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PROGNOSIS OF STERILITY *

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The treatment and more especially the operative treatment of sterility differs essentially from the treatment of ill health in that in the latter treatment is a matter of necessity, while in sterility it is frequently a matter of the patients' choice, of their readiness to submit to operation, or to perhaps tedious minor treatment, merely for the sake of future gain and happiness. For this reason an exact statement of the prognosis, of the degree to which success can be expected in the individual case, is of perhaps greater importance than in any other branch of surgery.

The importance of this point and the fact that the subject of sterility is so complex that a full review of even one phase of it can be with difficulty compressed within so short a space, is the reason that this paper must neglect treatment and even the details of diagnosis in order to cover prognosis even roughly.[1]

At first sight the most obvious method of dealing with this subject would be by the statistical study of cases treated, but apart from the complexity of the subject and the enormous number of cases which would be necessary for an adequate study of the several classes of sterility, a statistical presentation is rendered useless by the practical fact that so soon as one's study of sterility begins to bring him any considerable number of reference cases he sees an increasingly large proportion of cases which are on their face hopeless, the patients having traveled from place to place hoping against hope. The exclusion of these cases from his statistics would make them unconvincing and unreliable; their inclusion would make the results practically useless;[2] and further the only point which is of practical value is the attainment of an accurate prognosis in individual cases under the several classes of sterility, rather than a general statistical statement which would be of little value, and which, from the complexity of the subject, is all that could be obtained statistically from any number of actually observed cases which could today be collected.

In order to obtain a fair conception of the prognosis in any given case we must consider sterilities under a classification by causation, and must discuss, first, the prognosis in each of these classes by itself, and, later, the prognosis in the many cases in which the sterility is due to more than one of these causes.

We may begin such a classification by dividing sterilities into those which are dependent on absence or inferior quality of the ovum, those which are the result of secretions of the genital tract which are destructive to either the ovum or spermatozoa, and finally those which are due to absence or inferior quality of the spermatozoa. In each of these classes we have cases which are organic in nature, that is, due to local or anatomic abnormalities; and in each we see cases which are functional and due to abnormal constitutional conditions of the individual. We have, then, at least six classes to start from, and most of these must later be subdivided.

We are profoundly ignorant of the chemistry of the reproductive organs. We can then draw conclusions about the functional cases only from analogy with facts which have been more or less well established in the breeding of animals and by the very small amount of direct experimental work which has been done along lines bearing on sterility. After about three years of some personal study on this point in domestic fowls, and of inquiry among breeding farms devoted to animals it seems to be probably an established fact that, in animals, fertility is decreased both by undue obesity in either sex and by excessive overwork. There is also some reason to believe that conditions of life which produce marked nervous excitability decrease fertility in animals, and this must be remembered in connection with many of the conditions of civilized existence in the human race. We have, however, no knowledge of the mechanism by which such alterations of condition produce relative or complete sterility in animals. We do not even know whether it is effected by decreased quality of the ova

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[1] The Causes and Treatment of Sterility in Women, Am. Jour. Med. Sc., August, 1907; Anteflexion of the Cervix and Spasm of the Uterine Ligaments in Relation to Retroversion, Dysmenorrhea and Sterility, Surg., Gynec. and Obst., July, 1911, p. 17; The Ultimate Results of the Conservative Surgery of the Ovaries, Surg., Gynec. and Obst., March, 1912, p. 255. Reynolds, Edward: The Theory and Practice of the Treatment of Sterility in Women, The Journal A. M. A., Jan. 11, 1913, p. 93; Further Points on the Sterility of Women, ibid., Oct. 11, 1913, p. 1363.

[2] As an illustration: After selecting, in preparation for this paper, a certain date from which a statistical investigation of personal cases should begin, and assembling all the cases seen since that date, the first seven cases showed the following conditions: Patient 1, both tubes and one ovary previously removed for tuberculosis. Patient 2, large pelvic masses after repeated operations for "peritonitis"; condition of husband unknown. Patient 3, both tubes enlarged; two previous abdominal operations; will contemplate nothing but minor treatment. Patient 4, ten years of gonorrheal salpingitis in first marriage; two previous operations; demanded operation in spite of bad prognosis; both tubes found ruined. Patient 5, aged 44; previous operation for genital tuberculosis; polypus of cervix; husband not accessible. Patient 6, husband partly impotent and refuses examination. Patient 7, anteflexion of the cervix, pinhole os, plastic operation; pregnant three months afterward. Here six hopeless cases were found before one was favorable. In nearly a hundred cases which were abstracted before the attempt was given up, the proportion of hopeless cases proved indeed to be smaller than this, but was still so high as to vitiate statistical conclusions. The percentage of hopeless cases was, moreover, found to increase in a general relation to the distance from which the patient had been referred, thus hinting in another way that a prognosis drawn statistically from such a list as this would not show fairly the prognosis of sterility in cases as the practitioner sees them, or as they exist in the community at large.

or spermatozoa of the individuals, or by alteration of the chemical composition of the fluids in which these gonads are immersed.

We know even less about this question in the human race. We however know a little more about this point in the human male than in the female on account of the ease with which the spermatozoa can be directly inspected and because of the impossibility of finding the ovum. We have direct evidence that in the human male an excess of mental work sometimes results in the disappearance of spermatozoa from his semen, and some direct evidence that an excess of fat may produce the same result. We have also probable clinical evidence that the excessive use of alcohol and perhaps the extremely excessive use of tobacco decrease the vitality of his spermatozoa even though they be still present and of normal appearance. We have absolutely no evidence concerning the effect of these general conditions on the ovum, and can only surmise that they may well have the same effect on the gonads of the female that they have on those of the male. This weakness of our knowledge of the functional conditions is necessarily a constant embarrassment in our interpretation of the importance of the organic or anatomic abnormalities which we detect in a given case.

In spite of this extremely unsatisfactory state of our scientific knowledge it is, however, possible to obtain very satisfactory practical results in the prognosis of individual cases by the assumption of the following working hypotheses:

1. When the spermatozoa are abundant in number, normal in form and appearance, furnished with long cilia and capable of rapid movement through the semen the male is satisfactorily fertile.
2. When normal spermatozoa are killed or lose vitality overrapidly in the secretions of the individual woman, the chemicophysiologic character of her secretions furnishes an effective cause of sterility.
3. The alterations in a secretion which make it fatal to the spermatozoon may be localized in the vagina, in the cervix, in the body of the uterus, or in one or both tubes; and any one of these alterations may exist with normal secretions above it; but an alteration in the secreting surface in any of these localities usually vitiates all the secretions below it, probably by their necessary admixture.
4. When the spermatozoa are observed to penetrate without apparent loss of vitality to the fundus of the uterus and to survive there for a normal length of time, deficient quality of the ova may be considered the probable cause of the sterility.

Throughout the management of every case of sterility it must be remembered that the failure is the failure not of one individual, but of a couple, and that the condition of both partners must be studied.

If these hypotheses are borne steadily in mind throughout the study of a case, and if the variations in the conditions which affect them are studied and restudied by all the methods which are now at our disposal, it becomes surprising to see how practically good a prognosis can usually be made in spite of our lack of exact physiology and chemistry, but, on the other hand, it is certainly true that so long as we labor under these defects of theoretic knowledge, a painstaking exactness in the observation of details will be the first prerequisite to success.

In the practical management of such a case the first step is the taking of a careful history, which should not be confined to the history of the sterility alone, but should follow every detail of the past health of both patients, since many sterilities are dependent on slight pathologic alterations in the genitals on which great light is often thrown by past symptomatology. The history and physical examination should also include a careful study of the general condition and especially of the nutrition and habits of life of both partners, such factors as obesity, emaciation, nervous debility, drug habits, sleeplessness from overwork, etc., in either partner, being all important. Furthermore, distasteful as the subject is, he who is to handle sterility successfully must acquire the art of obtaining full and accurately truthful histories of the sexual habits of the couple, with especial reference to any abnormalities, even if apparently minor, in either the sexual appetite, or the methods employed in the performance of coitus. There is certainly a steady percentage of cases in which these matters are all important. The next step in the management of the case from a practical standpoint is usually a careful examination of the genital tract of the woman step by step, remembering that minor abnormalities which are unimportant to health, that is, which create no symptoms of importance, are often abundantly competent to produce infertility. I constantly see cases which have been pronounced normal even by excellent gynecologists and in which the organs are normal from the standpoint of health, but in which there is nevertheless some minor abnormality which is perfectly evidently the cause of the sterility, as is often shown by the fact that when this is remedied impregnation occurs without further treatment. This examination must include study of the condition of the vagina, cervix, uterus (including the character of their secretions), tubes and ovaries, and it must be remembered that the detection of the minor abnormalities of the tubes and ovaries almost always requires an examination under anesthesia.

When all this has been gone through with sufficient care the surgeon should be in a position to estimate with considerable closeness both the anatomic and functional condition of the woman and should have an equally good estimate of the general functional condition of her husband.

In the majority of cases the next step should be a form of examination which has been lately given to the profession by the ingenuity of Dr. Max Huhner of New York, the microscopic examination of the spermatozoa in situ in the genitals of the woman, of which much will be said in the remainder of this paper, but dramatic and interesting as this test is, it must always be remembered that it can furnish at most only one element in our study of a case.

This test not only furnishes an examination of the man which is in most cases thoroughly satisfactory, but also enables us to check the conclusions previously arrived at as to the relative importance of anatomic and functional conditions by direct observation of much of the process of fertilization while actually in progress. Experience has, however, convinced me that this process of observation must, like so many other exact methods, be considered by the wise clinician as furnishing only one link in the chain of evidence. It is so interesting and dramatic that it is extremely easy to overestimate its value, and to be led by it to false

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conclusions, if we fail to consider its results in connection with those obtained by other methods of observation. If the conclusions arrived at by both methods are substantially in agreement, even to details, we may safely trust them. If the two methods yield different results we should distrust our conclusions, for we are then certainly not in a position to act until further study has reconciled their discrepancies. To pin our faith to either method will usually lead to false conclusions.

For the performance of the Huhner test we must ask to see the woman as soon as possible after coitus has taken place. She may come to the office for this examination, since it is only very exceptionally, if ever, that the vagina does not contain sufficient spermatozoa for this test even after she has walked about for some time. With a normal vaginal secretion the spermatozoa should show active motility in the vagina for about an hour and sometimes much longer, but if circumstances permit it is desirable that the patient should be seen within half an hour of coitus. A specimen of the vaginal mucus is taken by a sterile platinum wire from the culdesac, exposed by a speculum, and this examination may be repeated if desired, whenever convenience permits, until the spermatozoa are found to have lost their activity. A specimen of the cervical mucus is next obtained in the same way, after the surface of the cervix has first been carefully wiped clean of semen by the repeated use of cotton swabs (no antiseptic should be used). With a normal cervical secretion and a normal os a few spermatozoa will usually be found in the lower part of the cervical cavity almost immediately after coitus, but will appear there in larger numbers at the end of half an hour to an hour. They are never so numerous here as in the vagina, but under normal circumstances, at the end of an hour, there should be several actively moving spermatozoa in each slide from the cervical mucus. The greatest care should be used to avoid the infliction of any trauma in the examination of the cervical cavity, since overthoroughness here may readily vitiate the use of the remaining portion of the test at that sitting.

When the cervical cavity has not been unduly disturbed, when the spermatozoa are of full vitality, and when the secretions of the woman are normal throughout, an examination of the secretions of the cavity of the uterine body should disclose the presence of a few actively motile spermatozoa in the uterine mucus at the end of from two to three or four hours. This examination must however be made with a specially devised syringe, since the platinum loop can neither be introduced with certainty to the fundus nor made to retain the uterine mucus during its withdrawal from the cervix. Even with the use of a syringe it is difficult to be absolutely sure that spermatozoa which are observed in the fluid withdrawn from the uterus are not due to an admixture from the cervix, but if the piston is not withdrawn until the tip of the syringe is well up in the uterine cavity, if the outside of the syringe is carefully wiped after withdrawal, if it is properly designed, and especially if the spermatozoa are found several times in succession, their probable location in the uterine mucus can be predicated. In some cases it will be found that actively motile spermatozoa have disappeared from the cervix after the lapse of a number of hours but are still found in the uterine mucus. In these cases the test is practically complete.

This study of the process of fertilization while it is actually in progress seems most rational and is in many cases extremely satisfactory, though care must always be used in its interpretation, as will be developed further later. The results obtained from it have led me to be a believer in the probable existence of that much mooted phenomenon, relative fertility; that is, I can now believe that a woman with slightly altered secretions may be sterile to a man with only moderately vitalized spermatozoa, and yet fertile to a man whose abundant and highly vital spermatozoa can resist her slightly hostile secretions; while, on the other hand, the moderately vital spermatozoa of the first man might succeed in effecting conjugation with the ovum through the absolutely normal secretions of another woman. On this latter point I have had fairly direct evidence, that is, I have seen instances in which with improvement in the secretions of the woman comparatively poor spermatozoa became able to make effective progress.

The Huhner test, valuable as it is, must however not be relied on too far lest it lead us into a too mechanical view of the problem of sterility. It requires for its successful use considerable tactile skill and no inconsiderable familiarity with the microscopic appearances to be noted, and there is undoubtedly much yet to be learned, from the microscopic point of view, by wider experience in the use of this test. It is not adapted for experimental, empiric use by the general practitioner, nor is it safe unless carried out with the most complete asepsis.

The several observations which may be made by this method will now be summarized, and their bearing on the results of other methods of examination will then be discussed.

If the vaginal pool when submitted to the microscope contains no spermatozoa, alive or dead, the probability is strong that the man is aspermatic and this should then be confirmed by direct examination of the semen as obtained by expression or from a condom specimen. Such aspermia may be merely temporary and is frequently neither permanent nor hopeless; but into the prognosis and treatment of aspermia and azoospermia I do not here propose to enter. If the vaginal pool contains an abundance of spermatozoa which are either dead, or at best feebly motile, at the time of a reasonably prompt examination, the character of the vaginal secretion is probably responsible for their death, and should in most cases be altered by treatment; but the importance of the vaginal condition is much affected by the size and position of the os uteri. There are not a few cases of widely opened os, with normal cervical secretions, in which a reasonable number of living spermatozoa succeed in entering the cervix in spite of a hostile vaginal secretion, that is, before it takes effect on them. If they succeed in entering the cervix in sufficient numbers and with sufficient vitality to be found later in the uterine mucus the condition of the vaginal secretion is of course of but little importance. If, however, as is frequently the case, spermatozoa are found, in an apparently normal cervical secretion, either dead or in a condition of limited vitality while the majority of their brethren have been killed by a hostile vaginal secretion, it becomes probable that even the most successful ones were largely devitalized by the latter, and its treatment is of the utmost importance.

Much the same thing may be said of the hostile conditions of the cervical secretion; but it may be remarked, in passing, that it is extremely interesting to see how often actively motile spermatozoa may be seen to progress across the field of the microscope in a cervical secretion of grossly normal appearance, until they come in contact with some clump of pus cells which is evidently tied together by sticky secretion, with which the tail of the spermatozoon becomes entangled. The result then is that he indulges in futile struggles to escape, by the violence of which he may be seen to become exhausted, and in a few minutes gives up the struggle and lies still. This is of course due to the admixture with normal serum of thick inspissated mucus from inflamed cervical glands. In these cases the cervical mucous membrane must of course be rendered normal before impregnation is likely to occur. It may here be again remarked that this is unlikely to be effected to the degree of normality which permits of impregnation, without an intelligent alteration of the size and shape of the os and cervical cavity by a plastic operation, in addition to a curettage and thorough if not repeated disinfections of the mucous membrane.

These conditions as actually seen under the microscope, then, amply demonstrate the reason for the almost invariable failure, in sterility cases, of the mere dilatation and curettage in which the general practitioner so often indulges, not infrequently, too, with results which permanently decrease his patient's chance of fertility under any treatment. At least such has been the result of my observations in this class of cases.

If the uterine mucus contains spermatozoa which have penetrated there and then died prematurely (they should live many hours if not days in this situation), it becomes probable that they have been killed by exposure to the tubal secretions so soon as they have reached the point where those secretions are but little if at all diluted by the secretion of the uterus, and those of the lower portions of the tract through which the spermatozoa have lived. If the uterine cavity contains fairly numerous spermatozoa of high and persistent vitality in a woman who nevertheless remains persistently sterile, the demonstration that her sterility is ovarian is sufficiently satisfactory to be practically useful.

By this means of direct observation of the progress of the spermatozoa through the genital canal, of their comparative vitality at the start and in each stage of their progress, an experienced observer may obtain information of the utmost value. In his interpretation of these facts, however, he must be guided not merely by these results, but by their correspondence with the observed local conditions both gross and microscopic, and by these as checked by his remembrance of all the light gained from the history, and from his study of the general condition of both partners. Otherwise I believe that he will take an unduly narrow view and will be in the long run none too successful in his management of these cases.

Success in diagnosis and prognosis from such complicated observations as these must always be a matter of the personal equation, but with sufficient care and thorough study they become increasingly accurate and often surprisingly so.

The prognosis in individual cases may now be discussed in accordance with the classifications by causations originally proposed.

If the male is azoospermatic the prognosis is that of azoospermatism, which varies with its cause.

If his spermatozoa are either few, abundant but somewhat lacking in motility, or in any other way imperfect, the prognosis which would be derived from the condition of the woman is impaired by just the amount of the feebleness of the male, and though it is usually not hopeless, both elements must be remembered in forming it.

If the spermatozoa are not only abundant but also long tailed, well formed, and active, the prognosis can be made from the condition of the wife alone.

When, in such cases, the only abnormality found is in the character of the vaginal secretion, or in such alteration in combination with a pinhole-sized and badly placed os, the prognosis of fertility under appropriate treatment is that of almost certain success. When, with first class spermatozoa, the abnormality is found in the cervix with an apparently normal uterine body, tubes and ovaries, the prognosis after appropriate treatment is always very good. When, with first-rate spermatozoa, the abnormality is apparently to be found in the uterine body, that is, when the uterine secretion as obtained by the syringe is sticky, or unduly filled with clumps of leukocytes; when the ordinary symptoms of endometritis are present; when the bimanual examination shows the uterus large and soft; but, on the other hand, when a careful bimanual examination under anesthesia satisfies the attendant that there is every probability that the ovaries and tubes are normal, the prognosis under treatment is good. When the abnormality is believed to be slight but existent in both tubes, that is, when both tubes are palpable though not greatly enlarged, the prognosis, though not necessarily hopeless, is not good. When both tubes are grossly diseased the prognosis is, in my opinion, so poor that operation is not justified for sterility alone unless both partners insist on it after full statement of the poor prognosis. When coincidence of all the above methods of examination leads the observer to believe that though one tube is undoubtedly or probably abnormal there is reason to believe that the other tube is normal, the prognosis is again good, after the removal of the affected tube. I have had several most satisfactory successes in such cases, though we must, of course, be always prepared in these cases to find that the second tube is occluded in spite of our belief to the contrary. When the whole genital canal is normal or substantially normal as shown by the result of an inspection and examination under anesthesia, with the support of the presence of active spermatozoa at the fundus, that is, when the fertility is demonstrably merely ovarian, when arrest of development is not present, but the ovaries are either normal or slightly enlarged, the prognosis after conservative operation on the ovaries is thoroughly good. In my opinion such an operation is justifiable under the conditions of today for sterility alone, provided that all the pros and cons have been placed before both parties and that both of them request operation after due consideration of them.

In the far more common cases in which there is an admixture of several of these abnormalities the prognosis must be determined for the individual case by carefully weighing the principles set forth above as applied to the individual combination of circumstances.

The results obtained in the treatment of sterility have long been, and too often are still, proverbially poor. I believe that the reason is to be found in the fact that so many physicians treat these cases from a purely empiric point of view and without any attempt at educating themselves in the special subject of sterility.

In the first place, the importance of an examination of both partners is too frequently overlooked; in the second place the search is too often directed to the discovery of lesions which should create ill health rather than toward the often minor conditions which determine sterility. To judge from my own experience, sterility is about as frequently the fault of the male as of the female, but popular opinion usually places the responsibility for the sterility on the woman, and this popular superstition is too often shared by the profession. I regret to say that my daily experience teaches me that many gynecologists do not hesitate to treat women and even subject them to operations, for sterility alone, with no knowledge whatsoever of the condition of their husbands. I feel bound to confess that in earlier days I have done it myself.

On the other hand, while urologists constantly rail at this weakness of the gynecologic portion of the profession, study of their writings inevitably leads one to the conclusion that too many of them have not plucked the beam from their own eyes. I have seen too many cases in which expert urologists have based their opinion on the sterility of a couple on an examination of the man alone to doubt that this branch of the profession is also often at fault. If the examination of a man shows him to be aspermatic no examination of the wife is necessary until his case has been concluded, but if, as so often happens, spermatozoa are present but are of doubtful excellence, the prognosis of the case must depend on the results of the examination of both partners. In this class of cases the examination of the spermatozoa as taken from the female genitals is of especial value, since it makes it possible to check at one sitting both the urologic and the gynecologic examinations, and to estimate their relative importance.

Nothing is more common than to have a woman referred from a distance unaccompanied by her husband, who is, however, stated by their attendant to be "all right"; and then to find that the statement that the husband is normal means merely that he is in general good health and potent, and does not mean that his spermatozoa have been seen. The treatment and more especially the operative treatment of a woman for sterility alone without actual inspection of her husband's spermatozoa is entirely unjustified. It is certainly practically expedient, and probably justifiable, to treat for sterility, even in an operative way, women who have been referred from a distance unaccompanied by their husbands, who present sufficient causes for sterility in their own person, and who bring an authoritative statement that the husband's spermatozoa have been examined and found normal, but the advantages to be gained by the inspection of the spermatozoa in their progress through the woman's genital tract, though not in my opinion essential, are nevertheless so considerable that sterility patients should, whenever possible, come to the specialist accompanied by their husbands.[3]

The case against the profession goes further than this common failure to study the couple as a pair, however. It may almost be said that the usual course of the gynecologist confronted by a case of sterility is to treat it from the standpoint of health and not from that of the relief of sterility, that is, to institute treatment or perform operations, directed to the removal of anatomic or other alterations which he perceives in a woman's genitals, without stopping to consider whether these observed peculiarities have anything to do with her individual sterility or not. It may almost be said that when the average gynecologist fails to detect any cause for sterility he dilates and curets the woman for the sake of doing something. There are of course many men whose conduct of such cases is conscientious and able, but the above description is, I believe, not too strong a statement of average facts, and has in my experience, in part at least, been applicable to the practice of some men who in other departments of gynecology are of recognized preeminence. Such empiric treatment is worse than useless. It too often renders futile, future rational efforts for the relief of the conditions which are actually important in the given case.

I believe it is mainly by reason of these two faults on the part of the profession that the treatment of sterility is so frequently unsuccessful. I believe that when sterilities are, as a habit, managed by the examamination of both partners as soon as sterility has become probable and before the woman has been subjected to useless and usually harmful minor treatment and operations, its prognosis will become what it ought to be and what it today is in well-managed cases, usually satisfactory.

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ABSTRACT OF DISCUSSION

Dr. John O. Polak, Brooklyn: I wish to emphasize one point in connection with what Dr. Reynolds has said in regard to the fertility of the man. This point should be taken into consideration in every case; i. e., the male's past performances. I always have the man examined not only as to his potency, but as to the presence of evidences of previous infection, because that link—the history of previous infection—has a great influence on his potency.

Dr. Joseph B. DeLee, Chicago: My associate, Dr. Lespinasse, has been working on cases which I have referred to him, to see if we could not reach a solution of the difficulty presented by those cases in which the husband is well and the wife is well and yet sterility exists. He has worked in the light of the knowledge given us by recent studies in serology. We all know of certain instances in which the husband, after a divorce from the sterile wife, has secured children from another woman, and the wife, on remarriage, has also been fertile by another man. I, personally, have such a case under my present care, having delivered the woman twice after a second marriage, and a physician in Los Angeles having delivered the second wife of this woman's former husband.

Why did not the spermatozoa of the first husband succeed in fertilizing the ovum of the first wife? Lespinasse has found the secretions in different women dissolved the spermatozoa of different men—a sort of immunity reaction. Experiments are being made, but I am not yet able to give the results, since we want to accumulate a sufficiently large number.

When Dr. Reynolds mentioned the change in the local secretions, this is but a step further in the study of the gross symptomatology and pathology of the genital tract. We have got far enough in the study of these immunity reactions that it seems possible we may find the cause of sterility where the husband presents no evidence of disease, has strong, living spermatozoa, and where the wife has no pelvic inflammation or no real surgical pathology of the parts.

The treatment of sterility has been, in a manner, extremely routine, and therefore, unsatisfactory, and women are bandied about from one specialist to another until they lose faith in medical art.

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[3] A satisfactory examination of a couple for sterility cannot always be concluded in a single office visit. It may not infrequently require a number of visits, sometimes at intervals of several days.

Another point that will explain some of the causes of sterility is the abnormality of the internal secretions. I hesitate to make that statement because it throws us into an immense field that is very dimly lighted by positive knowledge, but I do know cases that have been unsuccessfully treated elsewhere and have been successfully treated by the glands of internal secretion—thyroid and other extracts. In some instances administration of these preparations has been followed by impregnation, especially that type of firm fat obesity, in which the women are round and plump and the fat is hard, almost like firm flesh, and the periods are inclined to be irregular and small in amount. Those cases have responded to combined treatment occasionally.

The use of alkaline douches just before intercourse deserves mention. The husband, as a cause of the sterility, must be always emphasized, and I have found that excessive smoking of tobacco is occasionally a cause of sterility, and that alcohol, even when the spermatozoa are alive and motile, indirectly prevents them from successfully fertilizing an ovum; that workers in arsenic, antimony, and other chemicals, in spite of live spermatozoa are sometimes sterile. Then I have had men who have had syphilis and are sterile, even though the examination of the semen showed motile spermatozoa. The sperm injected into the woman has both a local and a general effect. It has been demonstrated that the spermatozoa not used for fertilization enter the cells of the genital tract and are absorbed into the cell. This is a line of light on the immunal theory. Isn't it possible that a woman can be immunized; her serum so protected against the advent of the spermatozoa that it dissolves them when they come? Perhaps this explains—when the husband or wife has been sent away for six or eight months—successful fertilization. The law of incompatibles thus bids fair to be explained.

Dr. H. O. Pantzer, Indianapolis: His, the anatomist, said that the complexity of the genitalia in the human female is such as to make it, to him, a surprise that woman ever conceives. Regarding the nervous excitability referred to, I have this observation to mention, that women who have delayed menstruation frequently give evidence of a presenile sclerosis of the ovum. These cases are often associated with chronic intestinal auto-intoxication. This interrelation of toxemia and ovarian sclerosis is not surprising when we recall that toxemia strikes essentially at all glandular organs, and in all is followed by withering and sclerotic changes. It is surprising how many cases of spanomenorrhea or amenorrhea are helped by looking after systemic elimination. All will remember the reliance the older practitioners and gynecologists placed on elimination, as evidenced by the free laxative remedies invariably contained in their prescriptions.

Dr. Edward Reynolds, Boston: Some of the points about which Dr. DeLee spoke were omitted in my reading, but were in the paper.

I do not think the bicarbonate of soda routine for the acid vagina is a good thing. The acid nature of the vaginal secretions is, in all probability, merely the most superficial indication of the chemical changes which destroy the spermatozoa. The failure of such treatment in the vast majority of cases is because we only neutralize the acidity and not the other chemical alterations. I am unable to speak as yet of various studies which I have made, and have had made, and am making on the chemical and microscopic character of the secretions. So far as I know, the chemical and microscopic examination of the mixed secretion of the male and the female, as obtained from the female genitals, is, as yet, an entirely virgin field. There have been a number of men who have observed the spermatozoa and their action in those fluids, but the essential point which we cannot yet speak of is the microscopic and chemical examination of the mixed secretions; the establishing of a normal standard and the detection of abnormality. I have learned to recognize certain arrangements of pus cells, and have seen the spermatozoa swimming freely, come into one of those pus cells, tangle his poor little tail in it, stop his progress, thrash, thrash, thrash, and lie dead. You have to reduce that apparently normal cervical secretion. There are dozens of such things that we know nothing of. The question of immunity is a very curious and interesting one but from a practical standpoint on both the question of abnormal chemistry and immunity we must be careful how we determine our action in such cases by subjects that are so little worked out that our knowledge is hardly a gleam in the obscurity of our ignorance.

RELATIVE FREQUENCY OF ECTOPIC GESTATION *

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Why an impregnated ovum should implant and develop outside the uterus so relatively frequently in the human species and fail to do so in lower animals is a question the answer to which has been sought through investigation by clinicians and laboratory workers for a great many years. Clinicians agree that ectopic gestation is a frequent abnormality of early pregnancy but vary in their estimates of frequency depending on whether their clinical experience has been gained as a necropsy surgeon, a gynecologist, an obstetrician or a general practitioner. The large number of case reports indicate the frequency with which this condition is met by surgeons, but is too irrelevant to be of aid in discussing the subject statistically. In this paper, a statistical study of a definite number of patients will be made in order to estimate the relative frequency of ectopic gestation to disease in general, to women's disease, to pregnancy and to abortion. The small material presented makes the importance of the subject the sole excuse for presuming to answer these difficult questions.

The necropsy surgeon reports that he frequently meets ectopic gestation because sudden death associated with such a condition requires his services to satisfy the demands of the law. The gynecologist considers ectopic pregnancy a frequent condition because he does not take into account the many ordinary conditions which the man in general practice has treated before referring to him the patient with ectopic pregnancy. The obstetrician considers ectopic gestation a relatively rare condition because, through lack of understanding, the laity are prone to come to him only after the first three dangerous months of pregnancy are passed. It is an odd experience that a general practitioner may encounter several ectopic pregnancies quite close together and then practice for some time without meeting a case.

Formad,[1] who was a coroner's physician in Philadelphia, in 3,500 routine necropsies, found thirty-five deaths from ectopic pregnancy. Michel[2] has reported twenty-six cases of ectopic gestation in 6,000 gynecologic conditions, while Hartz[3] reports 3.4 per cent. of ectopic pregnancy in 1,700 specimens examined in the gynecologic laboratory at Jefferson and St. Joseph's hospitals in Philadelphia. Hennig[4] stated some years

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] From an unpublished communication by Ellice McDonald.

[2] Michel: Fortschr. d. Med., 1914, No. 23, p. 637.

[3] Hartz: Am. Jour. Obst., 1915, lxxi, 601.

[4] Hennig: Die Krankheiter der Erleiter und die Tubenschwangerschaft, Stuttgart, 1876.

ago that the directors of even large obstetric institutions might never encounter a case.

Although ectopic gestation is discussed in textbooks on obstetrics, no modern obstetrician has, to my knowledge, ventured an opinion of its frequency based on his personal experience. My own experience has been that for ten years, while limiting my practice to obstetrics, I did not treat a case of ectopic pregnancy in private or clinic work, but during the last three years while combining gynecology with obstetrics, I have operated on thirteen clinic patients and on seven private patients for this condition. The clinic cases form the basis for this paper as they were encountered at fairly regular intervals in a comparatively large number of patients.

From July 1, 1912, to May 1, 1915 (the time of writing), 36,668 patients have registered in the outpatient clinics of the Leland Stanford University, School of Medicine. Of this number, 2,955 have been treated in the women's clinic. In the clinic, fairly extensive histories of the patients were taken and a careful pelvic examination made, as well as considerable routine laboratory work started. A presumptive clinical diagnosis was entered on the history as soon as conditions justified such procedure. These facts are mentioned because often the diagnosis of early pregnancy is impossible, and because some patients, so soon as that diagnosis is made, fail to report to the clinic. Many cases of pregnancy abort or are aborted after leaving the clinic, and possibly some cases of ectopic gestation are overlooked. Taking these facts into consideration, it is interesting to note that of the 2,955 patients registered in the women's clinic, 554 were operated on for various gynecologic conditions. Of these, 353 were curetted and the curettings, together with the associated pathology, were studied in the laboratory for obstetrics and gynecology.

From these specimens there have been made seventy-three laboratory diagnoses of incomplete abortion and thriteen diagnoses of ectopic pregnancy, 1,225 of the 2,955 patients were confined by the clinic at or near term, which makes a total of 1,311 known pregnancies and 468 patients operated on who were known not to be pregnant.

CLINICAL SUMMARY OF ETIOLOGIC CONDITIONS IN ECTOPIC GESTATION

Case	Age	Grav.	Para	Abortions, Induced	Abortions, Spontaneous	Gonorrhea	Last Pregnancy, Yrs.	Leukocytosis 10,000+	H. Per Cent. 60 or Lower	Tube Rupt.	Tube Unrupt.	Tube Abor. Comp.	Tube Abor. Incomp.	Clinical Diagnosis ‖	Salpingitis Microscopic	Tube Decidua	Fetus Present	Mortality, Fetus	Mortality, Mother
1	25	iv	ii	0	i	+	5	?	?	..	..	..	+	Pelvic abscess..............	+	—	—	+	—
*2	35	vii	ii	v	0	+	6	+	?	..	..	+	..	Salpingo-oophoritis.........	+	+	+	+	—
3	30	iii	i	0	i	—	7	—	+	+	..	..	..	Ectopic.....................	+	—	—	+	—
4	35	iv	ii	i	0	—	5	—	—	..	..	..	+	Ectopic ?...................	—	—	—	+	—
5	28	iii	i	i	0	—	11	+	?	..	..	..	+	Pelvic abscess..............	+	—	—	+	—
6	28	ii	0	i	0	+	12	+	+	+	..	..	..	Appendicitis................	—	+	+	+	—
7	23	ii	0	0	i	—	2	+	+	+	..	..	..	Salpingitis.................	+	+	—	+	—
8	29	ii	0	0	i	—	7	+	—	..	..	..	+	Pelvic abscess..............	+	+	—	+	—
†9	34	i	0	0	0	—	0	+	—	..	+	..	..	Uterus retroverted..........	+	—	+	+	—
10	40	ix	v	iii	0	—	1	?	+	+	..	..	..	Kidney stone................	+	—	—	+	—
11	21	i	0	0	0	+	0	+	+	+	..	..	..	Ectopic ?...................	—	+	—	+	—
12	24	ii	0	0	0	—	6‡	+	—	..	..	..	+	Incomplete abortion........	—	—	—	+	—
13	29	iii	i	0	i	—	8	?	+	..	+	..	..	Incomplete abortion........	—	+	+	+ #	—
Aver.	30	iii	i	..	..	..	6	80%	60%	..	..	..	..	....	60%	46%	30%	100%	0
Total	..	43	14	11	5	4	..	..	..	5	2	1	5						

* At operation there was found a leather-like fetus 3 cm. long compressed between a pus tube and the fibrous uterus. The patient survived a tube abortion, which undoubtedly occurred six years ago, associated with an attempted criminal abortion.

† In the laboratory there was found a hematosalpinx containing cartilage cells which, with the history, gave evidence that the patient survived an ectopic pregnancy four years ago, mistaking the conditions for a spontaneous abortion.

‡ Ectopic pregnancy. Left tube and ovary removed. ‖ On hospital entrance slip. # Fetus alive at time of operation.

The remaining group of 1,176 patients who did not enter the hospital includes undoubtedly some cases of pregnancy, but is composed largely of nonpregnant patients such as come to all clinics for treatment of minor gynecologic ailments, as well as patients past the childbearing period, and a few children. The statistical work with this group is not as accurate as with the hospital group and the proportion of pregnant to nonpregnant patients can be estimated only roughly. Still it is important to include with the known pregnancies a fair number of these doubtful cases. For ten years, I have recorded annually the percentage of pregnant patients that have failed to return to the San Francisco maternity clinic for confinement, and have found that, on the average, 25 per cent. of the applicants do so fail to return. Applying this experience to the present clinical material, 393 of the 1,176 doubtful cases, or 30 per cent. of the number of confinements, have been grouped with the known pregnancies, making a total of 1,704 pregnancies, and 783 have been grouped with the operated patients, making a total of 1,251 nonpregnant patients.

From these figures, it will be seen that we have met ectopic gestation thirteen times in 36,668 patients or once in 2,820 cases of illness such as a general practitioner would encounter in a practice covering the diseases of men, women and children. Thirteen cases of ectopic gestation among 2,955 women with pelvic symptoms, or once in 227 cases such as come to the specialist: and thirteen cases of ectopic gestation among 1,704 cases of pregnancy, or once in each 131 pregnancies!

Considering the pathologic diagnoses which have been made in the laboratory, it is seen that 86, or 5.33 per cent. of the pregnant patients were sent into the hospital because of bleeding, and were curetted. A study of these curettements has shown that thirteen of the 86 patients, or nearly 17 per cent. of possible abortions, were flowing because they were suffering with a misplaced pregnancy.

This does not indicate the relative frequency of abortion to pregnancy, which has been estimated by Taussig[5] as high as one abortion to every 2.3 labors, but will, I believe, call attention to the possibility of confusing ectopic gestation with incomplete abortion and should put the general practitioner on his guard when treating such cases.

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[5] Taussig: Prevention and Treatment of Abortion, St. Louis, 1910.

Albucasis,[6] an Arabian surgeon of the eleventh century, is said to have first described ectopic pregnancy. For generations the etiology of the condition was little understood, but gradually the idea prevailed that, in many cases at least, an inflammatory condition of the adnexa was the predisposing cause.

Dr. William Campbell[7] accumulated these data and published a monograph which later formed the basis of Parry's[8] work and to whom Lawson Tait[9] gives great credit in discussing the subject.

Lawson Tait[9] said, "I believe it to be more than likely that the real cause of this accident is the coincidence of a set of circumstances the most important of which is the destruction or insufficiency of the ciliary movement." Since Tait made this statement, however, investigators have shown that often the cilia are not destroyed. Moreover, the condition of round-cell infiltration, of destruction of the surface epithelium, of agglutination of the septa of the tubes, of edema and fibrosis, which are frequently present in the ectopic tube, are stated by some pathologists to depend on the condition of the existing pregnancy or the recent rupture of the tube rather than a preexisting inflammation. Careful sections of the tubes also show that in some cases the ovum has lodged in a blind passage supposed to be a congenital abnormality.

Webster[10] states that the ovum always imbeds in müllerian tissue and Huffman,[11] on theoretic considerations, carries his idea farther by stating that the ovum always imbeds, in cases of ectopic pregnancy, in anomalous imbedding areas. While these theories are attractive, they lead away from the clinical idea of inflammation and tend to place the predisposing cause of the condition on an unchangeable hereditary basis rather than on the basis of previous inflammatory affections which are preventable. Moreover, it should not be forgotten that decidual reaction of early pregnancy has been noted in the tissues of practically all the organs of the lower abdomen, including the omentum and the appendix.[12] Leo Loeb[13] recently concludes that guinea-pigs do not have ectopic pregnancy because it is impossible to create in them a decidual reaction outside the uterus. One reason for the frequency of ectopic gestation in human beings undoubtedly depends on the ability of the tissues into which the ovum penetrates to develop decidua, which affords the ovum an adequate soil for development, but this does not eliminate the fact that pelvic inflammations often result in deformities of the tubes, which causes the ovum not infrequently to imbed outside the uterus.

A clinical summary of the cases here reported is presented in chart form and from this it will be seen that the average age, the multigravida, the number of preceding induced and spontaneous abortions as well as attacks of gonorrhea, the period of relative sterility and the microscopic findings all point strongly to the clinical idea of Tait that many of the cases of ectopic gestation trace their etiology to a preceding pelvic infection. It might be added that gonorrhea plays the minor rôle, and that abortion, associated as it so often is with a more or less noticeable attack of salpingitis, is the major predisposing cause for this frequent, dangerous anomaly of pregnancy.

CONCLUSIONS

From a statistical study of 36,668 clinic patients, the relative frequency of ectopic pregnancy is estimated as follows:

General practice	Once in	2,820 cases
Gynecology	Once in	227 cases
Pregnancy	Once in	131 cases
Early pregnancy with hemorrhage (necessitating curettement)	Once in	7 cases

Lane Hospital.

ABSTRACT OF DISCUSSION

Dr. Joseph B. De Lee, Chicago: Ectopic gestation occurs not infrequently in the lower animals, the horse especially, the cow and others. I know an interesting case in a house dog, running for six or eight weeks with symptoms of peritonitis. A roentgenogram disclosed the location of the fetus, an operation was performed, and a happy recovery made. As to the frequency of ectopic gestation, in my early years, in my hospital services everything except the actual delivery of a baby was assigned to the surgeon or to the gynecologist, and therefore, the obstetrician did not get the cases. He was considered perhaps one or two degrees better than a midwife, and of a different sex. This was the only distinction that I could learn. But as I began to assert my rights, and obtained all the obstetric cases, I found that the frequency of extrauterine pregnancy was increased. Perhaps we are losing sight of the point that so-called colics shortly after marriage, sometimes diagnosed as appendicitis, are not infrequently ectopic gestation aborting through the tube. You all know prostitutes' or actress' colic, and occasionally you hear of an actress being carried off the stage in a fainting condition. These are frequently cases aborting through the fallopian tube, and if properly diagnosed would increase the number of ectopic gestations which occur.

Dr. Alfred B. Spalding, San Francisco: I am not very much of a veterinarian and cannot dispute the point with Dr. DeLee about the ectopics occurring in the lower animals, but a great deal of work along this line has been done by others and many of the supposed cases of the ectopics in lower animals have been considered to be due to rupture of the uterus and to a secondary implantation of the ovum in the abdominal cavity.

Also the relation of the tube to the double uterus in the lower animals is different from that found in the human being. Loeb's work was on guinea-pigs. He found that it was impossible to make them have an ectopic pregnancy by any mechanical or experimental means, and they are not supposed to have an ectopic from natural causes. He was able in one case to get a supposed ectopic from a suspected rupture in the tube, which later was found to be a rupture of that part of the uterus which forms the connecting link between the two.

Responsibility in Rural Sanitary Improvement.—Again, this is within the purview of the county health officer. But the broadening of the outlook of the resident of the rural district is not the obligation of one man or one profession. The duty is shared by the church, the sociologist, the teacher, the minister, the welfare worker, in fact by all who bear responsibility because of position or knowledge. Where to begin is a point to be considered by each institution or worker in his own locality, but that each should do his part admits of no discussion.—Oscar Dowling, *American Journal of Public Health*, May, 1915.

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[6] Aboulcassem Khalaf ben Abbas Ezzahraony.

[7] Campbell, William: A Memoir on Extra Uterine Gestation, Edinburgh, 1842.

[8] Parry: Extra Uterine Pregnancy: Its Causes, Species, Pathological Anatomy, Clinical History, Diagnosis, Prognosis and Treatment, Philadelphia, H. C. Lea, 1876.

[9] Tait, R. Lawson: Diseases of Women, Philadelphia, Lea, 1879.

[10] Webster: Study of a Specimen of Ovarian Pregnancy, Am. Jour. Obst., 1904, L, 28.

[11] Huffman, Otto V.: A Theory of the Cause of Ectopic Pregnancy, The Journal A. M. A., Dec. 13, 1913, p. 2130.

[12] Meyer, R.: Ektopiche Decidua, Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxv, 760.

[13] Loeb, Leo.: Tr. Soc. Exper. Biol. and Med., 1913, xi.

STREPTOCOCCUS BACTEREMIA IN ENDOCARDITIS

ITS PRESENCE BEFORE AND DURING THE DEVELOPMENT OF ENDOCARDIAL SIGNS *

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The frequent occurrence of a bacteremia has long been suspected in certain cases in which blood cultures have always been negative. One has often felt that our blood-culture methods were very imperfect, that we failed to grow an organism when one was present. Rosenow's methods[1] are a decided advance and have placed in our hands means of investigating a large variety of diseases from which may come findings that will change present views of common diseases. The importance and wide range of the pathogenic influence of streptococci will become generally better appreciated and the association of certain diseases formerly often observed is even now being placed on a definite bacteriologic foundation.

In the heart clinic recently established at the Toronto General Hospital, in connection with the general medical outpatient clinic, it was felt that blood-culture methods similar to Rosenow's might well be applied to the investigation of cases of suspected endocarditis since this affection is so often observed in those who have never had rheumatism. It would appear reasonable that all cases of endocarditis are bacterial in origin, that the organism must be present in the blood for long periods at a time and could be demonstrated if our cultural methods were sufficiently perfected.

There was attending the medical outpatient department during the summer of 1914 a girl (the patient in Case 1) whose case had been diagnosed previously in Ward G as one of pulmonary tuberculosis. However, she had no cough or signs of activity and her morning pulse rate was too slow. Yet she had slight fever, the temperature reaching 99 to 99.4 on an average about twice a week. There was then no murmur present. It was this case that suggested the great value of an efficient blood culture. Success along this line has been attained even beyond expectations, so that now cases formerly diagnosed as cases of chlorosis, anemias, indefinite attacks of fever, obscure tuberculosis and especially "nervous breakdowns" are being called endocarditis.

In this method we have a means, second to none other, of diagnosing this interesting and important disease. Indeed in a few cases it has been the only evidence obtained. A bacteremia has been obtained before the onset of the murmur or thrill and in the presence of a normal temperature. Still this technic is not all-sufficient. A culture was taken in a case of endocarditis and general acute serositis following inflammatory rheumatism three or four weeks before death. The culture remained sterile and at necropsy streptococci were cultured from the heart's blood and were even found in direct smears from the spleen. Still, positive cultures have been obtained when scarcely suspected and in rather more than half of the cases investigated.

This communication is a preliminary report of the presence of a nonhemolytic streptococcus, usually, though not always, producing green on blood agar, in the blood in some twenty-six cases of endocarditis investigated by a modification of Rosenow's culture methods during the past six months. The first twenty-three histories are pointed out for special consideration, as most of them represent a class of very mild endocarditis from which it is thought that positive blood cultures have hitherto not been obtained. The last three are added chiefly for comparison as they conform to the variety commonly called in the literature "subacute bacterial endocarditis." Owing to lack of time and the depletion of the staff of the bacteriologic and pathologic departments by the war, in only a small percentage of suspected cases could cultures be made. Seven of the cases were found among the private patients of one of us (J. A. O.), in course of a small general practice in six months. At least as many others have been encountered in the same time in which cultures were not taken for reasons of age or convenience. During the same time only two cases of rheumatic fever have been treated in private practice and the three last cases (24, 25 and 26[2]) are all that have been recognized of subacute bacterial endocarditis of literature type during the same or longer time in both hospital and private practice. If the figures are at all representative, the incidence of a mild form of endocarditis, of the type to be described, must be far greater than the so-called rheumatic endocarditis, or the subacute bacterial (*Streptococcus viridans*) form. The relationship between these varieties remains to be determined.

In April, 1914, Simons[3] published a critical review of bacterial endocarditis of all forms, summing up very well indeed present-day ideas of this disease. He defines it as those cases (1) which are either acute or chronic, (2) are associated with the presence of bacteria in the valvular lesion and (3) in the circulating blood for some (usually a considerable) period of time and (4) are usually of fatal outcome. The idea is current that if organisms are present in the blood, especially in sufficient numbers to be recovered by culture, the case will end fatally in from a few weeks to two years. Simon uses the term bacterial endocarditis to include all organisms (except spirochetes). In this article, however, it is restricted to the type of case so well described by Osler,[4] Libman,[5] Schottmüller[6] and others, under such names as subacute infective or subacute bacterial endocarditis, endocarditis lenta, etc., and caused by a streptococcus variously named *Streptococcus viridans* or *mitis* (Schottmüller), the endocarditis coccus (Libman), modified pneumococcus (Rosenow), saprophytic streptococcus (Hörder), and others. It is generally accepted that these terms all apply to the same organism now usually called the *Streptococcus viridans,* though it must be remembered that this term includes a variety of strains of all grades of virulence and having special "affinities" for many different tissues.

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* From the Department of Bacteriology and Department of Medicine, University of Toronto.

* Presented before the Association of American Physicians, Washington, May, 1915.

[1] Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, The Journal A. M. A., Sept. 12, 1914, p. 903.

[2] Owing to lack of space a number of the case reports have been omitted from The Journal. They will be found in full in the authors' reprints, a copy of which may be had by sending a stamped directed envelope to the author.

[3] Simons, I.: Critical Review, Bacterial Endocarditis, Quart. Jour. Med., 1914, xxii, 291.

[4] Osler, William: Chronic Infectious Endocarditis, Quart. Jour. Med., 1908-1909, ii, 219.

[5] Libman and Celler: The Etiology of Subacute Infective Endocarditis, Am. Jour. Med. Sc., 1910, New Series, cxi, 516.

[6] Schottmüller: Endocarditis Lenta, München. med. Wchnschr., 1910, lvii, 617.

Recoveries from the type of *S. viridans* endocarditis described above are very rare but do occur. All recoveries reported can be counted on the fingers. Now if every case of endocardial inflammation (that is, the so-called simple endocarditis, not including the arteriosclerotic form) be bacterial in origin, then all Simon's conditions characterizing bacterial endocarditis should be fulfilled except the fourth. It is certainly safe to predict that all of these twenty-three cases are not going to end fatally in two or even twenty years. It is a well-recognized clinical fact that simple endocarditis can heal and remain healed for a lifetime.

Characteristic symptoms and signs of "subacute bacterial endocarditis" are malaise, fever of all grades, chills, progressive emaciation, weakness and anemia, hematuria, petechiae and other signs of embolism (hemiplegia, etc.) sweats, pigmentation, enlarged spleen and a terminal leukocytosis. Cases 24, 25 and 26 are types of this form of the disease, J. H. (Case 24) dying of emaciation, weakness and anemia, another patient (Case 25) of hemiplegia and one (Case 26) of embolism of the mesenteric artery, followed by gangrene of the small intestine, perforation and peritonitis. The majority of the main series (Cases 1-23) have shown very few of the preceding symptoms (some none), but some have shown just enough to suggest that they might be mild forms (Case 1 especially) and that there is a gradation in severity from the mildest (Cases 15, 7 and 8) to the severest case (Case 1) in which there is anemia, joint pains and considerable fever. Case 4 shows continual fever, nephritis and slightly enlarged spleen. None of the series is characterized by *progressive* emaciation, weakness and anemia. What anemia and weakness has existed has not progressed, indeed has improved, though of course the time of observation has been short. The patient in Case 1 has been under observation one year. Most of the patients look perfectly well, feel well and have no anemia. Hemoglobin below 60 per cent. was found in three cases. Six patients had no fever when the blood culture was obtained or while under observation, except a slight rise for a few days following removal of tonsils. The characteristic temperature appears to be an irregular one, normal all day, often for some days at a time, yet reaching 99 or 99.5 two or three days a week at irregular times of the day. To detect this the temperature must be taken systematically for considerable periods of time.

In seventeen cases the diagnosis was obscure, and was cleared up by the culture. In two or three, tuberculosis was suspected and may be present. T. D. (Case 9) conformed to the textbook description of chlorosis. Some suggested gastric ulcer. Two patients had symptoms somewhat similar to those in mild cases of typhoid (G. F., Case 11, and Mrs. H., Case 16). In fact both had suspicious Widal reactions and G. F. had an enlarged spleen and erythematous spots on the abdomen. But neither had the prostration, coated tongue, or malaise of typhoid, and were ill too short a period of time. E. K. (Case 4) had symptoms of meningitis. But the most characteristic group was that made up of "neurasthenics." Nine complained of fatigue, weakness, depression, irritability, restlessness, crying attacks, etc. "Nervous breakdowns" were common. The preponderance of young adult females in the series was striking. Five were males and eighteen females. Seventeen were between the ages of 16 and 41. Now, when one is consulted by a neurasthenic, the temperature is taken carefully for two weeks, and if fever be present in the slightest degree, or even in the absence of fever, if a history of tonsillitis is obtained, and diseased tonsils and endocardial signs found, a blood culture is taken. Some seventeen neurasthenics have been investigated and a positive culture obtained in nine cases. Seventeen had no cardiac complaint or symptoms when first seen. Eight had, or developed while under observation, a precordial pain, radiating to the left shoulder and down the arm, usually associated with dyspnea and brought on by exertion. This anginal pain in many cases was apparently quite out of proportion to the physical findings and often associated with cutaneous hyperesthesia. Tonsillitis was the usual precursor. In the children (Cases 2, 11 and 22) it was the continuance of the fever after tonsillitis that suggested endocarditis. One waited three or four weeks after the acute attack of tonsillitis before the culture was taken.

A history of tonsillitis occurring in other members of the family was noted in ten cases. In the case of R. F. and G. F., brothers, the mother is subject to tonsillitis and was ill one year with "low fever" at 19. During the last winter the two boys, the mother and the nurse had, each, two or three attacks. In another family the spread of tonsillitis and associated diseases was remarkable. The mother, who has often had nervous breakdowns, had tonsillitis in December. Shortly afterwards the husband had it also, followed in a month by appendicitis, and two or three weeks later, by a second attack with operation. While he was in the hospital the daughter, aged 5, had tonsillitis, after which slight fever persisted for five or six weeks and a pulmonary and mitral systolic murmur developed for the first time. During this interval the baby had a sore throat. About the same time the nurse went home with tonsillitis. While she was away the other maid, the last member of the family, was taken ill with appendicitis and operated on. While she was convalescing the nurse, who had returned, had appendicitis also, with operation. While the little girl was ill with endocarditis the mother's sister came on a visit and two or three days after her arrival she too had an attack of tonsillitis. Several other members of the mother's family have had tonsillitis often, some with endocarditis.

L. M. (Case 7) is interesting, showing the relationship of tonsillitis, endocarditis, appendicitis and gastric ulcer. Chronic appendicitis is blamed for causing gastric and duodenal ulcer. Possibly the real explanation is that both are results of the one infection. None of the series showed cholecystitis but two patients had herpes zoster.

The mitral valve was affected in nearly every case; the aortic in only one or two. In three cases endocarditis was suspected, before the murmur developed. In two the culture was obtained before any murmur could be heard and in two others the only murmur present when the culture was obtained was a faint systolic heard in the second left interspace over the border of the heart. There is some reason for thinking that this pulmonary systolic murmur is very often, more often than is thought, a transmitted mitral murmur, heard over the left auricular appendix. In most cases of mitral regurgitation, when looking at the cardiac action with a good screen, one can see a quick systolic dilatation in the left heart-vessel angle, which suggests a left auricular appendix being dilated with regurgitating blood. This has been seen when only a pulmonary systolic murmur could be heard on auscultation. In three or four cases in which opportunity has been had for watching the development of mitral regurgitation the murmur was first heard in the pulmonary area and later (a few weeks, or in the case of Patient 1 nearly two months) in the mitral area. Moreover, in many cases of mitral incompetency a louder murmur is heard in the pulmonary area, or the space below it than at the apex; and in all cases of mitral regurgitation, observed recently, a pulmonary systolic was present as well as the mitral.

In only one or two of the series was any cardiac enlargement present and that not at all extreme (most in Cases 21 and 6). Four patients had a leukocytosis of short duration (Cases 1, 6, 14 and 19). Six showed signs of nephritis. Five had gastric symptoms. These are often very troublesome and difficult to explain. One had painful subcutaneous nodules on the hands. None had petechial hemorrhages.

Should the presence of the bacteremia alter the prognosis? Probably not, for we have learned from clinical experience that most of these patients get better and live many years. Most of them were too slightly ill to ordinarily be kept in bed. The prognosis of Patients 1 and 21 is uncertain. The latter has a severe anemia and syphilis. Next to these the cases of chronic endocarditis following rheumatism and chorea are most serious (Cases 6, 12, 13 and 14). Patient 6 is a small girl with a fairly well-advanced mitral stenosis. Still, even she should live longer than the two or even three and a half years allotted to the previously recognized cases of subacute bacterial endocarditis.

In treating them, at first in every case the patient was put to bed, with the idea that every one with an active endocarditis should be at rest. Most of the "nervous" patients improved rapidly while in bed, but six did not show much change. Of these six, four have shown improvement since being allowed to be up and about, especially in Cases 3, 10 and 11. E. J. (Case 1) got up against advice and she became no worse. In fact she has lower fever now than she has had for six months. She is the most ill of the series. Hers would be classed as a type of mild case of the subacute bacterial endocarditis of the literature. Eight patients have had their tonsils out while under observation. Of these one (Case 9) improved afterwards. Cases 2 and 10 were uninfluenced. Cases 16 and 22 have been too recent to draw conclusions. The other three patients were so slightly ill before the operation that no difference in symptoms was noted.

The patients were kept in the fresh air as much as possible, encouraged to eat and given iron. Quinin appeared to give benefit in one case. Autogenous vaccines were administered in seven cases. Large doses were worked up to, usually without reaction. Recently it has been customary to start with 500 million streptococci at the first dose and 1,000 million at the second in the effort to obtain a reaction. Two patients with these doses had local reactions (Cases 1 and 5). It is difficult to see any difference in the course of those cases in which the patients were given vaccines, and those in which they were not.

The organisms recovered in the cases cited in this paper are being studied both as to their reactions and by animal experimentation. A detailed report of the results will be given at a later date.

CONCLUSIONS

1. A streptococcus bacteremia is present in the great majority of cases of active endocarditis and probably in all in some stage of the disease.

2. Endocarditis more commonly follows tonsillitis in children and young adult females than is generally believed. Possibly this accounts for the frequency of mitral stenosis in females.

3. This low grade streptococcic endocarditis is much more common than the so-called rheumatic endocarditis.

4. A large number of persons showing symptoms of the neurasthenic type are really suffering from a subacute streptococcic endocarditis.

5. Endocarditis may be active for considerable periods of time without symptoms.

6. A family incidence of tonsillitis and endocarditis (also appendicitis, gastric ulcer and other diseases which are often of streptococcic origin) is of frequent occurrence.

7. The pulmonary systolic murmurs so frequently found in "run-down" and anemic individuals are rarely functional.

On the other hand they usually indicate mitral regurgitation.

REPORT OF CASES

Case 1.—E. J., aged 22, was admitted to Ward G, Toronto General Hospital, June 2, 1914, complaining of general weakness and backache for seven months with dizziness, fainting, dyspnea and palpitation. Her family history is negative. She has had measles, mumps and chickenpox and has been anemic since 17. Two years ago she was confined to bed three weeks with fleeting pains in many joints without tenderness or swelling. The doctor diagnosed grip or muscular rheumatism. From Christmas, 1913, she lost 30 pounds in weight; had morning cough and expectoration, with pains in various joints and throughout the chest till the time of admission. Examination showed some dulness with bronchovesicular breathing found over right apex with no râles. The heart was normal in size, sound clear and distinct. No murmurs. The tonsils were found diseased and removed in July, 1914. On admission, the blood count showed red blood cells 2,500,000, hemoglobin 58 per cent., white blood cells, 8,000. Urine normal. When discharged, July 28, the count showed red blood cells 3,700,000, hemoglobin 75 per cent. Her condition was much improved. While in the hospital the patient's temperature went above 99 five times in fifty-two days and reached 99 on seven other days. The pulse averaged from 70 to 80. The patient attended the outpatient department till December 8. During this time the temperature continued as described above. The pulse was slow in the morning—50 to 60—going to 90 and 100 in the afternoons. During August a systolic thrill in the mitral area was detected. In September a precodial pain developed, brought on by exertion and associated with dyspnea. At the same time there was a suspicion of a pulmonary systolic murmur. On December 8 the patient was readmitted to the hospital (on account of angina pain and a slight swelling of the feet) for a rest. At this time the heart was not enlarged and the presence of a mitral systolic murmur was questioned. A pulmonary systolic murmur on exertion could be heard. On December 18 her temperature rose to 100.5 and from then till now (June, 1915) her temperature has oscillated from 97 to 102, reaching the high point at irregular intervals, sometimes a. m., sometimes p. m. There has been no cough since June, 1914. The pulmonary condition is unchanged. The murmurs are becoming rougher. December 24 blood culture taken by Rosenow's method showed *Streptococcus viridans* on the second day. January 13 the mitral murmur was loud and rough with a rougher pulmonary systolic murmur and accentuated pulmonary second sound. Red blood cells, 3,920,000; hemoglobin, 65 or 70 per cent.; white blood cells, 9,000; polymorphonuclears, 72 per cent. The urine showed a few granular and hyaline casts. Spleen and liver were not enlarged. The patient remained in bed three and one-half months with no improvement. Since April 1 she has been going about with her condition unchanged except the temperature does not go quite so high. She has been given autogenous vaccine (500,000,000 per dose) which gave a local reaction about 2 inches in diameter but which has not altered her condition.

Case 2.—R. F., a boy aged 5 years, 9 months, was seen on Feb. 15, 1915, complaining of feverishness continuing after tonsillitis. His mother often has severe tonsillitis and had endocarditis for one year at 19. Brother has subacute *Streptococcus viridans* endocarditis. Had an attack of feverishness without evident cause in 1912 and again in November, 1913. Examination showed a bright boy, slightly pale, restless, constantly moving. The organs were normal except the heart, which showed a systolic thrill and murmur in the mitral and pulmonary areas. On March 9 a blood culture showed *S. viridans.* The urine showed a small amount of albumin and granular and hyaline casts. Red blood cells, 4,500,000; white blood cells, 7,500; hemoglobin, 80 per cent. For the past four months his temperature has averaged slightly above 99, reaching 99.8 or 100 two or three times a week. He was given 8 or 10 doses of autogenous vaccine, beginning with 25,000,000 and increasing to 400,000,000 with no appreciable effect on the course of the disease. April 24 his tonsils were removed, cultures from which gave *S. viridans.* The boy has been in bed four months during which time he has grown and improved in general appearance. He now looks and feels perfectly well, yet the fever continues unchanged. His mitral murmur has become fainter.

Case 3.—C. M., aged 41, a nurse, was admitted to the Toronto General Hospital Feb. 14, 1915, complaining of fatigue, nervousness, general pains in limbs and back, coccygodynia, palpitation of the heart and slight dyspnea on one or two occasions. Her right knee was swollen for two or three days. She had had no previous illnesses except repeated "nervous breakdowns." Was off work four months in 1913 for coccygodynia and a nervous breakdown. Family history negative. The patient was a well-developed, well-nourished woman with all organs normal except the heart, which showed mitral and pulmonary systolic murmurs, without cardiac enlargement. Pulse averaged 70 to 80. The temperature reached 99 nearly every day and on four occasions reached 99.5 between February 14 and April 28. Red blood cells, 5,000,000; white blood cells, 8,700; hemoglobin, 75 per cent.; polymorphonuclears, 72 per cent.; systolic blood pressure, 115; diastolic, 78. The urine, specific gravity 1.015, showed a trace of albumin and red cells on one occasion and always a few granular and hyaline casts. On February 14 a Rosenow blood-culture showed *S. viridans.* An autogenous vaccine was given up to 700,000,000 per dose with no reaction or appreciable effect. Patient remained in bed for two months without change. She was then allowed to be up and to walk about. Her temperature ran higher for two or three weeks, then became normal and has remained so with a corresponding improvement in symptoms.

Case 4.—E. K., a nurse, aged 21, entered the hospital Feb. 19, 1915, complaining of severe pain in the lumbar region and in the front of thighs. Six weeks previously she was in bed three days with tonsillitis accompanied by an urticarial rash. Three days before admission pain began in her thighs and two days later in her back; it was severe enough to prevent sleep and require three-fourths grain of morphin a day. Family history negative. She had no previous illnesses except tonsillitis. Heart, lungs, liver and spleen were normal. No retraction of the head or Kernig's sign. Reflexes normal. Sensation normal. On February 22 a lumbar puncture was done and an antimeningococcus serum given as there were several cases of meningitis in the hospital at that time. The fluid was clear, cell count 4 or 5.

February 23, her condition was unchanged. A second lumbar puncture showed a turbid fluid. A slight hemorrhage prevented an accurate cell count but the fluid which came last contained many polymorphonuclear leukocytes, lymphocytes and endothelioid cells. A smear showed numerous gram-positive diplococci. On account of the absence of other signs of meningitis and the localized nature of the pain, the cord condition was considered focal and possibly embolic, though no cardiac murmur was present. Two days later a blood culture was taken which showed a gram-positive coccus growing in pairs and short chains, which on further culture proved to be *S. viridans.*

March 1 a dark brown pigmentation in the form of a coarse network developed on the inner side of the thighs. The pigmentation corresponded to the purple mottling which occurs on the arms and legs in vasomotor disturbances. This pigmentation has persisted for nearly three months. March 7 the pulmonary second sound was noted accentuated and a very faint systolic murmur was heard in the pulmonary area. She constantly moved about in bed.

March 25: Pains in the thighs have continued till now. A soft pulmonary systolic murmur is still heard.

March 31: Some pains are still present in the knees and thighs.

April 2: A systolic murmur is heard in the mitral area.

April 12: The patient is feeling fine, the mitral systolic murmur is becoming louder.

May 10: The heart condition is unchanged. Patient is feeling perfectly well.

May 23: The patient began to sit up.

June 18: Patient can go upstairs with very slight increase in the rate of the heart's action, with the rate returning to normal in less than a minute on lying down. During the first ten days of this period the temperature remained above 99, reaching on one occasion 101.5 usually going from 99 to 100 daily. From March 1 to the time of discharge on June 19 the temperature has reached 99.4 on fifteen occasions. At periods it remained below 99 for a week at a time. The urine contained a trace of albumin and red blood cells on two occasions. White blood cells, 12,000 on admission, were found 8,000 in a week and remained from 8,000 to 9,000. Red blood cells, 4,200,000 on admission. When the patient was discharged, red blood cells, 5,200,000; hemoglobin, 74 per cent.; systolic blood pressure, 104; diastolic, 84. On June 1 a second blood culture was positive in both aerobic and anaerobic cultures.

Case 5.—Dr. M., aged 25, entered the hospital on March 12 for tonsillectomy. He had had tonsillitis five or six weeks before, which was followed by pains over the tendons of his legs and in his ankles. He had rheumatic fever at the age of 9, and was ill several weeks. He had rheumatic fever at 14, and was in bed three weeks. He had tonsillitis frequently every year. His father had rheumatism. The patient was well nourished, well developed, did not appear ill, the heart was not enlarged. Systolic murmur in the mitral and pulmonary areas; was heard best in the pulmonary area. For two or three weeks following the operation there was arthritis in the wrists and shoulders. He had secondary hemorrhage from one tonsil on March 21. March 26, an aerobic blood culture was sterile. April 5, (three weeks after operation) an anaerobic blood culture gave hundreds of colonies of *S. viridans.* On May 25 both anaerobic and aerobic blood cultures were negative. Red blood cells, 5,500,000; white blood cells, 9,000; hemoglobin, 80 per cent. Urine negative. He was given 6 doses of autogenous vaccine—the first 500,000,000 streptococcus, the second and others 1,000,000,000. These produced local reactions. From time to time the murmur varied in intensity, becoming louder and rougher and then softer and fainter. He was discharged.

June 5: During all of this time his temperature was normal with the exception of two days following the operation when it reached 99.5 and 100 respectively.

CASE 6.—Miss B, aged 8½, weighed 3½ pounds at birth. At 2½ years she had adenoids and otitis media. The adenoids were removed. The heart was normal. In June, 1912, she began to be restless at night with night terrors, which lasted six weeks. Then she began to have nausea and pallor in the mornings with no elevation of temperature. On the fourth day her heart was said to be badly diseased. After three weeks there was marked muscular twitching and loss of voice, said to be chorea. She was confined to bed until the end of October. All of this time no record of temperature was kept. In the beginning of November she was allowed to be up and in December the doctor said the heart was as well as ever it would be. In February, 1913, she contracted a catarrhal cold and looked very tired. The doctor found the pulse rate 145 and the heart violent and irregular in action with a low afternoon temperature. Twitching movements of muscles again appeared. In a period of improvement in March the tonsils were removed. She was confined to bed until June 5 but was not allowed to walk until September, at which time the heart was apparently normal in size and no murmur could be made out. In October, after strenuous exercise, a soft systolic murmur could be detected.

In December 1913, she had a slight catarrhal cold. Between this and Easter, 1914, she had two colds with high temperature, but was only confined to bed for two or three days. The heart seemed unaffected. The child continued active and strong except in September, 1914, when abdominal tenderness led to a reexamination and it was stated that no abnormal condition could be found in the heart. In November she was examined again for abdominal pain. At this time there was a slight systolic murmur. In February, 1915, she had a catarrhal cold, contracted from the mother, marked sore throat, glandular enlargement, high temperature, and a leukocytosis of 19,000.

The heart was dilated, very rapid, with a harsh presystolic and systolic murmur. In April a Rosenow blood-culture gave a plentiful growth of *S. viridans*. Leukocyte count, 11,000. At this time quinin—3 grains four times a day—was administered. The temperature gradually fell to normal in about two weeks' time. Vaccine 1,000,000,000 increased to 2,500,000,000 every fourth day. Only once was there local reaction. The pulse rate ranged from 88 to 110. On June 10 the child was allowed to get up. The pulse rate increased only 5 to 10 beats during the first three or four days, then remained about 100 until the present date. The child is up and playing about, six hours a day. At no time throughout the course has there been found any abnormal urinary secretion.

CASE 7.—L. M., aged 24, a nurse girl, entered Ward G for investigation of symptoms of indigestion consisting of heartburn and nausea. She also complained of weakness and fatigue. Her mother died of heart disease at 37. The patient's tonsils were removed incompletely (?) ten years ago. She had appendicitis with operation six years ago; tonsillitis two years and 1 month ago; two attacks of gastric ulcer twelve and nine months ago. Has vomited "coffee grounds." The organs are normal except the heart, which shows a rough mitral and pulmonary systolic murmur with no cardiac enlargement. The tonsils were badly diseased. Red blood cells, 4,800,000; white blood cells, 8,000; hemoglobin, 75 per cent. Urine normal. Test meal and bismuth meal revealed nothing abnormal. Tonsils were removed May 23 and showed marked disease. Cultures from the tonsils and the Rosenow blood-culture showed *S. viridans*. The temperature reached 99 occasionally. The patient felt perfectly well after a week's rest in bed.

CASE 8.—E. B., aged 25, a music teacher, was referred from Dr. L. on April 23, 1915, for investigation, on account of two attacks of iritis lasting three weeks. She complained of being run down, tiring easily, headaches and some depression. Has had headache over the right eye all her life. She was operated on for fibro-adenoma five years ago and hernia eight years ago. One month ago she had tonsillitis. Her sister is subject to tonsillitis. The mother died of appendicitis. On examination the patient, a well-nourished woman, did not appear ill. The heart showed no enlargement or thrill. There were systolic murmurs in the mitral, pulmonary and aortic areas. Spleen slightly enlarged, by percussion not palpable. Other organs normal. Red blood cells, 4,900,000; white blood cells, 6,600; hemoglobin, 85 to 90 per cent. Crypts of the tonsils contained an exudate. The temperature was normal. A blood culture on April 28 showed profuse growth of streptococcus. The tonsils were removed May 31. Cultures from the tonsils showed a similar strain of *S. viridans* to that obtained by blood culture. After six weeks' rest she feels perfectly well. Her temperature continues normal.

PROSTATECTOMY MISTAKES AND FAILURES *

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Having in mind some of my own failures and believing we can often learn more from the consideration of mistakes than from successes I sent out a questionnaire to a number of my friends, having for its object an inquiry into prostatectomy and the ultimate results of operation. Many did not contribute to this series because, as Dr. Schmidt put it, "If my case histories answered these questions I would write a paper of my own." Some others who did reply had evidently guessed at many of the questions to such an extent as would render the whole inquiry misleading if their cases were included. Therefore I take the work of thirty-four surgeons who give fairly good notes on 1,423 cases. These include my own. Many names will not be mentioned for various reasons.

Let us consider the errors in order to discuss their cause and the avoidance of them. In 1905, before this association, I read a paper publishing the fact that many surgeons had an average mortality of 20 per cent. in prostatectomy and only about 30 per cent. of good results. This paper was productive of great good, since Hugh Young in 1906 produced a splendid critical analysis of his cases in order to prove that when properly performed the mortality of prostatectomy is low and the results good. Even this monumental compilation has not accomplished all the missionary work necessary, as can be seen from the present series of cases. Young[1] sets forth the fact that when a prominent surgeon publishes a series of successful cases he incites many to try to imitate his success without proper instructions in his operation or understanding of the procedure or of the dangers to which he subjects his patient. The object of my paper ten years ago was largely to call to the attention of the surgical world the need of some method by which patients' lives or comfort may be safeguarded without injustice to any surgeon. In this present series about half the surgeons contributing, operating on more than half (820) of the 1,423 cases, are men of unquestioned training in prostatectomy by either the suprapubic or perineal routes. A comparison shows the mortality of the operation in the hands of these men to be less than 3 per cent. while in the hands of other surgeons of less experience in prostatectomy (although perhaps equally or more skilful in other forms of surgery) it is 26 per cent. Now is it right in these modern days to sit smugly by without comment, while patients are sacrificed to the ambition of men unprepared to do this operation properly? I do not speak of novices or immature boys just out of the medical school, but of men undoubtedly able to be of great help to their patients in other ways but who are not sufficiently experienced in this operation. There are four excellent general surgeons contributing each a small number to this series who are the exceptions that prove the rule. These four men have had only a few cases of prostatectomy, but no mistakes or failures or even a justifiable death can be quoted against them. I believe this exception proves that there is nothing mysterious about good results in prostatectomy; that after proper diagnosis and a well-considered operation these results are obtainable by any really good surgeon by methods similar to those used in other major operations.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Young: Hypertrophy and Cancer of the Prostate, Baltimore, Johns Hopkins Press, 1906, p. 2.

Let us consider for a moment the matter of diagnosis. In this critical analysis of a series of cases, methods of diagnosis can not be described in detail. It would seem unnecessary to call attention to the fact that a correct diagnosis is important before prostatectomy but evidently many otherwise careful surgeons consider the diagnosis of this condition so easy that they do nothing more than guess at the problem presented to them. Stricture of the urethra, spinal neuroses, condition of kidneys and other organs are frequently slighted or missed altogether in their examination. Even the most experienced operators occasionally overlook a case of prostatic or periprostatic cancer. In our present series, taking only the cases reported in which the surgeons have evidently tried to differentiate between hypertrophy and cancer, 7.3 per cent. of these patients were, in ultimate analysis, found to have cancer. This is a considerable percentage. It is worth reflection before operation.

Dr. A. says he operated in a case of cancer which proved very extensive. Result, urinary fistula which could not be closed before the patient died. It is possible that a thorough examination might have demonstrated this case to be inoperable and the patient had better have been left to die in peace. As a matter of diagnosis too, it is well to so examine patients that a wise choice of the suprapubic or perineal routes will facilitate the removal of the gland with best ultimate results. This is not the time or the place to open a discussion between the operators using exclusively the high or the low procedure. Many surgeons believe the high operation more suitable for one class of cases and the low for another. There is so much of the personal equation in this that universal agreement never will be possible. Watson of Boston attributes two deaths to "applying the perineal operation to very large prostates, one of them weighing 12, the other 10 ounces, after prolonging, by the effort, the operation, being forced to have recourse to the high operation and losing both patients from hemorrhage or shock, largely because of failure to choose the high operation in the first place." In a case of my own not long since the converse was true. The prostate was small but obstructing. The bladder contracted. In the suprapubic operation I accidentally opened the peritoneum and was finally obliged to have recourse to a perineal incision in order properly to enucleate the gland. Had I chosen the perineal route for this case in the first place no mistake would have occurred. This patient eventually recovered, but the operation was more severe than was necessary. L. Davis of Boston also reports to me having once accidentally opened the bowel in a suprapubic section. Possibly the patient had a small contracted bladder as mine just mentioned did.

In regard to the perineal operation it is only fair to note that a rough tearing-away operation, through a too small incision without much regard to the anatomy of the perineum, causes many absolutely unnecessary results such as rectal fistula and injury to the vesical sphincter producing incontinence. In our present series we note fourteen cases of rectal fistula and twenty-four of postoperative incontinence. all in perineal operations. I believe Young is right when he states that these mistakes are absolutely avoidable by doing an anatomically correct dissecting operation, under the guidance of the eye, and in absolutely condemning a blind manual enucleation of the prostate through a short perineal wound. Watson says, further, that "injury to the rectum is caused usually by pressure on the upper surface of the gland either when enucleating or when withdrawing it." In two cases in this series a rectal fistula was caused by passage of instruments, in one case a rectal tube and in another a urethral catheter. In this connection also one surgeon mentions a case of death from perforation of the sigmoid flexure by a rectal tube ten days after operation. These three accidents have nothing to do with prostatectomy, perineal or otherwise. Two cases of fatal hemorrhage, caused by passage of a rectal tube a day or two after suprapubic prostatectomy, present to us the danger of postoperative rectal instrumentation either for lavage or for the introduction of salt solution by the drip method.

In determining the probable chance of a patient before operation, perhaps the one most important examination is to ascertain the functional activity of the kidneys. This is unfortunately not so frequently done as it should be. Failure to do so accounts for the high mortality mentioned against the occasional prostatectomist and many general surgeons in this series. Uremia, so-called, after prostatectomy, should usually be labeled renal insufficiency. A sufficient number of tests of renal function should be made to indicate to the surgeon the gravity of the risk in each case. In cases in which absolute or even repeated retention of urine exists, the relief of operation should not be withheld because of the increased risk due to renal insufficiency, but a knowledge of the results of tests will warn the surgeon to safeguard renal function in every possible way. Dr. P. reports two patients dying of renal insufficiency within a few days after operation. This in spite of the fact that this surgeon is a skilful cystoscopist and might easily have ascertained the renal condition before operation, which he did not do. He says he has depended too much on clinical symptoms without a thorough cystoscopic and renal function examination before operation. Consequently his mortality was 30 per cent. Dr. L. had two deaths from uremia immediately after operation. He had not ascertained the functional activities of the kidneys. Some advocate two-stage operations although it has not been proved that a lower mortality results in consequence. Whether to operate immediately or to delay while medicinal and mechanical means are employed to improve the patient's general and renal conditions or whether a preliminary drainage operation is indicated are matters of grave concern, allowing for exercise of rare judgment guided by experience. In this connection must be mentioned the choice of an anesthetic when the kidneys are insufficient. Spinal anesthesia is probably safest. Perhaps it is safest in every case, but certainly it is so in the presence of chronic nephritis. Examination of the heart, blood pressure and lungs from the point of view of the surgeon rather than from that of the physician will eliminate many deaths from "shock" and will materially aid in the choice of the anesthetic. It would be well if all bladders could be examined cystoscopically. Unfortunately this is not always possible. The age of the patient, his mental attitude toward the proposed operation and the size of the obstructing tumor often prevent such an examination.

There is a condition which leads to unsatisfactory postoperative results which may be cystoscopically discovered but is rarely even guessed at without cystoscopy. This is the existence of vesical diverticula. Several contributors to this series mention them as the cause of postoperative residual urine (amounting in a few cases to almost complete retention), and diverticula are frequently responsible for an incurable chronic cystitis with or without calculi. Some say they do not wish to include such cases in an analysis of postoperative results. They should be included, because, if the prostatectomy is undertaken with a full knowledge of the presence of a diverticulum, then the added risk of an unsatisfactory result is carefully considered in connection with the other features of the case, or if the diagnosis is so incomplete that the presence of a diverticulum is not known before operation, then both surgeon and patient have accepted the chance of operation admitting of failure if a faulty guess has been made. Dr. G. considers postoperative cystoscopy important for the purpose of detecting mucous-membrane flaps which may close the vesical outlet like a valve. Cystoscopy may be done advantageously through the wound. In suprapubic cases this is easy. In perineal ones the patient must be in the extreme Trendelenburg or knee-chest position.

Diabetes is a not infrequent complication observed before operation. From a statistical point of view one would not choose to perform prostatectomy in the diabetic. Unfortunately, urinary retention or hemorrhage or pain frequently forces the surgeon to accept the increased risk in order to save life in spite of the probable unsatisfactory end-result.

Squier[2] believes the average duration of life, after the habitual use of a catheter is begun, to be less than three years. We each probably have in mind many exceptions to this but for the sake of argument we must place some limit. If three years is the average then prostatectomy undoubtedly offers to the average sufferer an added period of comfort in his old age in spite of the fact that some will afterward complain of pain, partial retention or other symptoms almost or quite as troublesome as those for which the operation was undertaken. In the present series this number was only 19 per cent. in the whole series and very much less in the cases reported by the best prostatectomists. Probably skill, judgment and large experience reduce the number of unsatisfactory after-results to about 7 per cent. instead of 19 per cent. as in this series, or 30 per cent. in my series of ten years ago. One surgeon writes that he "supposed everyone had none but successful cases" except himself.

F. S. Watson writes me:

> I am very glad to supply such information as my subsequent knowledge of my patients upon whom I have done prostatectomies permits. I lost sight of almost all the patients operated upon at the hospital relatively soon after they were discharged. Of the private patients who numbered about seventy I lost sight of a good many also. I cannot, therefore, regard the data I am sending you as at all complete. The same may be said of most of our surgical practice and that is the trouble with the statistical compilations of data concerning late results of our work. We do not know really just what proportion of them we can regard as actually cured in the strict sense of the word, or how many have suffered relapses, or failed to gain complete relief, etc. Hence the fallacies that are so often connected with statistical work. We rarely have the whole of any of our experiences, and knowing the whole might lead to very different conclusions.

M. Krotoszyner says:

> It is to be assumed that patients in whom the result was not entirely satisfactory might have gone elsewhere for further treatment, and I cannot, therefore, give you data about these cases, but those whom I see off and on and whose whereabouts I am able to trace for years after the operation, are apparently well and without urinary disturbances.

Dr. W. writes:

> Important mistakes resulting disastrously include two operations on patients in extremity. I would better have drained these cases through a ureter catheter passed into the bladder through a suprapubic troca cannula. Both died of uremia. The operation in both cases was short.

Dr. T. "wishes he had not operated upon a case of simple hypertrophy because the patient had frequency, pain and 8 oz. residual several years after operation." He also did prostatectomy in two unrecognized malignant cases. Both patients died within a few months.

Dr. X overlooked a diverticulum of the bladder. For this he later did a second suprapubic section on the same patient. He operated in one case of "atonic bladder" (etiology not stated) and in this case the patient still leads a catheter life.

Dr. B. says he considers prostatectomy ill advised in cases of known prostatic cancer. He had two such cases which he afterward wished he had not touched. Both patients died within two months after operation.

Dr. XY "used chromic catgut deep in perineal wound. Later an abscess formed which opened itself into the rectum. This urethro-rectal fistula never has closed."

It is generally a mistake to be in a hurry before, during or after operation. Insufficient preoperative preparation, inexact diagnosis, hasty judgment as to route or time to operate are only equaled as mistakes by too great haste during operation and lack of skilful care afterward. Prostatectomy, dealing as it usually does with unsound old men, to be successful should have every factor in its favor. The surgeon should be an experienced one and should carefully study his cases. The patient is best cared for in a well-equipped hospital and the operator should personally supervise the after-care of the patient, at least until he is up and about and has regained some of his strength. If these precautions before and after operation are followed the end-results will be generally satisfactory and the mortality low.

Journal Building.

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[2] Squier: Surg., Gynec. and Obst., October, 1913.

ABSTRACT OF DISCUSSION

Dr. Granville MacGowan, Los Angeles: It has been specifically emphasized on the medical profession that these operations must be performed rapidly. I am a reasonably slow operator yet I do not know of anyone who has a lower percentage of deaths than I have had. The percentage has been so low that I have been afraid to publish it. It is not often necessary to perform the operation of prostatectomy rapidly. One should take the time necessary to do what one intends to do thoroughly. The patient should be well prepared beforehand and well cared for afterward; then he will live and be comfortable. That is a point the essayist has brought out.

In every community are crippled old men who have been operated on rapidly for enlarged prostates without having their obstructions removed. Within the past three months I have seen two such people who were operated on in two of the very best clinics in America. They were operated on very rapidly but they still have their prostates. One paid $5,000 to have his removed but he has a beautiful intravesical growth, and lives a catheter life because he cannot get up courage to be operated on again.

Dr. A. B. Cecil, Los Angeles: The importance of ascertaining the function of the kidneys by the use of the phenolsulphonephthalein previous to operation, should be emphasized. I have used this test very extensively from the time it was first introduced and it undoubtedly gives in many cases data which cannot be obtained in any other way. I have heard the criticism that the excretion of phenolsulphonephthalein has been found to be relatively high and yet the patient died of uremia following prostatectomy, and that another recovered when the excretion of phenolsulphonephthalein was relatively low.

It must be remembered that phenolsulphonephthalein gives us only kidney efficiency but does not tell us how much work the kidneys have had to do. The patient with a low kidney efficiency may be better able to stand operation than a patient with a relatively higher efficiency, because by prolonged drainage, or because of low metabolism, he may not have retention of toxic products in the blood. So that not only must we determine the efficiency of the kidneys, but where this is low, retention should be suspected, and should be determined by cryoscopy or blood urea.

Dr. G. Shearman Peterkin, Seattle: I believe thoroughly in what Dr. Whiteside says. The important thing is that you should operate slowly. One of the advantages of operating slowly is found in spinal anesthesia. When you give a patient a spinal anesthetic it is going to last from three-quarters of an hour to an hour anyway, so what is the use in hurrying. You will not get any better results. You can take your time with spinal anesthesia in this operation when you cannot in other forms of anesthesia.

I want to speak of the diverticulum. In Seattle when we undertake these operations, after catheterizing the patient once, we inject a 2 per cent. silver iodid solution, then take a roentgenogram of the patient lying on his back, or best of all, lying on his stomach, with a tube up against the glutei. You will be surprised how many diverticulums you will see and how many bladder trabeculae you will see. It is even more advantageous than your cystoscopic examination, when you show your patient the diverticulum on the roentgenogram, because he knows then that you know what you are talking about and he is satisfied. If you simply tell him it is there, he may perhaps question your diagnostic ability.

Dr. L. W. Bremerman, Chicago: I think the two most important features in Dr. Whiteside's paper relative to the net results in prostatectomy are brought out in his remarks regarding the preliminary treatment and postoperative treatment. I think the operative procedure is the simplest part of the whole affair. I think most of us are too prone to see our patient today and operate tomorrow, without having made the proper functional tests, and how could it be otherwise than to expect that in a fairly large number of the cases the end-results will not be good. We should take our patients and study them carefully and get the general condition of the patient in proper shape for operation, and then proceed with the operation, and follow it with proper subsequent treatment, which may differ in the minds of many surgeons, but which should always be carried out to some extent. We are so ready to discharge our patients as cured when the abdominal wall heals up, and there is no leakage from the suprapubic or infrapubic wounds. We call our patients well. It is wise to keep those patients under observation for weeks, and discharge them from observation only when the bladder is clean.

The feature Dr. Peterkin brought out relative to a Roentgen-ray examination of his cases is an excellent one, and in all cases the genito-urinary surgeon should have the best possible means of diagnosis. I believe that the proper equipment of a genito-urinary surgeon's office today should include a Roentgen-ray apparatus, and every case should have roentgenograms incorporated as a part of the examination.

Dr. J. I. Butler, Tucson, Ariz.: To avoid, especially in the perineal method, a complication spoken of by Dr. Whiteside, that is, rectal fistula, I have been in the habit of employing the simple procedure of divulsing the sphincter ani as practically the first step of the operation. The object and result of thus relieving rectal pressure is obvious. I think this procedure valuable, and make the suggestion here because I have not seen it in print or in other clinics than the ones I have been connected with. It is carried out just as in hemorrhoid or fissure operations. Of course the levator ani muscle is also sectioned across in front. This permits the use of the Murphy drip in postoperative treatment.

Dr. Hiram R. Loux, Philadelphia: One point of interest in Dr. Whiteside's paper is the postoperative treatment by the drip method of irrigation. That method we have used in our clinic for quite a long time, and it occurred to us that the oozing which follows along the margin, or follows prostatectomy, is positively kept up persistently by the continuous irrigation. The question might be well discussed as to what advantage one really derives from the continuous irrigation. Recently, I talked with Dr. Young and I brought up the question. He told me that he was not irrigating as much as he did some years ago. I have found that the trouble from oozing proceeds for a period of eighteen to twenty-four hours following the removal of the prostates, and that by stopping the drip method of irrigation the clots properly form, instead of being washed away. This continual oozing causes a depression of the patient to some degree.

Dr. George S. Whiteside, Portland: In regard to Dr. Simpson's discussion, some of us who live in the far west do not have the advantage of the Johns Hopkins Hospital and urea blood tests convenient to our hand, and it seems to me that almost the same results can be obtained by the ptyalin test in the urine, and the Tycos blood pressure apparatus.

Dr. Peterkin has brought out a very valuable suggestion that I had entirely forgotten about. He told me about it before. Dr. Bremerman spoke of preoperative and postoperative treatment. It seems to me that is exactly why the real up-to-date genito-urinary surgeon has better results in prostatectomy, on the average, than the general surgeon; because of the fact that he does pay attention to preoperative treatment and postoperative treatment.

Dr. Bremerman is quite right. We should not lose sight of the patient too early. In this series of cases that I have quoted here a very large number of the men did not know whether their patients had residual urine two years afterward or not.

Dr. Butler spoke of rectal fistula and the stretching of the sphincter. Stretching the sphincter does not help in those cases in which the fistula is of mechanical origin, caused by punching through into the rectum at the time of the operation, either with the finger or with some instrument.

Dr. Loux spoke of a postoperative irrigation treatment. I may have misled him on that. I did not say that I did any irrigation after prostatectomy. I do not irrigate them at all for at least two weeks. Convalescence is more satisfactory without lavage than it used to be when frequent washing was the rule.

VERUMONTANITIS *

W. J. PENNOCK, A.B., M.D.
SPOKANE, WASH.

Symptoms ascribed to inflammation of the verumontanum were noted as early as 1839, when Baxter stated that many patients were seen suffering from frequency of urination and a violent throbbing or spasm on passing the last few drops of urine, and that he believed these symptoms to be due to an affection of the mucous membrane in and about the verumontanum.

The veru as an anatomic entity was not recognized by the anatomists, who gave hazy and inaccurate descriptions, Gray, for instance, stating that the verumontanum is a narrow longitudinal ridge formed by an elevation of the mucous membrane and its subjacent tissue — 8 lines in length by a line and a half in height. The sinus pocularis, he describes as a culdesac, one-fourth inch in length, projecting backward in the substance of the prostate behind the middle lobe. The erroneousness of this description was rendered evident with the advent of urethroscopy, but it remained for Rytina to demonstrate the actual gross and histologic anatomy of the gland.

Embryologically the veru is developed from the united lower ends of the atrophied müllerian ducts, which explains the origin of its glandular tissue, and it is in derivation homologous with the uterus and vagina.

Rytina has differentiated the organ into a central glandular and a peripheral stromal portion, the glandular portion, consisting of groups of glands showing numerous intra-acinous proliferations, and these infoldings are composed of several layers of epithelial cells, in type varying from columnar to squamous. The peripheral portion is made up of a fibrous-tissue stroma with an occasional glandular acinus and the organ is encapsulated at its base with dense bands of fibrous and elastic tissue. Much eleastic tissue was demonstrated in both peripheral and stromal portions.

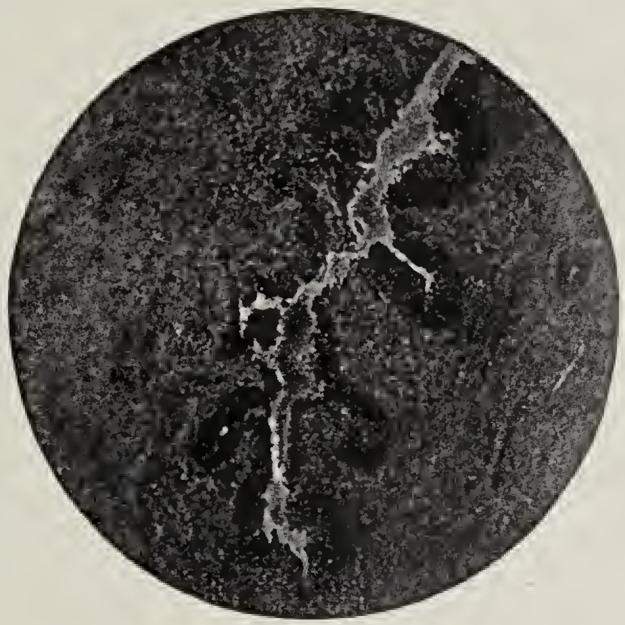

Fig. 1.—Section through lower portion of sinus pocularis showing invaginating processes. From photomicrograph.

PATHOLOGY

There may be simple hyperemia or an edema of the veru and the mucous membrane about and notably posterior to it. The veru may be evenly distended until it practically fills the lumen of the urethra, or smaller, with its surface showing small cysts or ulcerations. In pyogenic cases purulent material may protrude from between the swollen lips of the utricle and in these cases pus often is expressed from the orifices of the lateral lobe prostatic ducts in the prostatic sinuses on each side of the veru. In the acute cases, usually, the inflammation of the veru is only part of the general hyperemia and edema of the prostatic mucosa. In the chronic cases, the surrounding mucous membrane is nearly normal, while the veru is clearly defined, hypertrophied, firm, infiltrated and fibrotic. Michailoff reports cases of calculi protruding from the utricle. Microscopically, Rytina has studied only the infective type of verumontanitis. He finds the essential lesion in these cases to be a submucous and periacinous roundcell infiltration. He also demonstrated in serial sections the infection traveling the entire length of the sinus pocularis.

As I have not felt justified in removing the entire organ in any nonpyogenic case, I have not been able to get sections of the complete gland for examination. Specimens removed by rongeur in the line of treatment comprise necessarily only the hypertrophied upper portion, and show merely hypertrophic changes. It is desirable that we should have sections through the glandular portions to demonstrate if any adenomatous change is present.

ETIOLOGY

Infection by pyogenic organisms, while fairly frequent and probably a necessary concomitant of prostatitis and vesiculitis should not be emphasized as an etiologic factor, as the infection of the veru is less important than the infection of either prostate or vesicle, impossible to eradicate until the subjacent infection has terminated, and is liable to withdraw our attention from the more important noninfective cases. Neisserian infection is undoubtedly common and it is worth noting that the veru may become infected by a descending infection from a pyelitis without definite involvement of the bladder, and the patient's most distressing symptoms may be due to the verumontanitis.

There are many etiologic factors in the nonpyogenic cases.

1. Coitus interruptus is a fairly common cause. My records force me to believe the practice to be more general than we have thought and I now embody the question in all case histories. Obrowski believes we should regard as causative factors any deviation from the normal sexual act that provokes a rapid fall of the curve of orgasm, as by these the automatic reflex contraction of the dilated blood vessels is interrupted, preventing the normal return of the vessels to their collapsed condition of rest. The repeated disturbance of the normal curve causes a lowering of tone of the local blood vessels, resulting finally in their remaining in a state of semidilatation; the hyperemia thus induced being the first stage of inflammatory change. If these partially dilated and relaxed blood vessels are irritated by protracted repetition of the sexual act, a paresis of the vascular muscle results, and the unphysiologic overstimulation produces an eventual paresis of the spinal innervation center, the function of which is to change the condition of the vascular spaces from

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

that of the maximal dilatation. intended for a short time, to the state of normal quiescent contraction.

2. Ungratified sexual desire, as exemplified by persons allowing their passions to be aroused by intimacies, while refraining from the sexual act, falls in the same class as coitus interruptus. The maximal dilatation of the blood vessels is maintained for a greater length of time and a longer relaxation and consequently a more pronounced stasis is produced.

3. Masturbation is so evidently unphysiologic that I simply mention it to call attention to the fact that after an inflammation has been produced by the practice, the continual irritation of the inflamed veru may make it almost impossible for the patient to break himself of the habit. I desire to emphasize the need of examination of the veru in all cases of onanism in the adult. Cole states that often masturbation is the cause rather than the result of verumontanitis.

SYMPTOMATOLOGY

The symptoms of verumontanitis may well be divided into those referable to the urinary and those referable to the genital systems, the individual case usually showing symptoms referable to only one system.

1. Urinary symptoms:

(a) Urinary frequency: This varies from urination every fifteen to thirty minutes, with a nearly constant interval desire to urinate, in the acute cases, to every one and one-half to two hours with no interval distress in the chronic cases, in which annoyance may be caused only by interrupted sleep.

(b) Urinary precipitancy.

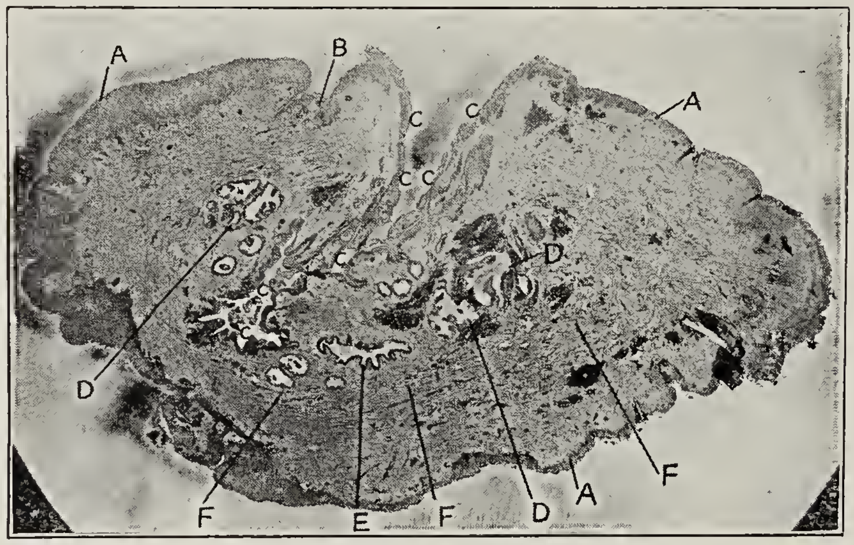

Fig. 2.—Section of normal verumontanum showing course and structure of sinus pocularis: *a*, mucous membrane; *b*, pit formation; *c*, sinus pocularis; *d*, central group of glands, some showing infoldings; *e*, duct; *f*, capsule; *g*, stroma. (After Rytina.)

(c) Burning sensation in the deep urethra, sometimes referred to the end of the penis. This may occur only for a few minutes following urination, may be constant or, quite often, may gradually increase during the urinary interval, forcing the patient to urinate in the endeavor to alleviate the sensation. I had one patient who had this symptom for a few hours each day, the remainder of the twenty-four hours his condition being entirely normal.

(d) Terminal tenesmus is present in the acute cases.

(e) Hematuria is present in the acute and subacute cases, varying from macroscopic blood in all three glasses — a few drops of blood extruded at the end of urination — to microscopic blood in the third glass.

(f) Pyuria is of course present in the pyogenic cases.

(g) Shreds of mucus embedding a few white and red blood cells are often noted in the nonpyogenic cases.

(h) Urinary obstruction or retention: Swinburne believes that inflammation of the veru induces spasmodic contraction of the compressor muscle, causing marked obstruction, and cites cases in which patients have difficulty in urinating, with residual urine as high as 16 ounces, in which the caliber of the urethra was normal and in which treatment of the inflamed verumontanum produced cure.

(i) Nocturnal enuresis occasionally occurs.

(j) There may also be mentioned an occasional symptom, dribbling of urine, a sensation of wetness in the urethra and a lack of the normal sensation at end of urination.

2. Genital symptoms:

(a) Diminution of sexual power ranging in degree from poor erection to absolute impotence. Michailoff believes the atonic form of impotence to be due entirely to a hyperemic stagnation in the region of the veru. Orbowski reports 310 cases of impotence in which the diagnosis of typical verumontanitis was made in 261. Of the 261 patients all but 16 were cured by treatment of the veru. Of the atypical cases more than half were not improved by treatment. He believes that in the 16 typical cases the lack of success was due to insufficient consideration of the secondary psychic manifestations. It must also be noted that a purely psychic impotence may develop, the patient presenting, also symptoms due to a demonstrable inflammation of the veru, prostatic urethra or trigon.

(b) Premature, usually, occasionally delayed, ejaculation.

(c) Painful ejaculation: This symptom is common in the acute and subacute cases and usually is evidenced by a sharp stabbing pain, often referred to the perineum, sacral or coccygeal region. In some cases there will only be a burning sensation in the deep urethra, persisting for some time after ejaculation. This burning sensation is probably due to the inflamed mucosa surrounding the veru, while the sharp pain is undoubtedly due to the sudden stretching of the ejaculatory ducts, the lumens of which are diminished in caliber by the round-cell infiltration in the surrounding tissue.

(d) Priapism is, I believe, rare, although the acute cases sometimes show increased erections due to the irritation of the nerve ends in the posterior urethra.

(e) Nocturnal emissions: These are due to the infiltration of the collicle, which produces a mechanical atrophy of the muscles of the ejaculatory ducts.

3. Other symptoms:

(a) Referred pain is common in these cases. Some of the patients complain of a dull ache in the suprapubic region, but a great many suffer from actual pain, in the lumbar region particularly. This pain is sharp, often severe and remittent in type. This is often the only symptom the patient complains of and an inflamed veru is undoubtedly the cause of many, so-called, lumbar myalgias and neuralgias. The pain may also be referred to the testicle, coccyx or rectum.

(b) The suprapubic pain is common only in the acute cases, in which, with the inflammation of the veru there is hyperemia of the mucosa posterior to it and of the trigon. A persistent, mucoid, urethral discharge is sometimes present. Many of these patients are so neurotic that their symptoms must be regarded as due both to the actual lesion and to psychic disturbance.

DIAGNOSIS

I do not feel that the symptoms present a symptom complex. As I have stated, the cases usually present either urinary or sexual symptoms exclusively and not the admixture of both that we would expect; therefore we must, in any case showing any of the symptoms, regard the veru as a possible causative factor until eliminated by examination. In a routine genitourinary examination, any undue sensitiveness in the prostatic urethra to the passage of bougies should arouse suspicion of verumontanitis.

In the urethroscopic diagnosis, examination of the verumontanum alone is not sufficient; the mucous membrane surrounding it must be examined carefully and if that is inflamed the trigone and bladder should be examined; the trigon and prostatic mucosa often being hyperemic, edematous and bullous in appearance. The straight tube of Young affords a better picture of the entire mucous membrane than the fenestrated curved tube, and facilitates treatment of the surrounding mucosa.

Diagnosis of inflammation of the veru should be made only after thorough examination of the prostate and vesicles and elimination of pathologic conditions of the kidney and bladder. The urethroscopic examination should not be made until after any irritation induced by the passage of bougies or instruments has subsided, as, otherwise, oozing of blood may obstruct clear vision. The passage of the urethroscope should not cause hemorrhage from a normal veru, and the presence of any bleeding, I feel, evidences pathologic change.

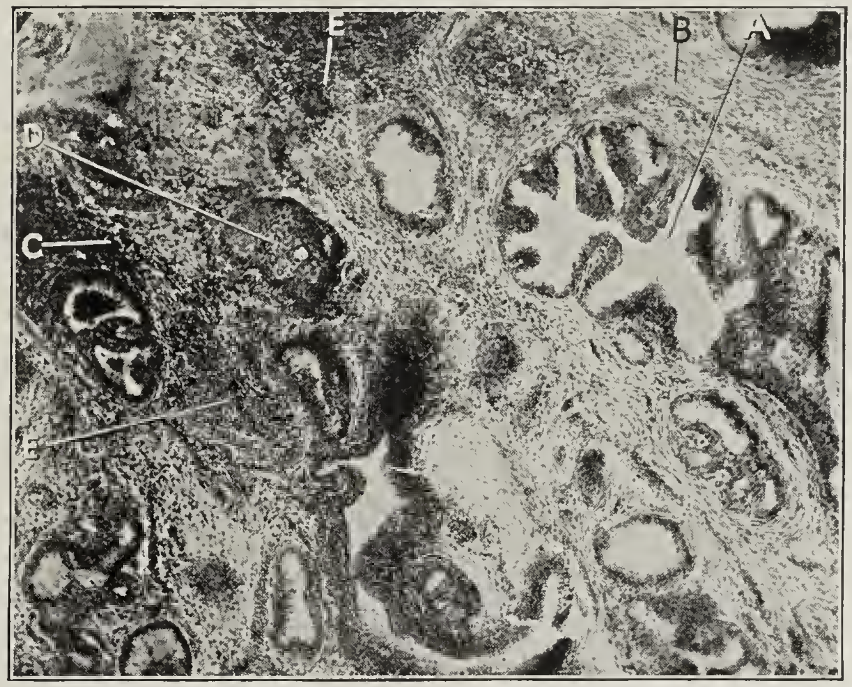

Fig. 3.—Section through an infected verumontanum. Infection is limited to left half; right half is normal: *a,* normal acinus showing infoldings, suggests prostatic hypertrophy; *b,* normal stroma; *c,* periacinous infiltration with round cells; *d,* normal acinus replaced by round-cell infiltration; *e,* infected stroma. (After Rytina.)

TREATMENT

In the pyogenic cases, emphasis must be laid on termination of infective processes in the prostate and vesicle, and treatment by injection of the sinus pocularis, while valuable, necessarily is only an adjunct in cases in which its infection resists the treatment directed to the prostate. In the acute nonpyogenic cases, treatment must be directed to the inflamed mucous membrane as well as the veru. I have seen several cases in which the mucosa of the prostatic urethra was so hyperemic and edematous that it was impossible at first clearly to outline the veru, but after one or two applications of a 5 to 10 per cent. silver nitrate solution to the mucous membrane, its condition returned to normal; the veru became well defined and the application of a strong silver nitrate solution to the veru itself cleared up the case. In the acute cases the local application of the weaker silver nitrate solution to all the inflamed mucosa of the prostatic urethra gives decided relief from the symptoms, which we must remember are not ascribable to the veru alone.

In the subacute cases I use 20 per cent. silver nitrate in those showing a soft, somewhat cystic veru, fused silver nitrate when the veru is larger and firmer, and confine the application to the veru alone. In these cases I neutralize the silver nitrate with sodium chlorid before removing the tube. In the chronic cases, I amputate the hypertrophied portion and apply fused silver nitrate. Hawkins states that if a little oil is left in the urethra after the application of the silver that the patient suffers much less. He uses eucalyptus 1 part, charcoal-filtered cylinder oil 7 parts.

The possibility of epididymitis developing during treatment must be considered even in nonvenereal cases. I have had cases develop several days after applying silver nitrate to the veru, and without other etiologic factor. I find that the treatment, particularly of the chronic cases, requires a great deal of tact. There is so much of the neurotic element in many of these men that the local condition must not alone be considered, and particularly if there is diminution of sexual power, the patient requires an optimistic prognosis and general tonic treatment. If this is neglected, the patient will not be cured even if the veru is restored to normal. Inflammation of the veru is also the basic factor in many neurotic and neurasthenic cases, as the neurologists are now recognizing. Gardner reports one patient who was committed to a state hospital for the insane because it was thought the patient imagined a pain in the neck of the bladder; the case clearing up on treatment of the veru.

As soon as the veru is normal in appearance, even if the patient still complains of symptoms, I stop all treatment, assure him that he will recover completely, advise him against worrying over his condition, make him take plenty of outdoor exercise and above all emphasize the fact of his eventual recovery.

REPORT OF CASES

Case 1.—A painter, married, aged 43. He denies venereal disease. During the last year he has had a feeling of irritation at the neck of the bladder, particularly when working. Urinary interval, two hours. He has a constant interval desire to urinate. Urination is not painful. There is no tenesmus or blood. The sexual act is normal. Genitals, urine, prostate, vas and vesicles are normal. A bougie causes pain in the prostatic urethra. The verumontanum is large, dark red and very tender. Silver nitrate stick applied three times gave entire relief from symptoms.

Case 2.—A bookkeeper, married, aged 25. He denies venereal disease. Three and one-half years ago he developed pain and irritation at the neck of the bladder. The condition had persisted and become gradually worse. He urinates every one to one and one-half hours. For three hours every day the patient feels normal; the remainder of the time he has a constant desire to urinate. He has a slight burning sensation in the deep urethra. The urine occasionally has shown white and red blood cells, but no bacteria. The verumontanum is twice normal size and very sensitive to pressure. The silver nitrate stick was applied. The first treatment gave relief from symptoms for eight days. In all, the patient was treated five times, improving after each treatment, but noticing some recurrence of symptoms after each treatment but the last. Four months after the last treatment the patient reported himself free from symptoms.

Case 3.—An accountant, married, aged 33. Patient had gonorrhea ten years ago and a symptomatic cure in three months; complains of pain in coccyx, particularly at night. He has loss of normal sensation during the sexual act. Urination is normal and painless, the urine negative. Genitals, prostate, etc., are normal. The verumontanum is inflamed, bleeding on touch, with a bleb on the left margin. Applied silver nitrate 20 per cent. once and 10 per cent. once. Four months later the patient reported himself free from coccygeal pains. Sexual powers and sensation are normal.

Case 4.—A porter, married, aged 24. The patient denies syphilis but had gonorhea five years ago, which persisted for several months. Urination interval is normal and painless. He has loss of sexual sensation. For some time he has had severe pain in the lumbar region, both sides. This pain is severe enough to make him seek treatment. The urine is negative. Examination revealed nothing but the severe pain produced by a bougie in the prostatic urethra. The verumontanum is intensely inflamed, filling the end of the urethroscope. Applied silver nitrate 20 per cent. Backache ceased the day following the treatment, but returned ten days later. Silver nitrate stick applied five times gave entire relief from symptoms.

Case 5.—A mason, unmarried, aged 20. Patient denies venereal disease. One year ago he developed great frequency of urination with severe burning along the course of the urethra with severe tenesmus and terminal hematuria. Cystoscopy at that time revealed a normal bladder. He made a gradual improvement, leaving the hospital in three weeks. The symptoms did not entirely leave and, becoming severe again, the patient was in the hospital for two weeks, gradually improved and was free from symptoms for eleven months. The present attack came on suddenly. He urinates every thirty minutes day and night. The third glass is red with blood; urine negative except for red blood cells. Urinary and sexual organs are normal. Cystoscopy shows bladder mucous membrane normal; the trigon slightly edematous, not inflamed. The kidneys were catheterized. Urine was negative. The verumontanum was larger than normal, soft, and did not bleed on pressure. The silver nitrate stick was applied. The patient immediately improved after the application of silver nitrate, leaving the hospital five days later. Silver nitrate was applied three times at ten-day intervals until the verumontanum was reduced to normal size. Two months later the patient reported himself perfectly well.

Case 6.—A mechanic, married, aged 34. The patient denies venereal disease. July, 1914, he had a urethral discharge, which has persisted. The discharge is slight and contains a few intracellular diplococci. The prostate on the left side is hard and distended. The prostatic secretion shows 75 white blood cells to the field. The patient came under observation Oct. 10, 1914. Urination interval is one hour; nocturia, 8. There is severe tenesmus. Sometimes the patient has passed a little blood with the urine.

Octo. 28, 1914: Patient urinates every fifteen minutes, the urine showing blood. There is constant burning and tenesmus. Cystoscopy negative, with the exception of congested trigon. The kidneys were catheterized, the urine was negative.

October 30: Endoscopy revealed a swollen, distended veru. The silver nitrate stick was applied. Six days after treatment the patient showed much improvement, with urination every two hours. Nocturia was 0 and patient had very little discomfort. He immediately began gaining weight and strength. Silver nitrate was applied twice subsequently and when seen December 19 the patient was feeling well. Urinary interval two and one-half hours; nocturia, 0 and 1; urine, negative.

April 10, 1915: Urethroscopy revealed a normal verumontanum and patient free from symptoms.

Case 7.—A clerk, unmarried, aged 23. The patient denies venereal disease. Has practiced masturbation sixteen years. The genitals are normal. The passage of sounds caused severe pain in the prostatic urethra. The verumontanum is swollen, edematous, bleeding easily. Silver nitrate 20 per cent. was applied three times until verumontanum became normal. The patient had no difficulty in breaking himself of the habit as the irritability which caused the desire left him with the improvement in his condition.

Case 8.—A farmer, unmarried, aged 18. The patient denies venereal disease. He has bladder distress, frequency of urination and pronounced tenesmus. The genitals are normal. Urine, all three glasses are cloudy with pus cells, the third containing a few red blood cells. The urine from the right kidney is negative; urine from the left kidney containing pus cells, but no bacteria. Cultures and inoculations were negative. The bladder showed chronic cystitis. The verumontanum is swollen, very edematous, bleeding on touch, practically filling the urethra. Treatment of the verumontanum gave the patient practically complete relief from his symptoms. Urination became painless and at regular intervals, the pus remaining, however, in the urine, until the pyelitis was cleared up by lavage.

507 Paulsen Building.

ABSTRACT OF DISCUSSION

Dr. Edgar G. Ballenger, Atlanta, Ga.: I have recently made it a little easier to apply these treatments by a slight modification of the endoscope. I had one made with rounded edges so that it could be introduced without an obturator. The observation may be made as the instrument passes in and the verumontanum is more easily found. Patients suffering from verumontanitis are very sensitive in that portion of their anatomy and greatly appreciate gentleness and speed in these treatments. By using this endoscope the passage of urine into the instrument causes considerable less annoyance than with the usual endoscope.

Dr. W. J. Pennock, Spokane, Wash.: I was glad to hear Dr. Ballenger's suggestion with regard to the instrument. I am not quite satisfied with our instruments at the present time, and I am very glad that Dr. Ballenger has found something better. There is no question about the necessity of giving these patients as little pain as possible, as the treatment must necessarily be administered more than once and the patient is not usually very glad to come back to you. I go into the bladder with the endoscope and then draw the endoscope forward, feeling that it is quite important to make a careful study of the mucous membrane of the prostatic urethra.

Iron Bacteria.—It has been known for many years, says E. C. Harder, (*Science*, Sept. 3, 1915, p. 310) that some of the higher bacteria are concerned in the precipitation of ferric hydroxid from iron-bearing waters. Thus, in city water pipes the frequent turbidity of water containing a small percentage of iron and the occasional filling of the pipes with ferric hydroxid has been attributed to *Crenothrix polyspora*. Other forms have been found abundantly present in surface iron-bearing waters, and it has been asserted that such bacteria play an important part in the formation of numerous small deposits of bog iron ore. Harder thinks it possible that they may also be in part responsible for extensive beds of sedimentary iron ore. In a field study of the subject, Harder has found iron bacteria present in almost all iron-bearing waters, both surface and underground, including the workings of mines to a depth of several hundred feet. The last-mentioned fact, Harder thinks, suggests the possibility that certain underground deposits of iron ore have been formed by these bacteria.

THE VALUE OF THE COMBINATION METHOD IN THE TREATMENT OF CERVICAL CARCINOMA

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NEW ORLEANS

Although it has been known for centuries that cancer is peculiarly susceptible to heat, its application was not established on an intelligent basis until Percy, in 1912, experimentally proved that cancer cells would be destroyed when exposed to a temperature of 113 F. for twenty minutes, and, further, that the normal tissue would live in a temperature as high as 131.9 F.

With this as a fundamental principle, he worked out a scheme by which heat could be applied to cervical carcinoma on a far more elaborate scale than had ever heretofore been possible. Up to this time we had been trying to realize the same brilliant results accomplished by Byrne of Brooklyn, but he left no definite technical plan to follow. Each worker groped along independent lines. There was no definite knowledge of the physical effect of heat on cancer cells, and consequently individual efforts ended in gross disappointment.

The perfection of this elaborate heat method marks a brilliant epoch in the cancer problem. Though possessing many admirable qualities, it does not seem to me, when viewed in the light of a cure, that it is a method to be *singly used.* It should be classed as a *valuable adjunct,* and its chief virtues are to be witnessed when combined with other equally valuable but operative methods.

In my first cases the hot irons were used only in advanced inoperable cases. Certain of these women showed such noted improvement, both locally and constitutionally, that it was disappointing to realize that their condition was only temporary. When the slough would detach, the bleeding stop, and the toxemia diminish, these desiccated, cadaverous individuals would be transformed into a state of apparent health. As a result of the stimulation through these initial encouraging results, the use of the method was broadened and was found to be admirably adapted to transforming cases less advanced, though still inoperable, into safely operable risks.

Two of our first advanced cases had severe hemorrhages following the detachment of the slough. In one instance, the hemorrhage proved fatal, and in the other was controlled by packing.

With the hand in the abdomen to control the degree of heat, both internal iliacs and one ovarian were ligated for the special purpose of coping with this serious complication. This step splendidly accomplished the desired end, since we have had no secondary hemorrhage within six months after its application. Though this preliminary ligation was done primarily to control secondary hemorrhage, its evolution has taught me that it possesses other commendable points.

In this extensive ligation, twenty-five arterial trunks are shut off, the uterus receives only a limited supply of blood through the one ovarian, and as shown by Dawbarn, the resulting starvation produces a marked retarding influence over the growth. Second, while the iliacs are being tied, the angle of the bifurcation of the common iliac can be explored for lymphatics, which, when removed, are a valuable prognostic guide as to the advisability and wisdom of further subsequent radical operation. Third, as a preliminary hemostatic for primary or later Wertheim removal, it notably controls operative hemorrhage. Last, as a result of these ligations, the slough seemingly detaches sooner, and the vault of the vagina clears more rapidly.

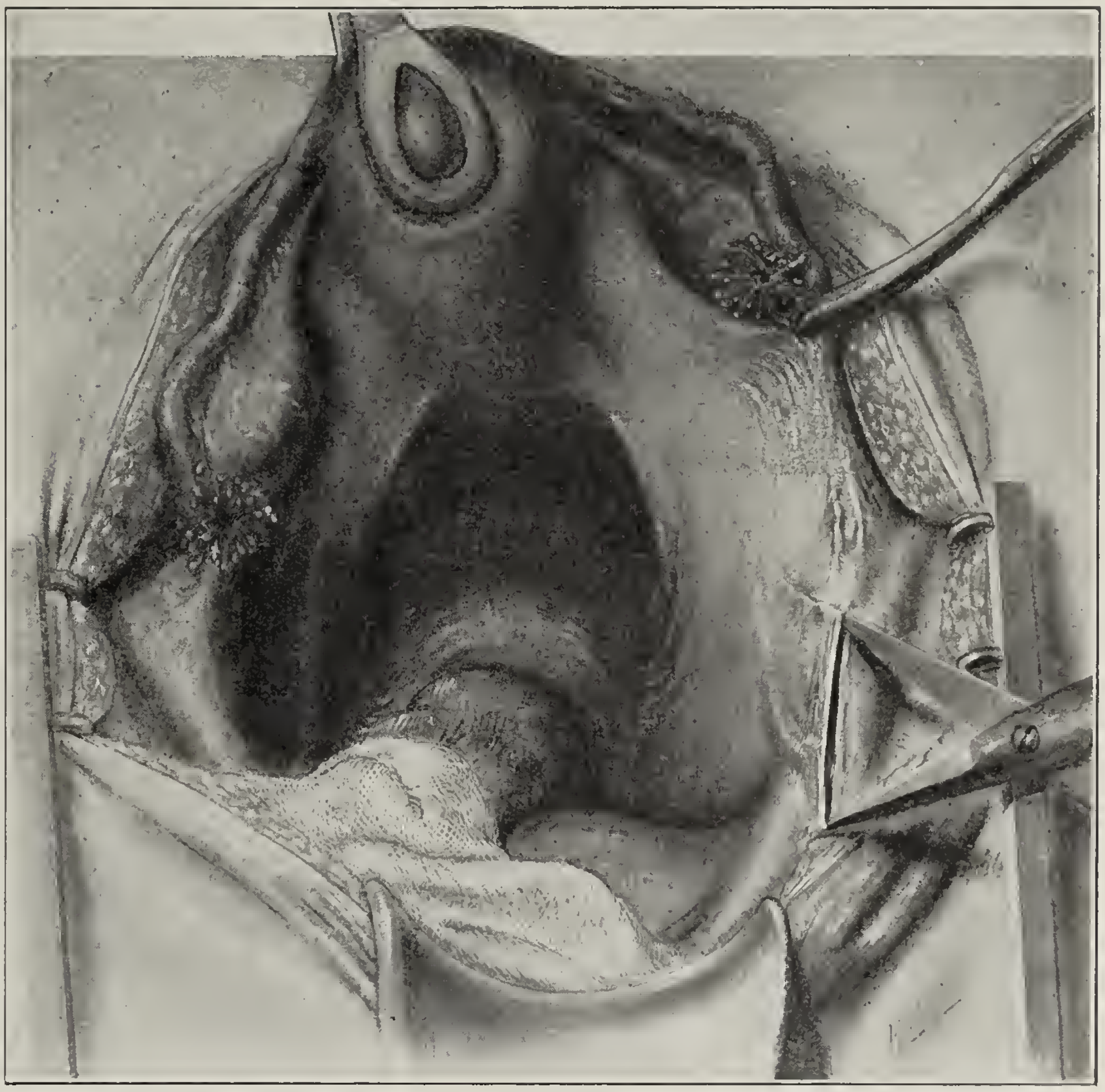

Fig. 1.—The right infundibulopelvic ligament put on stretch, bringing ovarian vessels into view. Mayo scissors in peritoneal nick at bifurcation of common iliac.

For purposes of discussion, cervical carcinoma may be conveniently divided into the following groups:

Group 1: Incipient cases. Ulceration strictly limited to cervix. Free mobility. No infiltration. Occasional unaccountable show. Menses slightly prolonged. Constitutionally unimpaired.

Group 2: Cervix well infiltrated with carcinoma. Growth just beginning to spread to vaginal walls. Uterus still movable, though there is a definite thickening in its lower and middle segment. No appreciable lateral infiltration. No pain in sides. Having copious bleeding. Secondary anemia and constitutionally below par. The type in which the radical operation is reluctantly considered from the standpoints both of primary mortality and of permanent cure.

Group 3: Either a crater or large cauliflower mass in vault of vagina. Notable lateral infiltration as well as involvement of vaginal wall at least an inch from cervix. Decided impairment of mobility. Pain in sides. Marked cachexia and anemia. Constitutionally and locally surgically impossible from radical standpoint.

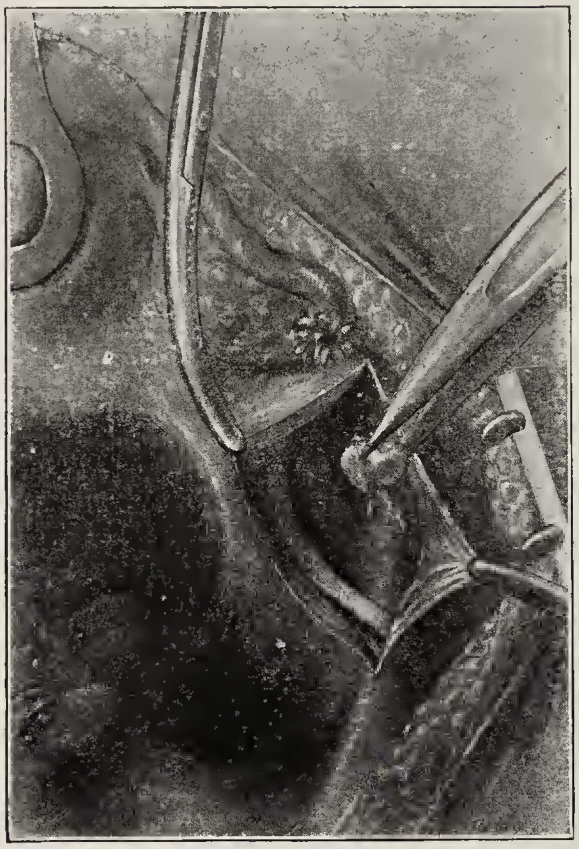

Fig. 2.—Bifurcation of common iliac with ureter attached to inner peritoneal flap and lymph gland being removed.

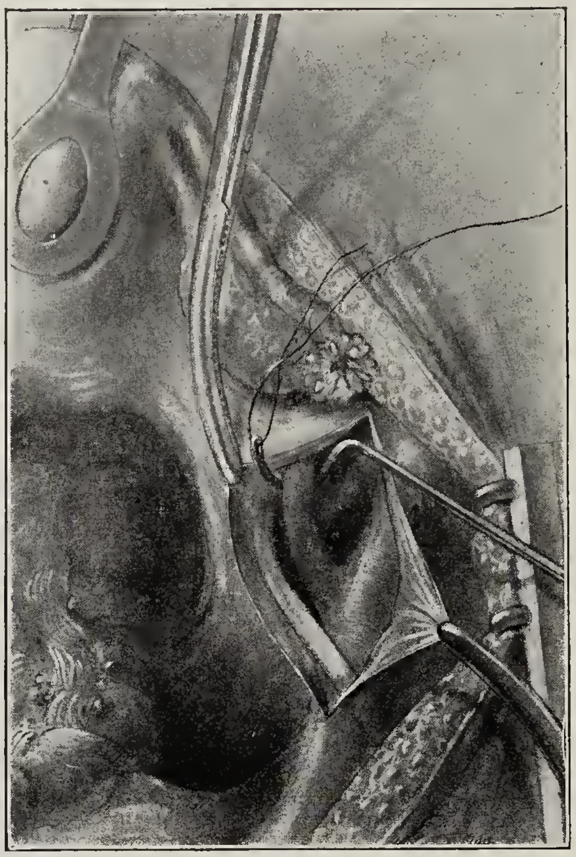

Fig. 3.—Ligation of internal iliac. Not necessary to open sheath. By lifting exposed vessel with forceps, needle can be passed without danger of injury to underlying vein.

Group 4: Hopelessly advanced. Conglomerate metastases of rectum, bladder and vagina. Inguinal lymphatics involved. Constant losing with foul odor. Constitutionally wrecked. Opium habitués.

FIRST GROUP

Cases falling in the first group are treated by combining at the one sitting the application of heat with the Wertheim removal. The abdomen is opened, thoroughly packed off, and as a prophylactic hemostatic measure, both internal iliacs are ligated, which excellently serves in reducing bleeding so frequently associated with the radical work.

The hot iron is now applied for twenty minutes, the hand being used within the abdomen as a guide to the position and degree of heat of the cautery. Heat is used here to destroy cancer cells, in the belief that the risk of grafting cancer through manipulation is thereby diminished; further, it aids in sterilizing the vaginal vault. Iodin is liberally applied to the vaginal canal, and the radical work immediately follows.

Where there exist no physical contraindications, the combination of these two valuable measures gives the best chance for permanent cure. I have seen fairly early cases in good physical condition treated only by the cautery, in which in six or eight months there would be a return of the disease at the site of the former burning. To follow the heat with radical removal unquestionably gives a better end-result. The heat adds not more than twenty-five minutes to the sitting, and with a good surgical risk, it is not too taxing to perform the Wertheim removal immediately afterward.

In extremely obese women of small stature, it is a physical impossibility to operate radically; furthermore, if it were possible, the primary mortality would be so high as to render the procedure unwise. Here the liberal application of heat offers the best and only chance, as these patients are unfit for the extensive operating, and yet can well withstand the abdominal incision for the introduction of the guiding hand.

SECOND GROUP

In the second group, the Percy method occupies a unique position in that it *converts* the constitutionally unfit into good surgical risks, and too, causes marked shrinkage in the local area. By employing it in combination with ligation of both internal iliacs and one ovarian at the first sitting, with a three and a half weeks' interval, these surgically doubtful risks are literally transformed into safely operable cases.

This procedure produces little or no shock; in fact, it is striking to see how readily these poor risks tolerate this first sitting. The plan adopted is to cook and ligate, and then let the patient remain in bed about ten days, at which time the slough detaches. The hemorrhage and toxemia having been controlled, the patient is permitted to return home and ordered daily douches and forced feeding.

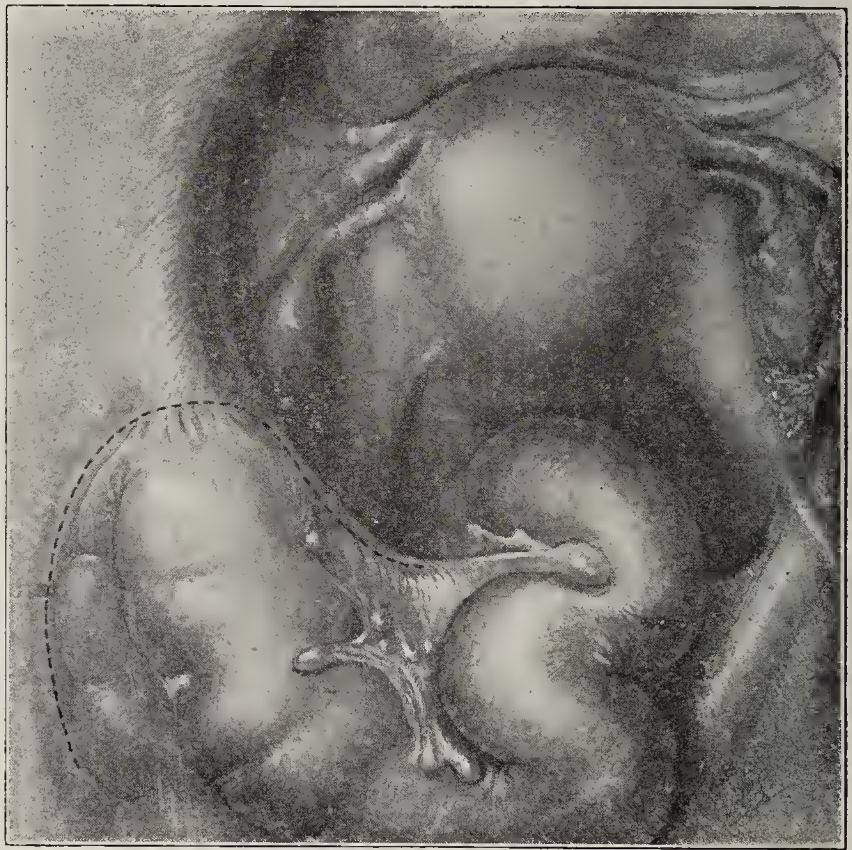

Fig. 4.—Line of dashes shows line of incision, should it be found necessary to reflect sigmoid to reach bifurcation of common iliac. Not as yet found necessary.

From three to five weeks after this first sitting, the picture has changed, the hemoglobin has risen from 15 to 25 per cent., the vessels are full, the entire economy has steadily improved and from being a questionable surgical undertaking, the case is lifted both locally and constitutionally into a frankly operable state.

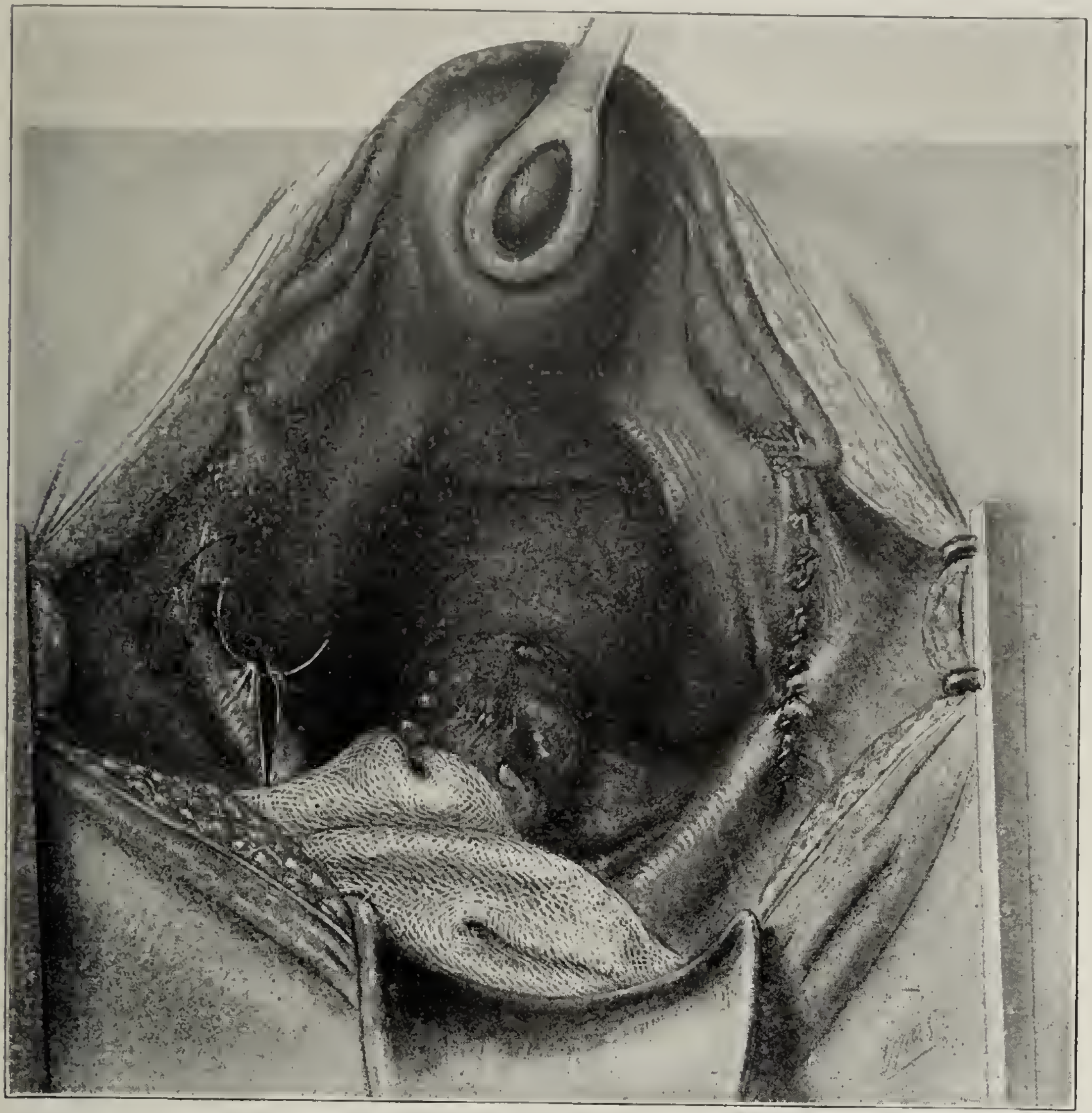

Fig. 5.—Peritoneal rents closed with continuous whip-stretch, full curved, round needle. Right ovarian artery tied.

Prior to my experience with the heat method, I can vividly recall certain patients who were clearly operable from a local standpoint, but who were notably depleted from hemorrhage, and after the major extirpation, simply did not have sufficient reserve force to get well. They would gradually lose ground and die on about the tenth day from no apparent cause, except exhaustion.

By the use of this two-stage plan, such cases can be radically improved, and I feel that it can be positively asserted that it is a method which *increases* the *operability* of cervical cancer, as well as *reduces* its *primary mortality.*

THIRD GROUP

The third group of cases has heretofore been considered hopeless. The patients would as a rule be superficially singed, and sent home to die. Since employing the elaborate heat plan as a routine in combination with internal iliac and one ovarian ligation, I feel that, though permanent relief is not as a rule to be expected, still much genuine comfort and *some* cures can be given this group.

Pathologists have taught us that it is not possible to tell from the macroscopic appearance of a cervical cancer just to what extent it has metastasized. The pathologist of the Cancer Hospital at London held routine necropsies in 100 unoperated cases with death of cancer, and found that in 46 per cent. of these cases, the lymphatics were not involved beyond the pelvis, and from the side of lymphatic invasion, these cases were curable from an operative standpoint. Even though we accept these flattering statistics with some reserve, it gives a reasonable basis for a cure in some advanced cases, and further explains some of the sporadic cures with the old zinc chlorid treatment.

The same combination plan is adopted in this group. While in the abdomen, the infiltration is specially studied with a view to possible removal, and also while ligating the iliacs the lymphatics are removed to be later sectioned for metastasis. If the infiltration is too extensive, or if the iliac glands are metastasized, the case is abandoned as a hope for radical cure. On the other hand, if the glands are negative and the large mass is believed to be partly due to a chronic infection, the woman is allowed to transform and subsequently is given the benefit of a radical operation.

In my list I have had two cases which, when first seen, were obviously inoperable, but after the use of the combination method, they changed so completely that the Wertheim operation was performed.

Much to my surprise, even after very careful search, no cancer cells could be found in either of these specimens. Though carefully feeling my way in this group, and not having as yet formulated a positive conclusion, my results thus far have been sufficiently encouraging to warrant further study. Where the condition is so aggravated as to prohibit radical surgery, the ligation and heat give great temporary relief.

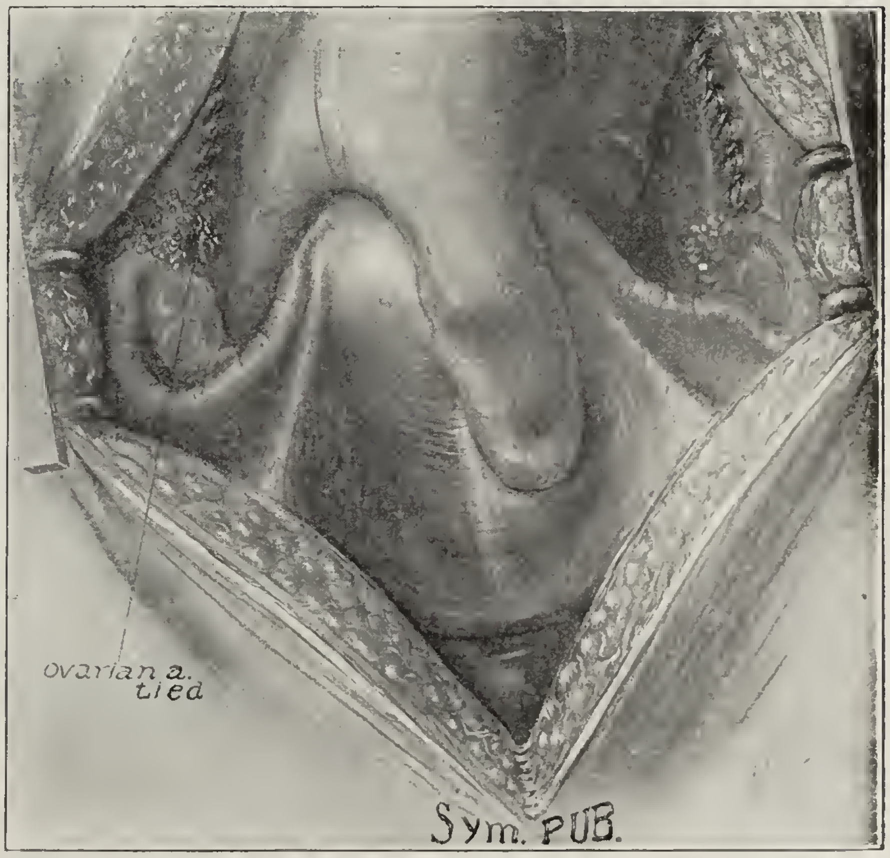

Fig. 6.—Ovarian artery tied and peritoneum closed over ligated internal iliacs. Hand grasping uterus with fingers extending down around basal structures to guide Percy cautery and control heat. Cautery schematically shown embedded in lower half of uterus—inserted by vagina.

In two of these advanced cases in which such noted improvement followed the combined method, the uterus having greatly increased in mobility, as well as a general shrinkage of the tumor mass having occurred, I thought it possible to perform the Wertheim operation. But when this was attempted, it was found as a result of the heat destruction that the upper two thirds of the uterus, when liberated, parted from the mass in the vaginal vault, thus rendering further radical procedure unwise, but still giving an opportunity to apply the heat to this remaining area through the abdominal route. Where the mobility of the uterus is solely employed as a guide to operability in these advanced cases, one will necessarily encounter this disappointing experience in a certain number of cases.

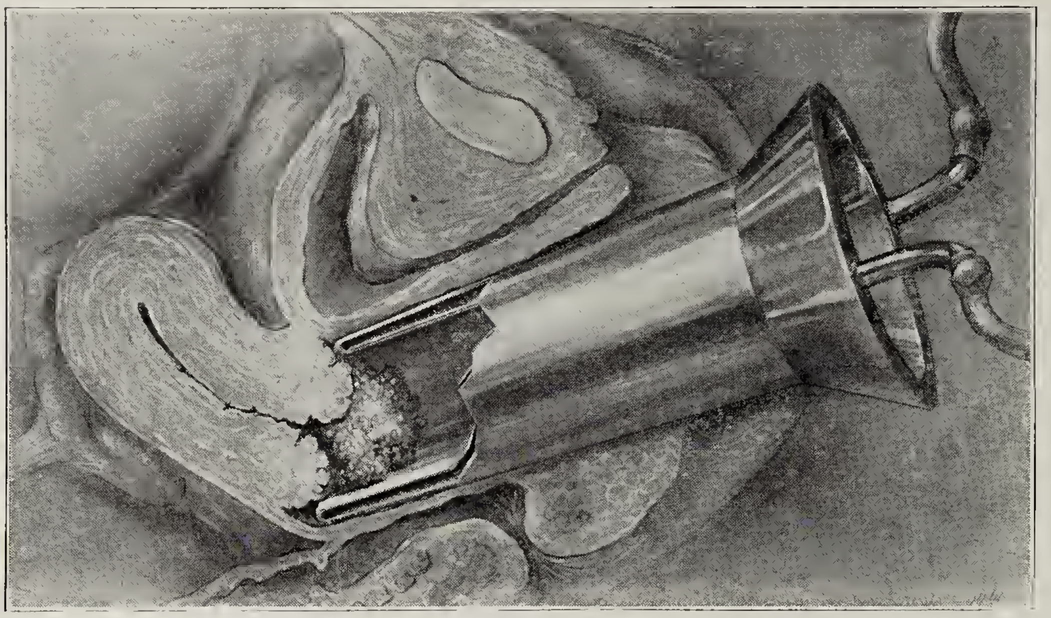

Fig. 7.—Gelpi's water-cooled speculum introduced into the vagina, bringing into view an external cervical carcinoma.

It is in the third group that the vesicovaginal fistulas are encountered. Five such complications have resulted in my cases. After the destruction of the initial mass and entire cervix, there remains a huge crater with suspicious nodular areas demanding further cauterization. Since the upper boundary of this cavity is the bladder itself, it is almost impossible to avoid damaging its wall in subsequent heat application. In order to overcome this feature, we are devising an accessory water-cooled speculum like a flat spoon to fit underneath this exposed vulnerable area.

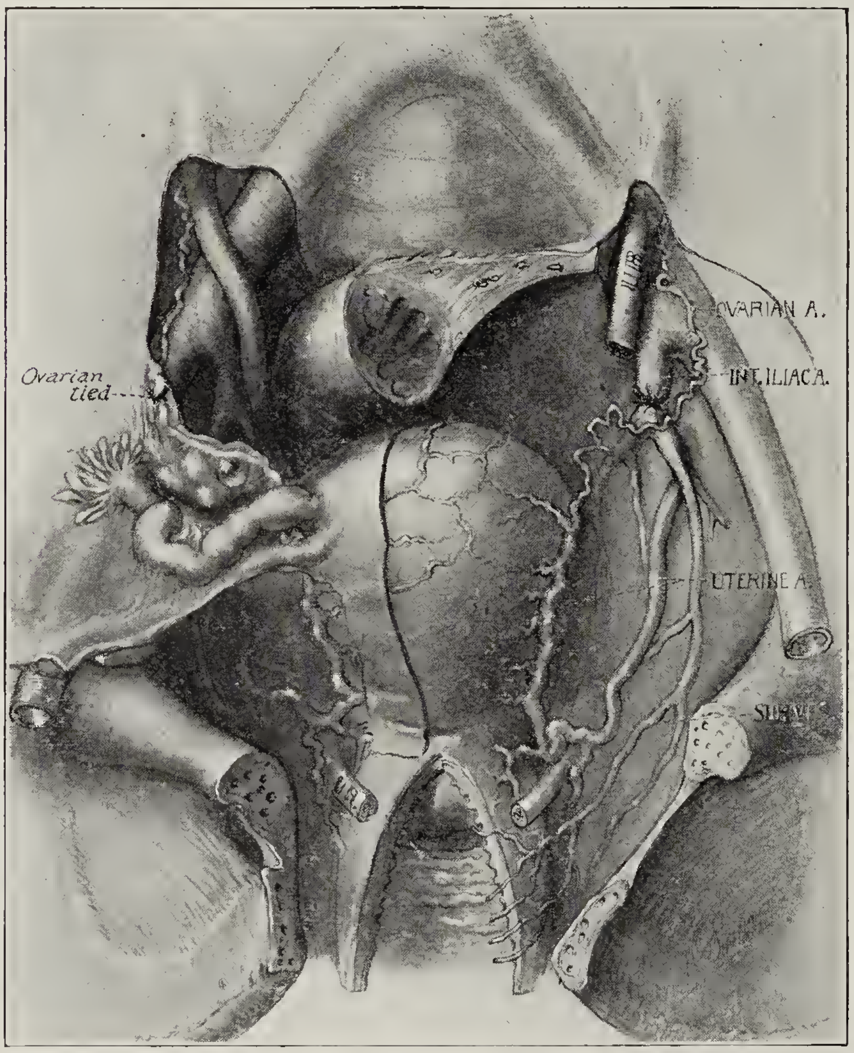

Fig. 8.—Semischematic figure showing uterine arterial collateral circulation via ovarian. Left internal iliac ligated, and right ovarian tied through peritoneum.

Unfortunately, the third group is a very large one. In it are found some of our most interesting problems, and though further study is necessary before positive conclusion can be deducted, still it presents a field in which much can be done.

Permanent cures are not, as a rule, to be expected; but in view of my experience with this combination method, I feel that these patients should be more painstakingly studied and not, after the most superficial consideration, as is the usual custom, be relegated to the life of a morphin habitué. Thus far, through the use of this method, it can be stated that some surprisingly satisfactory results have been realized. In the majority, not only has there been given marked comfort, but a definite extension of life; and further, in a certain small number, there has apparently been given a cure.

FOURTH GROUP

The fourth group is the absolutely hopeless class. From early experience, I have learned that more harm than good follows any attempt toward local interference. It is to be hoped that, as a result of improved medical education, combined with the educational work now being so splendidly conducted by the Cancer Commission, this group will greatly diminish.

Last December, I presented a preliminary report of this work to the Southern Surgical and Gynecological Association, at which time I discussed the heat technic. Since this time, the only radical change in method has been the addition of extensive arterial ligation. This communication was based on the observation of twenty-five cases; the number has now increased to forty-two. While it would be most desirable to submit at this time a detail analysis of each case with end-results, this would not be feasible, since the work is still in its infancy. However, since the use of this combination method, it can be stated that there has not been a single primary death following the ligation and heating, or from the Wertheim removal.

Five years will have to elapse before end-results can be reasonably computed, but my experience with this plan of attack has so completely surpassed former methods of treatment, that I feel fully justified in presenting at this time the subject for discussion.

SUMMARY

1. The heat method alone has doubtful curative properties, and should be viewed in the light of a valuable adjunct in the treatment of cervical car-

cinoma. However, in extremely obese women, it offers the best and only chance for a permanent cure.

2. Heat should be used as a routine in all types of cervical carcinoma, except in hopelessly advanced cases (Group 4).

3. The ligation of both internal iliacs and one ovarian possesses definite merit, and when combined with heat, furnishes the best means of converting the borderline cases into frankly operable ones.

4. It cannot be too strongly emphasized that the combined application of heat and ligation of vessels, on the one hand, and total extirpation, on the other, in all except clearly operable cases, should be done as a two-stage operation.

5. In the combination of heat with starvation, we have a valuable means of markedly increasing the operability and of decreasing the primary mortality of radical extirpation.

6. Heat combined with extensive arterial ligation, followed by radical hysterectomy, offers the greatest possibilities for permanent cure.

GUINEA-WORM DISEASE

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AND
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The occurrence of a parasitic disease, which is spread by drinking water, and found in an army force, in a country generally free from these parasites, seems of sufficient interest and importance to warrant a rather extended study of the case. Dracontiasis or guinea-worm disease occurs frequently in Africa and East India. It is rare in the United States, only a few cases having been reported, and these are mostly imported, although Van Harlingen's case occurred in a man who had always lived in Philadelphia.

In man, the female worm develops in the subcutaneous and intermuscular connective tisue and produces vesicles and abscesses.

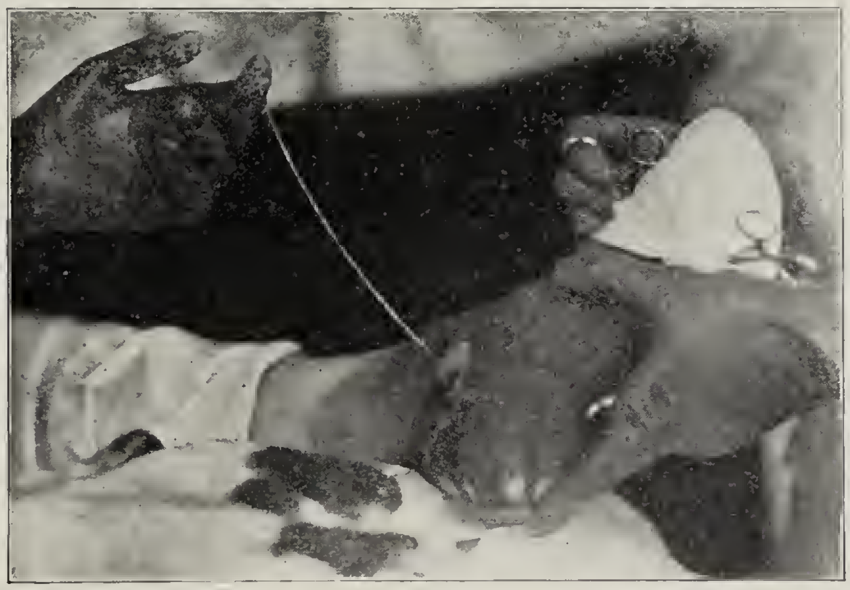
Fig. 1.—Guinea-worm being gently drawn from the subcutaneous tissue of the left foot.

The parasites are generally found in the lower extremities. Of 181 cases, 124 occurred in the feet, thirty-three in the leg, and eleven in the thigh. The worm is usually solitary, although six or more have been present in the same patient. The worm is cylindrical in form, 2 mm. in diameter, and from 50 to 80 cm. in length.

The parasite gains entrance through the stomach and not through the skin, as is usually supposed. The male and female are ingested. The former dies and is discharged, but the latter after impregnation penetrates the intestines and attains full growth in the subcutaneous tissue, where it remains for a considerable time and may be palpated beneath the skin, feeling like a nest of worms.

The worm, in its endeavor to rid itself of its large number of living embryos, burrows head first downward, until it reaches the foot or ankle, where the head, penetrating the skin, causes a vesicle in the epidermis, which ruptures and results in an ulcer, through which the head projects. After the distended uterus ruptures, and the embryos are cast off in a whitish fluid, the worm generally leaves the host. These embryos contaminate the water, and develop in the cyclops, a small crustacean, and it is likely that man is infected by drinking the water containing these developed larvae.

The history of our case is as follows:

Lance-Corporal D. L., Second Cameron Highlanders, Company D, has seen service seven and a half years, five of which he spent in India. Since October, 1914, he has been at the front in France. Before he entered the service, he was a blacksmith in Glasgow, Scotland.

Patient states that while swimming in the rear of the trenches, six weeks before, he was injured by a barbed wire, receiving slight flesh wounds of the left foot, below the internal malleolus, and of the right foot on the dorsal surface. He believed the wounds insignificant at the time, and painted both wounds with tincture of iodin, applied no dressings, and continued on duty. In two weeks the wounds were almost completely healed, but in the course of another week, the left foot became tender, swollen, and finally suppurated. The inguinal glands on that side also became swollen and painful. He does not know whether he had any fever or not. At this time he reported to his regimental surgeon, who opened the wound and applied wet dressings. The wound partially healed, after which he went to the trenches for seven days, and again his foot became swollen and tender. This time he was sent to the clearing hospital, where it was again opened, and, following which he arrived at this hospital.

The patient states that coincidently with the primary injury he noticed a white, raised area on the flexor surface of the left forearm. A member of his regiment who had served with him in India broke the vesicle and removed a worm, by carefully wrapping it around a lead pencil. It was 2 feet in length. The wound closed and is now the site of a small pigmented scar. In regard to the patient's previous history, he stated that he did not remember having had any of the diseases of childhood, but had suffered from a severe attack of tonsillitis in 1911. He denies any venereal history. During his five years' service in India, he enjoyed good health, except for an occasional chill, followed by sweats and rise in temperature. These attacks persisted in spite of prophylactic doses of quinin taken twice weekly. All the water he drank while in India had been previously chlorinated. His family history is negative.

Examination of the wounds on the median aspect of the left foot, below the internal malleolus, showed a large, infected, irregularly shaped ulcer, about the size of a silver 25-cent piece. Its ragged necrotic edges were undermined for a variable distance of from 2 to 4 cm., and several sinuses extended upward and exuded pus, and sanguinopurulent material. The base of the ulcer consisted of unhealthy and uneven granulations. The region about the wound and half way up the leg was quite tender. The inguinal glands on this side were enlarged and painful.

On the lateral aspect of the dorsal surface of the right foot was a small abrasion surrounded by an inflamed zone, which was also tender. The inguinal glands on this side were enlarged, but not very tender. Aside from local findings, the patient had a marked chronic pharyngitis, and acne vulgaris of chest and back. His chest and lungs were negative. Abdomen was tympanitic and somewhat distended, but no areas of tenderness were present. The spleen was not palpable. Liver, which was palpable, came just below costal margin. Reflexes were normal, and genitalia showed no scars. Blood examination showed: hemoglobin, 85 per cent., red blood corpuscles, 5,000,000; white blood corpuscles, 10,000; differential count: polymorphonuclears, 54 per cent.; lymphocytes, 36 per cent.; eosinophils, 10 per cent. The urinalysis revealed the specific gravity of the urine as 1.024; slightly acid, no bile, albumin or sugar.

Under ether anesthesia, the feet having been rendered bloodless by a Martin constrictor, both lesions were opened. In the left foot about 3 c.c. of pus were found. Culture from this was made and later showed *Staphylococcus pyogenes albus* and *Streptococcus pyogenes*. When the necrotic subcutaneous tissue was being dissected, a long tortuous, cylindrical organism was noted, which could by gentle traction be partially dislodged from its bed. By too great or sudden traction the organism would break, but another coil could be found in the tissue, and again traction applied. One organism was removed in toto. It was impossible to judge the number of worms in this foot, as it was difficult to decide whether several parts of one or of more than one worm were removed. There were certainly at least two, as one entire worm was removed.

The conditions in the right foot were quite similar, but no worm was removed in toto. The report from the pathologist, Dr. R. L. Thompson, was as follows:

"Specimen consists of several white stringlike parasites, varying in length, and tough in consistency. One of these seems to be a complete worm. The others are fragments of other similar worms. The complete worm measured 32 cm. in length by 3 mm. in circumference. The body is round, semitransparent, and filled with numerous small, milky, white bodies (embryos). The end of the worm tapers to a sharp point, which is slightly curved at the extreme tip. Diagnosis (by Sir William Leishman) *Dracunculus medinensis*, or guinea-worm."

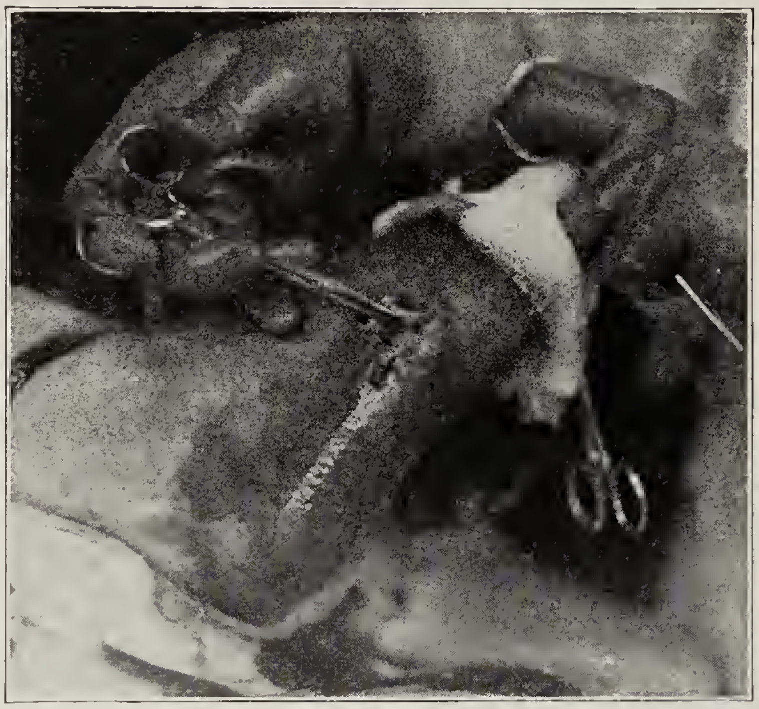

Fig. 2.—Necrotic tissue, and site of lesion on lateral aspect of right foot.

As this patient has recently returned from India, and as no other cases of guinea-worm disease have occurred in this vicinity, it is reasonable to suppose that this patient was infected in India, and that he has imported the disease.

The statement of the patient that the original lesion dated from an injury by barbed wire, and the occurrence of the worm at the site of the injury are worthy of note. Whether the worm was really the etiologic factor in producing the lesion, or whether it was attracted to the site of injury, is of course a question.

It seems that the removal of this worm may be effected better by prolonged traction, that is, wrapping the worm around an instrument and not allowing it to retract, than by operative procedure — endeavoring to excise the worm — as it may be divided and portions with embryos may remain and cause trouble later. The secondary pus infection should, of course, be treated by the usual surgical procedure.

A CASE OF CONGENITAL PERINEAL TESTICLE

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The infrequency of congenital perineal testicle is best shown by the report of Grégan (Montpellier, 1913), who collected records of eighty-three cases up to the year 1913, but did not state what proportion of these were congenital, since this type is by far the more uncommon.

The literature dating from this time contains reports of three cases of perineal testicle, two of which were of the traumatic variety (Bevan, A. D.: The Surgical Treatment of Undescended Testicle, The Journal, Sept. 19, 1903, p. 718. Mulligan, R. A.: *Proc. Roy. Soc. Med.*, London, 1912-1913, vi. Simpson, J. S.: *Med. and Surg. Rep., Episc. Hosp.*, Philadelphia, 1914, ii).

I wish to report another case of the rarer type: the congenital form of perineal testicle.

The patient, a boy of 12, had complained for the past six months of pain in the perineal region when in the sitting posture, especially when suddenly arising and on running. The pain was described as dull and aching and recently increasing in intensity. His mother stated that when the boy remained seated he would constantly change his position, shifting from one gluteal region to the other. Examination showed that the patient was somewhat undersized but mentally normal. The right side of the scrotum was atrophied, and the left testicle was found normal in all respects. The perineal region showed an oval body which measured about 2.5 by 1.5 cm., located 5 cm. anterior to the anus and 2 cm. to the right of the median raphé. The mass gave a testicular sensation on pressure, and could be easily manipulated from the area just anterior to the anus to the region of the right external abdominal ring, but could not be placed into the scrotum. The mother then volunteered the information that the absence of the right testicle had been noted about two weeks after the child's birth, but that no further attention had been given to it.

At operation (Beck) an incision about 5 cm. long was made over the right external abdominal ring. The cord was seen emerging from the ring and extending down to the ectopic perineal testis. Attached to the lower pole of the testicle was a strong fibrous band, the gubernaculum testis, which was attached 2 cm. anterior to the anus and about the same distance from the median raphé. The gubernaculum was excised from the testis just below its attachment, and the somewhat underdeveloped testicle placed into the scrotum in the usual manner. The recovery was perfect, the patient leaving the hospital on the eighth day.

Four weeks later, the testicle remained in normal location and seemed normal in all respects.

SARCOMATOUS PROLIFERATION (SARCOMA OF RIB)

IN A TRAUMATIC TUMOR SIXTEEN YEARS AFTER ITS FIRST APPEARANCE

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AND
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The question as to how long cells which are malignant or potentially malignant can remain in the body without manifesting any tendency to grow, proliferate or metastasize is one of great interest which may throw considerable light on the entire subject of malignant tumors.

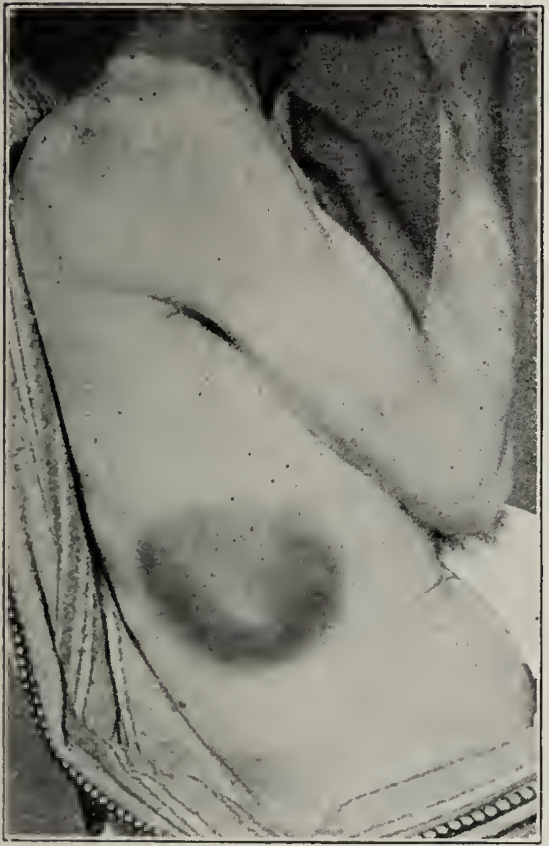

Fig. 1.—Tumor, painted with iodin.

Paterson[1] describes a case of gastric cancer in which he operated two years after the onset of symptoms. He found an inoperable carcinoma at the pylorus and did a gastro-enterostomy. The patient continued in good health for six years, without any symptom of extension of the growth or metastasis. Here we have a known cancer which was present for eight years in a spot richly supplied with lymphatics, with no tendency to manifest the ordinary nature of a cancer.

Hertzler[2] has told us of a case of cancer of the breast in which he operated fifteen years ago. The patient has been under observation repeatedly in the interval. At the fourteen-year period she had had no metastasis or extension when she reported for examination. Nine months later she had a small recurrence in the upper end of the scar.

The following case, which deals with a sarcoma, is in line with these cases:

Summary.—Man, aged 36, received a trauma which resulted in the appearance of two small tumors over the region of the ninth rib. These tumors had been present sixteen years, when a sarcoma of the rib beneath them resulted. On removal, these tumors were seen to be sarcomas of the same structure as the sarcoma of the rib.

History.—The man, a farmer, was first seen by us Oct. 3, 1913. Family history was not significant. Personal history was negative for syphilis, rheumatism, tonsillitis and typhoid. At the age of 14, the patient was kicked in the right knee by a horse, sustained a fracture, and has had an ankylosed knee ever since. At the age of 19 he fell across a log, lighting on the right side of his chest in the axillary line. The injury was slight, but within a week or so two small lumps appeared under the skin at the level of the ninth and tenth ribs in the midaxillary line on the right side. They have always been painless, and have never grown sufficiently to notice; in fact, so far as the patient has noticed, they have always remained exactly stationary in size. They have been movable, the size of plums, and soft in consistency. His physicians, including ourselves, have always told him they were lipomas.

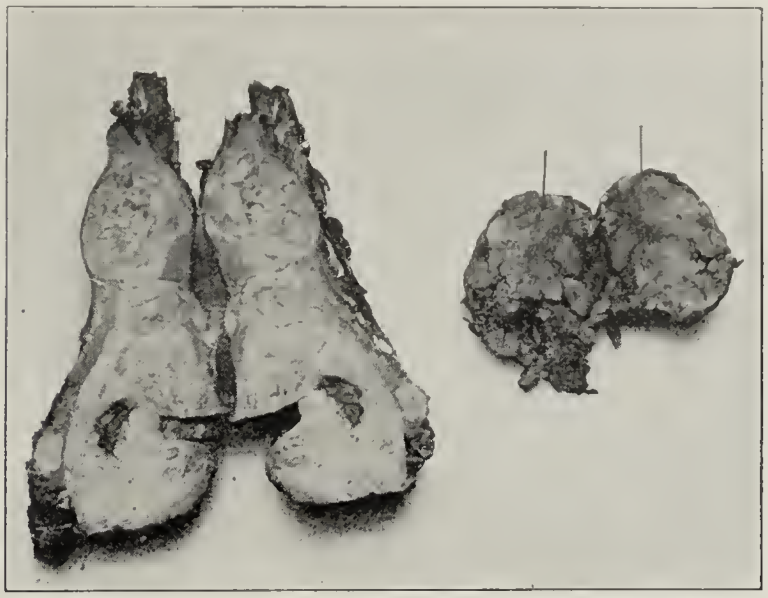

Fig. 2.—Same as Figure 3, with the tumors split open.

Nine months ago, without previous injury, he noticed that a hard lump had appeared over the ninth rib on the right side just under these old tumors. It was much larder, somewhat painful and not movable under the skin. It grew slowly at first, but has grown very rapidly during the last three months.

Examination.—Temperature, 98.5; pulse, 86; blood pressure, 120; leukocytes, 6,000; heart and lungs, no abnormalities. There is a hard mass, about 4 by 5 inches, over lower ribs on the right side. It is dense and adherent to the ribs. Two smaller masses in the same locality, movable under the skin, feel like lipomas.

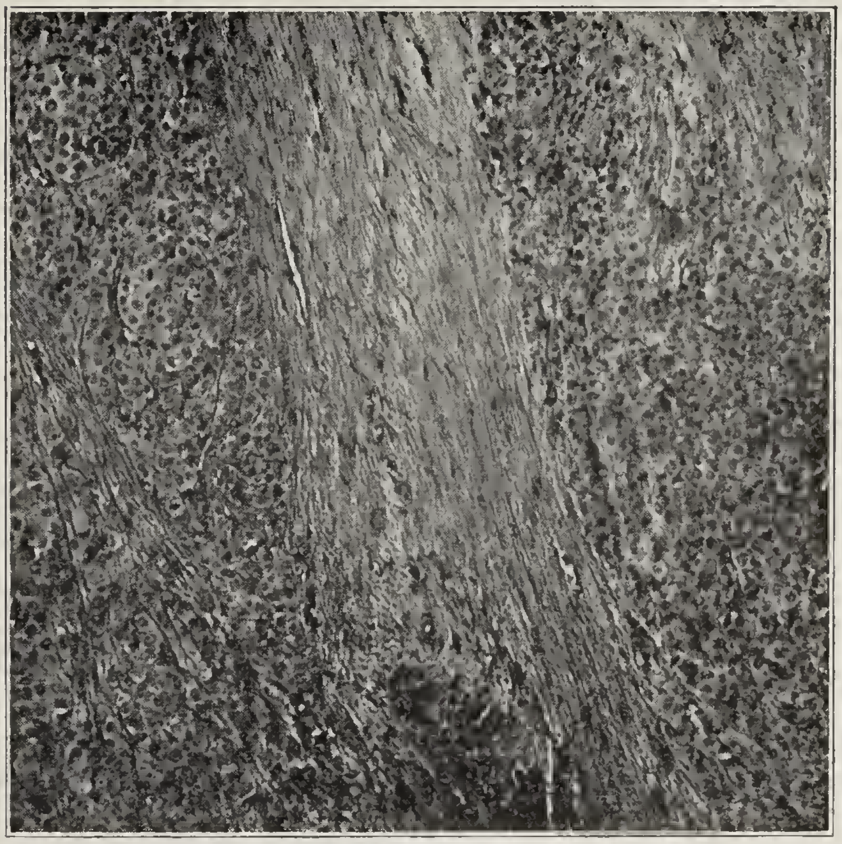

Fig. 3.—Photomicrograph of tumor on rib.

Operation.—Oct. 3, 1913, under gas-ether anesthesia, by the ordinary method, no attempt being made to use the negative pressure cabinet or intratracheal insufflation, a mass was revealed, comprising parts of the ninth and tenth ribs, which was removed by resecting these ribs without opening the pleura. A small plaque of growth on the pleura was revealed just under the site of the growth on the ribs, and necessitated the opening of the pleura for its removal.

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[1] Paterson, in Murphy's Clinics, iii, No. 1.
[2] Hertzler, A. E.: Personal communication to the authors.

The two small tumors previously mentioned were seen to be purplish encapsulated masses in the muscle and subcutaneous tissue, and were easily removed.

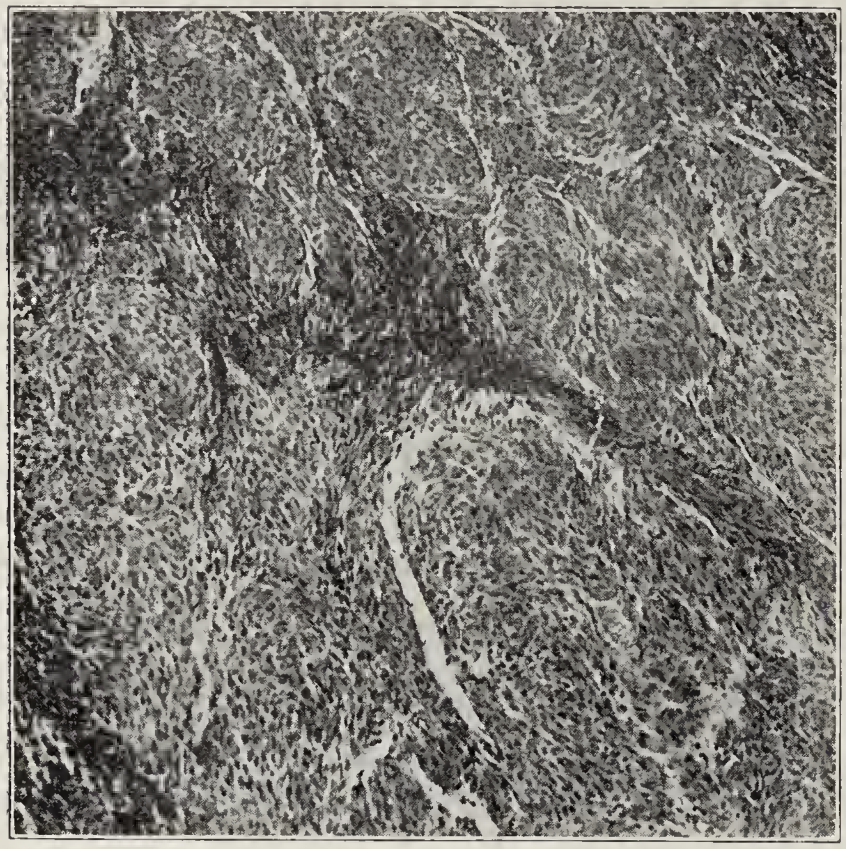

Fig. 4.—Photomicrograph of one of the small original tumors.

Pathologic Examination.—The material consisted of: (*a*) parts of two ribs united by a hard, dense, white fibrous growth, the size of a man's hand, and (*b*) two small lumps of tissue, which were soft and were encapsulated everywhere by a membrane as thick as the dura mater. On section, both of these showed the structure of a small round-cell sarcoma. The sarcoma from the ribs was interlaced with fibrous strands, while the small tumors were almost free from connective tissue framework.

Certain points in connection with this case may perhaps be emphasized. First, the identical structure of all these tumors: the original tumors and the new tumor on the ribs are all the same sort of sarcoma. Second, the complete encapsulation of original tumors. Third, the fact that they had been present for sixteen years without pain or growth.

The question arises whether they were sarcomas from the start, that is,, whether they were the original focus of sarcoma, or whether they simply suffered in the general sarcomatous degeneration in the region. Whether, in short, the sarcoma was primary in the ribs or in these small tumors. Whoever defends the hypothesis that it was primary in the ribs will have to take into consideration the necessity for an explanation of the fact that a sarcoma developed at the exact site of a trauma received sixteen years previously.

Lund[3] reviews the surgery of sarcoma of the chest wall. The entire number of cases collected by him was twenty, to which he added one personal case. The case here reported is therefore of interest on account of its rarity as well as its pathologic significance.

Rialto Building.

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[3] Lund: Ann. Surg., 1913, lviii, 206.

FISTULA OF THE ESOPHAGUS AND BRONCHUS

REPORT OF A CASE, WITH ROENTGENOLOGIC FINDINGS

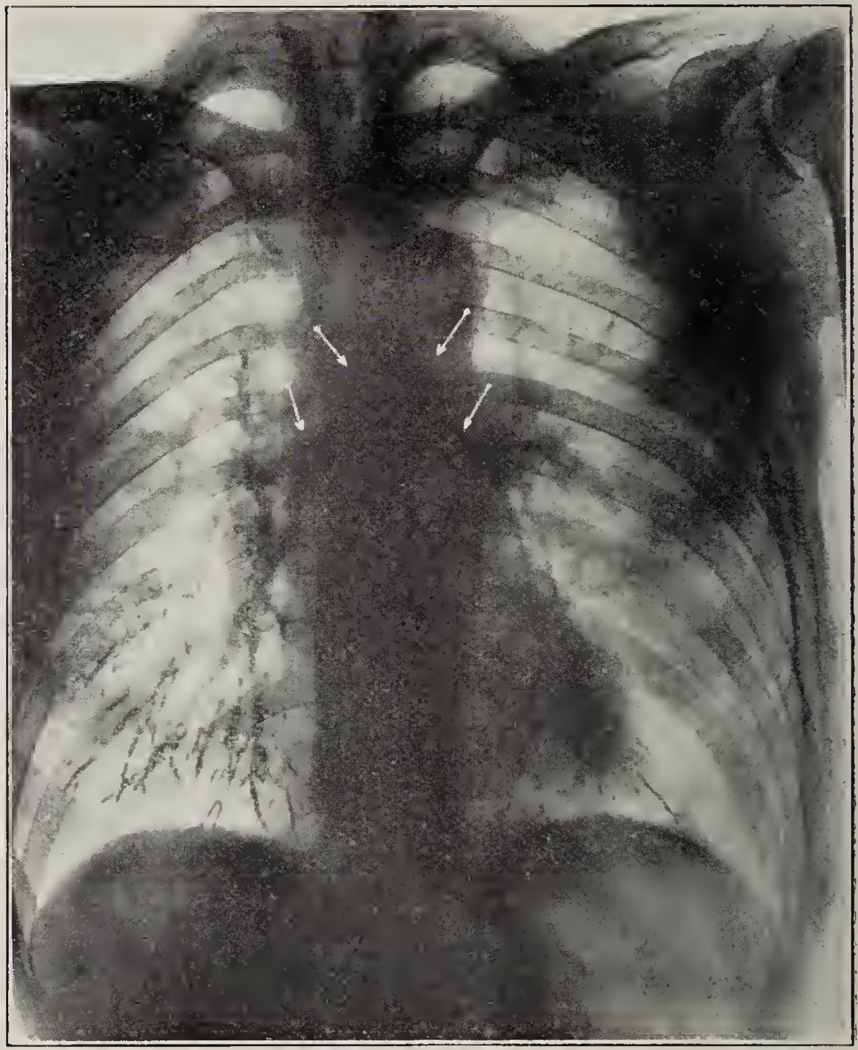
Raymond Cole Beeler, M.D., Indianapolis

On the afternoon of May 7, 1915, I was called to the Indianapolis City Hospital to make a Roentgen examination of the esophagus. The patient had been admitted to the hospital that afternoon and had alarmed the intern, so he called a member of the attending staff.

History.—Mr. H. C. B., aged 58, white, a native of Ireland, married, in the real estate business, with negative family history, had had syphilis forty years ago and myocarditis one year ago; he denied gonorrhea, and there was no history of swallowing escharotics. The present illness began six months ago with difficulty in swallowing. The patient was unable to swallow solids or liquids. He then got better and worse. This continued until one week ago, when he had a hemorrhage of bright red blood which he thought was from the stomach. Up to the time he had this hemorrhage he had gradually become worse and could only with difficulty swallow food and liquids. He was not able to take liquids or drink water since the time he had his hemorrhage. He had violent choking spells when he attempted to eat or drink.

Examination.—The patient was much emaciated, had a distressed look, the breathing was labored, the breath sounds roughened, mostly bronchial, there were some fine moist râles throughout chest, and he had a rasping cough.

Roentgen Findings.—The patient was given a mouthful of barium mixture and told to swallow. The fluoroscope showed the meal to go down the esophagus a short distance and then to go through and fill the bronchi, both lower trunk areas and the bronchioles. These were all seen distinctly as the barium filled them. The patient went into a fit of coughing and expelled a considerable quantity of the meal. He was at once rushed to the roentgenographic room, and stereoscopic roentgenograms of the chest were made. The



Roentgenogram of esophagobronchial fistula.

roentgenogram here shown is one of the pair made at this time. The main trunks and branches are easily made out, but they are not shown in the dilated form as we saw them on the screen. Just above the bifurcation there is made out a mass of barium, probably a dilation at the region of the fistula. There was an area of denser lung shadow in the left middle, and the upper trunks looked to be dilated and thickened. The patient was sent to the ward and fed by rectum. Gastrostomy was performed the third day. The patient stood the operation well. On the seventh day the patient died, apparently from pneumonia. Unfortunately necropsy was not obtained.

Laboratory Report.—Sputum negative. Urine negative. Wassermann positive.

COMMENT

This case is interesting because of the value of the stereoroentgenograms obtained, giving the exact anatomy of the lower bronchial trunk areas in the lung of a living subject. I have not been able to find any similar case reported in literature. The primary cause of this esophagobronchial fistula was probably syphilis.

Hume Mansur Building.

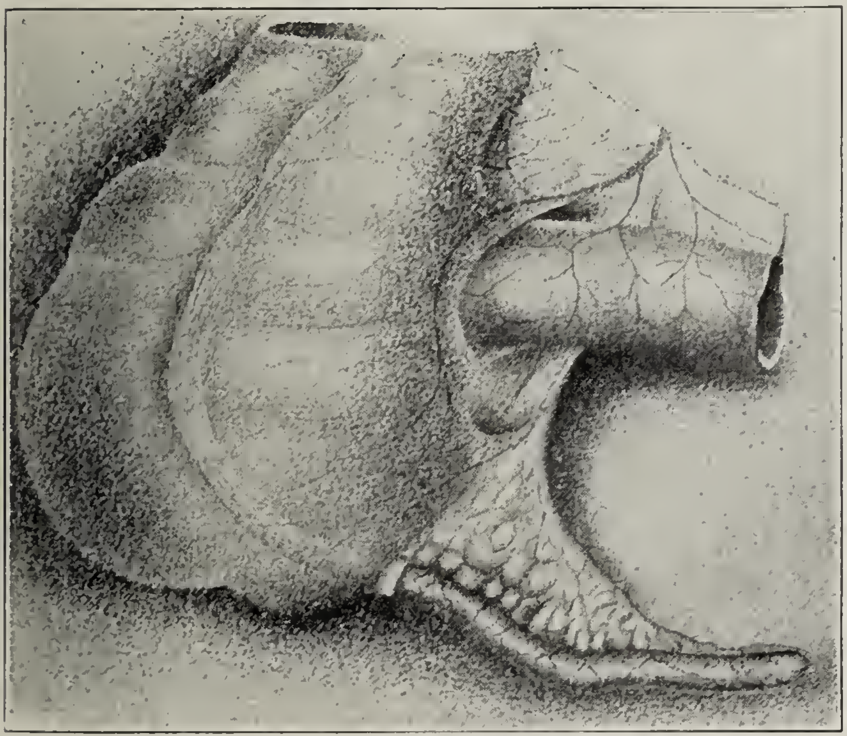
A SPECIMEN OF "AUTO-AMPUTATION" OF THE APPENDIX

J. R. Judd, M.D., Honolulu, H. I.

In "Keen's Surgery," v, 741, J. B. Murphy uses the expression "auto-amputation" of the appendix. The specimen illustrated in the accompanying photograph seems to belong to this classification, and is reproduced as a pathologic curiosity.

The patient from whom the appendix was removed was a man, aged 24, with an indefinite history of appendix inflammation.

During the course of a kidney operation, the appendix was exposed through the lumbar incision and was brought up into the wound. It was found to be connected with the cecum only by a fine adhesion, so delicate that simply pinching it between the fingers sufficed to separate it. Careful probing failed to disclose any opening into the cecal cavity. The proximal end was also solid. The appendix was 7 cm. in length, not dilated and contained a small amount of mucoid material. It showed the lesions of a chronic interstitial inflammation.

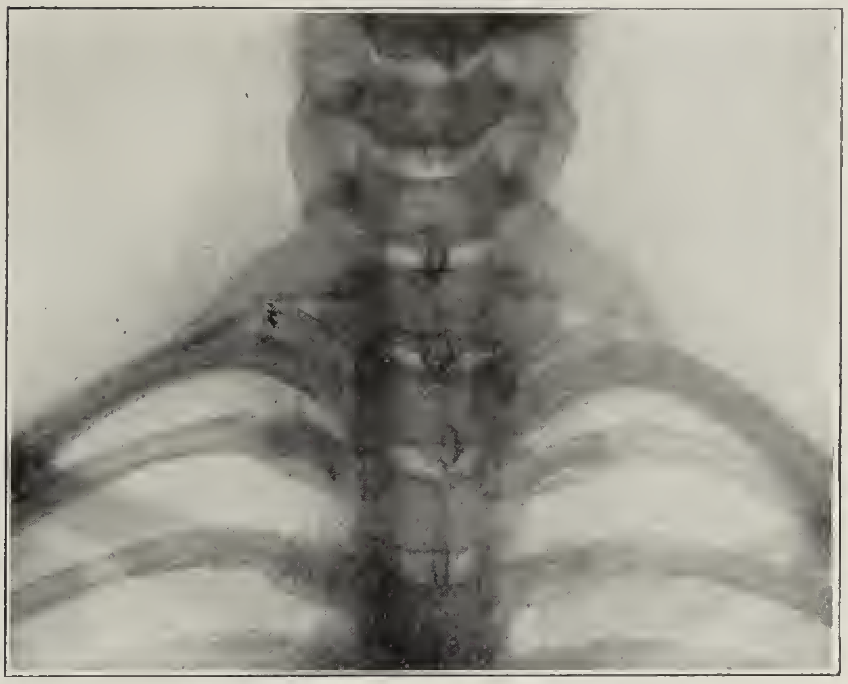


Specimen of "auto-amputation" of the appendix.

CERVICAL RIB AS A CAUSE OF BRACHIAL PAIN

Fred B. Kyger, M.D., Kansas City, Mo.

Cases of cervical rib, while seldom reported, are not uncommon. When the chief complaint is brachial pain, one must always be on guard, as the diagnosis is frequently confused with rheumatism, brachial neuralgia, or neuritis. Miss T., a college student, complained of pain in the right arm and side of the neck. She had been under osteopathic and electric treatment for ten months under a diagnosis of neuritis. The pain had started about one year before in the right arm, and had been growing steadily worse, extending up into the neck and side of the head. She suffered from nervousness and insomnia, and at times the pain was so severe that opiates had to be given.



Cervical rib as cause of brachial pain.

The patient was 21 years of age, and weighed 105 pounds, which she stated was about 10 pounds under her normal weight. Personal and family history were negative. Both parents were living and healthy. Her pulse and temperature were normal. Nothing could be seen on inspection, as there was no especial bulging over the region complained of. She was very tender to palpation above the clavicle and to each side of the cervical vertebra. There was also a firmer resistance to the examining fingers than is normal to that location.

"A pulsating mass above the clavicle means cervical rib nine times out of ten," says Cabot. This characteristic sign, caused by the pulsation of the subclavian artery which usually overrides the rib, was not felt perceptibly in this case. The constant brachial pain with the marked tenderness in that region pointed strongly to cervical rib, and such a diagnosis was given.

The patient returned to her home in Pueblo, and the diagnosis was confirmed by the Roentgen ray, as shown in the accompanying negative taken by Dr. Epler. The patient was subsequently operated on by Dr. Pairs of Pueblo with excellent results.

700 East Thirty-First Street.

Good Food.—What is needed is not so much uniform food laws throughout the country as uniform food definitions for the guidance of those who have in charge the enforcement of the laws. Let us have uniform food definitions that will be accepted by all and then we shall hear very little about the necessity for uniform food laws. If the manufacturers are really sincere and desire to have uniformity other than on a low plane, they can accomplish the most by encouraging the establishment of definitions and standards that will afford protection alike to the consuming public and to the honest manufacturer.—*Bulletin of the North Dakota Agricultural Experiment Station.*

New Instruments and Suggestions

AN AID TO A GOOD FUNCTIONAL RESULT IN ARTHROPLASTIES ON A DIGIT

Paul Gallagher, M.D., El Paso, Texas

In doing my first arthroplasty on a finger, I was impressed with the need of some apparatus which would at the same time give proper exercise to the joint operated on but would be neither cumbersome nor expensive. With this in view, I devised the apparatus shown in the accompanying illustrations.

The arthroplasty was done on the proximal interphalangeal joint of the fourth finger to relieve a traumatic bony ankylosis. As a result of exercise prescribed, two months after the operation, the patient could lift and carry with ease, without assistance and on this joint alone, a weight of 7¾ pounds. Voluntary flexion was present to about 45 degrees and extension to about 170. Any article, such as a pick or ax, could be grasped firmly and securely. In other words, the hand on which the operation was performed is about as good as its normal fellow.

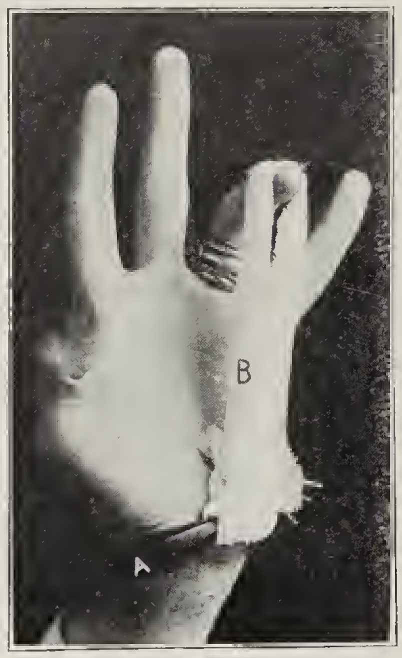


Fig. 1.—Method of obtaining primary passive flexion.

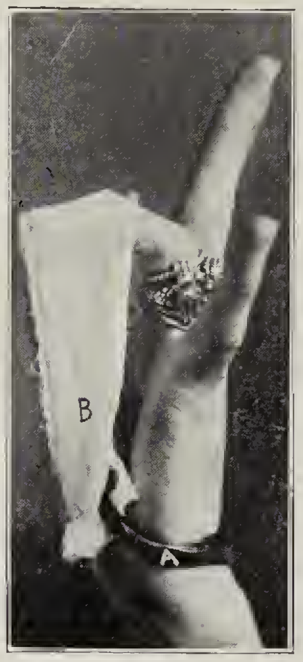


Fig. 2.—Method of obtaining primary passive flexion.

Supervision and encouragement by the surgeon are needed, but I am confident that with some such apparatus fewer fingers need be sacrificed and better surgery will be done.

The apparatus consists of a cuff of old rubber glove (*A* in the illustrations), a piece of bandage (*B*) and a thin strip (*C*) about 8 inches long to which are attached by adhesive tape one or more small rubber bands. The number of bands is to be increased from day to day as the need of greater resistance is met.

Figures 1 and 2 illustrate the method of getting primary passive flexion. From day to day the bandage piece is tightened and the cuff slipped up on the arm until flexion is such that the bandage piece will no longer stay on the finger.

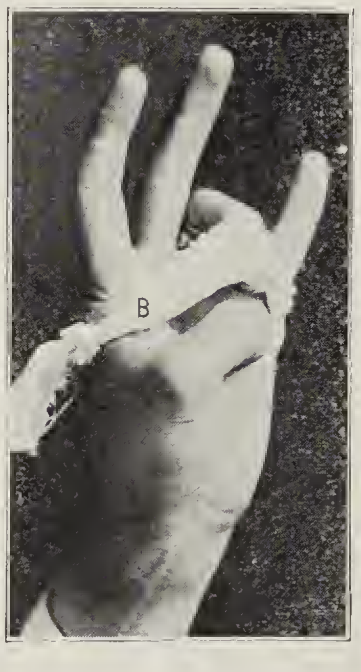


Fig. 3.—The ends of the cuff of the rubber glove are tied to the ends of the bandage.

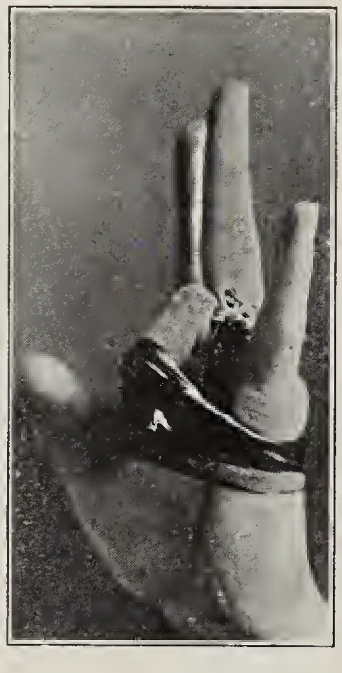


Fig. 4.—Method of obtaining greatest possible passive flexion.

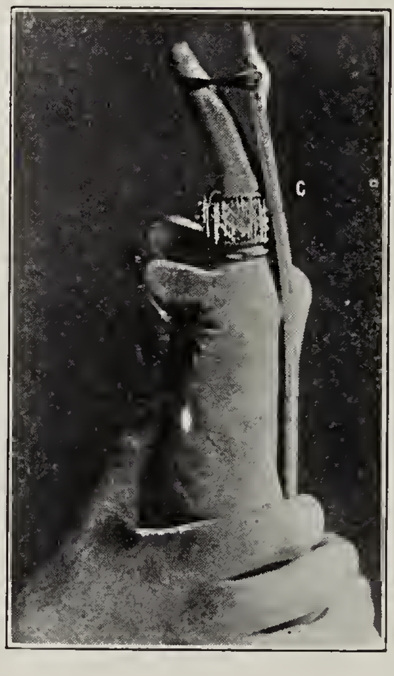


Fig. 5.—Method of obtaining forced flexion and also of developing flexors and extensors.

Figure 3 illustrates the change to be made then and to be persisted in till the piece of bandage, coming around from the back of the hand, can give no greater flexion.

Figure 4 illustrates the method of obtaining the most complete degree of passive flexion possible.

Figure 5 illustrates the method of getting forced flexion and of developing the flexors and extensors too.

I do not believe that the method has been described before, as I was unable to find anything similar when looking up the subject for my own guidance.

AN AUTOMATIC TRANSFUSION APPARATUS *

Morris Kush, M.D.,† New York

In spite of the apparent simplicity of the cannula and syringe methods now used in transfusion, several assistants and more or less elaborate preparations are always needed in order to make the operation go smoothly. With the purpose of eliminating all assistants, and reducing the entire process to as simple a procedure as possible, but still retaining the efficiency of the older methods, the apparatus herewith presented was devised.

The idea of using one syringe in transfusion was first suggested by the Schreiber salvarsan apparatus. Experimentally it was shown that the ball valve was entirely unsuitable for working with blood, owing to the fact that whirring of the valves soon caused clotting. The valve idea, however, was not abandoned, and finally the principle of the sliding valve was utilized in making this machine.

By reference to the accompanying diagram (Fig. 1) the mechanism will readily be understood. Essentially we have a cylinder (*A*) containing a piston (*B*). The cylinder contains two ports (1 and 2), an opening in the base (3), for the escape of air, and a set screw (4). The piston contains a passage way (5) and a milled groove (6). This groove is so built that it receives the set screw, and the latter limits the motion of the piston so that at the end of each excursion the passage way (5, lower end) is exactly opposite either the upper or lower port, and absolutely prevents any rotation. A spring (7) is placed between the piston and the cylinder. This spring is of such strength that it will just support the piston plus an empty 20-c.c. record syringe at the upper port.

The theory of action is as follows: Port 1 is connected with the donor and Port 2 with the recipient. The record syringe is fitted into the passage way (5, upper end). Aspiration on the handle of the syringe raises the piston (*B*) so that the passageway (5, lower end) is opposite Port 1 and permits of the entrance of blood from the donor into the syringe. Depression of the handle of the syringe shifts the piston (*B*) so that the passageway (5, lower end) is opposite to Port 2 and permits of the expulsion of the blood from the syringe into the recipient.

The only criticism which has been made is that clotting will occur because at the end of each cycle the apparatus is not flushed with saline. So far as the valve is concerned, this has been made to fit so accurately that the blood is exposed to a perfectly smooth, continuous passage, and clotting has not occurred. So far as the syringe is concerned, this drawback has been overcome by making use of a method suggested by Dr. C. A. Elsberg. It is well known that to remove clotted blood from a record syringe, all that is necessary is to place it on ice. It was therefore thought possible to *prevent* clotting by keeping the syringe cool. This is done by spraying the barrel with ether from an atomizer during the course of the transfusion. Paraffin-coated catheters with connecting plugs carry the blood between the instrument and the donor and patient. These have been proved capable of withstanding clotting. The ordinary intravenous cannulas of the Kaliski type are used in the veins. The complete apparatus set up and ready for use is shown in Figure 2.

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* From the Surgical Service of the Mount Sinai Hospital.

† Dr. Kush died, May 27, 1915.

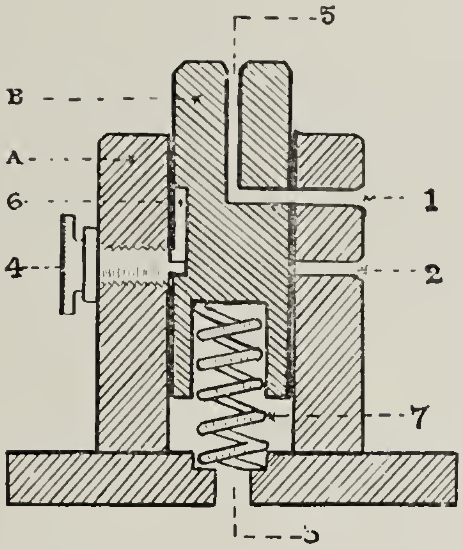


Fig. 1.—Details of automatic transfusion apparatus.

The method of procedure is as follows: The entire apparatus is rendered sterile by boiling, and then the tubes are taken from a supply prepared in advance. The cannulas are introduced into the veins, that in the donor pointing peripherally and that in the recipient centrally. The tubes are connected with the valve, and the syringe, half full (10 c.c.) of normal saline solution, is attached to the piston. The solution is expelled through each tube, leaving an air-free circuit. The trocar is removed from the donor's cannula, and the upper tube leading to Port 1 attached. The lower tube from Port 2 is attached to the recipient's cannula. Transfusion then proceeds by manipulating the handle of the syringe in the usual fashion, the barrel being subjected to the ether spray throughout the entire procedure. Any desired amount of blood can then be transfused.

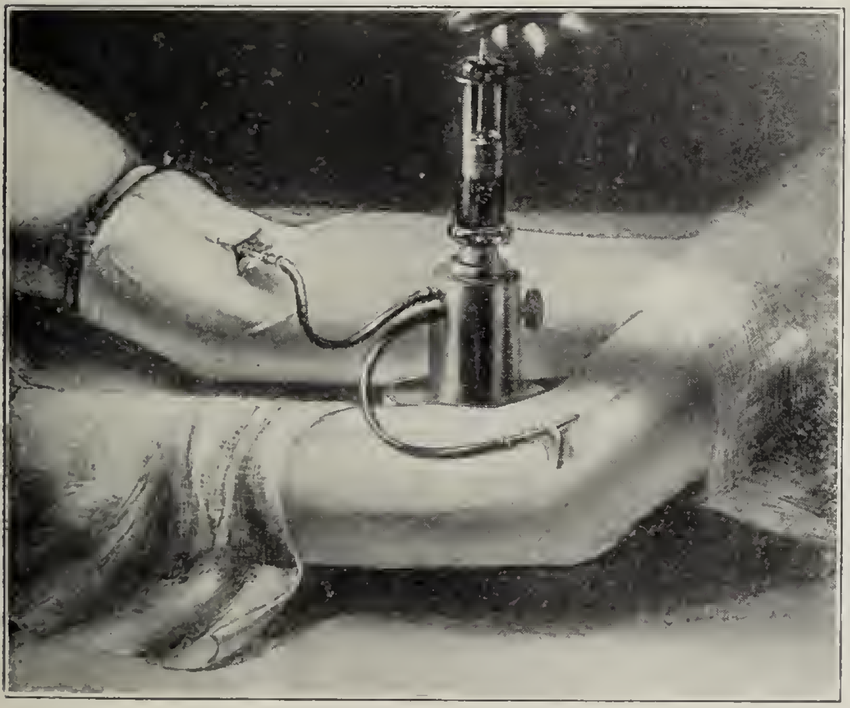


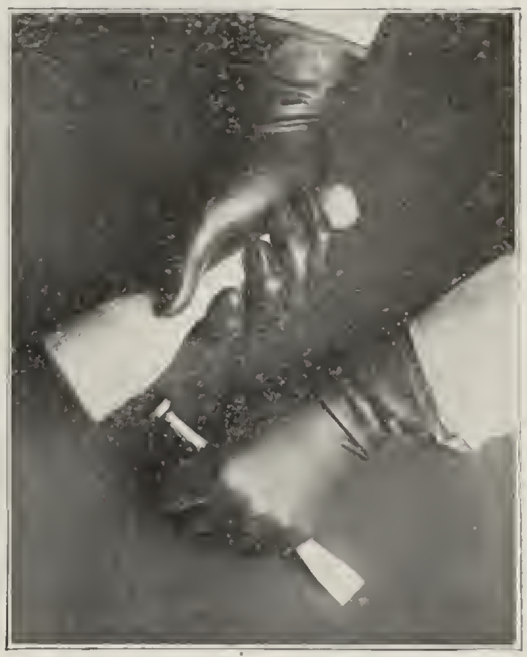
Fig. 2.—Automatic transfusion apparatus ready for use.

Experimentally the device has proved efficient. Several dogs have been transfused, and a number of phlebotomies have been performed. Two successful human transfusions, one of 260. c.c. and one of 160 c.c., have also been performed.[1]

A SIMPLE OPERATING MALLET *

HENRY W. MEYERDING, M.D., ROCHESTER, MINN.

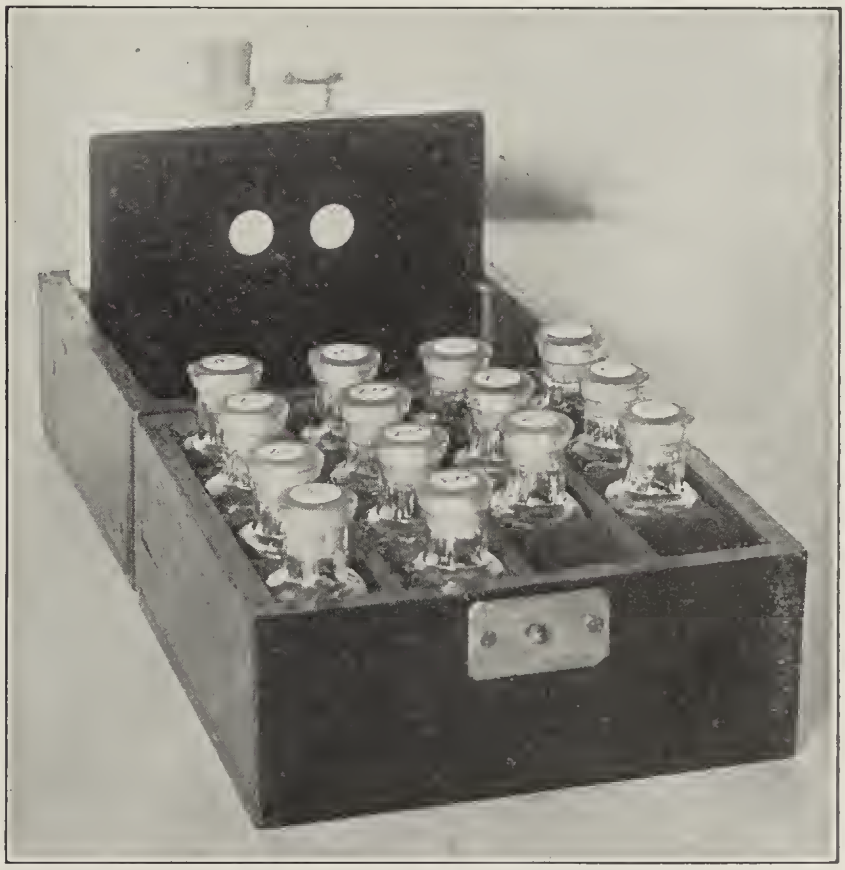
In surgery of the bone it is important to be able to watch the cutting edge of the chisel, and accurately to gage the force of the blow without danger of striking the hand and tearing the glove. The mallet of my design here illustrated has been used with satisfaction for several years in the Mayo Clinic. It is an alloy of zinc, copper and aluminum so composed that the metallic ring of the hammer is avoided, so shaped as to allow a firm grip, and heavy enough to deliver a forceful blow. It measures 8 inches in length, and the diameters are 2½ inches at the head and 1¼ inches at the handle.


Operating mallet.

DEXTROSE COLORIMETER

PHILIP ATLEE SHEAFF, M.D., PHILADELPHIA

In THE JOURNAL, April 25, 1914, p. 1307, Kleiner describes "A Clinical Method for the Rapid Estimation of the Quantity of Dextrose in Urine." This method has proved of much use to myself and certainly to all others who have availed themselves of Kleiner's suggestions. As a further aid in the technic, the accompanying illustration will make clear a container for the "standard vials" which I have constructed.


Container and screen for standard vials.

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[1] The apparatus here described is manufactured by Tiemann & Co., New York.

* From the Mayo Clinic.

The solutions vary by gradations of 0.25 per cent., reaching a maximum of 3.5 per cent.

When in use, the solution to be tested is placed in a fixed position on a shelf behind one of the holes shown in the black screen, while one of the "standard vials" is placed alongside of it back of the remaining opening. Back of both vials is fixed a white opaque glass. When not in use, the black screen and the glass are held securely in the top of the closed box, and the solutions are kept in the dark.

The "standard vials," prepared as Kleiner directed, have changed color in my hands since being made up, shortly after his paper was published, and in the "standard vials" now in use I have omitted adding to the filtrate the ammonium hydroxid solution of Kleiner's formula, and have substituted 1 c.c. of commercial formaldehyd solution to 9 c.c. of the filtrate.

This gives a series of lighter blues, the permanency of which remains to be decided by the test of time.

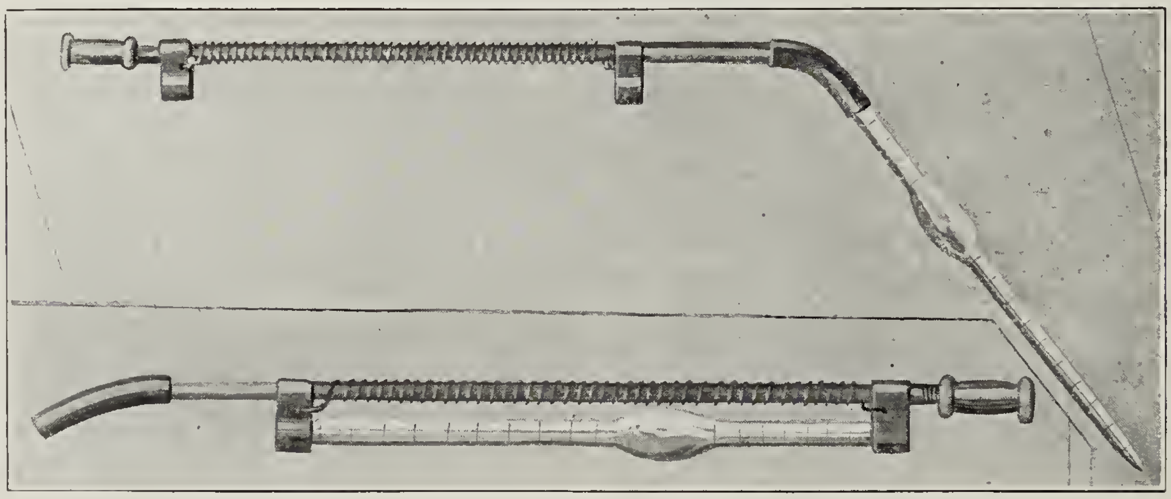
4008 Baring Street.

A COMBINATION HOLDER AND ASPIRATOR FOR USE WITH THE BLOOD PIPET *

Gordon J. Saxon, M.D., and Louis E. Drummond
Philadelphia

Most clinical laboratory workers have from time to time encountered annoying incidents in connection with the simple procedure of doing a leukocyte or red blood cell count. The rubber tubing has at times been punctured in the process of being used to wrap the ends of the counting pipet, and the contents have escaped in transit from the bedside to the laboratory.

The accompanying illustration shows an implement which is a combination of holder and aspirator for the ordinary blood-counting pipet, and is self-explanatory.



Combination holder and aspirator for use with the blood pipet.

This instrument was made experimentally by Edward P. Dolbey & Co. of Philadelphia and may now be obtained from that firm.

5314 Spruce S

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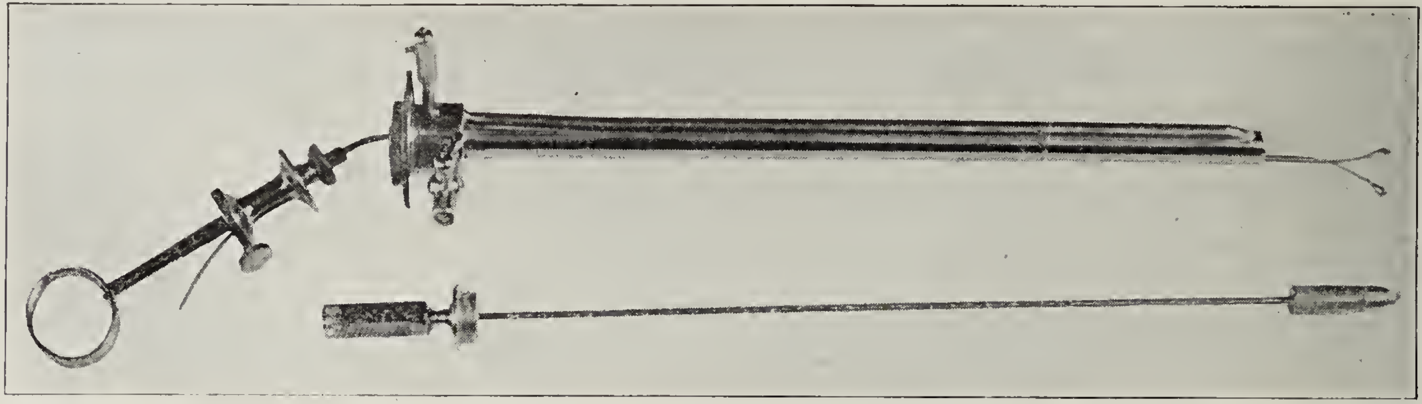
* From the Laboratory for Cancer Research at the American Oncologic Hospital.

APPARATUS FOR THE REMOVAL OF FOREIGN BODIES FROM THE BLADDER

H. McClure Young, M.D., St. Louis

Any one who has attempted to remove a foreign body from the bladder must have been impressed with the inconvenience attending the use of any beaked cystoscope. The body can be found and grasped with the forceps, but a difficulty immediately arises when we attempt its removal. It is the exception that even a bit of catheter can be withdrawn through the lumen of the cystoscope, and where the greater part of this lumen is already taken up with a lens system, such a procedure becomes practically out of the question. The most rational procedure, therefore, is to remove the cystoscope and forceps together and allow the firmly grasped foreign body to follow after. To such a maneuver, however, the beak of the cystoscope presents a very serious obstacle. The projecting forceps form a continuation of the shaft of the cystoscope, but the beak is set at an angle and will effectually prevent the removal of the cystoscope as long as the forceps are in place. Even when flexible forceps are used, matters are not much better for the reason that the forceps tend to lose their flexibility to a large extent when the jaws are once set.



Apparatus for removal of foreign bodies from the bladder.

The accompanying illustration shows a very simple apparatus designed to overcome these difficulties. It is modeled after an ordinary Koch urethroscope, but is somewhat longer and is provided with a glass window and irrigating cock. It renders possible the dilatation and careful examination of the bladder. The foreign body can then be grasped at the most advantageous point and drawn close up to the mouth of the instrument. If it cannot then be drawn through the lumen, the cystoscope and forceps can be withdrawn together and the foreign body allowed to follow. In this manner it should be possible to remove any object whose passage through the urethra is not in itself an infeasible procedure.

600 Carleton Building.

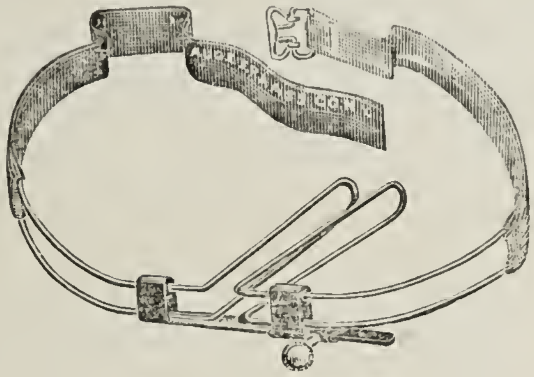
Rabies.—There is no spontaneous origin of this disease of animals and of man. Every case of rabies is due to infection from some previous case.—*Bulletin State Board of Health of Maine.*

A SELF-RETAINING RETRACTOR FOR THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM

Joseph Eastman Sheehan, M.D., New York

The retractor here illustrated consists of two pieces of steel wire connected by a firm band, which is also of steel, held in position by a screw. The outer face piece consists of malleable material so that one can adjust it to the various conformities of the face.

After it has been placed in position, it is held firm by a linen band which is adjusted to the subject's head. The retractor is particularly serviceable when an assistant is not to be had, and more so when the operation is performed in a sitting posture. The danger of injuring the tissues is lessened, and the operating surgeon has always before him a clear view of the operative field.



Self-retaining retractor for submucous resection of nasal septum.

214 West Seventy-First Street.

HERNIA RECORD CARDS

Carleton Dederer, A.B., M.D., Los Angeles

Clinician in Surgery, Los Angeles Department, University of California Medical College

In order to facilitate the history taking and keeping of proper records in hernia cases, I have devised the following form to be printed on the history cards in addition to the usual matter. This card should be used throughout the case in order that the record may be complete. The preferable size is 8½ by 11 inches. This size is suitable for filing in the standard size cabinet.

I. Family history of hernia or hydrocele.
II. Previous hernia history.
III. History of present condition.
    1. Onset.
    2. Cause attributed.
    3. Duration.
    4. Pain.
    5. Spontaneously reducible.
    6. Any general symptoms.
    7. Truss worn.
IV. Examination for hernia, hydrocele and varicocele.
    1. Location and direction.
    2. Appearance of skin.
    3. Shape.
    4. Size.
    5. Character of contents.
    6. Expansile impulse on coughing.
    7. Reducible.
    8. Character of rings.
    9. Normal anatomic structures and position.
    10. Presence of hydrocele, varicocele or inflammation.
V. Treatment.
    1. Truss or
    2. Operation.
        (a) Incision.
        (b) Findings.
        (c) Method of repair.
        (d) Sutures.
        (e) Character of recovery.
VI. Conditions at subsequent examinations.

602 Hollingsworth Building.

Therapeutics

ACUTE DIARRHEA

This simple, frequently occurring indisposition may be due to many causes; but whether the diarrhea is due to a poison from without or to a disturbance from within, it is of primary importance to prevent further irritation and further absorption of toxins by free catharsis. This catharsis should be of our own making; the diarrhea is almost never sufficient, especially if a speedy cure is desired. A diarrhea will often cure itself in time, but the disturbance may last for days, and may leave a subacute irritation of the bowels for several weeks. Therefore, the safest and quickest method of curing a diarrhea is to begin with free therapeutic catharsis.

In a few words, the treatment of acute diarrhea, with or without pain, is:

1. Give castor oil (30 c.c. or 1 fluidounce), on black coffee, on water with a little salt undissolved in the bottom of the glass, or on lemon juice; or calomel, 0.20 gm. (3 grains), and sodium bicarbonate, 1 gm. (15 grains), perhaps taken with Vichy; or a Seidlitz powder, Rochelle salt, 20 gm. (5 drams), or magnesium sulphate, 15 gm. (one-half ounce).

2. Allow no food for from twelve to twenty-four hours.

3. Give a good quantity of hot water, or cool water if hot water is refused. Give hot tea if desired.

4. There should be absolute rest on a couch or bed.

5. Two hours after the purgative has been given, begin the administration of bismuth subcarbonate, 1 gm. (15 grains), and phenyl salicylate (salol), 0.30 gm. (5 grains), combined in one powder, and administer such a dose every two hours for ten doses; or, bismuth subcarbonate, 2 gm., and phenyl salicylate, 0.50 gm., may be given every two hours for five doses.

6. If there are much intestinal gas and colicky pains, 2 teaspoonfuls of paregoric, in hot water, should be given every two hours for two or three doses.

7. If the bowels move too many times from the cathartic, 1/10 grain of morphin sulphate should be given by the mouth, and repeated in three hours, if needed. Large doses of morphin in such a condition are not needed.

8. If the patient is faint, give 1/30 grain of strychnin sulphate by the mouth, and, if deemed advisable, one-half teaspoonful of the aromatic spirits of ammonia, repeated if necessary.

9. If the intestinal pains are severe, a hypodermic of one-eighth grain of morphin sulphate, with 1/150 grain of atropin sulphate, might be given. Rarely in this condition is a larger dose of morphin needed or necessary. It is, of course, better to avoid morphin, if possible.

10. If the patient is already faint from the pain and from profuse watery stools before the treatment is begun, it may be best to postpone the cathartic and give a hypodermic of morphin and atropin as above, and perhaps 1/40 grain of strychnin sulphate. This hypodermic treatment, combined with rest and a hot water bag to the bowels, and perhaps a cup of hot coffee or tea will soon revive the patient. A laxative may be given later, and generally should be, else irritants will remain in the bowels.

11. In from twelve to twenty-four hours hot malted milk, some cereal gruel, milk toast, or mutton broth may be given, and repeated; later a poached egg, and still later a small piece of steak or a lamb chop may be allowed the patient.

12. Bismuth subcarbonate, 1 gm., may be given three times a day for a few days, if thought best, but not for too long, as bismuth tends to accumulate in the bowels, and may cause a new irritation. Frequently a Blaud pill, two or three times a day, is indicated. The diet should be gradually enlarged, fruit and laxative vegetables being the last to be added to the list. The bowels should be kept warm for some days after an apparent recovery.

N. B.: There is no excuse for giving calomel in divided doses, as it causes irritation of the upper bowel. One does not want Doses "1," "2" and "3" of calomel to be acting and Dose "10" not even yet started. Therapeutic catharsis is purging, not dribbling. This foolish one-tenth-grain-dose-of-calomel-every-hour fad should be given a decent burial. If it is claimed that calomel in small doses is a bowel antiseptic, then the answer is, Why cause poisoning to produce antisepsis? Salol in small doses is a harmless antiseptic; small doses of calomel may mercurialize the whole system. The late vomiting after an operation is frequently due to the administration of divided doses of calomel.

HEART TIRE

It is now recognized that any infection can cause weakness and degeneration of the heart muscle. The *Streptococcus rheumaticus* found in rheumatic joints is the cause of such heart injury in rheumatism. That prolonged fever from any cause injures the heart muscle is well known, and cardiac dilatation after severe illness is now more carefully prevented. It is not sufficiently recognized that chronic, slow-going infection can injure the heart. Such infections most frequently occur in the tonsils, in the gums, and in the sinuses around the nose. Tonsillitis, acute or chronic, has been shown to be a menace to the heart. Acute streptococcic tonsillitis is a very frequent disease, and the patient generally, under proper treatment, quickly recovers. However, tonsillitis in a more or less acute form, sometimes so mild as to be almost unnoticed, probably precedes most attacks of acute inflammatory rheumatism. Chronically diseased tonsils may not cause joint pains or acute fever, but they are certainly often the source of blood infection and later of cardiac inflammations. The probability of chronic inflammation and weakening of the heart muscle from such slow-going and continuous infection must be recognized and the source of infection removed.

The determination of the presence of valvular lesions is only a small part of the physical examination of the heart. Also, too readily is the heart eliminated from consideration as the cause of the general disturbance because murmurs are not heard. A careful decision as to the size of the heart will often show that it has become slightly dilated and is a cause of the general symptoms of weakness, leg-weariness, slight dyspnea, epigastric distress, or actual chest pains. In many such cases the patients are treated for gastric disturbance because there are some gastric symptoms. There is no question but that gastric flatulence or hyperacidity or a large meal causing distention of the stomach may increase the cardiac disturbance, and the cardiac disturbance may be attributed entirely to indigestion, but treatment directed toward the stomach, while it may ameliorate some of the symptoms, will not remove the cause of the symptoms.

When an otherwise apparently well individual begins to complain of weariness, perhaps drowsiness in the daytime and sleeplessness at night, or his night's sleep is disturbed, or he has feelings of mental depression, or he says that he "senses" his heart, perhaps for the first time in his life, with or without any edemas of the feet and legs, with or without any pains referred to the heart or heart region, we should presuppose that there is a weakening of the heart muscle until we have, by careful examination, excluded the heart as being the cause of such disturbance.

Although constantly repeated in books on the heart and articles on cardiac pain, it still is often forgotten that pain due to cardiac disturbance may be referred to the shoulders, to the upper part of the chest, to the axillae, to the arms, and even to the wrists, to the neck, and up into the head, and into the upper abdomen. It is perhaps generally auricular disturbance that causes pain to ascend, but disturbances of the ventricles can cause pain in the arms and in the region of the stomach. Not infrequently disturbances of the aorta cause pain over the right side of the chest as well as up into the neck. Real heart pains frequently occur without any valvular lesion, and also, as necropsies have shown, without sclerosis of the coronary vessels.

While angina pectoris is a distinct, well-recognized condition, pains in the above-mentioned regions, especially if they occur after exertion or after mental excitement or even after eating (provided that a real gastric excuse has been eliminated), are due to a disturbance of the heart, generally to an overstrained heart muscle or to a slight dilatation. Too much or too little blood in the cavity of the heart may cause distress and pain, or an imperfect circulation through the coronary arteries and the vessels of the heart, impairing its nutrition or causing it to more readily tire, may be the cause of these cardiac pains, distress, or uncomfortableness.

So frequently is the cause of these pains, disturbances and weakness overlooked and the stomach or the intestines treated, or treatment is aimed at neuralgias, rheumatisms or rheumatic conditions, that a careful examination and consideration of the part the heart is playing in the causation of these symptoms should be made.

The treatment required for such a heart, unless there is some complication, as a kidney complication or a too high blood-pressure or arteriosclerosis (and none of these causes necessarily prohibit energetic cardiac treatment) is digitalis. If there is doubt as to the condition of the cardiac arteries, digitalis should be given in small doses. If it causes distinct cardiac pain, it is not indicated and should be stopped. If, on the other hand, improvement occurs, as it generally does, the dose can be regulated by the results. The minimum dose that improves the condition is the proper one. Enough should be given, and not too much. Before deciding that digitalis does not improve the condition (provided it does not cause cardiac pain), the physician should know that a good and efficient preparation of digitalis is being taken. Strychnin will sometimes whip up a tired heart and tide it over periods of depression, but it is a whip and not a cardiac tonic. While overeating, all overexertion, and alcohol should be stopped, and the amount of tobacco should be modified, there is no treatment so successful as mental and physical rest and a change of climate and scene with pure air.

Many individuals with these symptoms of cardiac tire think that they are house-tired, shop-tired, or office-tired, and undertake physical exercise, such as walking, climbing, tennis playing or golf playing, to their injury. Such tired hearts are not ready yet for added physical exercise; they should be rested first.

The treatment of this cardiac tire is not complete until the tonsils, gums, teeth and the nose and its accessory sinuses are in good condition. Various other sources of chronic poisoning from chronic infection should of course be eliminated, whether an uncured gonorrhea, prostatitis, some chronic inflammation of the female pelvic organs, or a chronic appendicitis.

Longcope[1] has recently shown that repeated, and even at times one protein poisoning can cause degeneration of the heart muscle in rabbits. Hence it is quite possible that repeated absorption of protein poisons from the intestines may injure the heart muscle as well as the kidney structure; consequently, in heart weakness, besides removing all evident sources of infection, we should give such food and cause such intestinal activity as to preclude the absorption of protein poison from the bowels.

CHRONIC APPENDICITIS?

Many patients with a condition diagnosed as chronic appendicitis, when operated on, are not relieved of their pain, constipation, and general abdominal discomfort. In many cases, with what seems to be positive evidence, both by history and physical signs, of a subacute or chronic appendicitis, the appendix is found normal. In many other cases, the diagnosis is found correct, and relief follows operative removal. The fact still remains, however, that a certain large percentage of appendectomized patients disappoint their physicians by continuing to have pain, which we helplessly attribute to "operative adhesions" and which we "think" will gradually subside.

The diagnosis of chronic appendicitis, like that of many other conditions, should be made only by exclusion. Gallbladder disturbance, prolapsed right kidney, and ovarian inflammation must all be excluded, if possible. Adhesions and bands in the appendix region may perhaps be included in a diagnosis of chronic appendicitis, although a better phrase would be "chronic disturbance in the appendix region." An insufficient ileocecal valve, or an enlarged and movable cecum, as first pointed out by Blake[2] may be the cause of such symptoms as constipation, gas, and distention.

The following should be the rule of procedure before operation is done for chronic pain and disturbance in the right lower abdomen:

1. Careful physical examination should be made to exclude if possible gallbladder, kidney, ovarian, or pelvic causes of the right abdominal disturbance.
2. Carefully studied bismuth pictures of the intestines should be taken.

It should be recognized also that many times no conclusion as to the exact conditions in this region can be made until the abdomen is opened. At the operation the gallbladder, the right kidney, the right ovary and tube should all be carefully studied; bands and adhesions should be sought for and broken up, if possible. Also, it may be wise to operate on a cecum for ileocecal valve insufficiency, or for an enlarged pendant cecum. At least these conditions cause symptoms, and many times proper surgical treatment at the time of the primary operation obviates the necessity of a secondary operation.

The main point of this article is that it is often not sufficient, with chronic pain in the lower right abdomen, to remove the appendix, however abnormal it may be found. Especially if the appendix is found normal (though of course it should be removed), the other conditions that cause abdominal disturbance should be investigated and surgically treated.

New and Nonofficial Remedies

The following additional article[1] has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Its acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

MERCURIALIZED SERUM, Mulford.—A solution of mercuric chloride in normal horse serum, diluted with physiologic sodium chloride solution.

Actions and Uses.—Mercurialized serum, Mulford, is proposed for the treatment of syphilis, particularly the cerebrospinal type. It is an attempt to produce a preparation which, while therapeutically active, possesses comparatively low toxicity and slight local irritative action, and which consequently is adapted to intraspinal use and can be used intravenously without danger of phlebitis.

Dosage.—Intraspinally, 30 Cc. of a solution, the dose containing the equivalent of 0.0013 Gm. (1/50 grain) mercuric chloride, increased, when tolerance is established, to 30 Cc. of a stronger solution, the dose containing the equivalent of 0.0026 Gm. (1/25 grain) mercuric chloride. Intravenously, 2 Cc. of a solution, the dose containing the equivalent of 0.0055 Gm. (1/12 grain) mercuric chloride, increased, if indicated, to 8 Cc. of the same solution, the dose containing the equivalent of 0.022 Gm. (1/3 grain) mercuric chloride.

The H. K. Mulford Company, Philadelphia, Pa. No. U. S. patents or trade-marks.

Mercurialized Serum, Mulford, No. 1.—Each package contains one 30 Cc. ampule, containing the equivalent of 1.3 mg. (1/50 grain) mercuric chloride, with rubber tubing and an intraspinal needle.

Mercurialized Serum, Mulford, No. 2.—Each package contains one 30 Cc. ampule containing the equivalent of 2.6 mg. (1/25 grain) of mercuric chloride, with rubber tubing and an intraspinal needle.

Mercurialized Serum, Mulford, No. 3.—Each package contains ten 30 Cc. ampules, each containing the equivalent of 1.3 mg. (1/50 grain) mercuric chloride, with rubber tubing and an intraspinal needle.

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Mercurialized Serum, Mulford, No. 5.—Each package contains 8 Cc. mercurialized serum, Mulford, containing the equivalent of 22 mg. (1/3 grain) of mercuric chloride in a syringe graduated in fourths, with needle.

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Mercurialized serum, Mulford, is prepared by adding to a solution of mercuric chloride sufficient normal horse serum to dissolve the precipitate first formed and then diluting to the desired volume with physiologic sodium chloride solution.

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[1] Longcope, W. T.: The Effect of Repeated Injections of Foreign Protein on the Heart Muscle, Arch. Int. Med., June, 1915, p. 1079.

[2] Blake, Joseph A.: Ann. Surg., May, 1912.

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SATURDAY, OCTOBER 2, 1915

OBJECTIONABLE FEATURES OF GARBAGE DISPOSAL

In almost every large community there are plants for the disposal of garbage and offal; they represent a feature of the conservation processes which economic conditions have made necessary. The work includes the recovery of grease and the manufacture of tankage, a product at first used solely as a fertilizer but now beginning to enter into the feed of the domestic animals. The processes are not infrequently attended with the production of odors and sometimes of dust of a disagreeable nature, leading to complaints and raising questions of public hygiene and comfort. Where waste-disposal engineers are not available, the expert advice of physicians is drawn on. Testimony is sought as to the alleged nocuous or innocuous character of the subject of complaint; but, owing to the meager character of the information on this topic possessed by most of us, the outcome of the testimony is often quite contradictory.

Some of the offensive odors from the fat rendering or reduction plants originate from the raw "green" garbage. These odors, as well as certain others arising in the manipulations, are of a rather local nature. Other odors from some of the treating methods may be far more objectionable in that they are capable of causing discomfort several miles away. How to avoid or counteract these difficulties in the economic handling of large quantities of very low grade materials, particularly in the neighborhood of such places as Chicago and New York, is a problem that has taxed the ingenuity of many experts. The Central Testing Laboratory of New York City has lately made a chemical study of the nature of the odors and dust in garbage reduction plants and also the present and possible means of treating them.[1] In the reduction works located near to inhabited sections, garbage must be transported in closed scows or cars; the handling of the garbage, both raw and in process, and other obnoxious treatments should properly be carried out inside of buildings in which the odors can be properly disposed of. In many cases the ventilating air can be drawn through "scrubbers," which are devices for washing the gases with water to dissolve or retain some of the objectionable constituents. Afterward this partly purified air can be passed through devices for scenting it with wood-tar oils or coal-tar. Systems of this nature are successfully used in treating packing-house air. For many persons the sense of smell seems to be the guardian of health, so that the "covering up" or substitution or confusion of odors is quite as comforting as the more rational elimination or destruction of the offending respiratory invader.

In the manufacture of tankage, garbage is necessarily heated in large containers for several hours, usually with the aid of live steam. It is the vent gases from these "digesters" that have odor of more than local importance. According to Mahr and Kraft,[1] the mechanically carried over substances removed by the condensers are principally mineral matter, fats and fatty acids. The volatile substances in the vent gases which are condensable or absorbable in water include alcohol, acetic acid, carbon dioxid, essential oils and sulphur compounds. Of these constituents, the latter two are important from the standpoint of odor. The extremely nauseating odor of the uncondensable vent gases appears to be due to sulphur compounds and other nonsulphur-containing substances, possibly essential oils.

In some plants, very high temperatures are used for destroying the odors and uncondensable vent gases from garbage digesters. Thus they are sometimes sent through the fires required in the devices for drying the tankage. A method of deodorizing packing-house air by means of sulphur dioxid has been said to give good results. According to Mahr and Kraft, it is possible that the sulphur dioxid, formed by heating the vent gases, could be reconducted to the jet condensers, and in this way a deodorization of the condenser water brought about.

However efficient the elimination of the nauseous products of the garbage reduction processes themselves may be, they do not exclude the necessity of maintaining in a cleanly way all plants where garbage is collected, stored and treated. Winds passing over a filthy plant may take up considerable residual odor, even when no garbage is present or in process. The New York experts emphasize the fact that to eliminate this source of trouble, garbage plants should be of the most sanitary construction to permit washing and prevent material lodging in crevices. The cement of concrete floors is readily attacked by the "stick liquor" and garbage, and wooden floors are sometimes put down. As may be easily understood, these soon become of a very objectionable nature and cannot be well cleaned. A concrete floor with a frequently renewed tar coat or one of asphalt would be a great improvement on the wood.

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[1] Mahr, H. W., and Kraft, A. C.: Investigations on the Nature and Elimination of Odors and Dust from a Garbage Reduction Plant, Jour. Indust. and Engin. Chem., 1915, vii, 778.

To the layman it must seem strange that until recently so little serious study has been given to problems which involve inevitable sources of discontent and occasions for remonstrance in our larger cities. As in the case of the smoke nuisance, the authorities have been content to obey the law of inertia until popular demand has precipitated an immediate and hasty examination of phenomena which have long demanded more careful and detailed scientific investigation. We have become accustomed to a conventional shabby treatment of applied science as a factor in community life and economic progress, but this sometimes ceases to be a joke.

THEORY AND PRACTICE

In his presidential address before the British Association for the Advancement of Science on the subject, "The Common Aims of Science and Humanity," Prof. Arthur Schuster[1] discusses the age-old ever-recurring problem of the comparative value of theory and practice for accomplishment in life. Much is said in our time of the difference between the academic scientist and the man of affairs. Professor Schuster speaks of England, but some of his remarks apply very aptly to conditions in America; for instance, he says that "sometimes we are recommended to hand over the affairs of the nation to men of business; sometimes we are told that salvation can only be found in scientific methods." An analysis of these type characterizations does not reveal the opposition that is often supposed to exist between them. Schuster justly insists that "every method that leads to a correct result must be called a scientific method," and that therefore when "one man calls for the conduct of affairs on 'business lines' and the other clamors for scientific methods, they either want the same thing or they talk nonsense."

This discussion is of particular interest to physicians because of the unending difference of opinion as to the relative value of theory and practice in medical education. In this, as in everything else, truth lies not at one of the extremes, but between them. Schuster says:

"The most fatal distinction that can be made is the one which brings men of theory into opposition to men of practice, without regard to the obvious truth that nothing of value is ever done which does not involve both theory and practice; while theory is sometimes overbearing and irritating, there are among those who jeer at it some to whom Disraeli's definition applies: 'the practical man is the man who practices the errors of his forefathers.' With refined cruelty Nemesis infects us with the disease most nearly akin to that which it pleases us to detect in others. It is the most dogmatic of dogmatics who tirades against dogma, and only the most hopeless of theorists can declare that a thing may be right in theory and wrong in practice."

"Common sense" is another stereotyped expression which Schuster is inclined to challenge. Huxley is often quoted as declaring that science is organized common sense, but Schuster cannot find a definition of common sense that fits the phrase. "Sometimes the word is used as if it were identical with *uncommon* sense, sometimes as if it were the same thing as common *nonsense*." He suggests that in its best aspect it is that faculty which recognizes that the obvious solution of a problem is frequently the right one. It must not be forgotten, however, that obvious explanations often are quite wrong and that any scientific reason to the contrary, when supported by good observations, makes the common-sense explanation of no value. This is true even with regard to things as to which there is almost universal agreement among mankind. The obviousness of the sun going round the earth has no weight when it comes to the scientific demonstration that the earth goes round the sun. The practical man, proud of his common sense, comes around to the theorist's view in this matter when he knows enough.

All advance in science comes from a combination of theory and practice, or rather, from a successful application of theory to practice. In this way what seemed to one generation the climax of theory becomes to the next generation only a very obvious practical scientific advance. There is no real opposition between correct theory and correct practice. Practice cannot dispense with theory, and theory is sure to become unreal and fallacious when not reduced to practice in some way. The greatest discoverers — Galileo, Pasteur, Kelvin, Lister and practically all the great discoverers in medicine — are always theorists and men of action as well. The opposition between theory and practice is a myth, fostered largely by the bungling theorist who is unable to put his theories into practice, and by the bungling "practical man" who is unable to express the theory which underlies his practice.

THE PANCREAS, AND SUGAR IN THE BLOOD

In recent discussions of the causes of diabetes, two theories have gained prominence. The Journal has referred to them[1] as the over-production and non-utilization theories, respectively, using these terms in relation to the sugar factor, which naturally forms the essential theme for consideration in this disease. Whether or not it is agreed that the disturbance in the carbohydrate metabolism appears to represent a loss of power of oxidizing glucose, there is one fundamental fact about which no difference of opinion can exist.

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[1] Schuster, A.: Science, Sept. 24, 1915, p. 397.

[1] The Metabolism in Experimental Diabetes, editorial, The Journal A. M. A., Sept. 4, 1915, p. 878.

In diabetes, the sugar content of the blood is higher than normal and is variable in amount, and, when it is sufficiently high, the glucose escapes through the kidneys into the urine. Hyperglycemia precedes the glycosuria.

At the department of physiology and pharmacology of the Rockefeller Institute for Medical Research, Kleiner and Meltzer[2] have made a series of experimental observations that throw a somewhat different light on the subject of diabetes. Apparently certain striking differences in behavior occur between normal animals and those rendered diabetic by excision of the pancreas, a procedure which is familiarly known to result in glycosuria. Under physiologic conditions, sugar is liberated into the circulation from the liver, where it is stored as glycogen. If this function is imitated in an indirect way by the infusion of sugar solution directly into the circulation, the carbohydrate speedily finds its way out of the blood in some manner or other. Even a very large surplus of glucose will disappear from the blood stream under these circumstances. When the amount is large, part of the sugar is excreted through the kidneys, and part finds its way into the tissues. Before long the glucose content of the blood reaches nearly the same level which it had before the injection. Even in the absence of the kidney function, in nephrectomized animals, for example, the glucose returns to the previous level in about the same length of time, affording a striking example of the ability and readiness of the circulation of a normal animal to rid itself of a large surplus of sugar.

Quite different is the outcome of the introduction of sugar into individuals from which the pancreas has been removed. In such cases the blood is strongly hyperglycemic even before the sugar infusions. Kleiner and Meltzer found here, in contrast with what has just been recited, that the glucose content of the blood is not reduced promptly after the introduction of sugar. Apparently the removal of the pancreas interfered with the power of the circulation to rid itself readily of a surplus of glucose. The possible ability of the liver to provide the circulation with a greater supply of glucose in the absence of the pancreas can certainly be no important factor in these results. The investigators believe these new experiments to show that, in the presence of the pancreas, the circulation rids itself easily of intravenously introduced glucose, but that it is unable to do so satisfactorily in the absence of the pancreas. On the basis of these facts, Kleiner and Meltzer ask whether it is not plausible to assume, further, that the pancreas exerts exactly the same influence when the glucose in the circulation is being supplied in some other manner than by a buret into a vein — by the liver, for instance — through its connections with the circulation. In other words, do not these experiments make the assumption plausible that pancreatic hyperglycemia is due to the fact that, in the absence of the pancreas, the circulation is unable to dispose properly of the dextrose which it receives in normal amounts from the liver?

This is not all. The actual participation of the pancreas in the normal regulatory function is further suggested by the fact that the ability of the circulatory apparatus of animals to get rid of a surplus of glucose injected intravenously — a function which is impaired in the absence of the pancreas — can be temporarily restored by an intravenous injection of a pancreatic emulsion. Furthermore, such a procedure is also capable of reducing the hyperglycemia due only to depancreatization to a normal level of the sugar content of the blood.

It is too early to speculate extensively on the nature of the factors here involved. These interesting observations add one more link to the chain of evidence regarding the conspicuous performance of the pancreas in the disposal of sugar in the organism. Again, it becomes obvious that such effects of the pancreas must be of a chemical rather than a nervous character.

THE SURGICAL TREATMENT OF NEPHRITIS

Since Reginald Harrison, in 1896, reported an unexpected improvement in the symptoms of acute and subacute nephritis after incision of the renal capsule, operation has been performed with apparent success in many cases of nephritis of various types. Ruge,[1] who carefully reviews the literature, points out that the examination of kidneys exposed in these operations, as well as recent experimental work, in some ways have revolutionized our ideas about nephritis. Thus, it has been established that albuminuria, even when accompanied by casts and red blood cells, does not necessarily indicate nephritis as the term is understood usually, for purely mechanical factors may so interfere with the renal filter as to produce the urinary picture of nephritis. Conversely, in chronic nephritis as determined by microscopic examination, all symptoms may be absent, or a severe hemorrhage or colic may be the first and indeed the only sign. Of especial interest are observations to the effect that acute infection may develop in one kidney, or part of one kidney, and later be followed with injury to the healthy tissue by so-called nephrotoxic substances. The results of experiments indicate that increased blood pressure is not produced by mechanical changes in the renal vessels, but is probably due to resorption of degenerating renal epithelium.

In acute nephritis an explanation of the good results of capsular incision and capsular removal is not difficult, since pressure on swollen and inflamed tissue is relieved. After injecting diuretic solutions in cats Gawrilow obtained from two to four times as much blood in the renal vein, and from two to four times as much urine was collectible from the decapsulated as from the untouched kidney. The pressure of the capsule seems to establish a vicious cycle by increasing the circulating disturbance and thus causing even greater injury to the epithelium. In experimental toxic nephritis in dogs, Onorato reports recovery in five out of eight cases in which decapsulation was performed, while all the animals not operated on died. If these observations are in harmony with the conditions in man, certainly surgical treatment is indicated in all acute conditions in which conservative treatment does not succeed. In eclampsia, the variable severity of symptoms renders difficult the comparison of statistics. The general attitude of the observers now seems to favor decapsulation in severe cases. Sippel states that the operation is indicated when threatening symptoms of severe nephritis remain after the uterus has been emptied. After ureteral catheterization the kidney which shows greater injury should be treated. If there is no difference, both may be decapsulated if the condition of the patient permits. The operative mortality is relatively slight. Convulsions, it is said, usually stop at once and coma rapidly disappears.

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[2] Kleiner, I. S., and Meltzer, S. J.: Retention in the Circulation of Dextrose in Normal and Depancreatinized Animals, and the Effect of an Intravenous Injection of an Emulsion of Pancreas upon this Retention, Proc. Nat. Acad. Sc., 1915, i, 338.

[1] Ruge, E.: Ueber den derzeitigen Stand einiger Nephritis-Fragen und der Nephritis-Chirurgie, Ergeb. d. Chir. u. Orthop., 1913, vi, 503.

In nephritis following acute infections surgical treatment has not come into vogue, probably because surgeons do not see many such cases. Operation is held to be indicated when anuria or uremia point toward an increase in intrarenal pressure. Pousson, in 1904, reported operations in 37 postscarlatinal cases, with 6 deaths. Since then nearly twice as many cases at least have been reported. Of course, nephrotomy in such cases is indicated when the presence of an abscess is suspected. When bacterial emboli cause diffuse infiltration or abscess formation, nephrotomy, always preceded by ureteral catheterization, is the operation of choice if the condition of the kidney does not demand its removal. Kümmell has reported 28 cases, 17 nephrectomies and 11 nephrotomies with only 3 deaths. Tenderness and muscular defense in these forms of nephritis are important signs.

The good effects of decapsulation in chronic nephritis are harder to explain. Experiments indicate that in certain cases collateral circulation may be established. That the consequent maintenance of function is at best a temporary one, may explain the conflicting reports. Clinically, improvement and recovery have been noted in many instances. Guiteras, in 1904, reported decapsulation in 120 cases of chronic nephritis, with clinical recovery in 16 per cent., improvement in 40 per cent., and death in 23 per cent. In Edebohls' 102 cases, reported in 1909, 49 patients died within five years, 33 were permanently cured, 11 improved, and 6 remained uninfluenced by operation. Kümmell, in 1912, reported 26 cases with definite improvement in 14. In general, it would seem that when long internal treatment shows slight or no improvement, or if the condition grows worse, decapsulation might be tried. Anuria and uremia in chronic nephritis, in the opinion of most authors, are favorably influenced by surgical treatment. Thus, Uteau found that, in 300 cases of anuria under various methods of treatment, 75 per cent. of the patients treated surgically before the fourth day and 58 per cent. so treated between the fourth and sixth day recovered. Decapsulation, usually unilateral, seems to be the operation of choice.

In renal hemorrhage, considered most commonly as caused by chronic nephritis, differential diagnosis is difficult. If conservative measures fail operation is indicated. While there is no agreement as to the operation of choice, nephrotomy is preferred, according to Ruge, when the diagnosis is in doubt. Kümmell has reported 16 cases, 4 nephrectomies, and 8 nephrotomies, and 4 decapsulations, with one death.

In the nephralgia of chronic nephritis, often combined with hemorrhage, other signs may be absent. The colic which is not at all characteristic is probably due to capsular compression of a swollen kidney. The diagnosis is usually established by exposure and section of the kidney with examination of the pelvis. Kümmel has reported 13 cases, 4 decapsulations and 9 nephrotomies, in 12 of which the patients afterward remained free from pain as long as observed.

From what has been said it appears that it is justifiable to center interest on this comparatively new field of surgery because it awakens hope of benefiting conditions which respond but little to internal treatment, and because of the light it throws on the pathology of nephritis.

DEFENDING THE GREAT AMERICAN FRAUD

Most of the fellows and members of the American Medical Association are aware of the fact that the Chattanooga Medicine Company and its chief owner, John A. Patten, manufacturers of Wine of Cardui, have sued (1) the American Medical Association and the editor of The Journal for $300,000, (2) Dr. Oscar Dowling, President of the Louisiana State Board of Health, for $25,000 and (3) *Harper's Weekly* for $200,000. Comparatively few realize, however, that the "patent medicine" interests of the country are spending money lavishly in a desperate effort to win a suit on whose outcome, they consider, depends the very life of the nostrum business. We have, at different times, given our readers an insight into some of the methods pursued in this case, especially in connection with the employment of detectives for the apparent purpose of manufacturing "evidence."

To refresh the memory it is but necessary to refer to the case of the Limestone County (Ala.) Medical Society.[1] There it was strongly intimated that not only the society, but also the individual members would be sued if the resolutions passed by the society condemning the methods of the Chattanooga Medicine Company were not rescinded. The episode of Detective Smith is also in point. A man who posed as a journalist called on Mr. Samuel Hopkins Adams in New York and on Dr. Bolduan of the New York Health Department. He professed to be seeking information for an article he wished to write to show how prohibition in the South was driving the people of that territory to use alcoholic "patent medicines." Smith came to Chicago and, giving as his references the names of Mr. Adams and Dr. Bolduan, attempted to get an interview with the member of The Journal staff who has charge of the Propaganda Department. Failing to get the interview he left town, stating that he could be reached by mail in Indianapolis, but actually going to Chattanooga. Then there was Barron, who posed as a "western business man" stopping in Chattanooga. It was he who assiduously cultivated the friendship and hospitality—later betraying them—of the Chattanooga pastor who lost his pastorate after he had dared lift his voice against the iniquity of the Wine of Cardui traffic.

But this by the way. The object of this comment is to call attention to an interesting article in the current (October 2) issue of *Harper's Weekly*, wherein are described the activities of some of the horde of detectives employed in this case. We suggest that physicians who have the interest of the public health and the medical profession at heart buy a copy of this week's *Harper's*. Under the title, "Patten in Pink Whiskers," the story gives in detail the experience of "Operative No. 48," a detective who threw up his job in disgust at the work he was expected to do for the "patent medicine" interests. How the private papers of the secretary of the Limestone County Medical Society were ransacked; how the minutes of that society were purloined and copied; how the Chattanooga pastor was dogged by detectives and private conversations taken down in shorthand by stenographers hidden from view—these are some of the things described by "Operative No. 48" in the *Harper* article. Read in connection with The Journal's articles on the Wine of Cardui case,[1] it gives a very good idea of the methods to which the "patent medicine" interests will descend in their attempt to protect their noisome brood and to discredit the medical profession.

Those who in the past have built up huge fortunes by swindling the sick, sense the downfall of their business that is bound to follow the publicity that has been given it by the American Medical Association and other agencies. Really the Wine of Cardui cases are not simply "Chattanooga Medicine Company *vs.* The American Medical Association, Oscar Dowling and *Harper's Weekly;* they are "The Great American Fraud *vs.* The Medical Profession and the Public."

Current Comment

NEUTRALITY REGULATION DURING PREGNANCY

In a recent discussion of the subject of acidosis,[1] attention was called to the seemingly paradoxical statement that, despite the undue production of acid substances which goes on in certain disturbances of metabolism, of which diabetes is a classic example, the regulatory power of the organism nevertheless prevents any marked changes in the reaction of the circulating blood. Pregnancy furnishes a more physiologic instance of an acid-forming tendency provided by nature. It is attended by symptoms which are currently regarded as indicative of a degree of acidosis; and inasmuch as this ordinarily falls within the range of what may be regarded as a fairly normal function, the acidosis of pregnancy should afford an excellent opportunity to study the relative participation of the physiologic regulatory devices for preserving neutrality in the organism. These include, as we have pointed out before, an increased production of ammonia from protein products to neutralize the acid products, a decreased concentration of carbon dioxid in the blood (and alveolar air) owing to its displacement through the agency of the augmented acid; and an increased elimination of acid radicals by way of the kidneys. Which, if any, of these factors are brought into play under the conditions of pregnancy? Hasselbalch and Gammeltoft[2] of Copenhagen have carefully investigated this question by making comparisons of the various functions concerned in the same persons during and after pregnancy. It was found that the hydrogen ion concentration of the blood of gravid females is not different from that of other nongravid individuals of either sex. Whatever unusual production of acid may arise as the outcome of the pregnancy is evidently promptly taken care of by the regulatory mechanism. This is in part accomplished by the ammonia-producing activities, for the percentage output of ammonia in the urine is somewhat higher in the pregnancy period. More striking, however, is the decrease in the tension of carbon dioxid in the blood, which seems to serve in larger measure to prevent any rise in the true acidity. The increased genesis of acid substances, whatever they may be and however produced, is compensated by the expulsion of carbonic acid gas through the lungs and a resulting lower tension thereof in the blood. A fixed acid replaces one more readily expelled. Altered respiration plays a part in the process. The stability or constancy of the reaction of the blood under conditions such as disease and pregnancy, which represent pronounced departures from the usual routine of acid formation in the body, is one of the most interesting facts of physiology. Highly sensitive tissues like the nervous structures are thus spared the irritation of even slight alterations of hydrogen ion concentration. Failure or insufficiency of the regulation brings severe manifestations of disease. This seems to be the case, according to a few experiences of the Danish investigators, in that puzzling condition described as eclampsia.

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[1] This matter and other articles on the Wine of Cardui case are reprinted in the pamphlet "Female-Weakness Cures and Allied Frauds," price 10 cents, published by the American Medical Association.

[1] Acidosis and the Reaction of the Blood, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1114.

[2] Hasselbalch, K. A., and Gammeltoft, S. A.: Die Neutralitätsregulation des graviden Organismus, Biochem. Ztschr., 1915, lxviii, 206.

THE SURVIVAL OF BACILLUS BULGARICUS IN THE ALIMENTARY TRACT

One aim of the procedure which has somewhat tauntingly been termed the sour-milk therapy is to establish the predominance of organisms of the *Bacillus bulgaricus* type in those parts of the intestine in which the products of their activity will repress undesirable putrefactive changes in the alimentary contents. The group of organisms which includes the one specially recommended and found in fermented milk is distinguished by the ability of its members to grow in mediums containing considerable amounts of acid. In a widely quoted research, Herter and Kendall[1] found that by feeding a monkey for two weeks exclusively on milk fermented with *Bacillus bulgaricus* (but containing also some yeasts) it was possible to maintain an acid reaction throughout the digestive tract. The acid reaction was more pronounced above the ileocecal region than at this region or below it. The acidity decreased progressively from the ileocecal region to the anus. Lactic acid was detectable at every point in the digestive tract that was tested, the reaction growing less marked below the ileocecal region. Exclusive feeding for two weeks with milk fermented with *Bacillus bulgaricus* failed to establish the predominance of this organism in the ileocecal region or in the large intestine. In the latter situation, the number of bacilli of this type was relatively small and decreased toward the anus. Thus, in the regions characterized by most active putrefaction, the lactic acid bacilli failed to establish themselves in relatively large numbers. The experimental data in this field deserve considerable attention because of the widespread employment of these bacterial cultures along with the diet in American homes, either with or without the sanction of physicians. The latest of numerous contributions, by Dr. Alfred H. Raehe[2] of the Cornell University Medical College in New York City, brings added evidence that the *Bacillus bulgaricus* cannot become adapted to the lower human intestine. It is still quite possible that such an organism might be able to adjust itself to the conditions prevailing in the duodenum and jejunum, but be unable to survive in the lower intestine, and thus be absent from the stools. A limited survival in the upper intestine of monkeys is apparently possible. This, however, does not adequately fulfil the foremost purpose of those who recommend its use to check the growth of putrefactive bacteria.

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[1] Herter, C. A., and Kendall, A. I.: An Observation on the Fate of B. Bulgaricus (in Bacillac) in the Digestive Tract of a Monkey, Jour. Biol. Chem., 1908, v, 293.

[2] Rache, A. H.: A Study of the So-called Implantation of the Bacillus Bulgaricus; Jour. Infect. Dis., 1915, xvi, 210.

THE COLLAPSE IN DIPHTHERIA INTOXICATION

Recent investigations in which exact methods of observation have replaced the clinical guesses of an earlier period make it evident that the haphazard explanations of the circulatory failure and collapse so frequently encountered in diphtheria are not tenable. In so far as they merely charge the heart with some vague disturbance of function, these hypotheses have little in fact to support them. That the vasomotor center is not impaired in diphtheria intoxication may be taken as demonstrated.[1] Two important assumed causative factors are thus excluded. In the pharmacologic laboratory at the University and Bellevue Medical College, New York, Myers and Wallace[2] have examined the possibilities of involvement of tissues other than the heart or vasomotor center. The reactions of the larger blood vessels in intoxicated animals were found to respond to stimulation in essentially the same way as did the arteries of unpoisoned subjects. It may be concluded from this that neither the vasomotor mechanism nor the muscle tissue in the larger arteries is affected to an appreciable extent by the diphtheria toxin. The prominence of gastro-intestinal symptoms in animals poisoned with the products of the diphtheria bacillus and the pathologic picture of the small intestine directed attention to the possible involvement of this region. The intestinal epithelium shows early coagulation necrosis; in the liver the capillaries show a widespread destruction; there is marked congestion in the terminal arteries of other abdominal organs. Myers and Wallace emphasize the significance of these structural changes in the different organs and contend that the engorgement of the mesenteric vessels would offer a sufficient explanation for the low blood pressure. An examination of the intestine as an independent organ has shown, further, that its blood vessels fail to respond in the normal way to the stimulus of drugs like epinephrin, after the subject has been subjected to the intoxication. From such facts it is concluded that the chief factor concerned in the circulatory collapse in poisoning from the diphtheria toxin is the arteriole and capillary dilatation.

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[1] Porter, W. T., and Pratt, J. H.: The State of the Vasomotor Center in Diphtheria Intoxication, Am. Jour. Physiol., 1914, xxxiii, 431. The Nature of the Circulatory Collapse in Diphtheria Intoxication, Current Comment, THE JOURNAL A. M. A., July 4, 1914, p. 37.

[2] Myers, H. B., and Wallace, G. B.: The Vascular Response in Poisoning from Diphtheria Toxin, Proc. Soc. Exper. Biol. and Med., 1914, xii, 43.

Breast Feeding.—Efforts to control the flow of milk which do not take into account the periodic character of its secretion are likely for the most part to end in failure. To this fact must be attributed much of the strength of a very widespread conviction that lactation is a most unreliable function. In the course of many observations from which these notes were constructed, no fact stood out with more prominence than the completely erroneous nature of this belief.—Harold K. Waller, M.B., *Jour. Obst. and Gynec., Brit. Emp.*, February, 1915.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Survey of Feebleminded of the State.—The Arkansas Commission for the Feebleminded has received notice from the Eugenics Record Office, Cold Spring Harbor, N. Y., that Dr. Harry W. Crane of that institution has been designated to carry on that part of the survey of the feebleminded in Arkansas, in which the Eugenics Record Office had previously agreed to assist. Dr. Crane arrived October 1 and began the study and classification of the inmates of the state charitable and penal institutions. The next work to be taken up will be a survey of the public schools to ascertain how many and what percentage of the children reported as backward are really mentally defective.

IDAHO

Medical Board to Meet.—The State Board of Medical Examiners will hold its next session in Wallace, October 5 and 6.

Personal.—Dr. George E. Hyde, formerly medical superintendent of the Idaho Insane Hospital, Blackfoot, has moved to Salt Lake City.——Dr. J. Eugene S. St. Jean, Wallace, had a narrow escape from injury when his automobile went over a 50-foot embankment at Mullan. He escaped, however, with only a bruise of the right knee.

Society News.—A medical society has been organized for the five counties of Twin Falls, Gooding, Lincoln, Minidoka and Cassia. At the meeting for organization at Twin Falls, the committee in charge was composed of Drs. Joseph Fremstad, Burley; Joseph N. Davis, Kimberly; and Drs. A. H. Dunn, Truman O. Boyd and Hubert W. Wilson, Twin Falls.——At the meeting of the Tri-County Medical Society for Blain, Gooding and Lincoln counties held in Hailey, recently, Dr. Simons, Wendell, was elected president; Dr. A. A. Higgs, Soldier, vice president, and Dr. Charles F. Zeller, Shoshone, secretary-treasurer.

ILLINOIS

Opening of Schools Postponed.—September 20, at DuQuoin, the opening of the schools was again postponed on account of the development of several new cases of diphtheria. The disease had prevailed for several weeks in the community and a number of deaths had occurred.

Foot and Mouth Disease.—LaSalle, Bureau and Putnam counties were placed under quarantine, September 25, on account of foot and mouth disease having been found in two herds in LaSalle County.——On account of the presence of foot and mouth disease on the Louis F. Swift farm in Lake County, the deer on this farm were killed, September 28.

Typhoid Fever.—Typhoid fever is reported to be epidemic in Menard County where 110 cases have been reported. The secretary of the State Board of Health has sent two of his assistants and three sanitary engineers to aid in the combat against the disease.——Dr. Patrick M. Kelly, superintendent of the Kankakee State Hospital, has ordered that all the employees and patients in the institution, nearly 4,000 in number, be inoculated against typhoid fever.

Personal.—Dr. John C. Foley and family, Waukegan, and Dr. and Mrs. John L. Taylor and family, Libertyville, returned from an automobile trip to the Pacific Coast and back, September 19.——Dr. John F. Bell, Elgin, was run down by a bicycle, September 15, and sustained severe bruises.——Dr. George A. Zeller, Peoria, alienist of the State Board of Administration, has been appointed a member of the board.——Dr. J. F. Echard, Streator, is reported to be seriously ill in the Streator Hospital with inflammation of the stomach and bowels.——Dr. Clarence A. Wells, Quincy, is made chief beneficiary of Mrs. Nellie A. Ward, deceased.——Dr. Harry L. Kampen has been elected president; Dr. Ralph Graham, vice president, and Dr. Charles P. Blair, secretary-treasurer, of the medical staff of the Monmouth Hospital.——Dr. Chester H. Latham, Pecatonica, who has been seriously ill in St. Anthony's Hospital, Rockford, is reported to be convalescent.

Chicago

Meeting of Society of Medical History.—The Chicago Society of Medical History will meet at the Hotel Sherman, Wednesday evening, October 13. Papers will be read by Dr. Fielding H. Garrison, Washington, D. C., and Dr. Arnold Klebs on Leonardo Da Vinci and Vesalius.

Personal.—Drs. Albrecht Heym, Sydney Kuh and George W. Hall have been appointed members of the attending staff of the Psychopathic Hospital, connected with Cook County Hospital.——Dr. I. N. Miller has moved to Kewanee, Ill.——Dr. Evarts A. Graham, assistant professor of surgery at Rush Medical College, has located at Mason City, Iowa, and has been appointed chief surgeon to the Park Hospital.

INDIANA

New Hospital.—The board of commisioners of Sullivan county have voted to build a hospital in Sullivan.

State Society Meeting.—The Indiana State Medical Association met at the Claypool Hotel, Indianapolis, September 22-24, under the presidency of Dr. Frank B. Wynn, Indianapolis. The following officers were elected: Dr. George F. Keiper, Lafayette, president; Drs. Llon J. Willien, Terre Haute, Albert C. Chenoweth, Winchester, and Walter F. Carver, Albion, vice presidents; Dr. Charles N. Combs, Terre Haute, secretary (reelected) and treasurer. Dr. J. Rilus Eastman, Indianapolis and Dr. Albert E. Bulson, Jr., Fort Wayne, were elected delegates to the American Medical Association. Fort Wayne was selected as the next meeting place, the meeting to be held on the last Thursday and Friday in September, 1916.

Personal.—Dr. Cameron Chamberlin, Indianapolis, is reported to be in a critical condition in the Presbyterian Hospital, Chicago, as the result of a nervous collapse.——Dr. Thomas C. Stunkard, Terre Haute, fractured his right arm above the wrist, while cranking his automobile, September 12.——Dr. Edmond J. Beardsley, Alexandria, was painfully injured September 9, by the fall of an iron awning which inflicted a severe scalp wound.——Dr. Lamar R. Knepple, Kokomo, was operated on in Good Samaritan Hospital in that city for appendicitis, August 31 and is doing well.——Dr. John P. Franz, Indianapolis, was painfully injured in an automobile collision during the past week.——Dr. Harold O. Williams has been elected secretary of the Kendallville Board of Health in place of Dr. Albert G. Coyner, who had been secretary more than twenty years, but who died recently. Dr. Cyrus A. Gardener, Kendallville, has been named in place of Dr. Harold O. Williams on the board of health.

IOWA

Hospital for Cherokee.—At a public banquet held in Cherokee, September 10, it was decided to raise a fund of $50,000 for the erection of a hospital.

Nurses' Home for Hospital.—The Park Hospital, Mason City, has recently purchased for $15,000 a new building for a nurses' home adjoining the hospital.

Wishes to Be Medical Inspector.—Dr. Louis A. Thomas, Red Oak, formerly secretary of the State Board of Control, who has been conducting a health examination of schoolchildren of Red Oak for the last three years, is said to be a candidate for the office of medical inspector of public schools of Des Moines.

Anthrax.—On September 16 it was reported that the danger of the spread of anthrax among cattle from the focus on a farm north of Muscatine had been overcome. The stock had all been given a second dose of a preventive vaccine by Dr. C. J. Hackett, the veterinarian in charge of the situation. The disease had caused the death of a number of cattle on the farm, but it was not allowed to extend to other farms.

Smallpox.—The smallpox which had prevailed at Davenport for the previous ten months was believed to have been eradicated, but the discovery of a case in the Madison School, September 20, by Dr. George M. Middleton, city physician, has again rendered the situation uncertain. A large number of pupils were exposed and radical measures have been taken to prevent the spread of the disease. Vaccination is still being urged.

Case Against Clinton Surgeon Dismissed.—The case of Joseph Knox, a mail carrier of Morrison, Ill., against Dr. David S. Fairchild, Jr., Clinton, in which the plaintiff claimed damages amounting to about $30,000 on the allegation that the Clinton surgeon, who had operated on him for kidney disease, had left a gauze sponge in his body, was closed September 22, by this entry in the Clinton District Court docket: "The case of Knox vs. Fairchild, dismissed; judgment against plaintiff for costs." This entry justifies Dr. Fairchild's contention that the case was absolutely without merit.

Free Medical Service.—Dr. William S. Norton, Muscatine, physician of Muscatine county, has offered to conduct a free clinic on three days of each week for the benefit of the poor of the city. The clinics will be held between 9 and 10 on Monday, Wednesday and Friday mornings and will be open to all patients recommended by the City Welfare Association.——It is announced that free medical service will be at the disposal of the students of the State University, Iowa City, this year. Whenever a student becomes ill, he will be at liberty to visit the hospital or to call a university student, without expense.

Personal.—Dr. Wilton W. McCarthy, Des Moines, who suffered a fracture of the femur in an automobile accident near Ames, September 11, was operated on in Mercy Hospital, Des Moines, September 19.——Dr. Channing E. Dakin, Mason City, has been appointed head physician of the Modern Brotherhood of America, succeeding Dr. George E. Baudry, Atchison, Kan.——Dr. and Mrs. Henry Matthey, Davenport, sailed from Rotterdam for New York on the *Rotterdam*, September 8.——Drs. Fred W. Sallander, and Sidney Maldon, Iowa City, sailed from New York September 6 on the *Noordam*, for London, and expect to enter the military service.——Dr. Sidney G. Hands, Davenport, has been elected treasurer of Scott County Medical Society, succeeding Dr. Theo. W. Kemmerer, Davenport, resigned to accept the position of assistant professor of pathology in the University of Southern California, Los Angeles.

MARYLAND

Typhus in Baltimore.—A second case of typhus fever was reported from the Bayview Asylum, September 18. The patient, a white woman living in East Baltimore, was isolated.

New Laboratory.—Work has begun on the foundation for the five-story building of the Hunterian Laboratory connected with Johns Hopkins Medical School. The new building is located at the corner of Wolfe and Madison Streets, will be 50 by 100 feet, and will cost about $65,000.

Hunner Victor in Suit.—The suit of Mrs. Bertha Stephenson and her husband, Charles Stephenson of Ridgely, Caroline County, against Dr. Guy L. Hunner, Baltimore, to recover $30,000 damages for alleged negligence in the performance of a surgical operation on Mrs. Stephenson, was dismissed September 17, by Judge Soper in the Superior Court.

Hospital Force Organizes for Defense.—The guards and other employees of the Springfield State Hospital have decided to form a provisional battalion for national defense at Sykesville. About sixty of the men are anxious to take the military training and the superintendent has arranged with the Adjutant General of the state to have a sergeant of the State Militia instruct the men at Springfield on alternate Saturdays.

Personal.—Dr. James M. H. Rowland, Baltimore, has been made a member of the Board of Regents of the University of Maryland, to succeed the late Dr. David Street. ——Dr. Fred P. Weltner has been selected to fill the vacancy on the medical staff of the Sheppard and Enoch Pratt Hospital, Baltimore, caused by the resignation of Dr. Burt J. Asper, who will practice in Asper, Pa.——Dr. Samuel J. Fort, Baltimore, has been appointed physician to the State Bureau of Statistics and Child Labor, succeeding Dr. John C. Travers, Baltimore.——Dr. William E. Moseley, Baltimore, was operated on at the Maryland General Hospital, September 16, and is reported to be improving.—— Dr. Frederick C. Warring, Baltimore, who was operated on recently in the Maryland General Hospital, is reported to be convalescen ——Dr. John C. Pound, Baltimore, is reported to be ill with fever.——Dr. William B. Blanchard, chief of the resident staff of the Maryland General Hospital, has resigned.——Fire in the laboratory of Dr. Howard E. Ashbury, Baltimore, September 9, caused damage estimated at several thousand dollars.——Dr. John F. Spearman, formerly of Mercy Hospital, Baltimore, reports that he is on duty in a German line hospital and expects to return to New York in October.——Dr. J. McPherson Scott, Hagerstown, has been appointed chief surgeon of the local staff of the Western Maryland Railroad.——Dr. Herbert E. Zepp, Baltimore, charged with having failed to report five cases of typhoid fever to the Baltimore Health Department, was exonerated and the charge was dismissed as the cases were found to have been reported as required by law.

MINNESOTA

Sanatorium Site Selected.—A site has been chosen for the tuberculosis sanatorium for Roseau and Marshall counties at a point about 5 miles southwest of Holt.

New Hospital Opened.—The Physicians' Hospital, Thief River Falls, erected at a cost of $15,000, was formally opened August 31. The institution has accommodations for twenty-five patients and is provided with up-to-date equipment. The members of the staff are Drs. Herman W. Froehlich, Harvey G. Hieber, Francis H. Gambell, Oscar F. Mellby and Jesse E. Douglass.

Union of Health Bodies.—A movement for merger of the State Sanitary Conference and the Minnesota Public Health Association was begun September 2 at a meeting of the directors of the latter body at Millard Hall, University of Minnesota, at which resolutions expressing approval of the plan, were unanimously adopted. The merger of the two organizations cannot be effected until after January 1 next, on account of a provision in the charter of the conference.

MISSOURI

Physicians' Building.—Contracts have been let for the new physicians' and surgeons' building, three stories in height, to erected at Seventh and Francis streets, St. Joseph.

Hospital News.—A new staff of physicians has been appointed in the Kansas City General Hospital for the hospital and health board.——The Maywood Hospital, Sedalia, was transferred August 24 to the control of the Sisters of Charity of the Incarnate Word.——A meeting of the stockholders of the Southwest Hospital Association, Springfield, was held September 10, at which a proposition was submitted to increase the capital stock from $20,000 to $30,000.

Personal.—Dr. Leroi Beck, Kansas City, was seriously injured by the overturning of his automobile, September 4. ——Dr. Charles R. Woodson, St. Joseph, entertained the Buchanan County Medical Society at his sanatorium, September 2.——Dr. Clarence A. Revelle, police surgeon of Kansas City, was cut in the face and hands and bruised in a collision between a motor car and a jitney bus, September 2.——Dr. Clarence D. Ussher, formerly of Kansas City, but at present a medical missionary in Van, Turkish Armenia, is reported to be seriously ill.

Plan to Eliminate School Infections.—Dr. Paul Paquin, health director of Kansas City, has a plan which if adopted he believes will eliminate the spread of infectious diseases due to school contact. It is a modification of the course pursued in many schools at present, but is more thorough and lays greater stress on frequent or constant inspections, etc. The plan provides for the examination of all pupils before admission; frequent examinations by nurses and physicians at school; the teaching of hygiene in every school; work by nurses in the homes; the creation of student sanitary commissions to aid the work. It is estimated that the cost in Kansas City would be about $25,000 a year. The school board is said to be favorable to the plan, provided the money can be obtained.

NEW JERSEY

Hudson County Bacteriologic Laboratory.—A county bacteriologic laboratory has been established in Jersey City under the direction of Dr. Von der Leit.

Typhoid Vaccination for Sailors.—Health Commissioner Joseph F. X. Stack, Hoboken, has administered antityphoid serum to the 2,500 sailors on the German steamers interned in Hoboken.

Bitten by a Dog.—John Kennell, health commissioner of Passaic and president of the Society for the Prevention of Cruelty to Animals was bitten by a dog that was thought to have rabies.

Old Health Officer Employee Dies.—Joseph C. Sayres, aged 70 years, a member and secretary of the Rutherford Board of Health for twenty-nine years, died at his home, September 16.

Health Officer Need Not Be Physician.—At the request of members of the Board of Health of Newark, the examination for health officer of that city, which was held September 23, was thrown open to candidates not practitioners of medicine.

Personal.—Dr. Fred M. Corwin has been reappointed medical inspector of the public schools of Bayonne.——Dr. Charles S. Pancoast, Camden, is said to have been presented with a decoration on account of distinguished service performed by him in Hungary.——Dr. Frederick C. Burt, who has served two terms as mayor of Hammonton, has refused to accept renomination.

NEW MEXICO

Personal.—Dr. Thomas J. Cummins has been appointed medical director of St. Joseph's Sanatorium, Silver City.

New Health Slogan.—The secretary of the Commercial Club of Albuquerque has originated a new slogan for that town which is as follows: "Albuquerque, N. M., the town where the sick get well and the well get prosperous."

State Society Meeting.—The thirty-fourth annual session of the New Mexico Medical Society was held in East Las Vegas, September 6 to 8, under the presidency of Dr. William T. Joyner, Roswell, the subject of whose annual address was "Medical Organization and Public Health." Albuquerque was selected as the place of meeting for next year and the following officers were elected: president, Dr. Evelyn F. Frisbie, Albuquerque; vice presidents, Drs. Clifford S. Losey, East Las Vegas; John W. Kinsinger, Roswell, and Arthur H. DeLong, Gallup; secretary, Dr. Robert E. McBride, Las Cruces (reelected); and treasurer, Dr. Frank E. Tull, Albuquerque (reelected).

NEW YORK

Hospital Remembered in Physician's Will.—According to the terms of the will of the late Dr. Joseph L. Hicks, Flushing, all his surgical instruments, and the books and pamphlets in his medical library, are bequeathed to the Flushing Hospital.

Health Officers Removed.—The State Commissioner of Health, Dr. Hermann M. Biggs, announced the removal of Dr. Emerick W. Crispell, Williamstown, health officer for the township of Amboy, and Dr. William B. Acker, health officer for the town and village of Hannibal. Dr. Biggs had accorded hearings to these gentlemen on the charges of incompetence and negligence which had been filed against them, but neither of the accused officers appeared to answer to the charges.

Personal.—Dr. Oliver W. H. Mitchell has been reinstated as city bacteriologist of Syracuse.——Dr. Howard L. Van Winkle, who has been in charge of the Syracuse Laboratory, has resigned as first assistant city bacteriologist.——Drs. William J. Books, New York City, and James N. Dunn, Schenectady, and six nurses have assumed charge of the medical inspection of the children in the city schools of Schenectady.——Dr. Ida C. Benner, for twenty years supervisor of the primary grades of the schools of the city of Buffalo, has resigned.——Dr. Loring T. Swaim, orthopedist of the Clifton Springs Sanatorium, has resigned and will practice in New York City.——Dr. William J. Thompson of the staff of the Central Islip Hospital has been appointed senior physician to the Danvers, Mass., State Hospital.

Mohansic Sewage Disposal Plan Opposed.—Some time since the Mohansic State Hospital secured the opinion of Dr. Hermann M. Biggs, State Commissioner of Health, that the temporary drainage of the affluent from the sewage disposal plant of the hospital into a lake from which a part of the water supply of New York City was obtained would not be objectionable. The matter was referred to the Department of Water Supply, Gas and Electricity of the City of New York which, after investigation, seriously opposed the plan. The committee then referred the matter to the Committee on Public Health of the New York Academy of Medicine. This committee also fails to concur with Dr. Biggs, giving as its reasons that there is a marked difference of opinion among sanitary experts whether the method of treatment which is proposed renders such sewage harmless and therefore they are not at all convinced that the proposition lacks danger even though it is only a temporary provision. They further state that although this plan of disposal might be safe under the present administration of the State Department of Health, there is no guarantee that in the future it might not be most unsafe through faulty administration and inefficient supervision. They suggest that as disposal of this sewage into the Hudson River would cost the state but $120,000, the State Department of Health should urge this expenditure as preventing all possible further pollution of the Croton water supply from this source.

New York City

Personal.—Dr. and Mrs. George S. Murray have sailed for Liverpool.——Dr. William P. Strain of Far Rockaway recently sustained a fracture of the forearm.——Dr. Charles F. Pabst, Brooklyn, saved a woman from drowning at Patchogue, N. Y., August 26.——Dr. Elizabeth J. Van Slyke, who has been serving with the American Red Cross at France and Belgium, arrived in New York on the *Santa Anna,* September 1.

Successful Control of Rabies.—The Department of Health announces that the measures adopted last year for the control of rabies in this city have been successful, largely through the ordinance requiring the muzzling of dogs. The number of cases of rabies found in animals examined in the laboratories of the department decreased from sixty-four during the second quarter of 1914 to fifteen during the corresponding period of this year. There was a reduction of 267 in the number of persons examined for dog bite and of 282 in the number of dogs examined for rabies.

Find Medical Care of Schoolchildren Inadequate.—The Bureau of Welfare of Schoolchildren of the New York Association for Improving the Condition of the Poor, of which William D. Straight is chairman, has issued a statement derived from the study of health department statistics, which indicates that 695,600 of the 925,000 schoolchildren of New York City, or 75.2 per cent. of all schoolchildren, are in need of medical attention for one or more of the physical defects common to children. Owing to the inadequacy of the staff of doctors assigned to school inspection and examination of children only 33 per cent. of the children are given a thorough physical examination each year. The statement points out that 167,577 children failed of promotion and assuming that this failure in a certain proportion of the children was due to the handicap imposed by one or more physical defects, the question is shown to have a serious financial side, since in addition to the amount expended by the health department it would cost the city $2,898,000 to reeducate this group of children who failed to advance.

NORTH CAROLINA

Third Antityphoid Campaign Opened.—The third antityphoid campaign to be inaugurated in North Carolina by the State Board of Health began in Craven and Warren counties, September 13. The county physician and a representative from the State Board of Health is in charge of the campaign in each county.

Examination Hours Restricted.—The State Board of Health has issued a notice that examinations for admission to the State Sanatorium for the Treatment of Tuberculosis, will be made only in the morning hours of the day, and patients are requested to communicate with the sanatorium and make appointments for such examinations.

Hospital Addition.—The addition to the Mission Hospital, Asheville, is almost completed and will be ready for occupancy by November 1. The addition is three stories and basement in height, fireproof and contains thirty-three rooms, of which thirty-one are to be utilized for patients. When the new building is in service, the hospital will have accommodations for forty-five private patients and thirty-six ward patients.

Bulletin for Teachers.—In connection with the State Department of Education, the North Carolina Board of Health is preparing to bring the subjects of health, disease prevention, and sanitation more closely to the attention of the public school teachers and public schoolchildren of the state. A bulletin is being prepared for the use of teachers which will contain the material for three-minute health talks, and may be used as a supplemental course in physiology, sanitation, and hygiene.

Registering Nurses and Cooks.—A number of cities and towns in the state have passed ordinances providing for the registering of washerwomen. The ordinance demands that they shall have certificates of good health and shall furnish sanitary premises and utensils for doing their work. In a *Bulletin of the State Board of Health* it is said that householders have protested that this ordinance is too narrow, and that it should include nurses and cooks, as they are even more important as disease-spreading factors. An instance is cited of one householder who reported that of three servants employed two were found to have tuberculosis and another a "worse disease." Each had succeeded in keeping the symptoms concealed for a time. The extension of protective ordinances to this class of help is advocated.

PENNSYLVANIA

Municipal Sanatorium Opened.—The new municipal tuberculosis sanatorium for Pittsburgh on the Leech farm, opposite Highland Park, is almost ready to receive patients. The institution has accommodation for 125 patients and several hundred applications for admission are already on file.

Hospital Notes.—Ground has been broken for the additional wing to the Braddock General Hospital to cost $80,000. When finished this will double the capacity of the hospital which now can accommodate seventy patients.——A new operating room, built and equipped at a cost of $40,000, was opened in the McKeesport Hospital, September 16.

New Cases of Typhoid at Danville.—Six new cases of typhoid were reported at Danville, September 22, bringing the total to sixty-nine. Five also have been reported in Mahoning township adjoining the borough, and six from Riverside. Two deaths were reported in the Danville State Hospital for the Insane, bringing the number up to eleven, but no new cases developed beyond the 133 already reported, which adds to the strength of the belief that the epidemic has been controlled through immunizing vaccination.

Personal.—Dr. Clinton T. Saylor, Rockwood, is reported to be seriously ill with appendicitis in the Memorial Hospital, Johnstown.——As the result of a civil service examination recently held in Illinois, to select a state psychologist, Dr. Harrison L. Harley, state college, headed the list and has taken up his duties at the Lincoln State School and Colony.——Dr. Thomas McC. Maxwell, Butler, was painfully injured in an automobile accident, September 16.——Dr. Jacob D. Liebermann, West Grove, is reported to be in a critical condition from septicemia.——Dr. Charles J. Hunt, Harrisburg, has been appointed a member of the staff of the Clifton Springs (N. Y.) Sanitarium.——Dr. James L. Yagle, New Freedom, was run over by his automobile, September 3, but was not seriously injured.——Dr. John J. Ott, Pleasant Valley, is reported to be seriously ill with heart disease at Applebauchville.——Dr. J. Frank Small, York, celebrated the twenty-fifth anniversary of his entrance into the practice of medicine, his retirement from practice and his fiftieth birthday, at his country home, south of York, by entertaining the York County Medical Society at dinner. Dr. Small was presented with a solid mahogany silver-headed cane, appropriately engraved.

State Society Elects Officers.—At the annual meeting of the Medical Society of the State of Pennsylvania held in Philadelphia, September 20-24, the following officers were elected: Dr. Charles A. E. Codman, Philadelphia, president; Drs. J. Torrance Rugh, Philadelphia; Edgar M. Green, Easton; W. Albert Nason, Roaring Spring, and Meyers W. Horner, Mt. Pleasant, vice presidents; Dr. Cyrus Lee Stevens, Athens, secretary (reelected); Dr. Clarence P. Franklin, Philadelphia, assistant secretary; Dr. George W. Wagoner, Johnstown, treasurer; Drs. Irwin J. Moyer, Pittsburgh; James Johnston, Bradford; John B. Lowman, Johnstown, and Jay B. F. Wyant, Kittanning, trustees and councilors; delegates to the American Medical Association, Drs. Americus R. Allen, Carlisle; William F. Bacon, York; Wilmer Krusen, Philadelphia; Charles C. Strickland, Erie, and Frederick L. Van Sickle, Olyphant; and alternates, Drs. Theodore B. Appel, Lancaster; Herbert B. Gibby, Pittston; George G. Harman, Huntingdon; Warren F. Klein, Lebanon; John A. Hawkins, Pittsburgh; Alice M. Seabrook, Philadelphia; Albert R. Matheny, Pittsburgh; William P. Walker, South Bethlehem; Robert B. Watson, Lock Haven, and Charles W. Youngman, Williamsport.

Philadelphia

Ground Broken for Hospital.—Ground has been broken for the erection of a three-story prison hospital for Moyamensing Prison, at the corner of Reed Street and Passyunk Avenue. It will be of granite, 36 by 43.5 feet, and will cost $18,000.

New Wards at the Polyclinic Hospital.—The Augusta Caroline Thorn Wards, presented to the Polyclinic Hospital by her daughter, Miss Mary Thorn, were opened at the hospital, September 22. The wards, which have accommodation for forty patients, cost $7,000. There are five rooms in all, designated as follows: women's surgical ward, women's medical ward, women's private ward, recovery ward, and the serious case ward.

To Raise Fund for the Children's Hospital.—Within a few days the board of managers of the Children's Hospital will announce the opening of a campaign to raise $500,000 to aid in completing the group of buildings for the site at Eighteenth and Bainbridge streets. One building is already finished and if the campaign is successful, plans for the main hospital building will be completed at once. Necessity for this work is emphasized by the fact that while there are in Philadelphia at the present time approximately 350,000 children less than 12 years old, the total hospital accommodation for such children is less than 900 beds.

Medical Institutions About Philadelphia.—Philadelphians will give a modern hospital to the State Masonic Home, Elizabeth, Pa. The building, for which architects are now preparing plans, is to be three stories high, of stone construction and 35 by 100 feet.——Title has been taken by the Orthopedic Hospital to the Parish House at the coroner of Seventeenth and Summer streets, from the Protestant Episcopal Church of St. Luke and the Epiphany for $40,000. The building will be used as a dispensary.

Personal.—Dr. Michael G. Wohl, pathologist to the Samaritan and Howard hospitals, has left Philadelphia to take charge of the laboratory of the Nicholas Senn Hospital, Omaha.——Dr. and Mrs. W. B. Dixon, Frankford, celebrated the sixty-fifth anniversary of their wedding, September 11.——Dr. Luther C. Peter has been elected associate professor of diseases of the eye in the Philadelphia Polyclinic.——Dr. J. William White returned home September 2 after two months of service in the American Ambulance, near Paris.——Dr. J. B. Frame has sailed for Persia as a medical missionary of the Presbyterian Board of Foreign Missions.——Dr. Malcolm C. Grow sailed from New York, September 12, on the steamship *Dvinsk* to serve in a Russian military hospital.

CANADA

A Doctor's Exciting Experiences.—Dr. W. V. Sargant has arrived home in Kingston, Ont., after a lively seven weeks. The government transport on which he went to England early in August was chased by a submarine, and he sailed for home as medical attendant on the S. S. *Hesperian,* which was torpedoed and sunk.

Toronto Physician Returns from Serbia.—Dr. James K. Mossman, Parry Sound, has returned from Serbia, suffering from septicemia contracted by cutting his finger during an operation. Before he went to Serbia 131 doctors in the whole empire out of 300 had succumbed to typhus fever. Dr. Mossman had charge of 300 patients and there were altogether over 4,000 patients with the disease in the town where he was stationed. There were not nearly enough doctors in that country to look after the wounded. A French commission was sent out in the spring which vaccinated all the people in the kingdom both civil and military against smallpox and cholera.

University News.—Queen's medical faculty is hoping the British War Office may see its way clear to allow Lieut.-Colonel Walter T. Connell, M.D., professor of bacteriology and public medicine, who is at present with Queen's Stationary Hospital at Cairo, Egypt, to return to Kingston for the work of the coming session. It has been found impossible to secure a competent supply to fill his position. Twelve of the third and fourth year medical students in France and in England are expected to return for the session's work.——Nearly one third of the doctors on the medical faculty of the University of Toronto will be missed when the term opens on September 28. Of the staff of 197 professors and lecturers forty-three went to the front with the University Base Hospital. Dean Clarke states that the medical faculty will probably have as many students this year as last year in spite of the large numbers who have enlisted.

Hospital News.—Members of the different faculties of Laval University, Montreal, met last week in special convention, called by the special committee in charge of the scientific organization of the Laval University Stationary Hospital, and passed the following resolution: "We learn with pleasure of the initiative of the Faculty of Medicine in organizing the Laval Stationary Hospital."——Dr. James C. Connell, dean of the Medical Faculty of Queen's University, Kingston, says that the Egyptian authorities declare that Queen's Stationary Hospital, established at Cairo, Egypt, is the best equipped hospital that has arrived there from France or Britain. It is the only hospital there with a laboratory and an expert pathologist. There are

480 beds in the hospital.——The Ontario Military Hospital being established at Orpington, in the county of Kent, England, under the supervision of the Hon. Dr. Robert A. Pyne, Toronto, has grounds comprising 27½ acres. It has a large dwelling house capable of accommodating a considerable portion of the staff, and Dr. Pyne is proceeding with the erection of temporary buildings to house the hospital. The buildings will accommodate 1,040 patients as well as a number of assistants. They are being erected on lines approved by the British War Office and under the direction of an architect who has had wide experience in construction of that kind, having built several of the British war hospitals. The work will be pushed forward as rapidly as possible. The institution will be known as the Ontario Military Hospital, and Dr. Pyne is remaining in England for the present to personally oversee the erection and equipment of the hospital.

Personal.—Dr. Alfred K. Haywood, assistant superintendent of the Toronto General Hospital, who has been home on sick leave, leaves for his duties in Northern France, October 2.——Lieut.-Col. Ernest C. Ashton, M.D., Brantford, Ont., has been promoted to the rank of brigadier-general.——Dr. James P. Rankin, Stratford, Ont., has been successful in qualifying for the rank of lieutenant-colonel in the Canadian Army Medical Corps.——Dr. Arthur M. Fisher, Woodstock, N. B., and Dr. Lorne deC. MacIntosh, Hartland, N. B., who recently joined the R. A. M. C., have gone to Egypt.——Dr. William D. Sharpe, Brampton, Ont., has been appointed to the staff of a hospital in Serbia.——Dr. George H. Bowlby, Berlin, Ont., has left for overseas service.——Dr. Charles Valery, Edmonton, Alberta, has been appointed chief of the medical service of the fifty-ninth division of the French army.——Among Toronto physicians taking training in the provisional school of instruction for officers of the Army Medical Corps at Niagara-on-the-Lake are: Drs. Frederick A. Cleland, George D. Carleton, Hector C. Hall, B. P. Matthews, W. J. Naber, James M. McCormack, McKilgow, Robert W. Phillips, W. M. Robb, Harold P. Rogers, S. O. Rogers, F. G. Thompson, F. G. Wonbridge and C. R. Young. Other medical men taking this course are J. A. McCampbell, Waubashene, Ont.; Frederick A. Ross and W. A. Lewis, Barrie; George T. Bailey, Cochrane; W. J. Kirby, Englehart; H. H. Harrier, Coldwater; Herbert W. Armstrong, Fergus; D. M. Baker, Toronto; John P. Russells, Cobalt; Lyman C. Lauchand, Dundas; James R. McLean, Salt Ste. Marie; Thomas A. Gourley, Cayuga; F. J. Matthews, Brooklyn, N. Y.

GENERAL

Mississippi Valley Medical Association Meeting.—The forty-ninth annual meeting of the Mississippi Valley Medical Association will be held at the Phoenix Hotel, Lexington, Ky., October 19 to 21, under the presidency of Dr. Hugh Cabot, Boston. Dr. Carl Lewis Wheeler is chairman of the committee on arrangements.

Tuberculosis Week.—Philip Jacobs of New York, on behalf of the National Association for the Study and Prevention of Tuberculosis, announces that tuberculosis week has been arranged from December 6 to December 12. On December 8 a nation-wide plea is to be issued for every citizen of the United States to go to a physician to be examined for tuberculosis. December 10 is to be known as Children's Health Crusade Day.

Obstetricians and Gynecologists Elect Officers.—At the twenty-eighth annual meeting of the American Association of Obstetricians and Gynecologists held in Pittsburgh, September 14 to 16, the following officers were elected: president, Dr. Hugo O. Pantzer, Indianapolis; vice presidents, Drs. Gordon K. Dickinson, Jersey City, N. J., and O. G. Pfaff, Indianapolis; secretary, Dr. E. Gustav Zinke, Cincinnati (reelected); and treasurer, Dr. Herman E. Hayd, Buffalo. Indianapolis was selected as the place of meeting for 1916.

Prevention of Infant Mortality.—The sixth annual meeting of the American Association for Study and Prevention of Infant Mortality will be held in Philadelphia, November 10-12. The subjects to be discussed include Eugenics; Effect of the Economic Standing of the Family on Infant Mortality; Infant Welfare Nursing in Small Cities, Towns and Rural Districts; Institutional Mortality; Midwifery Conditions, and Treatment and Prevention of Respiratory Diseases. The session on Economic Aspects of Infant Welfare will be a joint one with the Philadelphia Medical Society, and will be held at the College of Physicians, November 11.

Health Experts Elect Officers.—At the close of the meeting of the American Public Health Association in Rochester, N. Y., September 10, the following officers were elected: president, Surg. John F. Anderson, U. S. P. H. S., Washington, D. C.; vice presidents, Drs. George W. Goler, Rochester, N. Y.; Charles J. C. O. Hastings, Toronto, Ontario, and Omer R. Gillett, Colorado Springs, Colo.; secretary, Prof. Selskar M. Gunn, Boston, and treasurer, Lee K. Frankel, New York City. Maj. Gen. William C. Gorgas, Surgeon-General, U. S. Army; Dr. C. Stephen Smith, New York City; Dr. Henry D. Holton, Battleboro, Vt., and Dr. Frederick Montizambert, director-general of public health of the Dominion of Canada, Ottawa, were elected honorary members.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Hospital, Philadelphia, $10,000 by the will of August B. Loeb.

Episcopal Hospital, Philadelphia, and Emergency Hospital, Easton, Pa., each $1,000 by the will of Elizabeth Bartlett.

Salem (Mass.) Hospital, $5,000 to maintain a child's free bed to be known as the Arthur Curwin Davis free bed and to provide an appropriation for James B. Curwin, first president of the hospital; and one third of the residue of the estate after the payment of bequests, to the Massachusetts General Hospital, Boston, by the will of Caroline E. Davis.

Masonic Home, Charlestown, Mass., $10,000; Home for Incurables, Boston, Boston Floating Hospital, and Industrial School for Crippled and Deformed Children, each $5,000 by the will of Isaac Eddy, Dorchester, Boston.

Cleveland Medical Library, a maintenance fund of $200,000 by the will of Dr. Dudley P. Allen. The fund is left in trust with the Cleveland Trust Company, the principal to remain intact and the net income is to be turned over to the Association for the next hundred years, or as much longer as the library is efficiently maintained.

To aid in the fight against tuberculosis in Dallas, Tex., a donation of $1,000 by P. P. Martinez.

New York Throat, Nose and Lung Hospital, and New York Association for the Blind, each $5,000 by the will of Francis Finch Robins.

Harvey Society.—The program of the eleventh lecture course of the Harvey Society has just been published. The lectures will be given on Saturday evenings at 8:30, under the patronage of the New York Academy of Medicine, at its building at 17 West Forty-Third Street, New York. The program is as follows:

October 16.—Prof. C. W. Stiles, Hygienic Laboratory, Washington, D. C. "Recent Studies on Schoolchildren, with Special Reference to Hookworm Disease and Sanitation."

November 6.—Prof. A. J. Carlson, University of Chicago. "Recent Contributions to the Physiology of the Stomach."

November 27.—Dr. Eugene F. Du Bois, Cornell University. "The Respiration Calorimeter in Clinical Medicine."

December 18.—Prof. Florence R. Sabin, Johns Hopkins University. "The Method of Growth of the Lymphatic System."

January 15.—Dr. Donald D. Van Slyke, The Rockefeller Institute for Medical Research. "The Present Significance of the Amino Acids in Physiology and Pathology."

February 5.—Dr. Hideyo Noguchi, The Rockefeller Institute for Medical Research. "Spirochetes."

February 26.—Prof. Warfield T. Longcope, Columbia University. "The Susceptibility of Man to Foreign Proteins."

March 11.—Prof. Henry A. Christian, Harvard University. "Some Phases of the Nephritis Problem."

March 25.—Dr. R. T. Woodyatt, University of Chicago. "A Conception of Diabetes."

April 8.—Prof. Stanley R. Benedict, Cornell University. "Uric Acid in Its Relations to Metabolism."

April 29.—Prof. William H. Welch, Johns Hopkins University. "Medical Education in the United States."

The Plague Situation in New Orleans.—After a lapse of nearly a year a case of human plague occurred in the city of New Orleans, August 27. This case was confirmed as true bubonic plague on September 8. The epidemiologic investigations as to the exact source of the infection have not yet been completed but it is believed that it was probably received in the city of New Orleans. The occurrence of this case demonstrates the difficulties surrounding the eradication of the disease and indicate that had it not been for the active cooperative efforts of the United States Public Health Service and of the departments of health of the state of Louisiana and the city of New Orleans, the outbreak would have reached greater proportions and would have been longer continued. It also points out to other cities the necessity for ridding themselves of the rodent carriers of the disease and of thoroughly rat proofing all of their buildings. No fear is felt that this case will be followed by an outbreak. Officers and men of the Public Health Service, well trained in the control of the disease, are on the ground and with the health authorities of the city of New Orleans are taking every precaution to prevent the spread of the disease from the city and within it. During the three months from July 17 to September 18, the United States Public Health Service, in its work against bubonic plague in New Orleans, fumigated 118 vessels with sulphur, 144 with carbon monoxid and 15 with hydrocyanic acid gas; and issued 345 clean bills of health and 54 foul bills of health. In the department of field operations 56,233 rats were trapped, 101,226 premises were inspected and 7,281 buildings were rat proofed. The department of laboratory operations received 7,281 specimens of mus rattus; 13,988 of mus Norvegicus; 1,090 of mus Alexandrinus; 38,915 of mus musculus; 466 wood rats, 308 musk rats and 842 putrid rats. In all, 56,160 rats were received at the laboratory. Of these, 18,605 were examined, 169 were found suspicious and in 7 rats the diagnosis of plague was confirmed. The confirmed rodent cases were as follows: No. 245, captured at 617 St. Marys Street, July 7, diagnosis confirmed July 14, premises treated by intensive trapping, premises vacated and demolished and rat proofing initiated; No. 246, captured at Galves and Erato streets, July 13, diagnosis confirmed July 20, and premises treated with intensive trapping in the neighborhood and on the Galves dump and pushing forward of the rat-proofing operations; No. 247, captured at 536 S. Roman Street, August 1, diagnosis confirmed August 8, premises treated by intensive trapping, destruction of rat harbors, spraying of the premises with pulecide and the completion of rat proofing; No. 248, captured at 2503 Howard Street, August 17, diagnosis confirmed August 25, and the premises treated by intensive trapping, destruction of rat harbors, premises sprayed with pulecide and rat proofing expedited; No. 249, captured at Harmony Street Wharf, August 19, diagnosis confirmed September 2, and premises treated by intensive trapping; No. 250, captured at 1423 Joseph Street, September 6, diagnosis confirmed September 12, premises treated by summary destruction of rat harbors, spraying of pulecide in the vicinity, intensive trapping and rat proofing, and No. 251, captured at 837 S. Fulton Street, September 9, diagnosis confirmed September 14, premises treated by intensive trapping, fumigation by cyanid gas and rat proofing. During the week ended July 24, one suspicious human case was inspected and another during the week ended August 28, and one human plague case was discovered as reported above. Since the initiation of the work against plague in New Orleans, 44,938 buildings have been rat proofed, and 442,497 rodents have been captured, of which 286,087 were examined. Rodent plague was found in 4 cases in mus musculus, in 17 cases in mus rattus, in 8 cases in mus Alexandrinus, and in 222 cases in mus Norvegicus.

Annual Report of Rockefeller Foundation.—The first part of the annual report of the Rockefeller Foundation, covering the period to the end of 1914, deals with the activities of the international health commission. This commission was established June 27, 1913. Mr. Wickliffe Rose, administrative secretary of the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, was appointed director-general; Dr. John A. Ferrell, assistant director-general, the president and secretary of the organization serving ex-officio as chairman and recording secretary, respectively. The commission had assigned to it, two tasks: to extend to other countries the work of eradicating hookworm disease, and to follow up as far as practicable, the treatment and cure of this disease, together with the establishment of agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine. The hookworm infection includes practically all countries within the zone from 36 North to 30 South latitude and about 900,000,000 of the 1,600,000,000 inhabitants of the globe live in countries where the infection is prevalent. In the southern states, 39 per cent. of the 548,992 rural children microscopically examined were found to be infected; 90 per cent. of the population of the United States of Colombia, living between sea level and a latitude of 3,000 feet are infected; 50 per cent. of the population of British Guiana is infected; 90 per cent. of the population of Dutch Guiana; 50 per cent. of the laboring population of Egypt; 50 per cent. of the coolies in Natal and 90 per cent. among the plantation laborers in Ceylon are victims of the disease, and in some parts of India and among the coolies on the estates in Malaysia and Fiji which import their laborers from India there is a large percentage of infection. The southern two-thirds of the Chinese empire is infected, the infection of the farm population in the Yangtse Valley running as high as 76 per cent. The relief and control of the disease involve first a survey to determine the geographic distribution and approximate degree of infection; the microscopic inspection of the people and the cure of the infection, and the setting in operation and making effective such sanitary measures as will stop soil pollution. During the first year of the existence of the commission, trips for preliminary examination and conference were made to England, the British West Indies, Egypt and the British dependencies in the Far East and to Central America. As a consequence of these visits, work has begun in British Guiana, Antigua, Trinidad, St. Lucia, Grenada, Egypt, Ceylon, the Malay states, Panama, Nicaragua, Costa Rica and Guatemala. In addition to this work in foreign countries, the commission has also undertaken to complete the program of the Rockefeller Sanitary Commission for the eradication of uncinariasis in the southern states. The methods pursued include work under authority and direction of the government which was begun on a small scale; the treatment of those found infected; a survey of the geographic distribution of the infection; preventive measures and education of the people, the whole being designed as an object lesson in the treatment of disease, demonstrating that as one disease has been conquered others may be.

FOREIGN

Death of Professor Ewald.—Carl Anton Ewald's name fills a prominent place in textbooks on diseases of the digestive tract, as he has contributed much to the diagnosis, differentiation and management of stomach affections. He was born at Berlin, Oct. 30, 1845, and had thus nearly completed his seventieth year. He was one of the two editors of the *Berliner klinische Wochenschrift* until he resigned this task in 1907. He was the successor of Senator in the internal medicine service at the Augusta Hospital, and has served constantly since 1886. Besides numerous works on the pathology of the digestive organs, the Ewald-Boas test breakfast, the Ewald test meal, his stomach tube, and the Ewald-Boas method of expelling the gastric contents through the stomach tube, his name is connected with Sievers' in a clinical test of the motor functioning of the stomach. Before his last long illness, Ewald had taken an active part in sanitary organization, especially in establishing seaside homes for weakly children, and was appointed regular Honorarprofessor in 1908. He has been privy councilor, Geh. Med.-Rat, since 1898. The cable announces his death September 25.

WAR NOTES

Medical and Surgical Exports Increased by War.—The manufacture, in the United States, of drugs, surgical instruments and other medical appliances represented—as long ago as 1909—an approximate aggregate production of $165,000,000. Ordinarily, the total export of this material averages 10 per cent. The following table taken from *Commerce Reports*, July 19, illustrates the rapid growth of export trade in such materials in a single year, obviously due to the international conflict raging in Europe:

Articles	Year ending June 30 1914	 1915
Surgical appliances	$ 1,289,000	$ 4,500,000
Medical and surgical instruments	206,000	300,000
Dental goods	2,679,000	1,274,000
Patent or proprietary medicines	6,722,000	7,200,000
Miscellaneous drugs, chiefly disinfectants	9,020,000	22,500,000
Total	$19,916,000	$35,774,000

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended Sept. 24, 1915, lists the following contributions:

Norfolk County Medical Society, Norfolk, Va.		$ 28.00
Carroll County Medical Society, Wolfeboro, N. H.		10.00
Muscogee County Medical Society, Columbus, Ga.		14.00
Receipts for the week ending September 25		$ 52.00
Previously reported receipts		7,814.84
Total receipts		$7,866.84
Previously reported disbursements:		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 556.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

LONDON LETTER

London, Sept. 17, 1915.

The War

THE DEARTH OF PHYSICIANS: NEW SCHEME FOR THE ARMY

The problem of the medical student and the need for more physicians continues to cause anxiety. The director-general of the Army Medical Corps has announced that to outfit the new armies and to supply reinforcements for six months it was estimated that at least 2,500 more physicians of military age would be required. It has been found necessary to bring physicians from Canada, Australia and New Zealand. The hospitals have been in difficulties for some time. Recently the chairman of the British Hospitals Association met Sir Alfred Keogh, director-general of the Army Medical Corps, on the subject. Sir Alfred agreed to extend to all hospitals connected with medical schools the arrangements under which the resident staffs of hospitals are granted honorary commissions in the Army Medical Corps, but he could not extend the operation of the scheme to other hospitals. The following are the details: 1. The scheme is applicable only to hospitals connected with recognized teaching schools (not postgraduate schools). 2. All candidates for commissions must be registered physicians. 3. They must be physically fit for general service. 4. They shall be called on to take general service with the Royal Army Medical Corps after three months' residence, and shall be liable to be called up for service before the expiration of that period, if required, on forty-eight hours' notice. 5. So far as practicable, not more than one third of the number of residents will be called up on forty-eight hours' notice at one time. 6. Each candidate shall, on being approved for a temporary honorary commission, receive a grant of $100 as an allowance for the purchase of uniform. This is part of the grant of $150 issuable on taking general service. 7. No undertaking can be entered into that any residents called up for service will be replaced by the War Office. 8. Applications for temporary commissions should be made to the War Office by the hospital authorities concerned, who will vouch for the candidates whose names they submit. 9. The authorities of any hospital who wish to avail themselves of this scheme should inform the War Office of the number of beds maintained in the institution, and the number of residents employed. The effect of this scheme will be that hospitals will to some extent be secured against losing resident officers, and young physicians going to the front will have some special training before they go.

WOMEN PHYSICIANS

Mr. F. D. Acland, speaking at a meeting in support of the London School of Medicine for Women, said the supply of male physicians was not sufficient to meet the demands of the present day, and would be quite inadequate in the future. There were hospitals in London speaking of closing, not because of lack of patients, but because of lack of physicians. They were now beginning to realize the value of women physicians, and it was a pity they had not done so earlier. This war was teaching the nation the great sphere which medicine now occupied in national welfare. We were learning in a terrible way the cheapness of life and at the same time realizing the value of human life. Sir Berkeley Moynihan said that if five years ago the cost of one day's war at the present rate had been devoted to research work the scourge of tuberculosis would now be hastening to its conclusion, and we should probably have been free from cancer. Writing on the decrease in the number of male medical students and the shortage of physicians which must follow, the *Lancet* says that we must look to the increased entry of women into the medical ranks to meet the situation thus created. "In much of the glut of work at home women are playing their part, and the country has observed with pleasure that the war has given to them a fresh impetus towards the study of medicine. Apart from general practice there are certain well-defined directions where women will find congenial occupation, assured incomes, and opportunities for the recognition of their scientific work." Among these are the superintendence of children's clinics, the inspection of child life, the treatment of diseases of children and women, and practice overseas, particularly in India.

WOMEN DISPENSERS

The War Office is now engaging women dispensers for the military hospitals. The qualifications required are membership in the Pharmaceutical Society, or the assistant's diploma of the Apothecaries' Society. The latter is the qualification usually held by women, who are being engaged only for the duration of the war, in order to permit the male assistants to be sent abroad. The pay is $1.46 per day, Sundays included. In certain county districts allowance and rations are given. The hours are from 9 a. m. to 5 p. m. The women dispensers have given satisfaction, and the War Office has increased the number employed.

Irish Vital Statistics

The Annual Report of the Registrar-General for Ireland has just been issued. The birth rate was low—22.6 per thousand of the population. The marriage rate was 5.41 per thousand—the highest since 1867. The death rate was 16.3—the lowest recorded in Ireland since 1868. The emigration rate was 4.6, much below that for any year since emigration returns were first compiled in 1851. The estimated population in the middle of 1914 showed an increase of 2,386 on the estimate for the middle of 1913. The births during the year 1914 amounted to 98,806, or 22.6 per thousand, which is 0.7 below the average rate for the ten years 1904-1913. Old age, as usual, occupies first place in the causes of death, being credited with 11,565 deaths; tuberculosis comes next with 9,089; and, then, in order, heart diseases, bronchitis, pneumonia, cancer. The tuberculosis death rate shows marked decline in recent years. From 1864 to 1878 it varied between 2.4 and 2.6 per thousand living. From 1879 to 1908 it varied between 2.6 and 2.9. From 1904 the decline has been fairly steady, the rate in the successive years being: 2.88; 2.70; 2.67; 2.66; 2.58; 2.41; 2.28; 2.20; 2.15; 2.14, and 2.07. But the rate is still much higher than that for England, which is 1.4.

BERLIN LETTER

Berlin, Aug. 31, 1915.

Personal

Professor Friedberger, division chief of the pharmacologic institute in Berlin, has been appointed to succeed Professor Römer as ordinary professor of hygiene at Greifswald. Friedberger has made some very commendable researches in immunology.

Professor Gros of Leipzig has been appointed ordinary professor of pharmacology in Halle to succeed the late Professor Harnack.

A recently deceased cleric left the Berlin Institute for Cancer Research an endowment of 300,000 marks ($75,000).

The War

The exchange of severely wounded German and English prisoners is no longer being made. Germany and Russia are now making such an exchange. Provision is also being made to intern sick and convalescing prisoners of various nationalities in Switzerland. The different warring nations have given their consent to such an arrangement.

Although the number of Russian prisoners now in the hands of the Germans and Austrians is astoundingly large, still these two nations apparently are well prepared to make provision for them. Since May 2 no less than 1,100,000 Russians have been taken prisoners. At Braunau in Bohemia a prison camp is being constructed to take care of 100,000 prisoners, a number equaling the population of a large city, and yet the very best care is being given these men, as any American can convince himself by visiting these camps. Notwithstanding the fact that a large number of these Russian prisoners are brought to the prison camp in a most unhygienic condition and frequently suffering from some infectious disease, the care given them in the camp is such that the morbidity rate among the prisoners is remarkably low. Typhus is the disease met with most frequently, the next in order being cholera, typhoid, dysentery and smallpox.

As may be expected, such a large number of prisoners must have a considerable guard. Inasmuch as death and imprisonment must also be reckoned with among German soldiers, it is not possible to detail to the prison camp soldiers who are physically fit for duty at the front; hence, they have detailed to such duty the men who ordinarily were mustered out of service or rejected for service because of physical unfitness. This, of course, does not mean that cripples are detailed for this service, but men who ordinarily could be sent to the front in time of need and yet would not be considered absolutely fit for such duty. Notwithstanding this fact, it is rather remarkable to note how well these soldiers stand up under the strain of their duty. In fact, nearly all show a great improvement in health. A remarkable case in point is that of a man of 45 who, in 1897, entered a hospital because of an extensive left-sided empyema. A rib resection was done, but healing did not take place. Tubercle bacilli were not found. The surgeon performed a thoracoplasty, resecting five ribs, from the fourth to the eighth, removing all of the thickened pleura. The collapsed lung soon expanded again, and later an extensive plastic operation was performed. One-half of the left scapula was removed because the posterior rib stumps had become united to it. Convalescence was complicated by an acute nephritis and a very severe erysipelas. After two years the man was discharged as well. He was in fit condition for work and opened a window-cleaning establishment. When war was declared, his three sons went to the front and he volunteered for service. The military surgeon who examined him declared him unfit for duty because one-third of the left side of his thorax was missing. Thereon the man sought permission to enlist from the emperor himself and the request was granted. He was assigned to a transport as driver of a team, and in that capacity served throughout the entire campaign in France and without any personal inconvenience. Recently he was kicked in the right chest by a horse, and in consequence developed a hemoptysis. He was sent home on furlough. This case is one of great interest because it demonstrates that even a very extensive change in the thorax may permit of most unusual exertions and service.

PARIS LETTER

Paris, Sept. 9, 1915.

The War

THE PRACTICE OF SURGERY IN THE TERRITORIAL HOSPITALS

Experience has shown the disadvantages of leaving the initiative in surgical operations to physicians who are unfamiliar with the practice of military surgery, especially in certain unimportant hospitals. In some such cases, ill advised or useless operations, which would not have been performed in ordinary times without the assistance of a professional surgeon, have been performed to the detriment of the patients. To obviate these serious disadvantages, the minister of war has decided that all general surgical operations shall be performed exclusively by designated professional surgeons in each region after technical advice from the "head surgeons of sectors." The administration of the medical service has divided each territorial region (which represents a zone occupied in times of peace by an army corps) into three or four sectors corresponding to the military subdivisions of the region, and at the head of each of these sectors it has placed a head surgeon, who is to be in absolute control from the technical point of view, irrespective of all questions of rank.

These head surgeons of sectors are to fulfil two functions: 1. As operative surgeons each is to direct a surgical service in the place of his residence; he is to operate, moreover, after having consulted with the medical heads of the respective hospitals, in other establishments on patients who appear to him to need his personal attention. 2. As consulting surgeon, he is to visit the various establishments in his sector once every two weeks, first advising the medical heads of his coming; he is to give the physicians practicing there the necessary technical advice while refraining from becoming involved in questions of administration. In short, the head surgeon of a sector is at once operator, technical inspector and consulting surgeon.

While the head surgeons of sectors are to undertake the important operations within their respective territory, it is evident that they cannot perform all the operations. They must have surgical collaborators. The assistant secretary of state for the medical service has therefore directed the regional director to designate in all the important centers, after consulting with the head surgeon of the sector, one or several *chirurgiens de Place,* charged exclusively with the ordinary run of the surgery of the locality and of the neighboring hospitals, as well as with the urgent operations. These *chirurgiens de Place* are to be chosen from among the professional surgeons. They alone are to operate in the hospitals of that center and the environs.

The unimportant hospital centers are to receive only the slightly wounded patients, on the road to recovery and requiring only simple dressings. In case of an urgent operation on a patient in a hospital having no designated surgeon attached to its staff, the physician at the head of the hospital will telephone or telegraph to the head surgeon of the sector or of the nearest surgical center.

These rules apply only to major surgery (operations on the splanchnic cavities, resections, amputations, explorations for deeply situated projectiles). Minor surgical operations (the opening of abscesses and the extraction of superficial and easily accessible projectiles from the limbs) may be entrusted to the initiative of the physicians in charge of the cases, under the control of the *chirurgiens de Place.* The head surgeons of sectors are to make monthly reports on their tours of inspection and the technical functioning of their service, their residence and the territory within their jurisdiction. These documents are to be sent each month to the war department and to all the regional authorities.

PRISONERS OF WAR UNABLE TO ENDURE PRISON CAMPS TO BE PLACED IN SWISS HOSPITALS

It is well known that in the present war Switzerland has played an important humanitarian rôle, acting as intermediary in searching for prisoners, exchanging seriously wounded prisoners between France and Germany, etc. Switzerland is now about to undertake a new mission of trust, that of the hospital care of a certain number of prisoners of the various belligerent countries. These are to be patients who are not in a sufficiently serious condition to be returned to their own country, but who suffer particularly from the life in the prison camps. The first class taken care of there will probably be the tuberculous, who will be distributed among the principal climatic health resorts of Switzerland—Leysin, Montana, Davos, Arosa, etc. The prisoners are to be allowed a certain degree of liberty which is necessary for the reestablishment of their health. It is important, however, that they be not allowed to make use of this liberty to return home. It is probable that an agreement to this effect will be made not only by the prisoners themselves but also by the governments of their respective countries. Thereby surveillance will be much facilitated and the patients will be able to enjoy a certain degree of independence without entailing any abuses from which Switzerland would have to suffer.

THE HOSPITAL CARE OF PATIENTS WITH FISTULAS CAUSED BY WOUNDS OF WAR

The assistant secretary of war for the medical service has received a report of the presence in certain hospitals of a rather large number of soldiers almost cured of their wounds but still affected with fistulous openings caused by the presence of fragments of bone or of foreign bodies for which no active treatment has been undertaken. These patients ordinarily drag out a protracted stay in the unimportant hospitals, where it is not possible to undertake the surgical cure of these traumatic sequelae. The assistant secretary has therefore given instructions that all such patients who have been placed in hospitals where there is no surgical service shall be removed to hospitals having the necessary staff and equipment to operate for the speedy cure of such cases.

THE "DARDANELLES STAMP"

The Société française de Secours aux Blessés Militaires has contributed toward the conversion of the *Charles Roux,* a transatlantic liner, into a floating hospital. The society has furnished the boat with 300 beds and important hospital equipment. It has entirely at its own expense chartered another boat, the *Saint-François-d'Assise,* which is about to set out for the Dardanelles. The society has also sent out thirty nurses, some of whom are to work on board of the *Charles Roux,* while others are to be assigned to the ambulance units already established on the island of Lemnos. This work has imposed heavy expenses on the society. In order to meet these expenses, it has just issued a new five cent postage stamp called the Dardanelles stamp. This stamp shows an ambulance unit composed of several tents under the shadow of the French flag and the Red Cross standard; a nurse of the society is caring for a wounded soldier. This stamp is sold in books of twenty. On the cover of each book is a colored picture representing the *Charles Roux,* whose white hull is barred with a broad red stripe; at the masthead flutters the French flag and the flag of the Red Cross.

Accident to Professor Hayem

Dr. Hayem, formerly professor at the Faculté de médecine de Paris, has just been injured in an automobile accident which occurred in the outskirts of Chambéry.

Marriages

Clarence Searle Ketcham, M.D., Washington, D. C., to Miss Elizabeth Weed Rogers, at Huntington, L. I., N. Y., September 11.

John H. Nugent, M.D., Southampton, L. I., N. Y., to Miss Marie W. Moffitt of Center Moriches, L. I., N. Y., September 16.

Elmer Harrison Ormsby, M.D., Amsterdam, N. Y., to Miss Muriel Eloise Blackwood, of Huntingdon, Que., September 15.

Orel A. Welsh, M.D., Oregon City, Ore., to Miss Grace Wolcott of San Francisco, in Santa Cruz, Calif., September 11.

P. A. Surg. Ernest Oliver Joseph Eytinge, U. S. N., to Miss Marion Brooks, at Mare Island, Calif., September 11.

Henry Kleinschmidt, M.D., Oshkosh, Wis., to Miss Ethel Morris, of Farmington, Mich., in Detroit, September 1.

John Andrews Evert, M.D., Brainerd, Minn., to Miss Pearl A. Nash of Pipestone, Minn., about August 28.

Walter William Lowell, M.D., Brooklyn, to Miss Alice White of Brinsville, Ont., in Brooklyn, September 15.

Leslie Hall Redelings, M.D., Rochester, Minn., to Miss Gertrude Abbott of Plainfield, N. J., September 8.

Walton Evermont Muns, M.D., Columbia, Mo., to Miss Betty Hawkins, of New York City, September 6.

Thaddeus Hall Green, M.D., Bascom, Fla., to Miss Anna Lucia D'Antoni of Natchez, Miss., September 1.

Albert William Crews, M.D., Thurmond, W. Va., to Miss Pauline Riffe of Greenfield, Ind., September 16.

Ebenezer Ross Faulkner, M.D., to Miss Julia Whiton Little, both of New York City, September 11.

Clarence Vernon Smith, M.D., Tipton, Ind., to Christine Lukas, M.D., of Evanston, Ill., September 8.

Thomas Webster Edgar, M.D., to Miss Arleine E. Lamprey, both of New York City, September 7.

P. A. Surg. Emil Krulish, U. S. P. H. S., to Miss Sarah Sydnor, at Pasadena, Calif., August 30.

Deaths

Austin Flint, M.D. Jefferson Medical College, 1857; aged 79; died at his home in New York City, September 22, from cerebral hemorrhage. Dr. Flint was born in Northampton, Mass., March 28, 1836, the son of Dr. Austin Flint and Anne Skillings. He began his medical studies in the University of Louisville and after two years went to Philadelphia, where the degree of M.D. was given him by Jefferson Medical College in 1857. He practiced in Buffalo for two years, and was professor of physiology in the University of Buffalo. In 1859 he moved to New York City and became associated with the New York Medical College as professor of physiology. He then served in a similar capacity in the New Orleans School of Medicine for a year. At the outbreak of the Civil War Dr. Flint was appointed an Acting Assistant Surgeon in the Army and served for three years in this capacity in the General Hospital, New York City. He was one of the founders and for thirty-seven years was professor of physiology in Bellevue Hospital Medical College. During six years of this time he also filled the chair of physiology in Long Island Hospital College, Brooklyn. He associated himself with Cornell University Medical College in 1898 and was professor and professor emeritus from that time until his death.

He was a Fellow of the American Medical Association, an honorary member of the New York Academy of Medicine, a member of the Association of Military Surgeons of the United States and of many other learned societies. He was given the degree of LL.D. in 1885 and that of A.M. in 1894 by Princeton University and was decorated with the Third Class Order of Bolivar by the government of Venezuela in 1891. Dr. Flint had been visiting physician since 1869, consulting physician and visiting physician to the Insane Pavilion of Bellevue Hospital since 1896; was consulting physician to the Bellevue Hospital Dispensary for nearly fifty years, and from 1874 to 1878, he served as surgeon-general of the state of New York.

Dr. Flint was a prolific writer and his encyclopedic work on the Physiology of Man, in five volumes, has gone through two editions; his treatise on Chemical Examination of the Urine in Disease, is now in its sixth edition, and his Text Book of Human Physiology has required four editions up to the present time. He was also the author of other treatises and of many monographs and articles, chiefly on the subject of physiology, in which he specialized, and on medical biography and history.

Benjamin Lindsay Coleman, M.D. Bellevue Hospital Medical College, 1871; aged 68; a member and formerly vice president of the Kentucky State Medical Association; once president of the Fayette County Medical Society; member of the Mississippi Valley Medical Association; physician to the Good Samaritan Hospital, Lexington, Ky.; for many years curator of Transylvania University and a member of the Board of Trustees of Hamilton College; died at his home in Lexington, Ky., September 14, from cerebral hemorrhage.

Lorne Benjamin Graham, M.D. University of Toronto, Ont., 1907; formerly of Pacific Grove, Calif.; a member of the Medical Society of the State of California; who offered his services to the British Government at the outbreak of the war and was stationed at Eastbourne, England, as supervisor of Red Cross work and later was transferred to the Dardanelles; was killed in the Aegean Sea, August 17, when the transport on which he was proceeding to his new post of duty was sunk by a German submarine.

William F. Muhlenberg, M.D. University of Pennsylvania, Philadelphia, 1872; aged 62; a Fellow of the American Medical Association; formerly president of the Berks County, Pa., Medical Society; one of the founders and a member of the Board of Managers of the Reading Hospital; president of the Pennsylvania German Society; for more than thirty years surgeon to the Schuylkill Valley Railroad; died at his home in Reading, Pa., August 25, from myocarditis.

Emil Ernest Guenther, M.D. New York University, New York City, 1877; aged 61; a member of the Medical Society of New Jersey and a practitioner of Newark; formerly coroner of Essex County, N. J.; visiting surgeon to St. Michael's and St. Barnabas' hospitals, and a member of the staff of the German Hospital, Newark, N. J.; for many years a trustee of the Newark City Home; died at his summer home in Mountainview, N. J., September 12, from heart disease.

Chester Emory Coulter, M.D. University of Michigan, Ann Arbor, 1883; aged 60; for twenty-six years a practitioner of Ogden, Utah; a member of the staff of the Dee Hospital for many years; at one time city physician and a member of the Board of Education; died at his home in Ogden, September 12, from nephritis. The Weber County Medical Association attended the funeral service in a body.

P. Van Benschoten Fowler, M.D. Medico-Chirurgical College of Philadelphia, 1897; aged 49; a Fellow of the American Medical Association; for two terms secretary of the Suffolk County Medical Society; a member of the staff of the Babylon, L. I., Hospital, and of the school board of Centre Moriches, L. I.; died in Brentwood, L. I., September 14, from carcinoma of the stomach.

Susan LaFlesche Picotte, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1889; aged 49; a Fellow of the American Medical Association; for many years prominent as a medical missionary among the Indians of Nebraska and adjoining states; daughter of Chief Joseph, the last great chief of the Omaha tribe; died at her home in Walthill, Neb., September 18.

Charles R. Newton, M.D. University of Pennsylvania, Philadelphia, 1893; aged 58; of Nicholson, Pa.; a Fellow of the American Medical Association; physician in charge of the hospital maintained by the Delaware, Lackawanna and Western Railroad, for its workmen on the Tunkhannock bridge; died September 12, in Bellevue Hospital, New York City.

James Clinton Moore, M.D. University of Nashville, Tenn., 1900; aged 47; a member of the Medical Association of the State of Alabama; for several years a member of the Board of Education of Anniston and one of the prime movers in the building of St. Luke's Hospital; died at his home in Anniston, Ala., September 13, from heart disease.

Robert Gamaliel Cornwell, M.D. Long Island College Hospital, Brooklyn, 1875; aged 62; a member of the Medical Society of the State of New York; once health officer of Riverhead; jail physician for five years and for the last three years coroner of Suffolk County; died at his home in Riverhead, N. Y., September 16, from heart disease.

Charles Lee Crawford, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 52; a Fellow of the American Medical Association; formerly of Vevay, Ind.; but since 1910 a resident of Carlisle, Ark., was shot and instantly killed September 12, near Carlisle, by a negro whom he was attempting to arrest for murder.

Abijah J. Miles, M.D. Medical College of Ohio, Cincinnati, 1863; aged 81; a veteran of the Civil War; a member of the Royal Society of Medicine, London, England, and Cincinnati Academy of Medicine; at one time health officer of Cincinnati; died at the home of his brother-in-law in that city, September 8.

Oliver Willard Sinclair, M.D. New York University, New York City, 1889; McGill University, Montreal, 1891; aged 46; a Fellow of the American Medical Association; one of the owners of the Sequoia Hospital, Eureka, Calif.; was killed in that city September 15, in a collision between his automobile and a railway train.

George Francis McCutcheon Lamont, M.D. Long Island College Hospital, 1896; aged 42; of Newark, N. J.; a Fellow of the American Medical Association and a well known specialist on diseases of the eye, ear, nose and throat; was drowned off Sandy Hook, N. J., September 19 by the capsizing of a motor boat.

Andrew Lawson Grieve, M.D. Bellevue Hospital Medical College, 1898; aged 38; formerly of New Bedford, Mass.; fell or jumped from a third-story window in Providence, R. I., September 11, was impaled on a picket fence and died a few hours later in St. Luke's Hospital, Providence, from his injuries.

Robert Scott Wiley, M.D. Medical College of Virginia, Richmond, 1872; University of Maryland, Baltimore, 1875; aged 69; a member of the Medical Society of Virginia; for thirty-five years a practitioner of Allegheny County, Va.; died at his home in Covington, Va., September 4.

Henry F. Kortebein, M.D. Northwestern University Medical School, Chicago, 1892; aged 46; formerly a member of the State Medical Society of Wisconsin and a well known practitioner of Milwaukee; died at the Oconomowoc Health Resort, near Nashotah, Wis., September 14.

David M. Smith (license, certificate, Missouri, 1884), aged 80; for forty-six years a practitioner of Wright County, Mo.; was thrown from his horse, September 10, the horse falling on him and crushing him; and died from his injuries at his home near Hartsville, Mo., a few hours later.

Frank Mason Putnam, M.D. Dartmouth Medical School, Hanover, N. H., 1878; aged 62; of Gardiner, Me.; director of the National Bank of Gardiner, and chairman of the board of selectmen of Farmingdale; died at his home in Gardiner, September 1.

Jeremiah Campbell Foster, M.D. Hahnemann Medical College, Philadelphia, 1892; aged 44; of Columbus, Ohio; adjuster for Ohio and West Virginia for the Order of Ben Hur; died in Grant Hospital, Columbus, September 14, from heart disease.

George Wall, M.D. Rush Medical College, 1889; aged 63; a Fellow of the American Medical Association and for more than twenty-five years a practitioner of Oregon; died at his home in Cottage Grove, Ore., September 10, from cerebral hemorrhage.

James Sullivan, M.D. College of Physicians and Surgeons, Chicago, 1891; for many years a practitioner of Tama, Ia., but for the last year a resident of Muscatine, Ia.; died at the home of his brother in Machias, Me., September 2, from pneumonia.

Frederick Darius Bickford, M.D. University of Michigan, Ann Arbor, 1882; aged 54; for many years a practitioner of Ogden and Salt Lake City, Utah, but for the last year a resident of Fillmore, Utah, died in that place, September 10.

Walker Schell, M.D. Miami Medical College, Cincinnati, 1878; aged 59; a Fellow of the American Medical Association and a prominent practitioner of southern Indiana; died at his home in Terre Haute, Ind., September 13, from ptomain poisoning.

John Lester Sivert, M.D. University of Nashville, Tenn., 1909; aged 33, of Georgetown, W. Va.; was found dead in his office in Georgetown, September 13, from the effects of poison believed to have been self-administered with suicidal intent.

James W. Wallace, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 55; of Greenway, Ark.; died at the home of his father-in-law in Paducah, Ky., August 28, from uremia and cirrhosis of the liver, August 29.

John G. McGuire, M.D. Jefferson Medical College, 1861; aged 88; until 1895, a practitioner and druggist of Anamosa and Mechanicsville, Ia.; died at the home of his son in Chicago, September 5, from cerebral hemorrhage.

Ralph F. McHenry, M.D. University of Pittsburgh, Pa., 1895; aged 46; a Fellow of the American Medical Association; chief surgeon of the Windber, Pa., Hospital; died in Windber, September 14, from typhoid fever.

Samuel B. Limerick, M.D. Kansas City, Mo., Medical College, 1876; aged 61; a pioneer practitioner of Snohomish, Wash., but since 1898, a resident of Seattle; died in Providence Hospital, Seattle, September 11.

Philander F. Wellman (license, Kansas, 1901), aged 77; of Coffeyville, Kan.; a practitioner of southern Kansas for more than thirty years; died at the home of his son in Kansas City, Kan., September 16.

George T. Prince, M.D. University of Tennessee, Nashville, 1887; aged 50; a resident of Chattanooga, Tenn., for ten years; died at his home in St. Elmo, Chattanooga, September 16, from acute gastritis.

Elias S. Boyd (license, Texas, Fifth Judicial District Board, 1887); aged 66; a practitioner and Presbyterian clergyman of Texas since 1880; died at his home in Dallas, September 10.

Granville Prizer, M.D. University of Pennsylvania, Philadelphia, 1868; aged 70; at one time Register of Wills of Chester County, Pa.; died at his home in Lionville, Pa., September 7.

Carl N. McCaslin, M.D. Medical College of Indiana, Indianapolis, 1902; aged 39; of Earl Park, Ind.; died in the Washington Park Hospital, Chicago, September 17, from peritonitis.

Tyrer Harris Hassell, M.D. University of Louisville, Ky., 1885; aged 53; a member of the Tennessee State Medical Association; died at his home in Springfield, Tenn., September 11.

Joseph M. Wolf, M.D. University of Louisville, Ky., 1870; aged 74; for many years a practitioner of Arkansas, but since 1895, a resident of Texas; died at his home in Rockdale, Tex., August 30.

Henry Lehmann, M.D. New York University, New York City, 1881; aged 56; formerly a practitioner of New York City; died at his home in Brooklyn, September 13, from diabetes.

Philander Noffsinger Hardman (license, years of practice, Iowa, 1887), aged 74; a veteran of the Civil War; died at his home in Sigourney, Iowa, September 6, from valvular heart disease.

William Andrew Walker (license, Kansas, 1901), aged 82; an eclectic practitioner of Galena, Kan.; died at the home of his son in that city, September 15, from cerebral hemorrhage.

Andrew J. Stokes, M.D. Western Reserve University, Cleveland, 1882; aged 56; of Jersey Shore, Pa.; died at a cottage on Pine Creek, near Jersey Shore, September 7.

Newton Rodger McLean, M.D. Medico-Chirurgical College of Philadelphia, 1904; aged 38; died suddenly at his home in Bolivar, Pa., September 12, from heart disease.

Josiah Candor McLaughlin, M.D. College of Physicians and Surgeons, Kansas City, Kan., 1901; aged 50; died at his home in Kansas City, Mo., September 11, from nephritis.

Aquila A. Washburn, M.D. Jefferson Medical College, 1881; aged 56; a member of the Indiana State Medical Association; died at his home in Clinton, Ind., September 16.

William Hardin Boals, M.D. Rush Medical College, 1877; aged 65; of Minneapolis; died in the Eitel Hospital in that city, September 10, after a surgical operation.

William T. Boyd (license, Maryland), aged 55; of Upper Falls, Md.; died at the home of his father in Lebanon, Pa., from disease of the lungs, September 14.

Sidney W. Walters, M.D. Bennett Medical College, Chicago, 1898; aged 51; formerly of Goshen, Ind.; died at his home in Chicago, September 13.

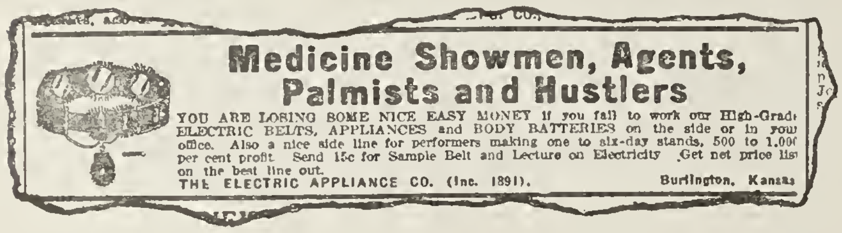
Alvin Steel Davidson (license, Blount County, Ala., 1876), died at his home in Oneonta, Ala., September 2.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ADDISON'S GALVANIC ELECTRIC BELT

While the electric-belt fake has lost the vogue it once had, that class of the community to which the late Mr. Barnum so feelingly referred is still in evidence. This, at least, is the impression one gets from an advertisement that appeared in a weekly publication devoted to the "show world"—the *Billboard*—and here reproduced:



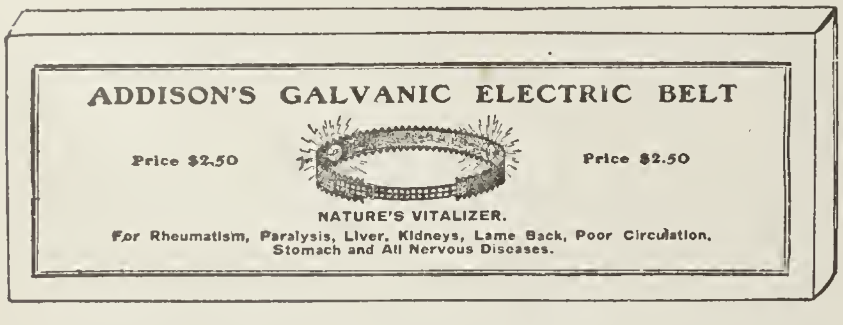
Medicine Showmen, Agents, Palmists and Hustlers

YOU ARE LOSING SOME NICE EASY MONEY if you fail to work our High-Grad ELECTRIC BELTS, APPLIANCES and BODY BATTERIES on the side or in you office. Also a nice side line for performers making one to six-day stands, 500 to 1,00 per cent profit. Send 15c for Sample Belt and Lecture on Electricity. Get net price lis on the best line out.

THE ELECTRIC APPLIANCE CO. (Inc. 1891). Burlington, Kansas

This makes interesting reading, especially as the *Billboard* has editorially declared that its "advertising columns are as carefully edited and the offers that get into them are as closely scrutinized as jealous care, scrupulous honesty and constant vigilance can ensure." Further the *Billboard* has said: "We print no swindling patent medicine ads . . . in fact no catchpenny or petty larceny business whatever."

In view of this, it seemed worth while to send fifteen cents to the Electric Appliance Company for the "sample belt and lecture on electricity." The belt came, also the "lecture," to say nothing of a miscellaneous assortment of advertisements of medical or quasi-medical devices. Cheap and tawdry was the belt but a most gorgeous affair, withal. Strips of vivid red and yellow cotton crudely put together and enveloping small pieces of copper and zinc separated by blotting paper. This last, of course, to generate the electric current. The "lecture on electricity" was a gem: "Did not time prevent, we could talk for hours upon the many wonderful things that electricity has accomplished. . . . Electricity contains all the elementary principles and therefore all the healing properties of all things in being. All the balms, oils and minerals in existence are contained in electricity and in their most skillfully combined proportions. . . . If you are weak you need electricity. For lost womanhood or manhood there is nothing like electricity to restore your health. To the ladies we will say, if you have female pains there is nothing better than an electric belt. . . . Electricity is the greatest power on earth. It puts life and force into whatever it touches; gives relief to rheumatism, backache, kidney, liver and bladder troubles, early decay, night losses, lack of nerve and vigor, nervous debility, constipation, dyspepsia, undevelopment and lost vitality and all female complications."


ADDISON'S GALVANIC ELECTRIC BELT
Price $2.50
Price $2.50
NATURE'S VITALIZER.
For Rheumatism, Paralysis, Liver, Kidneys, Lame Back, Poor Circulation, Stomach and All Nervous Diseases.

Miniature reproduction of the package containing the ten-cent electric belt.

All this, of course, leading up to the sale of the Addison Galvanic Electric Belt, which comes in a neat little box, on which is plainly printed the price, $2.50. And this electrical marvel may be purchased from the manufacturers, the Electric Appliance Company, for the trivial sum of $1.10 a dozen—less than ten cents each. Question: How much "nice easy money" have the "medicine show men" taken in this season in selling for $2.50 an "Addison Galvanic Electric Belt" that costs less than ten cents and isn't worth anything?

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. A star opposite a title indicates that a more extensive report on the article in question will appear in the Reports of the Council on Pharmacy and Chemistry, 1915, and that a reprint of the report in question will be sent on receipt of a 2-cent stamp.

Iodum-Miller*

Iodum-Miller (Iodum-Miller Company, Kansas City, Mo.) is advertised to physicians under the implied claim that the preparation is new and original. It is said to be made from "Soot Iodin." What "Soot Iodin" is, the company does not explain beyond making the statement that it is made from "Resublime" iodin and is soluble in water. According to the label:

> ". . . 45 drops equals 1 dr. by weight. Each drop equals the per cent. of iodin in 1 gr. potas. iodid."

Iodum-Miller, when analyzed in the Chemical Laboratory of the American Medical Association, was found to be essentially a solution of iodin and potassium iodid in glycerin. This, of course, disposes of the implied claim that it should be regarded as something new and original. It was found to contain 1.68 per cent. of free iodin and 1.80 per cent. potassium iodid. If the company's statement that 45 drops of Iodum-Miller weigh 1 dr. is correct, then it is obvious that 1 drop of the product equals the percentage, not of 1 gr. potassium iodid, as claimed, but of only 1/20 gr. potassium iodid. This being the case the statement on the label is manifestly false and should constitute misbranding under the federal Food and Drugs Act.

Iodum-Miller is recommended for internal use in doses from ½ drop to 20 drops which, as the examination shows, is equivalent to from 1/40 grain to 1 grain potassium iodid. Yet, the use of this product is suggested in:

> "Pneumonia, Tuberculosis, Pleurisy, Typhoid Fever, Syphilis, Catarrh of Mucous Surface of Alimentary Canal, Autotoxemia, Vomiting of Pregnancy, Rheumatism, Chronic Glandular and Organic Affections."

Its external or germicidal efficacy may be measured by the free-iodin content. The laboratory's analysis showed that this is less than one third of that of tincture of iodin. Nevertheless, Iodum-Miller is recommended for external application in:

> "Pleurisy, Cough, Sore Throat, Pyorrhea . . . Blood Poison, Diseases of Uterus and appendages . . . Gonorrhea . . . Orchitis, Bubo, Prostatitis, Swellings, Enlarged Glands, Etc."

The therapeutic claims made for Iodum-Miller are so obviously extravagant that they need no discussion. The case against this product may be summed up thus: (1) Incorrect statements are made regarding its composition; (2) the therapeutic claims made for it are unwarranted, and (3) the application of a trade name to an established non-proprietary product (glycerin solution of iodin) is unjustifiable. In view of these facts the Council held Iodum-Miller ineligible for New and Nonofficial Remedies.

Iod-Izd-Oil (Miller's)*

Iod-Izd-Oil (Miller's) is said to be an "iodin combination" made "from the same Soluble Soot Iodin as in Iodum Miller." It is said to "liberate Free Soluble Iodin" when applied to the skin, mucous surfaces, etc. It is further defined as "Soluble Iodin combined with water-white Hydrocarbon Oil" and is said to liberate "Soluble Iodin 2 per cent." While these statements suggest that Iod-Izd-Oil (Miller's) contains the iodin-potassium-iodid combination contained in Iodum-Miller, analysis indicated the oil to be a simple solution of iodin in liquid petrolatum. Quantitative determinations indicated, not 2 per cent. of iodin, as claimed, but only 0.42 per cent. and all of this was present as free iodin.

Iod-Izd-Oil (Miller's) is refused recognition because the composition is not correctly stated and because the application of a trade name to an established non-proprietary product tends to confusion.

Hexa-Co-Sal-In

Hexa-co-sal-in (Hexa-Co-Sal-In Company, Red Bank, N. J.) is advertised as "a condensation product of familiar composition." The further explanation that it is "colchi-magnesium salicylate with anhydrous hexamethylenamin" does not make this statement much clearer. "Colchi-magnesium salicylate"—not to speak of its condensation product with hexamethylenamin—is unknown in chemical literature. As a matter of fact, an examination made by the Chemical Laboratory of the American Medical Association shows that Hexa-co-sal-in is a simple mechanical mixture of hexamethylenamin, magnesium salicylate and some colchicum preparation. The composition is therefore falsely stated.

The preparation is advertised as:

> "Antirheumatic, Antineuritic, Urinary Antiseptic."
> "Uric Acid Mobolizer" (sic).
> "Intestinal Antiseptic, Mildly Laxative."
> "Whenever a salicylate is indicated use Hexa-co-sal-in."

The combination of salicylates, hexamethylenamin and colchicum in a routine formula is certainly inadvisable; where one of the ingredients is needed, the others may be useless or even harmful. The unqualified advice to use hexamethylenamin and colchicum "whenever a salicylate is indicated" is likely to do harm.

The statement of the composition of this preparation is false; unwarranted therapeutic claims are made for it, and the mixture is unscientific. The Council held Hexa-co-sal-in ineligible for New and Nonofficial Remedies because of conflict with Rules 1, 6 and 10.

Correspondence

Eye Headaches

To the Editor:—Dr. W. F. Cheney has recently written an article entitled "Gastric Headaches" (*Am. Jour. Med. Sc.*, May, 1915, p. 656) which should not go unchallenged on account of an apparent backward step in teaching that recurrent headaches, serious causes being excluded, are due to the stomach and not to the eyes. The poor stomach of civilized humanity has been long maltreated for headaches, and it is a pity to revive such treatment.

That a bad stomach can cause a headache is true, but never a headache that puts a patient to bed and out of business. A headache due to an overdose of alcohol is not due to the upsetting of the stomach, but to the action of alcohol on the brain. That going without food and purging will cure an eye headache is true; so will time. There is no anatomic reason for a stomach to cause a one-sided headache (instanced by Cheney), and there is good reflex reason why any headache may cause retarded digestion, nausea and vomiting. Recurrent eye pains can cause all kinds of gastric disturbances, hyperchlorhydria, etc.

In Cheney's Case 1 he took a hardworking office man and made him take more exercise out of doors, i. e., reduced his hours of eye work. The patient improved as to his headaches.

In Case 2 Cheney stopped the man's alcohol and reduced his tobacco, both of which cause a weakening of the eye muscles; the patient got better of his headaches.

In Case 3, the glasses did the girl no good, and there was "a chronic gastritis of the subacidity type." Cheney does not say for what defect glasses were prescribed, whether or not the eyes were reexamined and the glasses found correct, or whether the patient still wore glasses after the stomach treatment began or whether she discarded them. He corrected a diet "which had been in every way improper both in quality and quantity." This regulation of the diet, with the tincture of nux vomica before meals and cascara at bedtime, stopped the headaches. There is no doubt that a patient subject to eyestrain headaches cannot abuse his stomach with impunity.

This simply means that any toxin absorbed from the stomach or intestines may add the last straw to the resisting power of the eye-muscle balance, and a headache is the result.

I contend that if the eye defect is corrected the stomach, if not deliberately abused, will correct itself. On the other hand, no amount of treatment of the stomach, without correcting the eye defects or reducing the number of hours the eyes are used, or correcting a mal-use of the eyes, thus preventing eye tire, will stop migraine headaches.

A headache that is "periodical" "throughout months and years," "rarely lasting over twenty-four hours," in which "the patient awakens with pain in the morning," "growing more intense as the day goes on," or "it may come on in the evening," "may be so severe and prostrating as to incapacitate for any kind of work while they last," "sometimes nausea and vomiting," or "there may be no disturbance whatever of the stomach," is almost always an eyestrain headache and is probably very rarely a "gastric" headache.

Oliver T. Osborne, M.D., New Haven, Conn.

To Aid the Expression of Dosage by the Metric System

To the Editor:—To facilitate the expression of dosage and solutions in the metric system, I desire to recommend a resort to two expedients with which we are all familiar.

First, as the cubic centimeter is a measure of capacity it should have a name. I propose the word "Ceci" (c.c.).

Second, let us disregard all such intermediate expressions as decigrams, centigrams, hundredths of a cubic centimeter, etc., and read all metric expressions in prescriptions in milles in precisely the same manner as we read our monetary expressions in cents. No one reads $1.50 as one and fifty-hundredths of a dollar, but as one dollar and fifty cents. Then 1.500 c.c. would be read one ceci, five hundred milles; millececi being understood. And 5.080 grams would be read five grams and eighty milles; milligram being understood.

Also as we never write one dollar ten cents thus, $1.1, but always thus, $1.10, so we should always have the three places in our metric prescriptions thus, 1.700 gm. and never 1.7 gram. This for clarity and uniformity.

Frank Thomas Woodbury, M.D., Camp Gaillard, C. Z.

The Sweet Potato as an Aphrodisiac

To the Editor:—In a recent editorial [The Journal, Sept. 11, 1915, p. 957] on the "Sugars of the Sweet-Potato" you cite a quotation from the "Merry Wives of Windsor" as evidence that Shakespeare classed the sweet potato with sweetmeats. Let me suggest another interpretation.

The full quotation reads: "Let the sky rain potatoes; let it thunder to the tune of 'Green Sleeves'; hail kissing-comfits and snow eringoes; let there come a tempest of provocation, I shelter me here (embracing Mrs. Ford)." All three edibles above mentioned were, during Shakespeare's time, considered aphrodisiac, as truffles are today by the laity. The whole situation of the scene together with the allusion to the tune of "Green Sleeves" (a lascivious song) proves the correctness of my contention.

George Minges, M.D., Dubuque, Iowa.

Transverse Incision in Operation for Appendicitis

To the Editor:—In reading Dr. A. E. Rockey's paper (The Journal, Sept. 11, 1915, p. 939), I was struck by the fact that no mention was made by the author, or any of those who discussed the paper, of an important point brought out first, I think, by Professor Kocher of Berne, Switzerland: so far as possible to make the incision follow the line of skin cleavage. This line is transverse or nearly so in the lower abdomen, and when followed, the wound heals better, with a much narrower scar, and far less danger of postoperative hernia. This method has been followed by Babcock of Philadelphia for several years, with excellent results.

R. Penn Smith, M.D., Pittsburgh.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

JUDGMENT FOR DAMAGES—HERNIA—UNDER WORKMEN'S COMPENSATION LAW

To the Editor:—A man was injured in the mines and among his injuries a hernia developed. The employers refused to compensate this man any more than to the amount of $2.75, the price of a truss. He has brought suit. In a journal which I am unable to locate I find that a man got judgment in another state against the industrial commission of that state. Can you give me any reference to this case, or to any similar cases?

John Caldwell, M.D., Rayland, Ohio.

Answer.—The questioner has failed to state whether or not the person injured was working under the workmen's compensation law. If he was working under the compensation law, that law determines the amount of compensation to which he is entitled, and that amount can be recovered without necessity of entering suit. If he was not under the compensation law, he would have to sue under the common law.

Industrial commissions are administrative (and in some states quasi judicial) bodies appointed to administer the workmen's compensation law, and could not be sued by an injured person for compensation. The questioner, therefore, must be in error about judgment having been obtained against an industrial commission of some state for compensation due an injured workman.

In the case mentioned it is quite likely that the employers refuse to pay compensation for the reason that they believe the hernia was not the result of an accident. It is very common for workmen who receive an injury to claim that as a result of the injury a hernia developed, when as a matter of fact the hernia was present before the injury was received. Many cases of this kind have been tried under the common law as well as under workmen's compensation acts, with decisions varying, naturally, according to the facts in each particular case.

HERPES ZOSTER ON MUCOUS MEMBRANES

To the Editor:—Does herpes zoster occur in the buccal mucous membrane? A case was shown recently in the New York Post-Graduate School in which there had been vesicles on the inner surface of the mouth. These had been diagnosed as herpes zoster, but when the patient was shown to the class the vesicles had disappeared, leaving deep depressions on the inner surface of the cheek.

Julian L. Kendall, M.D., New York City.

Answer.—When there is involvement of the second branch of the fifth nerve, the eruption of herpes may occur on the cheek, side of the nose, and one-half of the upper lip. In exceptional cases, it may occur also on the mucous membranes of the cheek and pharynx. Loss of the teeth and necrosis of the jaw have been noted as rare complications.

LACTATION DURING PREGNANCY

To the Editor:—Pardon my suggesting that in your reply to the query of Dr. Norman (The Journal, August 21), you pass too lightly over the possible bad effects to the infant of nursing during pregnancy. While so far as I know, none of the standard authorities consider that deleterious substances are present in the milk as a result of pregnancy, there is practical unanimity among them in ascribing frequent bad results to infants nursing from the breasts of pregnant mothers. That this is not always due to nervous impressions is attested by the fact that there is not infrequently a deterioration in the mother's milk, even when she is ignorant of her pregnancy. That the decreased value of the milk of a pregnant woman may be due to a diminished supply or to an abnormal quantitative variation in normal constituents does not alter the fact of its undesirability as an infant's diet. Nor does it follow, because pregnancy does not always cause a deterioration of the milk, that it never does, any more than we can assume, because the laity are usually wrong on medical matters, that they are always wrong.

In lieu of further discussion of this question, I beg to refer you to the texts of Pfaundler and Schlossman, Rotch, Holt and others, who are not without reputation in the field of pediatrics. If, in the light of present-day knowledge, it is a matter of little or no consequence to the welfare of the nursling as to whether or not the mother is pregnant, it is the duty of pediatricians to lose no time in instructing, not the laity, but a large body of earnest and able general practitioners.

Benjamin H. Brown, M.D., Muskogee, Okla.

Answer.—There is no scientific proof of the theories advanced by our correspondent. While it is possible that in certain instances on the incidence of pregnancy the milk does deteriorate, that is not proof that the deterioration is due to the presence of the pregnancy. It would be a matter of clinical importance to determine whether pregnancy in itself without any attendant nervous phenomena produces the deterioration of milk which our correspondent suggests as a possibility. It is an unquestionable fact that a fair proportion of mothers nurse their babies until they learn of the presence of the pregnancy. It has never been possible by chemical analysis to determine any deleterious substances in the milk of pregnant women. Such substances, of course, may not be subject to discovery in this matter, but it would seem to be far wiser to assume that the pregnancy is not to blame for the disturbance in the infant or decrease in the flow of milk, and to seek in all instances to attribute this to some other cause. Certainly more harm can be done by assuming that pregnancy is deleterious to nursing than by assuming the opposite, and the question of the middle ground is at least debatable.

THE CLINICAL USE OF RADIUM

To the Editor:—Please inform me where I can secure literature on the clinical use of radium.

A. A. Ashby, M.D., Red Oak, Iowa.

Answer.—A list of references on this subject was published in The Journal for Oct. 18, 1913, p. 1475. The following articles have appeared subsequently to that date:

Literature on Radioactive Waters, The Journal, Sept. 18, 1915, p. 1049.
Abbe, R.: Roentgen-Ray Epithelioma Curable by Radium, The Journal, July 17, 1915, p. 220.
Simpson, F. E.: Radium in Treatment of Keloids, The Journal, April 17, 1915, p. 1300.
Tousey, S.: Roentgen-ray Keratoses on Hand of Roentgenologist Cured by Radium, The Journal, April 24, 1915, p. 1394.
Clark, A. S.: Radium Treatment of Cutaneous Epitheliomas by Single or Massive Doses, The Journal, May 9, 1914, p. 1453.
Tousey, S.: Case of Disseminated Carcinoma of Breasts and Axilla Improved by Radium, The Journal, April 11, 1914, p. 1167.
Rowntree, L. G., and Baetjer, W. A.: Radium in Internal Medicine, Its Physiologic and Pharmacologic Effects, The Journal, Oct. 18, 1913, p. 1438.
Simpson, F. E.: Radium in Skin Diseases, The Journal, July 12, 1913, p. 80.
Simpson, F. E.: Radium, Its Use and Limitation in Skin Diseases, The Journal, Aug. 29, 1914, p. 737.
Holding, A. F.: Relative Value of Radium in Dermatology, The Journal, Aug. 29, 1914, p. 741.
Kelly, H. A., and Burnam, C. F.: Radium in Treatment of Uterine Hemorrhage and Fibroid Tumors, The Journal, Aug. 22, 1914, p. 622.
Janeway, H. H.: Results of Radium in Cancer, The Journal, May 30, 1914, p. 1707.
Chace, A. F., and Fine, M. S.: The Use of Atophan and Radium Emanation in Treatment of Gout and Arthritides, The Journal, Sept. 12, 1914, p. 945.
Zinke, E. G.: Curative Effect of Radium, The Journal, Sept. 5, 1914, p. 817.
Newcomet, W. S.: Radium and Roentgen Rays in Radiotherapy, The Journal, Aug. 29, 1914, p. 743.
Schoenenberger, F. J., and Schapira, S. W.: Application of Radium in Bladder for Carcinoma, The Journal, Nov. 21, 1914, p. 1852.
Price of Radium Activators, Queries and Minor Notes, The Journal, Nov. 14, 1914, p. 1780.
Radium in Cancer, Current Comment, The Journal, Aug. 29, 1914, p. 787.
Radium Therapy in Carcinoma, Current Comment, The Journal, Jan. 17, 1914, p. 212.
Literature on Radium, Queries and Minor Notes, The Journal, Oct. 18, 1913, p. 1475.
Price of Radium Preparations, Current Comment, The Journal, Oct. 11, 1913, p. 1382.
Radium in the United States, editorial, The Journal, June 14, 1913, p. 1882.
Endemic Goiter and Radio-Activity, editorial, The Journal, June 7, 1913, p. 1799.
Effects of Radium Emanations on Uric Acid of the Blood, Current Comment, The Journal, Feb. 24, 1912, p. 560.

TREATMENT OF BEE STINGS

To the Editor:—Referring to query of Dr. Kettelkamp, under this heading (The Journal, Sept. 11, 1915, p. 972), I had a similar case and recognizing the evidences of anaphylaxis I gave 10 minims of epinephrin hypodermically with almost immediate relief. This may not be invariably successful, but I believe it is worth trying in such cases.

Frank L. Wood, M.D., Lynden, Wash.

Compensations in Medicine.—For scientific interest the field in medicine is large, and the reward comes in achievement, but the compensation otherwise is negligible. Problems of all sorts develop for the laboratory man as well as for the clinician in medicine and their solution is worth while, but not profitable.—Isadore Dyer, M.D., *New Orleans Medical and Surgical Journal.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS .

Arizona: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Colorado: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

District of Columbia: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

Illinois: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Kansas: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Michigan: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Montana: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

New York: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Oklahoma: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

Rhode Island: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

Utah: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Wyoming: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Montana April Report

Dr. William C. Riddell, secretary of the Montana Board of Medical Examiners, reports the written examination held at Helena, April 6-8, 1915. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 34, of whom 23 passed and 11 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1913)	77.8
Hering Medical College	(1910)	77.6
Northwestern University	(1912)	76.5
Rush Medical College	(1905) 85.2; (1908) 80.7; (1913) 84; (1914)	84.4
Medical College of Indiana	(1904)	76.2
Keokuk Medical College, Coll. of Phys. and Surgs.	(1903)	80.4
State University of Iowa, College of Medicine	(1897)	76.4
Tulane University of Louisiana	(1914)	81.8
College of Phys. and Surgs., Baltimore	(1913) 80.2; (1914)	79.9
Kansas City Hahnemann Medical College	(1909)	76.1
Washington University, St. Louis	(1914)	85.3
John A. Creighton Med. Coll.	(1905) 79.7; (1913) 77.6; (1914)	83.2
Jefferson Medical College	(1914)	78.1
University of Tennessee	(1907)	75.1
Vanderbilt University	(1906)	75.2
Wisconsin College of Physicians and Surgeons	(1912)	76.6
University of Christiana, Norway	(1896)	85.3

FAILED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago	(1910)	67
Dearborn Medical College	(1906)	73.5
Illinois Medical College	(1903)	71.6
University of Illinois	(1914)	71.6
Keokuk Medical College, Coll. of Phys. and Surgs.	(1906)	57
Sioux City College of Medicine	(1905)	74.1
University of Louisville	(1905)	62
University College of Medicine, Richmond	(1907)	74.1
Marquette University	(1910) 61; (1914)	73.9
University of Christiania, Norway	(1904)	73.5

Minnesota June Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 1-4, 1915. The total number of subjects examined in was 18; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 44, of whom 42 passed and 2 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1914) 86; (1915) 82,	87
Johns Hopkins University	(1913)	84
Harvard University	(1915)	87
Hamline University	(1904)	75
University of Minnesota	(1914) 84, 85, 87; (1915) 81, 82, 84, 85, 85, 86, 86, 86, 86, 87, 88, 88, 88, 88, 88, 89, 89, 90, (1916)* 83, 84, 84, 85, 85, 86, 86, 86, 86, 86, 87 87, 87, 88, 90.	

FAILED

College	Year Grad.	Per Cent.
University of Louisville	(1909)	74
Hamline University	(1904)	71

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University	(1910)	Illinois
Rush Medical College	(1903)	Illinois
Sioux City College of Medicine	(1905)	Iowa
University of Minnesota	(1910)	S. Dakota
Medical College of Virginia	(1914)	Virginia
Marquette University	(1913)	Wisconsin

* These candidates have completed a four year college term, but their diplomas are withheld pending the serving of a year's internship in an approved hospital.

South Dakota July Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Pierre, July 13-14, 1915. The total number of subjects examined in was 15; total number of questions asked, 95; percentage required to pass, 75. The total number of candidates examined was 11, all of whom passed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
George Washington University	(1909)	82.3
College of Physicians and Surgeons, Chicago	(1907)	84
Northwestern University	(1914)	93.3
Rush Medical College	(1911) 88.7; (1914) 85.2, 88; (1915)	90.7
Detroit College of Medicine	(1895)	81.4
University of Minnesota	(1915)	83.4
University of Nebraska	(1912)	85.7
University of Vienna	(1912)	84.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Minnesota	(1913, 2) (1914)	Minnesota
Woman's Medical College of Pennsylvania	(1912)	Colorado

The following questions were asked:

OBSTETRICS

1. Describe the female pelvis and name the bones composing the same. 2. Give cause, symptoms and treatment for puerperal eclampsia. 3. (a) What is menstruation? (b) What is vicarious menstruation? 4. How does the embryo receive nourishment? 5. Does the maternal blood enter the circulation of the child; if so, how? 6. How would you proceed when the placenta cannot be removed? 7. (a) What is abortion? (b) Miscarriage? (c) Premature labor? (d) Give treatment of threatened abortion. 8. What are the causes of albuminuria and edema during pregnancy? How would you treat the former? 9. What are the duties of a physician in a case of labor? 10. Give treatment of placenta prævia when occurring before full term.

EMBRYOLOGY, HISTOLOGY AND ANATOMY

1. From what embryonic layer is the skin developed? Name all other structures developed from the same layer. 2. Describe a fetus at third month. 3. Detail histology of the skin. Make a drawing showing a hair-follicle. 4. Detail histology of adrenal gland. Where are they located? 5. Locate the thyroid gland. Give its function, blood and nerve supply. 6. Describe and locate the ethmoid bone. 7. Name the bones of the tarsus. 8. Describe the ankle-joint. 9. Describe the axilla and name its contents. 10. Give origin, course and distribution of the seventh and eighth dorsal nerves.

PATHOLOGY

1. Describe the gross appearance of the kidney in chronic interstitial nephritis. 2. How does calcareous degeneration of the arteries influence the circulation? 3. (a) What is understood by the phrase "new formation"? (b) Define the term malignant as applied to new formations. 4. What are the pathologic appearances of anemia of the brain? 5. Is cerebrospinal fever more generally sporadic or endemic? 6. What is cretinism, and with what is it associated? 7. What pathologic conditions increase the elimination of urea? 8. Describe how mitral stenosis and aortic regurgitation respectively affect the cavities and musculature of the heart. 9. Describe the formation of an acute abscess. 10. (a) On what principals are tumors classified? (b) Mention the important classes of tumors, giving an example under each class.

REGULAR THERAPEUTICS AND PRACTICE

1. What are the symptoms and signs present in acute articular rheumatism with endocarditis? 2. Give in detail, the dietetic and hygienic rules and regulations you would prescribe in a case of diabetes mellitus. 3. Explain the difference between the principals underlying vaccine therapy and serum therapy. State the character of danger in their application to the human body. 4. Give the temperature chart in each of the following diseases: (a) Typhoid fever, terminating in recovery; (b) croupous pneumonia, terminating in recovery; (c) intermittent fever (quotidian); (d) variola, terminating in death on the twelfth day. 5. Give the incubation periods of measles, scarlet fever, smallpox and chicken-pox. 6. On what theories or principles are cold baths and cold sponging resorted to? State the indications calling for such measures. 7. How would you diagnose a case of diphtheria? Describe the treatment in detail and tell when it would cease to be infectious. 8. (a) Give the therapeutic application of drugs in the different stages of pneumonia. (b) Give the comparative value of chloroform and ether as an anesthetic. 9. In the treatment of chronic interstitial nephritis, what dietetic and hygienic suggestions would you make? Name three drugs that might be employed in the treatment of this condition, with the precise reason for the employment of each. 10. In what pathologic conditions is digitalis indicated and contraindicated? Describe its action.

SURGERY

1. Differentiate between congestion and inflammation. 2. What do you understand by a dissecting aneurysm? 3. What agents are employed for the production of local anesthesia? 4. Describe the operation of exposing the brachial artery for ligation at any selected point. 5. Describe a method of reducing a backward dislocation of the forearm. 6. What would be your treatment of a fracture at the base of the skull? By what symptoms would you base your diagnosis? 7. Describe the operation for the correction of a cleft palate. 8. What site should be selected in performing a paracentesis? 9. Give symptoms and treatment of hammer-toe. 10. Differentiate between appendicitis and renal colic from the standpoint of pain, tenderness, vomiting, urine and Roentgen-ray examination.

PHYSIOLOGY

1. (a) Give functions of gallbladder. (b) When is the bile thrown into the stomach and how? 2. Give the principal characteristics of the digestive juices. 3. (a) What is the difference between the sebaceous and sudorific glands? (b) Where found and their functions? 4. (a) What is the object of respiration? (b) What changes, if any, take place in the blood during respiration? (c) What muscles enter into the mechanism of respiration? 5. (a) Describe fetal circulation. (b) How many circulations during fetal and adult life? 6. What are the various functions of the liver? 7. Name the chief ductless glands and give functions of the same. 8. (a) What is meant by secretion? (b) What is meant by excretion? Give examples. 9. (a) How do the veins differ from the arteries? (b) How is the onward flow of blood maintained in the veins? 10. Give the varieties of connective tissue and where found and their functions.

CHEMISTRY

1. What is the average composition of air? Give chemical name, formula or symbol, valence and atomic weight of each constituent. 2. Give chemical name, symbol and physical properties of each of four gases, which would produce death if inhaled. 3. Give chemical names, symbols and physical properties of three gases having no bad effects if inhaled. 4. Complete the equations and give chemical names and physical properties of all new compounds formed. BaO_2 plus H_2SO_4 equals ? FeS plus H_2SO_4 equals ? 5. Give chemical name, formula and physical properties of each: aqua fortis; aqua regia; aqua destillata; oil of vitriol; blue vitriol. 6. How much mercury is contained in ten grains of mercurous chlorid? The atomic weight of Hg being 200, and Cl 35. 7. What is formaldehyd chemically? Physical properties? How is it made? 8. Detail a test for strychnin. 9. Detail approximate estimation of urea. What reagent is used? What is the chemical reaction?

10. ℞ Hydrargyri chloridi mitis.................... gr. xv
Potassii iodidi .... dr. i
Aquae...............................q. s. ad oz. ii
Misce.

What change takes place? Describe the appearance of the mixture.

GYNECOLOGY

1. Give a probable cause and treatment of dysmenorrhea in a virgin, aged 16. 2. Detail how you would treat half a dozen interstitial fibroids of uterus, not hemorrhagic, age 30. Why? 3. Give symptoms and treatment of hyperthyroidism, without exophthalmos. 4. Give symptoms and treatment of extra-uterine pregnancy. 5. Give indication for curetment of endometrium.

HYGIENE AND SANITARY SCIENCE

1. What do you understand by malignant pustule and how would you handle the same? 2. Describe a method of aerated disinfection. 3. Describe the method of antityphoid vaccination. 4. Why is pure air more beneficial than polluted air? 5. Describe how infectious and contagious diseases are most commonly spread.

BACTERIOLOGY

1. By what laboratory methods may rabies be diagnosed? 2. Describe the *Bacillus tuberculosis*, its habitat, mode of growth and method of detection. 3. Give the function and products of bacteria. 4. (a) Give a general description of the action of agglutinins. (b) In what disease, other than typhoid, do agglutination reactions occur? 5. (a) Define ptomains. (b) Define leukomains.

SKIN AND GENITO-URINARY

1. Briefly describe eczema and give treatment. 2. Give cause, symptoms and treatment of carbuncle, intertrigo, hives. 3. Describe condylomata; give their cause and treatment. 4. Give causes, symptoms and treatment of enlarged prostate gland. 5. Describe the course of an attack of gonorrhea in the female and give treatment; mention complications which are probable.

EYE, EAR, NOSE AND THROAT

1. What is the Argyll-Robertson pupil and what does it indicate? 2. Give etiology, symptoms and treatment of trachoma. 3. Mention a half dozen common affections of the eyelids and give the treatment for them. 4. How would you treat gonorrheal conjunctivitis? 5. Give cause and treatment of chronic suppuration of the middle ear. 6. Give prophylactic treatment when mastoid disease is threatened. 7. Name at least four general diseases that affect the ear. 8. Diagnose retropharyngeal abscess and give the treatment for it. 9. Give indications for doing tracheotomy. Describe the operation. 10. How would you diagnose nasal polypi? Give treatment.

MEDICAL JURISPRUDENCE

1. How would you determine the distance from which a bullet wound from a revolver had been inflicted? 2. What stains would you look for in suspected poisoning by (a) an acid, (b) an alkali? Give the character of the stains. 3. What would be your duty, as a physician, when called to a case of suspected poison, either by accident, suicide or homicide? 4. How would you distinguish between a case of death by suicide resulting from ingestion of (a) carbolic acid, (b) hydrocyanic acid? 5. How would you determine whether an infant found dead in water had been immersed before death or after?

Book Notices

Alveolodental Pyorrhea. By Charles C. Bass, M.D., Professor of Experimental Medicine at the Tulane Medical College, and Foster M. Johns, M.D., Instructor in the Laboratories of Clinical Medicine at the Tulane Medical College. Cloth. Price, $2.50 net. Pp. 167, with 42 illustrations. Philadelphia: W. B. Saunders Company, 1915.

The authors start out with essentially the following premise. The *Endameba buccalis* is found in pus from pyorrhea pockets. Emetin hydrochlorid injected into a patient having "alveolodental pyorrhea" causes the protozoa to disappear; in addition, the clinical appearance of the tissues involved in the disease is much improved after its use; therefore *Endameba buccalis* is the cause of pyorrhea, and emetin hydrochlorid is specific for the disease. The statement is so positively made that one at first is lead to accept it. But Koch's laws have not been satisfied; there is room for doubt as to the accuracy of the premise. Many other organisms are present in pyorrhea pockets which may be the cause of the disease. These too may be influenced by emetin, either directly or by causing changes in the tissues, rendering them unsuitable for bacterial action; therefore, one cannot unqualifiedly accept without further proof the statement that the *Endameba buccalis* is the cause of pyorrhea alveolaris. Those who have followed the writings of Barret and Smith and Bass and Johns, and attempted to verify their findings, have found amebas very constantly present in pus from pyorrhea pockets; but they have also found them present in practically all unclean mouths in which pyorrhea does not exist. Motile amebas taken from pus pockets about the roots of teeth, and observed in salt solution on a warm stage, do not differ materially from those taken from unclean mouths which are free from pyorrhea.

The statement that pyorrhea alveolaris is cured by emetin also needs further evidence. That some patients are temporarily helped there is little doubt; but that the disease is cured permanently by this drug does not coincide with general experience, and this is admitted in the book, since relapse is indicated; besides, it is acknowledged that surgical means are demanded in some cases. If the peridental membrane be so far destroyed that local treatment will not effect a cure, then no remedy which cannot restore the investing membrane will be effective. The peridental membrane being an organ, when once destroyed, cannot be restored, as is stated by the authors. This membrane when once gone leaves no means of vital attachment of the gums or other approximating tissues to the tooth's root; therefore the pockets caused as a result of destruction of the peridental membrane must remain, unless surgically obliterated. Otherwise the pockets are a constant source of reinfection.

The book contains well-stated truths and not a few fallacies. That traumatism is a fruitful source of pyorrhea as stated there is no doubt, but Talbot and others believe that there are other causes. The authors have not observed the beneficial effects of good brushing of the teeth and gums with the tooth-brush, else they would not have dwelt on the bad results of the use of the tooth-brush, and recommended gauze for cleaning the teeth. Hyperemic gums are often cured by intelligent or rather vigorous use of a stiff tooth-brush. Gauze may merely transfer the débris about the teeth to the interproximal spaces, rendering a bad condition worse. Gingivitis may lead to pyorrhea alveolaris; but not all gingival irritations are pyorrhea alveolaris, as the authors seem to believe; still, amebas may be found in almost every instance in which the gums are irritated at their margins by unwholesome surroundings, such as salivary or serumal deposits, food débris, etc., although the peridental membrane may not be in the least involved. Such a gingivitis, unless dependent on systemic disease or metallic poisons, is readily cured by thorough cleansing and friction. Pyorrhea alveolaris is difficult to cure by any known means except in its early stages. The gums in health are a dense tissue capable of standing much rough usage; indeed, if the gums and teeth do not have plenty of exercise either by the use of coarse food or by brushing, then both gums and peridental membrane become hyperemic.

The authors say (page 45), "We think that almost all are infected before they are 20 years old." If it is meant that amebas may be found in most mouths, one can easily concur in this statement; but if it is meant that all adults have pyorrhea alveolaris, experience in treating diseases of the teeth and mouth does not agree with this conclusion. Differentiation between simple gingivitis and the disease of the peridental membrane, commonly known as pyorrhea alveolaris, should be sharply drawn, as there is a vast difference between the two. The authors do not appear to recognize this distinction.

The authors doubt whether salivary calculi cause inflammation of the gums, or whether the gum inflammation causes the formation of salivary calculi (page 155). Had there been some reading of Black, Talbot, Kirk and others on such subjects, there would have been fewer errors of this kind. A reading of these authors would have given information which would have demonstrated that salivary deposits may be found on parts of artificial plates and teeth which do not come in contact with gums diseased or otherwise, and also that deposits on the roots of teeth, rootwise from the free margins of the gums, are not of salivary origin, but are probably due to inflammation. The positive statement that pyorrhea alveolaris is caused by the endameba and that emetin hydrochlorid is specific for this disease is unfortunate. It has permitted enterprising drug manufacturers to flood physicians and dentists with literature copied from those who have made these positive statements and, as a result, the drug is being used indiscriminately without sufficient knowledge to justify it.

Human Herbivore and Carnivore.—Given the presence of the two human types in one locality, what may be expected of them? History provides abundant answer. Thus in England the square-jawed Roundheads under Cromwell stirred up the country for a few years and disappeared. The hatchet-faced Puritans found England too crowded and settled a new world. Today hawk-nosed bird men rule the upper air. The carnivore is the restless pioneer, inductive, dying ever on the outskirts in search of something new. The herbivore is the sedentary stabilizer, deductive, ever at his appointed task. Both are necessary to the progress of the world, and neither can do the work of the other. It seems unlikely that the human species will ever be reduced to one type, but should this come to pass one might hazard a surmise that the surviving type would be a mixed one, perhaps three parts carnivore and one part herbivore.—John Bryant, M.D., *Boston Med. and Surg. Jour.*, Sept. 9, 1915.

Miscellany

Causes of Death in Eminent Physicians

Hermann Vierordt, son of the founder of clinical sphygmography, has recently published a study of the causes of death of various medical celebrities (*Med. Klin.*, 1915, xi, 499, 525, 549) similar in character to his book (1893) on the abnormities and diseases of famous historical and literary characters (Medizinisches aus der Geschichte, Ed. 3, Tübingen, 1910). In 1907, the late Dr. William Pepper published a study of "Diseases of Great Physicians of the Past" (*Med. Lib. and Hist. Jour.*, 1907, v, 273) to which Vierordt's list, mainly German, may be regarded as supplementary, as most of his items are modern. Pepper gives us many quaint and curious details, such as the fact that Dr. Guillotin did not die of the guillotin, as is claimed; Dupuytren's statement that "he would rather end his life through God's hand than that of a surgeon"; Sir Theodore Mayerne's prediction of the time of his own death, and the fatal duel between Drs. Williams and Bennet of Jamaica (1750), which originated in a controversy about their views on the nature of bilious "fever."

Combining the data of Pepper and Vierordt, we find that the most common cause of death in these brain-workers is apoplexy, of which there are no less than thirty-six cases, including Scultetus (1645), Harvey (1657), Malpighi (1694), Ramazzini (1714), Linnaeus (1778), Stoll (1788), Monro 2d (1817), Jenner (1823), Pinel (1826), Young (1829), Sprengel (1833), Neissner (1860), Baudelocque (1864), Malgaigne (1865), Pfeuffer (1869), Carl Livi (1876), Stokes (1878), Buchheim (1879), Schwann (1882), Bevill Peacock (1882), Ritter von Rittershain (1883), Fechner (1889), Helmholtz (1894), Henke (1896), Fick (1901), Max Nitze (1906), Ponfick (1913) and Julius Pagel (1912). Physicians, no doubt from the drive and worry of their active lives, seem particularly liable to disorders of the circulation. Thus Lancisi (1820), Boerhaave (1738), Morgagni (1771), Currie (1805), Corvisart (1821), John Bell (1838), Richard Bright (1858), Bezold (1868), Ritter von Hoffmann (1897), Sir W. T. Gairdner (1907), Koch (1910) and Angelo Celli (1914) died of heart disease; John Hunter (1793), Sir Charles Bell (1842), Sir James G. Simpson (1870) and Augustus Waller (1870) of angina pectoris; Liston (1847), Morel Lavallée (1865), Gustav Simon (1876), Murchison (1879), Nikolaus Friedreich (1882), Hilton Fagge (1883) and Baelz (1913) of aortic aneurysm, and Wepfer (1695), the historian A. Hirsch (1894) and Heineke (1901) of "calcification of arteries." Tuberculosis, also apparently one of the greatest enemies of the doctor himself, carried off Swammerdam (1680), Zinn (1759), J. G. C. von Siebold (1798), Bichat (1802), Robert Willan (1812), Bayle (1816), Mathew Baillie (1823), Laennec (1826), Canstatt (1850) and Lockhart Clarke (1880).

Van Helmont (1864) and Dupuytren (1835) died of pleurisy, and the physician-poet Mark Akenside (1770)—whose name Vierordt distorts into "Mark A. Kenside"—and Valleix (1885) of diphtheria. Gout numbered among its victims Scaliger (1558), Jerome Cardan (1596), Sydenham (1689), Linnaeus (1778), William Hunter (1783), Berzelius (1848), Corrigan (1880) and Cohnheim (1884). Smallpox killed Caspari (1828), Döllinger (1841), John Bostock (1841) and Henry Gray (1868); cancer, Lorenzo Bellini (1704), Sir Benjamin Brodie (1862), Mikulicz (1905) and Möbius (1907); septicemia, Spigelius (1625), Claude Perrault (1688), William Hewson (1774) and Kolletschka (1847); typhoid fever, Rush (1813), Spurzheim (1832), William Wallace (1838), Deiters (1863), Oppolzer (1871) and Meyer, the describer of adenoid vegetations, (1895); typhus fever, Reil (1813), John Syng Dorsey (1818) and G. Cornet (1915); dysentery, Thomas Hodgkin (1866), and erysipelas, K. W. Jacob (1858) and Moleschott (1893). Claude Bernard (1878) and Pasteur (1895) succumbed to uremic seizures; Neumeyer (1871) and Liebermeister (1901) to sarcoma of the kidney; Haller (1777) and Scarpa (1832) to cystitis; Riolan (1657), Rivinus (1723) and Portal (1832) to urinary calculus; Jobert de Lamballe

(1867), Theodor Simon (1874) and Karl Schroeder (1887) to brain disease; Bronssais (1838) to hemorrhagic colitis, and W. E. Horner (1853), Griesinger (1868), Middeldorpf (1868) and F. W. L. Bischoff (1882) to perforative typhlitis or appendicitis.

Wirsung (1643) and Delpech (1832) were assassinated; Desault (1795) may have been poisoned; Servetus (1553) was burned; J. von Jessen (1621) and Struensee (1722) were beheaded; Carpue (1846), C. Waller (1862), Bouvier (1877), Pagenstecher (1879), von Gudden (1886), drowned in the Starnberger Sea, while struggling with the insane monarch, Ludwig II of Bavaria, during his last moments), R. Carmichael (1887), Wernicke (1905) and Oscar Lassar (1907) met violent death by accident, and John Aitken (1790), Horace Wells (1848), Michaelis (1848), von Baerensprung (1864), Treitz (1872), Victor Hanot (1896), M. von Pettenkofer (1901) and perhaps Joseph Toynbee (1866) committed suicide. To the list of assassinations should be added Lehr's extensive martyrology of physicians and asylum attendants killed by insane patients.

Electrocardiography

The electrocardiograph is a rather expensive, recently invented instrument, requiring some skill in its use. This probably accounts for the fact that the great majority of medical men have no detailed knowledge either as to the instrument itself or as to its value as a diagnostic aid. A brief review of the subject will therefore be worth while.

The contraction of the muscular walls of the heart set up electrical currents known as action currents. When these currents are conducted from the patient to a sensitive string galvanometer (a silver thread approximately 1/25,000 inch in diameter suspended between the poles of a magnet) definite movements of the string result. These movements are photographed by a moving plate or film. The resulting picture is an electrocardiogram and, in reality, is a graphic portrayal of the cardiac action. Extensive experimental work by Einthoven, the inventor of the electrocardiograph, by Thomas Lewis and others, has demonstrated the significance of the various points in such a tracing and the alterations in this picture that occur in various pathologic conditions have become definitely established.

With the aid of the electrocardiograph it has been almost indisputably proved (Eyster and Meek, Experiments on the Origin and Propagation of the Impulse in the Heart, *Heart*, 1914, v, 119) that the impulse which causes the heart to beat arises in a specific bundle of muscle fibers in the roof of the right auricle, known as the sinus node. This impulse is conveyed to the various chambers of the heart by a distinct system of fibers. When other points in this system become more irritable than the sinus node, a contraction impulse may arise here, and an extra beat or so-called extrasystole results. Whether such an impulse originates in the auricle, in the right or left ventricle or in the junctional tissues between the auricles and ventricles may be determined with the electrocardiograph. The large group of cardiac irregularities caused by extrasystoles has thus been definitely classified. An irregular pulse is often a matter of great concern to both the patient and the physician, and the electrocardiograph is an essential aid in determining whether an irregularity is of grave import or whether it is an extrasystole and of little significance.

Examples of heart block give a characteristic tracing. Since an auricular contraction results in a definite wave followed in a short interval by a series of waves depicting the ventricular contraction, any disturbance between the number and regularity of the auricular and ventricular beats is graphically portrayed. If there is a complete blocking of the impulse in its passage from the auricle to the ventricle through the bundle of His the auricular waves in the tracing are much more numerous than the ventricular waves and have no relation to them. This is the result of the independent rhythm of the auricles and ventricles that is estab- [illegible] block. If the blocking is only partial every second or third auricular impulse gets through the bundle of His and is followed by a ventricular contraction.

The advent of the electrocardiograph has established a heretofore unknown type of heart irregularity, auricular fibrillation, and one that is probably more frequently encountered than any other. In this condition the auricular musculature is fibrillating and instead of 60 to 80 strong auricular contractions per minute there may be as many as 400 to 500 pseudocontractions. Few of these impulses get through the bundle of His and the result is a markedly irregular pulse. Such a tracing contains numerous small auricular waves bearing no relation to each other and only an occasional one followed by a ventricular systole. When auricular fibrillation is suspected on physical examination an electrocardiogram is an invaluable help in establishing the diagnosis.

Information concerning the myocardium as a whole is also furnished. Hypertrophy of the auricles or of the ventricles is represented by an increase in the height of the auricular or ventricular waves. In mitral stenosis an increase in the height of the auricular wave has often called attention to a lesion which has not been suspected on physical examination. Recently it has been possible to take tracings representative of the heart tones and thus murmurs and their relation to the cardiac cycle are accurately recorded.

Physicians and the Hall of Fame

The *British Medical Journal* thus comments on the tabulation by Mr. Pickering in *Science* of the votes at the three elections of the American Hall of Fame:

"Politicians head the list. Next come authors. It is significant of the value of popular judgment that while of eleven writers of fiction nine were elected, of ten authors who dealt with serious subjects, only three gained the *arbitrium popularis aurai*. Next come soldiers and sailors. Doctors hold a low position, but this is not surprising, as medicine is not a profession which leads to popular fame among Anglo-Saxon peoples. What is surprising is that in a country like America which swarms with inventors, and where the cult of the 'almighty dollar' is generally believed to be so prevalent, engineers and business men are nearly at the bottom of the list. 'Philanthropists' stand lowest of all. The list suggests some curious reflections as to the mentality of the American people, but it would be rash to draw any definite conclusion from the figures. The system of voting is probably accountable for the strangeness of the results, for till now the judges have been literary men who may be assumed to have been more familiar with the work of authors than with that of men whose activity was displayed in other fields. Even allowing for this, it is remarkable that among so practical a people fiction should hold the place of honor in literature; and it is hard, as Mr. Pickering says, 'to believe that there are . . . twelve authors more famous than any American missionary, physician, engineer, or business man.'"

Improvement in Milk Supply

The National Clean Milk Society of London is making an effort to raise the hygienic standard of milk and milk products sold in London, and to educate the public as to the importance of a clean and wholesome milk supply. According to A. E. Ingram, U. S. consul at Bradford, when the milk and dairies act of 1914 was passed an effort was made to have a provision inserted for certified milk such as is now produced in the United States. The provision failed of adoption. Efforts are also being made to have the scorecard system of dairy inspection adopted such as is used in the United States. The city of Bradford has already adopted the plan. The British Board of Agriculture is encouraging the formation of milk recording societies. It is said that heretofore the dairy men have not appreciated the value of milk records. Up to March, 1915, only sixteen societies have been formed throughout the country.

Medicolegal

Amount Physicians May Prescribe Under Harrison Antinarcotic Law

(*United States vs. Friedman* (*U. S.*), *224 Fed. R. 276*)

The United States District Court, Western District of Tennessee, sustains a demurrer to, and quashes, an indictment that charged the defendant with having dispensed, distributed, and prescribed gum opium and powdered opium, the derivatives, compounds, and preparations thereof, to wit, morphin sulphate, heroin, and cocain, a derivative of coca leaves, without the dispensing, distribution, and prescription as aforesaid being in the course of his professional practice; that is to say, that he dispensed, distributed, and prescribed the aforesaid drugs in quantities more than was necessary to meet the immediate needs of a patient, and did not distribute, dispense, and prescribe the drugs in good faith and as a medicine. The court says that the indictment was drawn under Section 2 of the Act of Congress approved Dec. 17, 1914, known as the Harrison Antinarcotic Law. An attentive examination of the indictment disclosed that the offense with which the defendant was charged was dispensing, distributing, and prescribing the prohibited drugs in quantities more than was necessary to meet the needs of a patient, and that they were not distributed, dispensed, and prescribed in good faith and as a medicine. As the court understands Section 2 of the Act, the only thing required of a person, who shall give an order as provided in said section for the drugs mentioned in the act, is that he shall make or cause to be made, at the time of giving the order, a duplicate thereof, on a form issued by the commissioner of internal revenue, and in case of the acceptance of said order he shall preserve such duplicate for two years. The defendant was not indicted for failure to do either of these last-mentioned things. Subsection "a" of Section 2 provides that nothing contained in the section shall apply to physicians, dentists, or veterinary surgeons, registered under the act, who dispense or distribute any of the drugs in the course of their professional practice, provided that they shall keep a record of all of such drugs dispensed or distributed, showing the amount dispensed or distributed, the date, and the name and address of the patient to whom such drugs are dispensed or distributed, unless the physician shall administer them personally to the patient. But the defendant was not indicted for violation of subsection "a," but, as has been said, he was indicted for giving a prescription for said drugs in quantities more than was necessary, and not in good faith and as a medicine. The court fails to find in the act of Congress under examination any language making the doing of the things with which the defendant was charged a violation of law. In other words, there is no limit fixed to the amount of said drugs that a physician may prescribe, nor is there any duty imposed on him, other than to keep a record of all such drugs dispensed by him, and the name and address of the patient, except those to whom he may personally administer, and that he must preserve the records for a period of two years. For failure to do either of these things the defendant was not indicted. The result is the court holds good a demurrer to the effect that the acts of the defendant averred in the indictment are not prohibited by law, nor are they in violation of any law of the United States.

Constitutionality of the Harrison Antinarcotic Law

(*United States vs. Brown* (*U. S.*), *224 Fed. R. 135*)

The United States District Court in the Western District of the State of Washington overrules a demurrer to an indictment charging the defendant with unlawfully having in his possession and under his control about 3 drams of "yen shee," a derivative and preparation of opium, he not having registered nor paid the special tax as required by the Act of Congress of December 17, 1914. The demurrer was filed on the ground that the indictment did not state facts sufficient to constitute an offense under any valid or constitutional law of the United States. It was contended that the support of the indictment, if any, must come from Section 8 of the act referred to, and that this section, which makes it unlawful for any person who has not registered and paid the special tax as provided by this act to have in his possession or under his control any opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, is unconstitutional, in that it is an attempt on the part of Congress to encroach on the police power of the several states; that the only right Congress has to control the sale of a commodity, within the provisions of the Constitution, is (a) to regulate commerce; (b) the right of taxation; and neither of these rights is invoked by Section 8. But the court says it thinks it may assume, and will take judicial notice of the fact, that no opium is grown or produced in this country, and that the purpose of the act is to prohibit the importation of opium. The purpose of Congress being to prohibit the importation, manufacture, or sale of the drugs described, and by this act the drug having become an "outlaw" in the country, Congress has a right to trace its presence, and has the power to punish any person in whose possession this "outlawed" article may be found. The possession of such drug or control thereof is made presumptive evidence of the unlawful importation, manufacture, etc., as well as an obligation to pay the special tax provided by the act, and a failure to register and pay the tax as provided would be a fraud on the United States, in that it deprived the government of the revenues provided by the act. Congress, having the power to exclude the drug entirely from the United States, and the right to regulate its relation to interstate commerce, and to levy a tax, must be held to have the right to make it unlawful for any person who has not complied with the provisions of the act by registration or paying a tax, to have in his possession this "outlawed" article. The act must be construed as a whole, and force given to every part when this can be done.

Indictable Use by Physicians of Mails to Defraud

(*United States vs. Baxter et al.* (*U. S.*), *221 Fed. R. 473*)

The United States District Court, Northern District of California, overrules a demurrer to an indictment for using the mails in furtherance of a scheme to defraud. The court says that the scheme, as set forth in the indictment, was that the defendants, as physicians, should by means of advertisements induce certain persons named in the indictment, and others to the grand jurors unknown, to communicate with them relative to real or supposed ailments. That the defendants should then, by means of letters and through the postoffice department, and irrespective of any symptoms communicated to them, and even in cases in which the symptoms indicated health, rather than disease, and without any real knowledge of the condition of the person so induced to communicate with them, state to such person that he was afflicted with a disease which the defendants could cure, and that they would furnish treatment for such disease for a certain sum of money, and by means of such letters would induce such person to send them money for the purpose of procuring medicine and treatments skilfully and properly designed and prepared for the cure of the disease with which such person was afflicted, or had been induced by them to believe himself afflicted, which money they would fraudulently convert to their own use. That in return for such money they should send to such person certain medicines of little or no value, and not medicine and treatment skilfully and properly designed and prepared for the cure of such person, the defendants having no real or proper knowledge of such person's condition, or whether he was diseased or not, or whether or not such purported medicine was capable of benefiting such person, as they well knew. It was contended on the demurrer to the indictment that for many reasons the foregoing scheme was not one to defraud within the meaning of Section 215 of the criminal code. But to this contention the court is unable to agree. When it is averred that a physician has devised a scheme to defraud, by stating to one who offers himself as a patient that such person is afflicted with a disease which the physician can cure, and this irrespective of the symptoms, and whether or not the symptoms indicate health rather than disease, and without any real knowledge of the condition of such person, and by such statement should cause and induce such person to send him money, for which he would send in return medicine of little or no value, and not medicine skilfully and properly designed and prepared for the cure of the disease with which such person was afflicted, or had been induced by such physician to believe that he was afflicted, the court thinks it clearly appears that the physician was engaged in one of the most reprehensible schemes to defraud of which the law can take cognizance. It may, indeed, be quite true that medicine is not an exact science, and that there is a wide divergence of opinion, even among reputable physicians, as to what is the proper method of treatment for any particular disease. But this fact is beside the mark here. All such treatments contemplate at least good faith on the part of the physician, and are not based on a deliberate design on his part to procure money from a person who, so far as the physician knows or has reason to believe, is in sound health, by stating to him that he is afflicted with a disease; and this is true, whether resort be had to the use of the mails or not. The design as alleged may not be easily proved; but it is a design to defraud, and the indictment is sufficient.

A Limited Partnership Between Physicians and Their Liability for Malpractice

(Pier vs. Cauley et al. (Neb.), 152 N. W. R. 298)

The Supreme Court of Nebraska, in reversing a judgment rendered in favor of the defendants, two physicians sued for malpractice, and remanding the cause for further proceedings, holds good, as against a joint demurrer, a petition which charges concurrent and inseparable acts of negligence, which result in injury to the patient, against two physicians charged with the care and treatment of the patient. The court says that the plaintiff alleged that the defendants, Drs. Cauley and Allenberger, one of whom practiced at one place, and the other at another, had an arrangement with each other whereby, in cases in which Dr. Cauley was called in his professional capacity to attend and treat a patient for a wound or physical injury of any kind, and particularly when he was called in a case which needed or required a surgical operation or treatment, he was to call Dr. Allenberger in consultation and to aid and cooperate with him in such treatment and operation, and was to charge his patient for the services of each of them. That the plaintiff broke her leg below the knee in such a manner that the bones protruded from the wound and dirt and foreign substances were admitted therein. That Dr. Cauley was called to treat the case, but negligently omitted to remove from the wound the dirt and foreign substances, and negligently failed properly to treat the injury or reset the broken bones, in addition to which he urged the plaintiff's parents to cause her removal to a hospital in the city where Dr. Allenberger was located, and where Dr. Allenberger was, pursuant to the arrangement before mentioned, called by Dr. Cauley to come and aid him in the treatment of the case, and that Dr. Allenberger, with the knowledge and consent of Dr. Cauley, and pursuant to said arrangement with him, continued unskilfully and negligently to treat the plaintiff for said injury for a period of over nine weeks. That, as soon as the plaintiff's parents learned her true condition and of the alleged negligent and incompetent treatment, they took her to another surgeon, who amputated her leg, the amputation being necessary to save her life and made necessary by the "negligence, unskilfulness, and carelessness of said defendant." The defendants filed a joint demurrer to the plaintiff's petition on the grounds that the several causes of action therein stated were improperly joined, and that there was a misjoinder and a defect of parties defendant. The demurrer in effect admitted the truth of all the allegations of the petition, one of which was with regard to the arrangement or agreement between the defendants, before mentioned. The effect of this agreement to create a limited partnership. No separate cause of n was necessarily stated against Dr. Cauley, because the acts of negligence charged were continuing acts, beginning with his first failure to cleanse the wound, and extending throughout the time that the patient was under the care of himself and his special partner, Dr. Allenberger. Counsel for the defendants cited a number of authorities in support of their contention that the petition stated two causes of action, one for the wrongful acts and omissions of Dr. Cauley while acting alone, and another for the acts and omissions of the two physicians while acting jointly; but in the cases cited there was no concerted action between the different defendants, but each of the wrongdoers acted independently of all others, although the effect of what they did merged and produced the injury. If the defendants acted separately, each independently of the other, there being no concert of action between the two, there would be no joint liability; but if their acts were concurrent and inseparable, and, taken together, produced the injury alleged, they were jointly liable therefor.

Standard for Measuring the Nuisance Qualities of a Noise

(Wahrer vs. Aldrich (Wis.), 152 N. W. R. 456)

The Supreme Court of Wisconsin affirms a judgment holding that a proprietor of a hotel was not entitled to have the operation of a neighboring roller skating rink permanently enjoined, but only later than 10 o'clock at night. The court says that, as would be expected in a case of this kind, there was a wide range in the testimony regarding the volume of noise made by the rink. Some described it as very loud and annoying and others as nothing out of the ordinary. All practically agreed that the noise made by the skating was that of a rather loud rumbling noise—much like that of a train passing over a bridge. Some found the music pleasant, some unpleasant, and on others it seemed to have made no particular impression. There was medical testimony to the effect that the noise was not of a kind physically to annoy persons of ordinary sensibilities. The court thinks that the evidence supported a finding of fact to the effect that the operation of the rink, as conducted, was not physically annoying to any of the permanent residents, of ordinary sensibilities, in the neighborhood. The standard for measuring the nuisance qualities of the noise was its effect on a person of ordinary sensibilities. It was to be gaged neither by a neurotic nor a phlegmatic temperament. To constitute a nuisance, it must be physically annoying; it was not sufficient for it to offend mere taste or what was ideally desirable. An actual effect of discomfort must be produced by it on the average nervous organization before courts would interfere.

Examination by Physicians for Defense After Exhibition to Jury

(Houston & T. C. R. Co. vs. Bukowsky (Tex.), 175 S. W. R. 477)

The Court of Civil Appeals of Texas, in affirming a judgment in favor of the defendant railroad company, in this personal injury case, holds that there was no error in refusing to permit two physicians to examine the plaintiff's foot outside of the courtroom, and not in the presence of the jury, with the view of determining whether or not he was in fact injured as claimed by him, and thereafter testifying as to the result of their examination, which, it was contended, would have disclosed that the plaintiff was malingering, and that his foot was not in fact injured. The court says that it was not shown that a full examination could not have been made by the physicians in the courtroom and in the presence of the jury. Where the plaintiff voluntarily submits to a personal examination in the presence of the jury by physicians of his own selection, who testify with reference thereto, then it would be error to refuse to permit the opposite side to examine him by its physicians for the purpose of controverting the result of the examination as testified to by his own witnesses; and for this purpose, if it is made to appear that such examination cannot be made by the opposing witnesses in the presence of the jury, it would be the duty of the court to permit them to make such examination apart from the jury. This case, however, did not come within this rule.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
National Assn. for the Study of Pellagra, Columbia, S. C., Oct. 21-22.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Vermont State Medical Society, Burlington, Oct. 14-15.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Twenty-Eighth Annual Meeting held at Pittsburgh, Sept. 14-16, 1915

The President, Dr. Charles L. Bonifield, Cincinnati, in the Chair.

Local Anesthesia in Herniotomy

Dr. J. H. Jacobson, Toledo, Ohio: Among 124 operations done by me there have been no deaths. My experience with this method has convinced me that whenever possible, such operations should be performed under local anesthesia. The only exception to this rule should be in herniotomy in children and when the operation must be performed in uncontrollable nervous adults. In only three of the operations was it necessary to complete the operation with a slight amount of ether. These were among the earlier operations.

I have never observed the slightest toxic effect from the use of the 0.5 per cent. novocain and epinephrin solutions which I have employed for these operations.

DISCUSSION

Dr. John W. Keefe, Providence, R. I.: My experience is in accord with that of the essayist. Most of the operations for inguinal hernia can and should be done under local anesthesia.

Dr. Albert Vander Veer, Albany, N. Y.: A hernia operation should not be undertaken in children under local anesthesia. A general anesthetic is best for that purpose.

Dr. William H. Humiston, Cleveland: In following an exclusive method of anesthesia, one is inclined to make every case submit to that form of anesthesia, and in my early work I soon found out that this is poor judgment. We must select our cases.

Case of Intestinal Obstruction and Volvulus

Dr. Rufus B. Hall, Cincinnati: This case of intestinal obstruction and volvulus was caused by a large gallstone. The profession generally does not regard gallstones in which the patient is not a great sufferer as a surgical condition. These patients are treated by physicians, with very indefinite results, so far as any permanent relief is concerned, the symptoms being variously described by such vague terms as indigestion, neuralgia, gastritis, etc. They are surgical cases and I recommend exploratory operation in all those chronic cases in which there is a clear past history of one or more acute attacks. In those cases in which the stone, through ulceration, passes into the bowel, the patient is subjected to great danger, even if he does survive. When intestinal obstruction occurs, it is so many years after the acute attack that the real cause is not recognized until revealed at the operation or necropsy. The long history of gallstone is ignored or forgotten.

DISCUSSION

Dr. Hugo O. Pantzer, Indianapolis: The first case of this kind was reported by Dr. Elsner, of Rochester, N. Y., about twenty years ago. There was a history of gallbladder trouble attended by attacks of acute obstruction. In each of the attacks, a different part of the abdomen appeared to be the seat of obstruction. Finally, the stone was passed per rectum.

Dr. Gordon K. Dickinson, Jersey City, N. J.: If 30 per cent. is our accurate diagnostic average in the abdomen, then operation should be done promptly, and more on suspicion than on an accurate diagnosis, more on opinion that something is wrong than to wait until we feel that something is positively and surgically bad. In going over my cases I find that death in many of them was due to dilatation of the right side of the heart, which comes on quickly after an abdominal operation, partly due to the anesthetic, and partly due to the condition of the heart before operation.

Dr. J. Henry Carstens, Detroit, Mich.: We do not perform these operations early enough. If we can make a diagnosis and resort to an exploratory operation promptly, we would not have so many of these cases terminate fatally.

Dr. Magnus A. Tate, Cincinnati: Five years ago I saw a woman, 60 years of age, who had been complaining of progressive pain and tenderness for a number of years. One day she was taken with severe continuous vomiting, and the abdomen was distended. She refused to undergo an operation. Later she was operated on, and a stone, 2½ inches in size, was found in the intestine, about 6 inches from the gallbladder. The intestine was gangrenous and ready to burst. In making the resection a portion of the contents escaped into the abdominal cavity. The patient went into a state of collapse and died about three hours after the operation.

Dr. John F. Erdmann, New York: I have had five cases of intestinal obstruction from gallstone in the past ten years, and of this number four patients died. Strange to say, the recovery was in a woman 72 years of age on whom I did an enterostomy and appendectomy. She also had a large tumor of the right ovary which was mistaken for an appendicitis.

Dr. Herman E. Hayd, Buffalo: I recall a patient, a woman, 79 years of age, who had practically no symptoms. So far as the passage of a stone is concerned, she never had an attack of violent pain, and yet the stone found was as large as a small hen's egg. I was called to see her when she was having fecal vomiting. She vomited for two days. I operated, removed the stone, and she lived five days after the operation. There was no history of ulceration or of an inflammatory attack. The stone was found in the bowel and the symptoms were those of intestinal obstruction.

Dr. Albert Vander Veer, Albany, N. Y.: A patient whom I had attended some fifteen years previously was taken very ill and had what we supposed was an acute jaundice. He recovered from this attack and lived fifteen years afterward in good health. At the time of death, I was allowed to make a necropsy. We suspected he had some malignant disease of the intestinal tract. I found a direct communication between the neck of the gallbladder and the beginning of the transverse colon. I believe this man in his previous illness had passed through a form of sickness that had resulted in relieving the gallbladder of gallstones, and they had passed out through the large intestine. The fistulous tract gave him no great inconvenience.

Dr. Charles L. Ill, Newark, N. J.: In forty patients operated on by my brother and myself we found three large gallstones in the small intestine. In one case we found a mass between the small intestine and the gallbladder. Three large gallstones were passed through ulceration into the intestine, caused obstruction, and killed the patients.

Dr. D. Todd Gilliam, Columbus, Ohio: When we speak of being unable to find a gallstone or gallstones near the lower part of the ileum, there is reason for it. The upper part of the intestinal canal is larger in caliber than the lower, and a gallstone will pass down pretty well toward the entrance of the ileocecal region before it becomes arrested, and the lower part of the ileum is less distensible than the upper part. Whenever we find great distention of the abdomen along with obstruction, it should always remind us of gallstones.

Dr. John Norval Bell, Detroit: A woman, 67 years of age who had never had any pain, but simply heaviness and fulness, had a palpable tumor of good size. It was hard to determine its nature. On opening the abdomen I found it was a large thickened gallbladder full of stones.

Dr. William Edward Darnall, Atlantic City, N. J.: I recall a patient I saw a year or two ago on whom I operated after the diagnosis of appendicitis with all of its symptoms, and I found a small collection of pus and in it a stone (undoubtedly an enterolith) about the size of a goose egg. It was about one-eighth of an inch thick, with a hard shell of calcium salts. Such accumulations of bile salts under some circumstances go on to form a full gallstone.

Cholecystectomy Versus Cholecystostomy

Dr. L. W. Swope, Pittsburgh: No absolute rule can be laid down to guide one in determining when cholecystectomy is preferable to cholecystostomy, yet there should be some way of ascertaining why the percentage of cures is higher after removal of the gallbladder than after draining. From the former cases in the patients who survived operation and answered my inquiries I get a report of 96.8 per cent. cures, and the remainder suffer from symptoms probably indicating associated gastric or pancreatic disease. On the other hand, in cholecystostomy, there were only 74.8 per cent. of cures, the remainder being no better and many of them worse than before operation. In considering the latter it is, of course, true that in many of them the disease was so advanced and adhesions so extensive that removal of the gallbladder was out of the question because of the high mortality in such cases. There are still a large number in which it seems to be reasonable to suppose that better permanent results would have been obtained by removal of the gallbladder instead of drainage. This argument receives verification in the results obtained in the two-stage operation where for some reason we decided to drain the gallbladder at the first operation and remove it from four to eight weeks later. The dangers of cholecystectomy include the possibility of injuring the ducts, vessels and surrounding viscera from the manipulations necessary to free the adhesions. When adhesions are so extensive that the removal of the gallbladder would be attended with marked traumatism and leave large areas of raw surfaces to be covered, then because the primary mortality is so high and the hope that subsequent complications will not arise is so uncertain, I believe better results are obtained by drainage of the gallbladder. While a diseased gallbladder, like a diseased appendix, should always be removed when possible, still there are exceptions. Because primary removal of the gallbladder opens up so many tracts for the possible extension of infection, and because experience has shown that occasionally a patient does die from acute sepsis in infections of this kind, I am convinced that such a gallbladder should be drained with as little manipulation as possible. Then at the end of from four to eight weeks, if recovery is comparatively complete, the gallbladder should be removed, as these patients are the ones who are left with a chronic infection which advances so insidiously that years may elapse before a return of symptoms, but when they do return the involvement of the upper abdomen is frequently too extensive to permit complete removal and ultimate cure. These cases also offer favorable sites for subsequent malignant degeneration. In advocating cholecystostomy in infective cases I do not include hydrops and chronic empyema of the gallbladder in a quiescent state, as cholecystectomy is safer when the infection has ceased to be active.

DISCUSSION

Dr. John F. Erdmann, New York: As to cholecystectomy versus cholecystostomy, activity, efficiency and morbidity are the things we should consider in order to reduce the mortality to the lowest point. Anything that would increase efficiency must of necessity decrease morbidity, and cholecystectomy without any question limits morbidity and increases efficiency. As a result of my statistics I have been doing cholecystectomy practically in every case. There are some cases, however, in which we must do cholecystostomy.

Dr. C. S. Foster, Pittsburgh: There is an indication for removing gallbladders that cause no symptoms. For instance, if we suspect the ducts to be enlarged and the glands enlarged down along the ducts, independently of pancreatic disease or of involvement of the viscera of the stomach, such a gallbladder is infected and ought to be taken out.

Dr. John W. Keefe, Providence, R. I.: We ought not to operate during the acute stage of inflammation in gallbladder disease. Occasionally, we will have perforation and gangrene, and there will be a few cases in which it is necessary to operate during that period, but if one can keep away from operation and wait until convalescence is established, he will meet with greater success when he does operate.

Dr. Francis Reder, St. Louis, Mo.: With regard to feeding a patient deprived of bile salts on ox-gall, if you are reasonably certain that the patient's bile is in a normal condition you can feed that patient with his own bile by simply making him drink it.

Unusual Contents (Kidney) of Inguinal Hernia

Dr. Charles W. Moots, Toledo, Ohio: A woman, aged 38, had never suffered any illness necessitating her remaining in bed. About nine years ago she noticed a lump the size of a hickory nut in the region of the right internal abdominal ring. It remained about the same for eight years, when it came lower and appeared to double in size. At this time it also became very painful. Operation was performed Aug. 22, 1914, under local anesthesia. I made the usual skin incision and then found that the mass could not be pushed upward into the inguinal canal as it was adherent to the labium majus. An elliptical portion of the labium majus was excised in order to free the mass, which now gave me the impression that I was dealing with a kidney. However, it being almost beyond the point of identification, an opening was made in the peritoneum, when the right kidney space was explored and found empty. The left kidney was normal in size, location and consistence. A nephrectomy of the useless right kidney was done and the inguinal canal closed in the usual manner. The kidney was composed of a mass of small cysts about one-half inch in diameter.

A Prognostic Sign in Acute Suppurative Peritonitis

Dr. Hugo O. Pantzer, Indianapolis: The presence within the abdomen in cases of peritonitis of a free or encapsulated serous or seropurulent fluid, which is practically without odor, by the side of encapsulated foul material, indicates a strong systemic defensive activity of distinct prognostic value. A male baby, 6 months of age, had become acutely ill and at once revealed the characteristic signs and symptoms of an acute general peritonitis of probable appendiceal origin. The temperature was 104 F., pulse feeble, and 170 to the minute. At operation there was found much free fluid within the abdomen, cloudy with pus, but odorless; and about the ileocecal coil were extensive adhesions enclosing an abscess containing about 45 c.c. of creamy and extremely foul pus, and the gangrenous appendix. The case seemed utterly hopeless, yet it turned straightway to recovery. With three drainage tubes within the abdomen the very next day the child was found cooing merrily and taking its mother's milk, and from that time on it began to recover speedily.

Abnormality of Sigmoid

Dr. Budd Van Sweringen, Fort Wayne, Ind.: A woman, 37 years of age, had suffered from childhood with constipation. Palpation of the abdomen elicited tenderness and tumefaction in both flanks. By the vagina a mass in the left side was felt to be very hard and larger than one on the right. The abdomen was opened. The omentum was firmly adherent on the left side; a tubo-ovarian abscess on the right side was removed, also the appendix. In enucleating the left tube and ovary, which were very intimately adherent to the sigmoid, there was uncovered a cylindrical structure about 6 inches long, apparently coming out of the side of the sigmoid and entering the lateral aspect of the rectum. After freeing it, it was thought to be a diverticulum open at one or both ends. As the main channel of the bowel was thought to be still uncovered the diverticulum was ligated at the sigmoid and rectal attachments and removed. Preliminary to closure of the abdomen water was run into the rectum. The sigmoid and descending colon could not be filled. We had evidently destroyed the only passageway between the rectum and colon. We therefore anastomosed the rectum and sigmoid by the Noble method at the site of the former channel. The woman made a satisfactory but prolonged convalescence, and went home with a fecal fistula for which she was successfully operated May 11, 1915.

Mesenteric Thrombosis; Report of Two Cases

Dr. William Edgar Darnall, Atlantic City, N. J.: Infection plays a decidedly more important part in the etiology of mesenteric thromboses than we have thought in the past. Cases of acute mesenteric thrombosis are the result largely of some focus of infection, such as appendicitis, gallbladder infection, ulceration of the intestine or even of metastasis from a more distant focus. The superior mesenteric artery is most often the seat of the trouble. Any other treatment than operative need not be considered. Resection of the involved intestine is usually done, but many patients have been lost who possibly might have recovered if the anastomosis had been delayed and a secondary operation done later. The reason for this is that one cannot be certain that the gangrene has reached its limit and will not extend farther and that the complete operation is apt to involve more time and trauma than the patient can stand. These patients are usually in bad condition when they come for operation. It is therefore better that the gangrenous portion of the intestine should be brought well out of the incision, leaving full liberal margins at both ends. The intestine should be resected and its ends sewed into the wound, which is walled off with gauze. With both ends of the intestine thus opened, distention may be relieved and signs of further extension of the gangrenous process watched. At a later day, if the patient survives, the fistula may be closed and an anastomosis done.

President's Address; Some Comments on Present Day Tendencies in Gynecologic and Obstetric Practice

Dr. Charles L. Bonifield, Cincinnati: One method of diagnosis strongly recommended by some operators in recent years seems to me to be seldom needed. I refer to the opening of the uterus. The greater one's familiarity with intra-abdominal conditions the less frequently he finds it necessary to do an exploratory abdominal section. Hysterotomy will find more frequent employment in the hands of the general surgeon who has broadened his field to include gynecology than in the hands of a gynecologist who has studied at the feet of a master of the art. It is from the laboratory rather than from the operating room that further success in dealing with cancer is to be expected. The importance of early diagnosis and operation is thoroughly recognized by the surgeon, if not by the laity, and the radical and painstaking operations now performed have merely reached the limit as to thoroughness. Further experience with radium has pretty well demonstrated the position it should occupy in cancer therapy. The surgical treatment of uterine fibroids in the hands of an operator skilled in pelvic surgery is now so successful and satisfactory that any other form of treatment will have to show brilliant results to supplant it. As to the administration of anesthetics, I prefer my anesthetics to be given by some one whose knowledge of anatomy, physiology and therapeutics enables him to meet emergencies that may arise without much direction or supervision on my part. The professional anesthetist is a useful member of the profession, but naturally likes to magnify his calling, so he provides himself with expensive and complicated apparatus that makes the operating room look like the inside of a submarine. I do not claim that nitrous oxid is not a useful agent, and that there are cases in which it is preferable to either ether or chloroform, but I do claim that it has not been proved that gas is safer than ether as the routine anesthetic for major surgical operations.

Luteum Extract in the Treatment of Menstrual Disorders

Dr. Adam P. Leighton, Jr., Portland, Me.: There are cases of dysmenorrhea in which the main causal factor is deficient action of the natural corpus luteum. I am not carried away with the idea that the therapy of corpus luteum is a cure-all in any sense of the word. On the other hand, the cases which may be traced to ovarian deficiency are probably in the distinct minority. One must not allow himself to be so impressed with the etiologic value of some one factor in the cause of disease that he forgets or becomes indifferent to others of equal importance. Surgery is necessarily indicated in those cases in which we find pelvic pathologic conditions or anatomic abnormalities present, which we are wont to consider as probable causes of this disorder. There are some serious drawbacks to the use of corpus luteum. It generally must be used routinely or continuously to obtain and maintain results. Its action is not immediate, it is cumulative, and for that reason patients and we ourselves too often discard its use after a short trial, if it has been unproductive of good results. From 15 to 30 grains a day, seldom more, is sufficient in any case. Its prolonged administration has not brought about any untoward symptoms, with the possible exception of slight gastric disturbance in one or two instances. The subject of organotherapy, in its present experimental state, is rather involved and indefinite, and while it is sometimes difficult to recognize and identify cases which would be benefited by corpus luteum, yet when there is a possibility of ovarian deficiency being an etiologic factor in any gynecologic disorder, we owe it to the patient to make use of this remedial agency, for its value is well determined.

Present Status of Twilight Sleep in Obsterics

Dr. A. J. Rongy, New York: Judging from my experience extending over a period of fifteen months, and covering a series of over 350 cases, I feel that the value of the treatment and its acceptance, as a recognized therapeutic measure, will depend on our interpretation of the physiologic processes which are produced by these drugs. If we accept the theory that the semiconsciousness induced prevents the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless, and therefore to refuse to adopt it would be a failure on our part to carry out the trust reposed within us. On the other hand, if the mental state induced does not actually prevent the sensation of pain and the patient is actually suffering, even though it be modified, then the value of this method will devolve on the degree of pain, diminution or analgesia, and not on the lack of recollection of pain or amnesia. I find it difficult to reconcile the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as is observed in these patients, does not actually experience it. However, I am fully convinced that pain, in a goodly proportion of cases, is influenced to a degree that would warrant its adoption in selected cases, more particularly in the primiparas of the highly emotional type and in multiparas in whom we anticipate long and tedious labors.

The Teaching of Obstetrics

Dr. Charles Edward Ziegler, Pittsburgh: I would not overemphasize the importance of didactic teaching in obstetrics. It is basic and indispensable. It must in part precede and in part accompany clinical teaching, but can never take its place, as has too long been attempted. In times past obstetrics was taught very largely didactically and in certain quarters this is still the case. Even at present in all but a few medical schools in this country, the clinical teaching and practical experience given undergraduate students in obstetrics are wofully deficient. Both the teaching and practice of obstetrics are generally regarded as the poorest of all the clinical branches of medicine. There must be a reason for this. The lay public will continue to regard with indifference all pleas for the improvement in the teaching of the practice of obstetrics so long as more than 50 per cent. of confinements are in the hands of ignorant, nonmedical persons, who, as a class, are regarded as capable of doing the work satisfactorily, even by physicians, among whom are certain well-known professors of obstetrics. The teaching of the clinical or practical side of obstetrics can be accomplished satisfactorily only through the medium of suitably equipped and properly conducted hospitals and dispensaries. Such hospitals and dispensaries should be teaching and research institutions in the fullest and broadest sense of the terms, with a large amount of obstetric material freely and constantly available for the purpose. The teaching staff, and there should be no other, should consist of full-time workers only, who should be paid salaries sufficiently large to make them independent of all other work. To become a thoroughly trained obstetrician, the graduate student must spend a number of years as assistant and teacher in maternity hospital and dispensary services of the type described. The major part of undergraduate instruction should be given by graduate students for this very purpose. The teaching helps them immeasurably. It gives them assurance, makes them alert, teaches them the invaluable art of expression, and develops clean-cut ideals and thoroughgoing, accurate procedure. Laboratory studies and research should constitute an indispensable part of all graduate study in obstetrics, not alone for the knowledge which the student acquires and for what he adds to the knowledge of the subject, but most especially because of the habit of investigation acquired thereby, which will make him fruitful in research later and prevent him the more certainly from degenerating into a mere money maker.

The Combined Operation for the Interruption of Pregnancy and Sterilization

Dr. Palmer Findley, Omaha: The combination of abdominal hysterectomy and resection of the fallopian tubes is the procedure of choice in all cases not previously infected. The removal of the ovum through an abdominal incision should be reserved for those cases in which permanent sterilization is desired. No other method is so free from the dangers of sepsis, retained secundines, perforation of the uterus and excessive loss of blood. In point of safety, expediency and efficiency, the procedure will appeal to all abdominal surgeons.

Surgical Operations During the Pregnant State

Dr. Francis Reder, St. Louis: A woman expecting to become pregnant should be thoroughy examined for any physical defect that might be found. Such a defect should be corrected, if possible, before pregnancy takes place. No operation that can be deferred should be performed on a pregnant woman. Any operation that will contribute to the safety of a pregnant woman should be performed without hesitancy.

Menstrual Statistics Based on a Study of 4,500 Menstrual Histories

Dr. K. I. Sanes, Pittsburgh: Seventy-five per cent. of women menstruated regularly and 25 per cent. irregularly. The most common regular type met with was that of twenty-eight days, which constituted 72 per cent. of this type. The thirty-day type followed next in frequency with only 3.8 per cent. and the twenty-one-day with 3.3 per cent., etc. In some of the thirty-one-day type the menstrual flow appeared monthly on the same date independent of the number of days in the month. The most common irregular types were from three to four weeks, then from four to five weeks, two to three weeks, five to six weeks, etc. The most common ages of onset in order of their frequency were 15. 12, 16. The age of onset did not show any relation to regularity or irregularity of menstruation. The earliest age of onset in our series was 9 years and the latest 24 years. The most common duration of menstrual flow was three days, then four or five days, three or four days, five days, seven days and four days. The irregular type of menstruation showed a larger percentage of long durations and smaller percentage of shorter durations than the regular type. The quantity of flow in 45 per cent. of women was normal, in 17 per cent. scant and in 37 per cent. profuse. Irregular patients showed a higher percentage of profuse flow than the regular ones. Hyperthyroidism cases showed a high percentage of profuse menstrual flow (65 per cent.). Clots were very frequently found in menstrual flow and we did not find them to be influenced by menstrual irregularity. Forty-seven and four-tenths per cent. of women suffered from dysmenorrhea (if the term dysmenorrhea is to convey the idea of discomfort). In retrodisplacements the percentage was found to be 50.4 per cent. In 50 per cent. of the dysmenorrhea cases the symptoms appeared during the flow, in 29 per cent. before, in 17 per cent. before and after, and in the rest after the flow or during and after. Most frequently the dysmenorrhea appeared the day before the flow, then the first day of the flow, then two days during, two days before, one day before and two days during, then three days before, and seven days before. Improvement in menstruation was frequently noticed with advance of menstrual life, after marriage and after childbirths, menstrual periods becoming more regular and the dysmenorrhea improving or disappearing entirely. The most common ages of menopause in order of their frequency were given as 50, 46, 48, 47, 51, 49, 44, 45, 52. The length of menstrual life was most commonly given as thirty-seven years, then thirty-five and thirty-three. Sixty-eight per cent. reported a menstrual life of thirty years or more. The very early and very late ages of puberty showed a rather early menopause.

Spinal Anesthesia in Gynecologic Operations

Dr. R. R. Huggins, Pittsburgh: After an experience with spinal anesthesia covering a period of two years I am convinced that it is of great value and that it will eventually find a high place among the methods of anesthesia, particularly for surgical procedures in the lower abdomen and pelvic cavity. The time is not here, however, when it can be used indiscriminately and by those who are not familiar with the contraindications. It is highly important to know when not to use it. A keen appreciation of its dangers and the unfortunate sequelae which have thus far caused considerable prejudice against the method will enable us to avoid its use in certain instances in which they are liable to occur.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

September, V, No. 9, pp. 811-964

1 Degeneration of Life. W. J. V. Deacon.
2 Study of Methods of Sewage Disposal in Industrial and Rural Communities and Suggestions for Their Improvement. J. F. Siler, U. S. Army, P. E. Garrison, U. S. Navy, and W. J. MacNeal, New York.
3 Fate of Bacteria in Frozen Meat Held in Cold Storage and Its Bearing on Bacteriologic Standard for Condemnation. J. Weinzirl and E. B. Newton, Seattle.
4 Experiences with Refuse Collection and Disposal with Reference to Odors. S. A. Greeley, Chicago.
5 Wound and Skin Diphtheria as Public Health Problem. L. D. Bristol, University, N. D.
6 Proposed American Public Health Association Course of Study for Health Officials and Others Interested in Public Health Work. F. D. Bell, New York.
7 Accidents Following Vaccination. W. F. Elgin, Glenolden, Pa.
8 Protection and Maintenance of Public Health During and Subsequent to Great Conflagration. W. C. Hanson, Boston.
9 Bacteriologic Method for Determining Manural Pollution of Milk. J. Weinzirl and M. V. Veldee, Washington, D. C.
10 Uhlenhuth's Method for Sputum Examination, for Tubercle Bacilli. J. J. Kinyoun, Washington, D. C.
11 Bureaus of Water Supplies. E. Bartow, Urbana, Ill.
12 Danger to Laundry Workers of Infection from Handling Soiled Linen. E. A. Dederer.
13 Municipal Health Officers and Venereal Disease. W. A. Evans, Chicago.
14 Portable Air Sampling Apparatus for Collection of Large Volumes. E. W. Brown, U. S. Navy.
15 Refuse Disposal in Southern Cities with Particular Reference to Savannah, Ga., and Its New Incinerator. E. R. Conant, Savannah, Ga.
16 Report of Committee on Water Supplies of Sanitary Engineering Section. F. F. Longley.

Archives of Internal Medicine, Chicago

September, XVI, No. 3, pp. 341-508

17 *Transient Auriculoventricular Dissociation with Varying Ventricular Complexes Caused by Digitalis. H. A. Christian, Boston.
18 *Inactivation of Pepsin by Sodium Chlorid; Its Clinical Significance. W. W. Hamburger, Chicago.
19 *Endemic Typhus in Philippine Islands. G. B. Foster, Jr., Washington, D. C.
20 *Study of Infantile Tetany; Report of Case. A. Fletcher, Toronto.
21 *Simple Method (Indicator-Phenolsulphonephthalein) for Determining Variations in Hydrogen-Ion Concentration of Blood. R. L. Levy, L. G. Rowntree and W. M. Marriott, Baltimore.
22 Roentgenologic Determination of Gastric Motility. R. D. Carman and A. Miller, Rochester, Minn.
23 *Urobilin in Stool in Pernicious Anemia as Influenced by Splenectomy, Transfusion and Salvarsan. O. H. Robertson, Boston.

24 *Metabolism Studies Before and After Splenectomy in Congenital Hemolytic Icterus. S. Goldschmidt and O. H. P. Pepper, and R. M. Pearce, Philadelphia.

25 *Effect of Hemorrhage and of Occlusion of Carotid Arteries on Vasomotor Irritability. R. G. Hoskins, W. N. Rowley and C. Rosser, Chicago.

26 *Studies in Diphtheroids. H. Fox, Philadelphia.

27 *Diminished Power of Nephritic Kidney for Eliminating Uric Acid as Exemplified by Use of Atophan. M. S. Fine and A. F. Chace, New York.

28 Chronic Meningococcus Septicemia Associated with Pulmonary Tuberculosis. H. A. Bray, Ray Brook, N. Y.

29 *Treatment of Cystinuria; Report of Case. W. G. Smillie, Boston.

17. **Auriculoventricular Dissociation.**—As an occasional result of digitalis administration, there develops, says Christian, a cardiac disturbance consisting of variations in the form of succeeding ventricular complexes. Of the cases, one reported by Cohn, one by Oppenheimer and Williams and four by Christian, all except possibly one of the author's cases showed auriculoventricular dissociation. In one case the curve obtained did not justify any statement as to auricular activity; there may have been a regular rate in the auricles with auriculoventricular dissociation. All cases were of the type of chronic myocarditis without any marked signs of valve lesions.

18. **Inactivation of Pepsin by Sodium Chlorid.**—Hamburger summarizes his paper as follows: Sodium chlorid will prevent pepsin in aqueous solution from digesting protein. The inhibition of pepsin by sodium chlorid, together with the ability of animal serum to deviate pepsin (described in an earlier paper), is responsible for most, if not all, of the published accounts of antipepsin. The inhibition of pepsin by sodium chlorid is permanent, the inactivated ferment failing of reactivation by the subsequent addition of hydrochloric acid. The inactivation may be prevented, however, by dissolving the ferment in dilute hydrochloric acid. Neutralization of pepsin dissolved in hydrochloric acid alone (without the addition of sodium chlorid) inhibits the ferment by the sodium chlorid formed from union of alkali and acid, acting in a neutral solution. Complete neutralization of the gastric juice causes similar pepsin inactivation. The inactivation of pepsin by complete and continuous neutralization of gastric juice is indicated in the treatment of various diseases of the stomach in which temporary inhibition of peptic digestion is desired. This is particularly true in the prevention and cure of chronic gastric ulcer. By the use of certain foods, methods and time of feeding, and various alkaline substances, complete and continuous neutralization can be obtained.

19. **Endemic Typhus.**—Foster's observations are based on a study of twenty-three cases occurring among Filipinos. The first case was erroneously diagnosed as malaria. Tentative clinical diagnoses of typhus were made by elimination; but, in the absence of confirmatory laboratory evidence, the first positive diagnosis was not made until Oct. 12, 1914. The disease observed here corresponds to the acute infectious disease described by Brill, but the period of incubation appeared longer, the average leukocyte count was less and marked nervous manifestations—absent in Brill's cases—were not uncommon in Foster's cases. The onset was characterized by chill in twenty-one cases, headache in nineteen and by vomiting in six. Lumbar pain and pains in the extremities occurred in eight cases and vertigo was recorded once. In two of the cases the onset was gradual and fever was the first symptom noted. There was intense pain in the chest in one case at the onset, probably due to pulmonary congestion. The facies at the onset was that of intense congestion. The expression in some cases was anxious and in others dull and stupid. The color remained good until the crisis, after which pallor was evident for a variable time and the patient exhibited a "washed out" appearance.

The temperature rose rapidly during the stage of invasion, reaching the fastigium on the second to the sixth day. The average fastigium in twenty-one cases was 103.5 F., the lowest 102 F. and the highest 104.6 F. The fastigium was reached on the third or fourth day in 50 per cent. of the cases. The eruption occurred in sixteen cases, was absent in two cases and in the remaining five cases was either absent or overlooked. It appeared on the fifth day in two thirds of the cases but in isolated cases it was observed as early as the fourth day and as late as the eighth day. It appeared first on the abdomen and chest and developing rapidly and not in crops, had extended to the back, shoulders, arms, hands, legs and feet and in two cases to the face, within twenty-four hours. The lesions were discrete, slightly raised, rose red to dark red, irregular in outline and measured from 2 to 8 mm. in diameter. In the average case the spots were much more profuse than the rose spots of typhoid and less numerous than the lesions in the average case of measles. The eruption faded rapidly with the crisis and had disappeared by the tenth day. Desquamation did not occur.

The blood showed certain constant changes. The leukocyte count, in sixteen cases, varied from 4,000 to 18,000, the average count being 7,865. Differential leukocyte counts showed a rather consistent increase in the percentage of large mononuclear cells, with a corresponding decrease in the number of polymorphonuclears. Eosinophils were not present in appreciable numbers during the febrile period. Blood cultures in fifteen cases gave negative results. The pulse exhibited no characteristic features. The heart showed no variations from the normal except in one case. A soft blowing systolic murmur was audible in this case following the crisis. Anorexia developed early and persisted throughout the febrile period. Epistaxis, so constant a feature in typhoid, occurred but twice. Signs referable to the nervous system were common, and it appeared to stand the brunt of the infection. Retention of urine occurred rather persistently in one case, necessitating frequent catheterization. Polyuria was an almost invariable concomitant of the crisis. A relapse, intercurrent in character, occurred in one case. One death, due to acute ulcerative endocarditis following the crisis, occurred in the series of twenty-three cases, establishing a death rate of 4.34 per cent.

20. **Infantile Tetany.**—Fletcher holds that clinical observation would not warrant the conclusion that calcium changes alone account for the nerve irritability in tetany, but would seem to support the hypothesis that the tetany results from a disturbance of the concentration equilibrium of the salts. Such salt changes are probably associated with gastro-intestinal disturbances and decreased activity of the kidney, and, as improvement in the function of these two systems occurs, restoration of the normal salt equilibrium ensues. Treatment, accordingly, from these indications should aim at restoring a normal digestion and increasing the activity of the kidney.

21. **Hydrogen-Ion Concentration of Blood.**—The indicator method of determining H-ion concentration is made applicable to blood and serum by the authors by utilization of dialysis through a collodion membrane, which excludes the disturbing influences of color and of proteins. The method is simple, accurate, rapid and well adapted for clinical use. The technic consists of dialyzing 3 c.c. of blood or serum at room temperature against 3 c.c. of 0.8 per cent. salt solution for five minutes, adding an indicator and comparing with colored standard phosphate mixtures of known H-ion concentration. Phenolsulphonephthalein is employed as the indicator in this method. It is found to exhibit easily distinguishable variations in quality of color, with minute differences in H-ion concentration between the limits pH6.4 and pH8.4. Oxalated blood from normal individuals gives a dialysate with a pH varying from 7.4 to 7.6, while that of serum ranges from 7.6 to 7.8. Variations from these figures toward the acid side were encountered only in conditions which clinically, and from the standpoint of the laboratory findings, evidenced an acidosis. In a small series of clinical acidoses, the serums varied from 7.55 to 7.2 and the oxalated blood from 7.3 to 7.1. In experimental acidosis in dogs, a pH of 6.9 has been encountered in both serum and blood just before death.

23. **Urobilin in Stool in Pernicious Anemia.**—In six cases of pernicious anemia with splenectomy, examined by Robertson, the urobilin output which had previously been high, showed a marked decrease immediately after operation. In two cases in which the urobilin later returned to a high

figure, as well as one case in which there was a persistently increased output, showed definitely less improvement than the two cases in which the urobilin remained normal. Three of the four patients transfused gave evidence of a resulting bone marrow stimulation and at the same time showed a temporary increase in urobilin excretion. The one case in which transfusion was without effect showed no such increase. In three patients treated with salvarsan, there was practically no effect, either on the course of the disease or on the urobilin excretion. It seems fair to Robertson to conclude that: 1. Variations in the urobilin output may be taken as an index of corresponding changes in the course of the disease. 2. Such variations in the urobilin may occur before there is any change in the number of red cells. 3. The determination of the urobilin output as an index of blood destruction is the most accurate means we have of estimating the effect of treatment.

24. **Splenectomy in Congenital Hemolytic Icterus.**—In a child with congenital hemolytic icterus splenectomy was followed by a disappearance of the discoloration of the skin, a rapid improvement in the condition of the blood and a striking improvement in general health. Metabolism studies before and after splenectomy gave the following results: A slight positive nitrogen balance before splenectomy was followed by an increased retention eight days after operation. The output of uric acid showed a decrease of 47 per cent. after operation. In the period directly after operation a change in the partition of creatinin and creatin elimination occurred; the total creatinin, however, showing but slight change. Other urinary nitrogen constituents showed no variations from the normal, and no change was found in the hydrogen ion concentration. The utilization of nitrogen was good at all times. Fat metabolism was normal. There was a large loss of iron through the feces before splenectomy followed by a decided decrease (40 per cent.) after operation. The excretion of urobilinogen and urobilin in the feces was markedly diminished after splenectomy; the amount after operation was about one-ninth of that excreted before splenectomy.

25. **Hemorrhage and Occlusion of Carotid Arteries.**—The authors found that hemorrhage caused a marked augmentation of the reaction to nicotin but slight or no augmentation of the reaction to epinephrin. Occluding the carotids in most instances leads to similar results. The authors suggest that the augmented reactions are probably due to increased irritability of the vasoconstrictor center and that the phenomenon is probably an adaptive arrangement tending to preserve normal circulatory conditions.

26. **Diphtheroids.**—Examination of the charted characters, the morphology notes and the pictures in thirteen cases, leads Fox to state that no one bacterial variety with definite morphologic and cultural characters has been isolated from eleven cases diagnosed as Hodgkin's disease (Rosenow 5, Kolmer 2, Fox 4) to which may be added a case of endothelioma of the lymph nodes. Diphtheroid bacilli have been isolated from glands in at least two cases having no clinical or anatomic resemblance to Hodgkin's disease and from a case of mediastinal tumor. The author points out that diphtheroid rods may be isolated in cases of Hodgkin's disease and other adenopathies, but there is no uniformity in biology, and morphology among the strains isolated by three observers in clinical and pathologic Hodgkin's disease. Diphtheroid rods, similar in biology and morphology to those found in Hodgkin's disease, may be found in enlarged glands in cases of chronic atrophic arthritis and other conditions. Diphtheroids have been found in glands the seat of a neoplasm, and in the enlarged glands near a neoplasm. There is great similarity in all respects between the gland diphtheroids and those found in normal and pathologic seats in the body, the so-called pseudodiphtheria bacilli. In one case, in which autogenous vaccination was given a fair trial, the patient has died. Another patient, already improving under the Roentgen ray, continued to improve with autogenous vaccination and no Roentgen ray. In arthritis cases the patients receiving vaccine consisting wholly or in part of diphtheroids, showed some improvement. Much granules have not been found in sections of lymph granulomas of the Hodgkin's type.

27. **Use of Atophan for Eliminating Uric Acid.**—In six cases examined by Fine and Chace there was a general relationship between the degree of response to the administration of atophan on the one hand, and the extent of non-protein nitrogenous retention and the clinical pictures on the other. Their observations lend some support to the view that abnormal renal cells would be expected to prove less responsive to the action of atophan than are healthy cells.

29. **Treatment of Cystinuria.**—According to Smillie cystinuria is best treated by a low protein diet, with the addition of sufficient alkali to keep the urine alkaline. Cystin crystals will practically disappear from the urine of a cystinuric when sufficient sodium bicarbonate is added to the diet to render the urine alkaline. The amount of sodium bicarbonate necessary to render the urine alkaline, when the patient is on a nitrogen intake of 10 gm., or more, is greater than can be well borne by the stomach. Sodium bicarbonate does not influence body metabolism in cystinuria but simply renders the cystin soluble.

Archives of Pediatrics, New York

August, XXXII, No. 8, pp. 561-640

30 *Etiologic Relationship of Syphilis to Chorea of Sydenham. H. Koplik, New York.
31 Clinical Distinctions Between Cerebral Intoxication, Meningism (Serous Meningitis), and Meningitis. H. Heiman, New York.
32 *Meningitis in Newborn; Report of Case. C. Herrman, New York.
33 Congenital Depressions of Skull. A. L. Goodman, New York.
34 *Some Experiences with Friedenthal Milk. E. A. Riesenfeld, New York.

30. **Relationship of Syphilis to Chorea of Sydenham.**—Koplik took eleven successive cases of chorea in which the age range was from 6 to 13 years. In five of these cases there was an endocarditis on admission to the hospital, with an evident lesion of the valves, in three cases a distinct history of rheumatism or rheumatic pains, in ten cases a Wassermann reaction was made, and in eight the result was satisfactorily negative. In two, the reaction for one reason or another, failed but was not positive. In all the cases there was absolutely no stigmata of syphilis, hereditary or otherwise, nor could syphilis be traced in any way in the family history. Nine patients were injected with neosalvarsan in doses ranging from 0.15 gm. to 0.4 gm. of the drug. Of seven patients thus injected, once or repeatedly, the effect, in that the symptoms immediately subside, was not observed. Even after second and third injections the chorea continued to run its accustomed course. The average duration of the disease, after the last injection of the drug, was thirty-six days in seven cases. In another case a nephritis resulted and the patient was ill with chorea for some weeks after, though finally a recovery took place. Koplik concludes that there is nothing in these results to warrant any assumption of a possible syphilitic or parasyphilitic influence as a causative factor in chorea of Sydenham. He does not regard salvarsan as an agent of any value above what has hitherto been in vogue in the treatment of chorea minor, nor does he feel warranted in tracing any relationship between chorea of Sydenham and hereditary or acquired syphilis.

32. **Meningitis in Newborn.**—The case cited by Herrman, he says, is the only case of pneumococcus meningitis in the newborn reported. The case was especially interesting on account of the absence of fever and later a marked subnormal temperature, and on account of the entire absence of meningeal symptoms, so that the necessity for a lumbar puncture was not even thought of.

34. **Experiences with Friedenthal Milk.**—Of twenty-one infants placed on Friedenthal's milk by Riesenfeld, nineteen made a steady and normal gain in weight, with an average of 4 ounces per week, infants under 3 months of age making the greater progress. Two infants who failed to gain showed a marked intolerance for the high fat and sugar content of Friedenthal's milk and could only be given food containing low quantities of sugar and fat.

Boston Medical and Surgical Journal

September 16, CLXXIII, No. 12, pp. 413-450

35 Surgical Experiences in France. W. J. Mixter, Boston.
36 *Common Shoulder Injuries. E. H. Risley, Boston.
37 Technic of Transfusion by Means of Glass Tubes. A. R. Kimpton and J. H. Brown, Boston.
38 *Use of Schick Test in Children's Institution. H. Linenthal and S. H. Rubin, Boston.
39 Case of Anterior Poliomyelitis with Multiple Paralyses, Including Hitherto Unrecorded Involvement of Left Diaphragm. P. H. Sylvester, Newton.
40 *Auricular Fibrillation and Complete Heart Block. P. D. White, Boston.
41 Suction and Irrigation Apparatus for Diagnosis and Treatment of Antrum of Highmore. J. Prenn, Boston.
42 *New Method of Treating Flat-Foot. P. B. Howard, Newtonville,

36. **Common Shoulder Injuries.**—Emphasis is laid by Risley on the following points: Diagnosis in shoulder injuries is not made by clear cut signs and symptoms, but only in a careful process of exclusion and roentgenoscopy in every case. The Roentgen ray is of the utmost importance in every case as it often reveals the underlying cause of a persistent bursitis to be some of the frequent lesions of the greater tuberosity or acromion, which are often overlooked unless especial search is made for them. About 60 per cent. of subacromial bursitis cases are of the occupational type. The remaining 40 per cent. have as an underlying cause in the great majority of cases, some lesion of the greater tuberosity or acromion. The diagnosis of ruptured supraspinatus tendon should not be made until at least three months of nonimprovement have elapsed.

Cases of long standing bursitis with adhesions give a picture identical with that of ruptured supraspinatus tendon and give extremely satisfactory results from operation. Calcareous deposits in the subacromial bursa may be spontaneously absorbed. The term "insertion fracture" should be substituted for the nondescriptive term of "sprain fracture." Occupational neurosis per se does not exist in the shoulder joint. Injuries to the brachial plexus are rare. The percentage of patients benefited will be greatly increased by early exploratory operation. Slight injuries to the greater tuberosity and acromion process and arthritis of the acromioclavicular joint are of far greater importance than is generally supposed in prolonging disability after shoulder injuries. Risley lays especial emphasis on the importance of these seemingly trivial injuries to the shoulder joint as factors to be considered in diagnosis, prognosis and treatment.

38. **Schick Test in Children.**—Of 126 children, ranging in age from 5 to 16 years, Linenthal and Rubin found thirty-six susceptible to diphtheria and ninety immune. Antitoxin of 750 units administered to the nonimmune produced an immunity which did not last over four weeks in 50 per cent. in several as long as eight weeks, and in six children the immunity conferred by the antitoxin persisted after five months. With the exception of the six children with the persistent antitoxin immunity and one child who gave negative reaction the first time and a positive the second time, the results of two tests, five months apart, were uniform. The authors regard the test as of great value in determining susceptibility to the disease and thus serves as a guide to determine in the event of exposure to diphtheria, who should and who should not receive prophylactic doses of antitoxin. Persons naturally immune will thus be saved the annoyance and the possible disagreeable results apt to follow the injection of horse serum.

40. **Auricular Fibrillation and Complete Heart Block.**—White cites the case of a patient showing heart block and auricular fibrillation whose heart rate rose from 27 with complete block, to 47 with partial block during the administration of digitalis and coincident with marked clinical improvement. The ventricular complexes of the electrocardiogram changed in character simultaneously with the decrease in the degree of block, the change in the R suggesting a more normal conduction in the ventricle. The spontaneous return to a complete block was accompanied by a continuation of the patient's good health. The block was not vagal in origin, atropin having no influence on it.

42. **Method of Treating Flat-Foot.**—After having trouble with his own right foot, Howard decided to try an experiment which would give support to the arch in all positions and free play to the muscles, at the same time being perfectly flexible and self-adjusting. Taking a cast of his foot he made a model and had a rubber factory make up several arch supports or shaped rubber bulbs filled with air. These he covered with leather and tried them out in his shoe with much satisfaction. In general the arch above conforms to the arch of the foot below, it fits the shoe, and on the inner side it is reinforced to prevent bulging. This is encased in leather, which is extended under the heel for an anchor, so to speak, and forward it tapers off just a little in front of the arch support. The support is made and encased in such a way that the air is held absolutely under the arch of the foot, and as the contour of the arch of the foot changes, the arch support changes also, still exerting on the arch of the foot the same upward pressure. It allows free muscular action all of the time as the foot is flexed or extended in locomotion.

Canadian Medical Association Journal, Toronto

August, V, No. 8, pp. 661-756

43 Pharmacology of Animal Extracts. V. E. Henderson, Toronto.
44 Organotherapy in Obstetric and Gynecologic Practice. B. P. Watson, Toronto.
45 Animal Extracts in Surgery. G. E. Wilson, Toronto.
46 Animal Extracts in Rhinology and Laryngology. D. J. G. Wishart, Toronto.
47 Animal Extracts in Ophthalmology. N. Jones, Toronto.
48 Syphilis of Heart and Aorta. A. McPhedran, Toronto.
49 Experimental Gastro-Enterostomy. F. A. C. Scrimger, E. Archibald and A. H. Pirie, Montreal.
50 Résumé of Evening Clinic for Diagnosis of Diseases of Chest at Boston City Hospital. S. W. Ellsworth, Quincy, Mass.
51 Series of Unusual Surgical Conditions. A. T. Bazin, Montreal.

Georgia Medical Association Journal, Augusta

August, V, No. 4, pp. 81-103

52 Need of Better Rural Sanitation. L. C. Allen, Hoschton.
53 Influence of School Life on Physical Child. T. Toepel, Atlanta.
54 Psychosis of Morphin and Alcohol; Was Medical Profession Prepared for Harrison Law? C. King, Atlanta.
55 Infected Tonsils. R. T. Dorsey, Atlanta.
56 My Experience with Pituitary Extract. H. Rawiszer, Omaha.
57 Treatment of Typhoid. F. Bird, Valdosta.

Illinois Medical Journal, Chicago

August, XXVIII, No. 2, pp. 81-160

58 Organization; Medical Defense; Contract Practice. A. L. Brittin, Athens.
59 Making of Milk Commission. J. W. VanDerslice, Oak Park.
60 Medical Inspection of Employees on Certified Farms. G. H. Campbell, Chicago.
61 Physician's Opportunity to Conserve Health of People. J. A. Robison, Chicago.
62 Cooperation in Public Health Work by Neighboring Small Cities. G. F. Ruediger, La Salle.
63 Present Practice Relating to City Wastes Collection and Disposal. P. Hansen, Urbana.
64 Some Reflections. E. W. Weis, Ottawa.
65 Operative Treatment of Pelvic Hernia. H. T. Byford, Chicago.
66 Comparative Roentgen Ray Work. E. M. Sala, Rock Island.
67 Keeping Child Normal. W. O. Krohn, Chicago.
68 Some Pressing Health Needs in Illinois. C. St.C. Drake, Springfield.
69 Some Infections of Head and Their Causes. J. S. Clark, Freeport.
70 Blood Pressure in General Practice. N. T. Stevens, Clifton.

Iowa State Medical Society Journal, Des Moines

August, V, No. 8, pp. 311-350

71 Morrow of Surgery. T. E. Powers, Clarinda.
72 Life Insurance and Physician. G. E. Crawford, Cedar Rapids.
73 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
74 Tumors of Urinary Bladder. J. S. Eisenstaedt, Chicago.
75 Circumcision of Tonsil. F. G. Murphy, Mason City.

Journal of Infectious Diseases, Chicago

September, XVII, No. 2, pp. 277-436

76 *Environmental Studies of Streptococci with Special Reference to Fermentative Reactions. J. Broadhurst, Ithaca, N. Y.
77 Bacteriologic Study of Secondary Invaders in Hog-Cholera. F. Eberson, Ames, Ia.
78 Separation of Antibody Fractions in Hog-Cholera Serum. F. Eberson, Ames, Ia.

79 *Toxins and Side-Chain Theory. A. F. Coca, New York.
80 *Rapid and Efficient Method of Producing Hemolytic Amboceptor Against Sheep Corpuscles. A. F. Coca, New York.
81 *Thyroid of Guinea-Pig in Experimental Diphtheric Intoxication. L. A. Emge, Chicago.
82 *Leprosy—Presence of Acid-Fast Bacilli in Circulating Blood and Excretions. J. A. Honeij, Penikee Island, Mass.
83 *Serologic Diagnosis of Leprosy. S. Nakajo and T. Asakura, Japan.
84 *Observations on Serologic Diagnosis of Leprosy. S. Nakajo and T. Asakura, Japan.
85 *Iritis and Other Ocular Lesions on Intravenous Injection of Streptococci. E. C. Rosenow, Chicago.
86 *Effect on Antibody Production of Removal of Various Organs. L. Hektoen and A. R. Curtis, Chicago.
87 *Influence of Roentgen Ray on Production of Antibodies. L. Hektoen, Chicago.
88 Absence of Demonstrable Specific Antibodies in Rabies Caused by Fixed Virus. W. H. Burmeister, Chicago.
89 *Fate of Foreign Erythrocytes Introduced into Blood Stream of Rabbit. W. E. Cary, Chicago.

76. **Environmental Studies of Streptococci.**—Broadhurst's paper gives a condensed account of the results obtained in a study of 767 strains of streptococci of which all but twenty-three were freshly isolated for this purpose.

79. **Toxins and Side-Chain Theory.**—This discussion concerns itself only with the venom constituent that attacks the naturally invulnerable corpuscles with the aid of lecithin. The two important results that have come out of Coca's investigations of the hemotoxin of cobra venom are: First, the demonstration of the fermentative nature of a toxin, and second, the demonstrated failure of the side-chain theory in the first real test to which it has been put as an explanation of the mechanism of toxin action. In view of the first of these results Coca thinks it safe to assume that all toxins may be ferments. The sources of the ferments and those of the toxins are the same. Ferments as well as toxins are known to exist in glandular secretions of animals and in the products of the growth of bacteria and in the higher forms of plant life.

Another result of the investigations of the hemotoxin of cobra venom is the explanation of the natural resistance of the invulnerable corpuscles (ox and sheep) to the direct action of the hemotoxin. This natural resistance, or immunity, has been found to depend on a physical condition of the cell substance that prevents the hemotoxin from penetrating to the lipoids of the corpuscles. As the discovery of the nature and manner of action of the hemotoxin of cobra venom has revealed the probable nature of the other toxins so also the explanation of the natural immunity of the invulnerable corpuscles to the direct action of the venom hemotoxin, Coca says, may provide a clue to the mechanism of some of the other known instances of natural immunity to toxins. It is evident that the explanation offered by Ehrlich for natural immunity cannot be brought into harmony with the demonstrated mechanism of the natural immunity of blood corpuscles to the direct action of the hemotoxin of cobra venom.

80. **Rapid Method of Producing Antisheep Amboceptor.**—The results of Coca's study may be applied as follows to the practical production in rabbits of a hemolytic serum against sheep corpuscles. Two intravenous injections of 1, or at most 2 c.c. each of washed sheep corpuscles should be given at an interval of not less than four days to three rabbits. At the end of five days after the second injection, at least one of the rabbits will almost always yield a strongly hemolytic serum the hemolytic potency of which will be stable. If it is desired not to kill the animals, almost as much blood usually can be obtained by bleeding from the ear vein on two successive days (say the sixth and seventh days after the second injection) as by bleeding to death. The potency of the serum obtained from the second bleeding is as high as that obtained from the first bleeding. The rabbits should not be used again for the production of amboceptor against sheep corpuscles. In a single experiment in immunization with ox corpuscles, Coca has obtained results that are comparable with those obtained with sheep corpuscles. Three normal rabbits received, at an interval of five days, two intravenous injections each of 1 c.c. of washed ox corpuscles. On the sixth day following the second injection, the hemolytic strength of the serum of the three rabbits was respectively 1:2500, 1:2500 and 1:320. After two months, during which the serum had been preserved in the ice-box with the addition of 0.25 per cent. of phenol, the hemolytic strength of the serum was found to be unchanged.

81. **Guinea-Pig Thyroid in Diphtheric Intoxication.**—Experimental diphtheric toxemia produced in guinea-pigs in such a way as to simulate the course of human diphtheric toxemia, Emge states, does not lead to changes in the thyroid gland to the same degree as has been observed in the human thyroid gland in fatal diphtheria. The changes observed in the thyroid of the guinea-pig are not sufficiently marked nor so uniformly parenchymatous as to permit the conclusion that this gland has a detoxicating action in experimental diphtheric toxemia.

82. **Acid-Fast Bacillus of Leprosy.**—Honeij's paper is the result of systematic search in an attempt to analyze the cases occurring at the Penikese Leper Colony and to determine whether the acid-fast bacillus can or cannot be found in the blood, urine, feces, sputum, nasal mucus, and other excretions and discharges, so as to eliminate possible errors in research along other lines now being carried out. Of 28 examinations of the blood of 16 patients, there were 9 positive, 3 questionable and 16 negative. This represents 8 patients with positive and 8 patients with negative results. Of 41 examinations of the urine of 16 patients, 16 were positive in 9 patients. Of 27 examinations of the feces of 16 patients, 10 were positive in 6 patients. Of 41 sputa of 16 patients, 32 were positive and 9 negative, 14 patients giving positive and 2 patients negative sputum. Examination of the nasal mucus of 16 patients with 41 examinations gave 34 positive, 6 negative and 1 questionable result. In other words, 14 patients had bacilli in the nasal mucus and 2 did not. Of 15 patients that had bullae, ulcers and pustules, those having bullae gave 5 results positive and 10 negative; ulcers, 13 positive and 2 negative; and pustules, 7 positive and 8 negative. The tears were negative in 26 examinations with 13 patients. The presence of bacilli in the blood and in the various excreta as determined, Honeij believes warrants the assumption that insect transmission of leprosy is a possibility.

83. **Serologic Diagnosis of Leprosy.**—This report concerns the complement-fixation tests made on the serum of forty-six lepers and eight nonleprous patients, the total number of tests being 155. The results in complement fixation tests with leprous serum and old tuberculin, considered from the standpoint of the type of the disease, show that a higher percentage positive, that is, 87.5 per cent. was obtained in tuberculous leprosy, than was obtained in nervous leprosy, 40 per cent. Classified according to the severity of the symptoms, these results are: 89.48 per cent. positive cases, severe; 55.56 per cent. mild; and 45.45 per cent. slight. From these facts, Nakajo and Asakura conclude that the reaction produced by old tuberculin bears a direct relation to the nature of leprosy.

84. **Serologic Diagnosis of Leprosy.**—In the first series reported on by Nakajo and Asakura, 69.23 per cent. of the total number of cases gave positive results with old tuberculin. In the second series 70 per cent. were positive, practically the same result. Adding these two figures, forty-nine cases were examined in all, of which thirty-four or 69.38 per cent. reacted positively. On the other hand, eleven cases of syphilis and four other cases of nonleprous diseases, that is, fifteen cases in all, gave negative results. The fact that old tuberculin reacts specifically with leprous serum in the complement fixation test, has thus again been demonstrated. Thirty-three cases of leprosy were examined by the Wassermann test, of which twenty-six, or 78.79 per cent. were positive. This shows that the Wassermann test brings about a greater percentage of positive results than does old tuberculin, for of the nine cases examined with both kinds of antigen, only seven produced positive results with the latter, while all of them were positive with the Wassermann test. If, therefore, the serum in a doubtful case (whether syphilis or leprosy) produces positive results both

with old tuberculin and the Wassermann antigen, the authors hold that the probabilities are that the patient is a leper. However, negative results with old tuberculin are not sufficient to exclude a diagnosis of leprosy. On this occasion they observed no case of leprosy that reacted positively only with old tuberculin.

85. **Ocular Lesions from Injection of Streptococci.**—As the outcome of a long series of experiments in which animals were injected intravenously under uniform conditions with streptococci from rheumatism, from appendicitis, from ulcer of the stomach, from cholecystitis, from erythema nodosum, from herpes zoster, from parotitis, from pyorrhea, from tonsils, and from dairy products, Rosenow has had opportunity to study the eye lesions in forty-eight animals. The lesions may be classified as follows: (1) unilateral panophthalmia in five instances (twice following injections of strains from rheumatism and herpes zoster as isolated, and once in each case after one animal passage, and once in a rabbit injected with a streptococcus mucosus from the eyeball in a case of metastatic panophthalmia following tonsillitis and otitis media); (2) hemorrhages in the limbus, with or without episcleritis, in fourteen instances (four times following injection of laboratory strains after they had attained a certain grade of virulence, three times with rheumatic strains, twice with strains from appendicitis, twice with strains from herpes zoster and once each with strains from erythema nodosum, myositis and from butter); (3) iritis or iridocyclitis nine times (four times after injection of certain laboratory strains, three times with rheumatic strains, and twice following injection of streptococci from small pus pockets in tonsils of otherwise normal individuals); (4) conjunctivitis, usually bilateral, occurring frequently, in ten instances associated with the streptococci injected (once each with streptococci from appendicitis, herpes zoster and rheumatism, once with streptococci from butter, once with streptococci from the pus pocket in the tonsil of a cow, twice after injection of a laboratory strain, and three times after injection of strains from pus pockets in tonsils from approximately 100 individuals); (5) ulcer of the cornea due to the organism injected, observed only once, after injection of a strain of streptococcus from the muscle in calcifying myositis in a man. Lesions similar to these occurred with or without herpes in twelve animals injected with the strains from herpes zoster. Herpes of the conjunctiva followed injections or streptococcus from the tonsil in ulcer of the stomach in a cow. Hemorrhages in the retina were not often looked for, but were found in two instances.

86. **Production of Antibodies after Removal of Organs.**—In the dog complete removal of the stomach, of the small intestine, or of the thyroid according to the observations made by Hektoen and Curtis does not interfere with the development of the agglutinin and opsonin for rat corpuscles after intravenous injection of rat blood. Pancreatectomy, complicated by intussusception and by rabies, resulted in a diminution in the amount of antibodies that accumulated in the blood. Simultaneous removal of spleen and of pancreas appears to have about the same depressing effect on antibody production in dogs as removal of the spleen only. Removal of the small intestine and ligation of the mesenteric artery before the injection of rat blood in dogs may be followed by a longer latent period after the injection of antigen than in normal dogs. Adrenalectomy at the height of the antibody curve in dogs does not change the antibody content of the blood serum. In rats, removal of about one-half of the liver appears to have no effect on the development of lysin for sheep corpuscles. The results recorded indicate that the mechanisms for the fabrication of antibodies are quite secure from certain disturbances, and they are in no way contradictory of the current view that these mechanisms are located in the blood-forming organs.

87. **Roentgen Ray and Antibodies.**—Repeated exposures of white rats to the Roentgen ray immediately after the injection of sheep blood did not interfere in any noteworthy degree with the production of lysin when the exposures, though sufficient to reduce the number of leukocytes in the blood, have no definitely detrimental effect on the general health of the animals. When the exposures are commenced some days before the injection of sheep blood and continued in such manner that the number of leukocytes is greatly reduced for from fifteen to twenty days after the injection of sheep blood, Hektoen found that the formation of lysin is restrained to a marked degree. This may be accomplished without any appreciable effect on the general health. In such animals the spleen, lymphatic tissues, and thymus are greatly reduced in volume and the bone-marrow changed. In the blood, the granular leukocytes are increased relatively and the total number of leukocytes is much below normal. A single prolonged and eventually fatal exposure to the Roentgen ray immediately before the injection of sheep blood may prevent any formation of lysin for the next eight days or so, or lysin may be produced after a longer period of latency than in the control animals. The results harmonize with the view that antibodies are produced in the spleen, lymphatic tissues and marrow, as these structures suffer most directly from the action of the Roentgen ray. The results indicate also that one reason why the lymphocyte appears to be an important agent of defense in tuberculosis and other conditions may be its power to form antibodies. In view of the destructive action of radium on the leukocytes and blood-making organs, it is altogether likely that it will be found to have the same general effect on the production of antibodies as the Roentgen ray.

89. **Fate of Foreign Erythrocytes in Rabbit.**—It is the purpose of Cary's paper to contribute evidence that foreign blood cells introduced into the circulating blood stream are engaged by and destroyed within certain fixed tissue cells of the liver and spleen.

Medical Record, New York

September 18, LXXXVIII, No. 12, pp. 467-508

90 Some Every Day Injuries to Eye, and What to Do for Them. R. Kalish, New York.
91 Epithelial Function in Relation to Disease. O. Paget, Freemantle, West Australia.
92 Syphilitic Arthritis. H. C. Stein, New York.
93 Does General Practitioner Utilize Means at His Disposal for Diagnosing Early Pulmonary Tuberculosis? J. S. Ford, Wallingford, Conn.
94 Use of Term "Psychanalysis" and Its Substitute. M. Solomon, Chicago.
95 Principles of Bromin Therapy in Epilepsy. E. S. Brodsky, Westport, Conn.
96 Health Week in Public Schools. A. W. Baird, New York.
97 Primary Mastoiditis; Report of Two Cases. C. B. Broder, New York.
98 Case of Intense Food Anaphylaxis. L. C. Frost, Los Angeles.
99 Case of Tetanus; Recovery. J. Murphy, Middletown, Conn.
100 Gout. M. Strunsky, New York.

New York Medical Journal

September 18, CII, No. 12, pp. 589-640

101 Gynecologic Aspects of Backache. G. W. Kosmak, New York.
102 Backache from Standpoint of Neurologist. M. Neustaedter, New York.
103 Influence of Civilization on Insanity. M. J. Karpas, New York.
104 Roentgen Rays in Study of Gastric Diseases. F. J. Dever, Philadelphia.
105 Foreign Bodies in Conjunctiva and Cornea. A. Brav, Philadelphia.
106 Hygienic Features of School Lunches. D. B. Armstrong, New York.
107 Maintenance Diet for Adults. R. H. Rose, New York.
108 Intraspinous Injection of Neosalvarsanized Serum. D. T. Miller, Terre Haute, Ind.
109 Formation of Urinary Calculi. B. G. R. Williams, Paris, Ill.
110 Cancer Problem. J. W. Long, Greensboro, N. C.
111 Refraction in Schoolchildren. A. S. Tenner, New York.
112 Hydatidiform Mole; Report of Eight Cases. J. F. Robertson, Philadelphia.
113 Indications for Surgical Treatment of Hyperthyroidism. T. Jameson, Rochester.

Oklahoma State Medical Association Journal, Muskogee

September, VIII, No. 4, pp. 121-152

114 Surgical Treatment of Potts' Disease. R. Walker, Pawhuska.
115 Congenital Dislocation of Hip. R. L. Hull, Oklahoma City.
116 Formaldehyd Treatment of Compound Fractures. W. W. Jackson, Vinita.
117 Diagnostic Value of Leukocyte Count. T. H. McCarley, McAlester.
118 Intussusception. W. H. Livermore, Chickasha.
119 Intestinal Obstruction. F. L. Carson, Shawnee.

Tennessee State Medical Association Journal, Nashville

August, VIII, No. 4, pp. 161-204

120 Diagnosis and Choice of Operation in Certain Affections of Stomach and Duodenum. J. M. T. Finney, Baltimore.
121 Some Features in Management of Infectious Diarrhea. O. H. Wilson, Nashville.
122 Epidemic Otitis Media; Study of Its Manifestations. R. McKinney, Memphis.
123 Diagnosis of Syphilis of Nervous System. A. W. Harris, Nashville.
124 Tuberculous Meningitis. K. S. Howlett, Franklin.

Texas State Journal of Medicine, Fort Worth

August, XI, No. 4, pp. 205-258

125 Purification of Public Water Supplies and Sewage Disposal in Texas. J. B. Hawley, Fort Worth.
126 Digestive Symptoms of Pellagra. S. Harris, Birmingham, Ala.
127 Pellagra; Its Way and Prevention. W. F. Thomson, Beaumont.
128 Treatment and Prevention of Pellagra. C. A. Smith, Texarkana.
129 Pellagra Clinic. O. M. Marchman, Dallas.
130 Helminthiasis at Texas State Orphans' Home. J. H. Frey, Corsicana.
131 Filterable Virus. D. Meredith, Wichita Falls.
132 Foreign Body in Mastoid Cells; Foreign Body in Left Bronchus. W. D. Jones and H. B. Decherd, Dallas.
133 Chronic Purulent Otitis Media and Complications; Report of Cases. H. T. Aynesworth, Waco.

Wisconsin Medical Journal, Milwaukee

August, XIV, No. 3, pp. 77-114

134 Etiology and Pathology of Puerperal Pelvic Infections. D. Hopkinson, Milwaukee.
135 Puerperal Infection. W. G. Darling, Milwaukee.
136 Cryptogenic and Allied Infections of Surgical Import. R. H. Jackson, Madison.
137 Hodgkin's Disease and Allied Affections. J. L. Yates, Milwaukee, and C. H. Bunting, Madison.
138 Prognosis in Traumatic Neuroses and Psychoses. F. C. Studley, Milwaukee.
139 Camp of Instruction for Officers of Medical Reserve Corps. W. G. Merrill, Grand Rapids.
140 Tetanus; Site of Infection Unknown, Recovery. J. R. Longley, Fond du Lac.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

July, III, No. 9, pp. 1-156

1 *Character, Significance and Prognostic Value of Peritoneal Exudates. R. B. Carslaw.
2 Results of Operation for Malignant Tumors of Breast. G. E. Armstrong.
3 Three Mesenteric Tumors. E. P. Gould.
4 Retroperitoneal Hernia Cured by Operation, Report on Literature. A. R. Short.
5 *Clinical Study of Actinomycosis, with Illustrative Cases. V. Z. Cope.
6 Unilateral Hemorrhage and Unilateral Pain of Renal Origin. C. Wallace and L. S. Dudgeon.
7 Myeloid Tumor of Tendon Sheaths. M. J. Stewart and E. R. Flint.
8 Contemporary French Surgery. T. Tuffier.
9 Gunshot Injuries of Skull. C. A. Joll.
10 Gunshot and Other Wounds. F. P. Connor and H. Mowat.

1. **Peritoneal Exudates.**—An estimation of the character, significance and prognostic value of peritoneal exudates was made by Carslaw. His results are based on an examination of eighteen cases of appendicitis, four cases of perforated gastric or duodenal ulcer, one of tubo-ovarian abscess, and of femoral hernia, operated on by him. He found that the mononuclear phagocytes in the peritoneal exudate consist of two different types of cells, endothelial cells and large mononuclear leukocytes, which not only have two distinct sources of origin, but also can easily be distinguished from each other in all stages of their functional activity by the indophenol-synthesis test for oxydase. Examination of the peritoneal exudate is of great prognostic value in cases of spreading peritonitis, as it indicates the amount and virulence of the bacterial invasion and the extent to which the reactive forces of the peritoneal cavity have been, or are being developed. In considering the significance of the relative number of the various cells, their phagocytic activity, and their healthy or degenerated character, the duration of the bacterial invasion must always be borne in mind. The contention that an immediate examination of the exudate in cases of spreading peritonitis supplies information which indicates whether drainage of the peritoneal cavity is necessary or whether primary closure may be employed, Carslaw says, must be modified by three facts, namely: (a) Local drainage is often necessary although drainage of the general peritoneal cavity may be not only unnecessary but also injudicious. (b) Drainage of the general peritoneal cavity is only called for in very exceptional cases. (c) Effective drainage of the general peritoneal cavity is impossible.

5. **Study of Actinomycosis.**—Cope urges that actinomycosis should always be considered in the diagnosis in the case of any newly formed subacute or chronic swelling in the region of the mouth, face, neck, thorax, or right side of the abdomen. Pus from every abscess should be examined as a routine practice. In any subacute or chronic lesion, the discharge needs to be examined repeatedly. Peribuccal infections comprise the majority of the cases. Here the organism enters most often through the mucous membrane of the alveolar margin near a carious or erupting tooth, or through the tooth socket into the jaw. The fungus is taken in with the food, and lodges round the teeth. The features of the hard peribuccal form are characteristic and can often be diagnosed long before pathologic investigation can give much help. Treatment by the administration of iodids, by vaccine therapy, and by surgical measures, promises the best results.

British Medical Journal, London

August 28, II, No. 2852, pp. 317-352

11 *Treatment of Gunshot Wounds by Excision and Primary Suture. H. M. W. Gray.
12 *Use of Certain Antiseptic Substances in Treatment of Infected Wounds. H. D. Dakin.
13 Use of Sleeve of Vein in Nerve Suture. A. Fullerton.
14 Treatment of Gunshot Fractures of Leg with Posterior Wounds. C. A. Morton.
15 Extraction of Foreign Bodies. J. R. Caldwell.
16 Open-Air Treatment for Wounds. W. E. Nelson.
17 Public Health Work of British Medical Association. H. Jones.

11. **Treatment of Gunshot Wounds.**—The advantages claimed for this method of treatment by Gray are: Healing by first intention is assured in the vast majority of properly selected cases. Much time is thereby saved. Some wounds, which would otherwise require months to heal, are soundly united in the course of from ten to fourteen days. The soldier is thus available for duty again at a much earlier date. The amount of attention required to be given by the medical officers and nursing sisters, etc., is greatly reduced. Much pain is avoided. The amount of dressings required is reduced to a minimum, and in this way expense is lessened. Complications which may arise from the presence of a septic wound are avoided. A more sightly scar is obtained. Because of the absence of the contraction which would accompany the formation of a large cicatrix, there is less impairment of function in the part concerned. In the case of head injuries, excision of the wound, especially in some, apparently trivial, injuries, provides a means of ascertaining, with greater certainty than by any other method, whether depressed fracture or injury to the brain coexists. Gray says that healing by first intention may be procured in practically all cases in which the surfaces of the new wound can be brought into accurate approximation without much tension. In rare cases, when the wound is deep, approximation in the depth has to be dispensed with and drains are introduced for a short period—until one is assured that aseptic healing will occur. In some cases it is necessary to adjust and fix the parts of the body adjacent to the sutured wound so that the fullest relaxation is secured. The mere length of a wound is no bar to operation. It is not necessary to wait until the wound is surgically clean, in fact, in most cases, the sooner the excision is made the better. Only when a large "bank" of inflamed tissue surrounds the wound is immediate excision inadvisable on account of the septic condition of the wound. By vigorous "salting" (hypertonic treatment) such wounds are usually rendered suitable for excision in from twenty-four to forty-eight hours. Other

contraindications are the presence of marked pocketing in the wound and the exposure of vascular or nerve trunks in the depths of the wound or exposure of bone which it is inadvisable or impossible to remove.

12. **Use of Certain Antiseptic Substances.**—The principle of the preparation advocated by Dakin is as follows: Chlorid of lime (bleaching powder) is decomposed with a solution of sodium carbonate and the filtered solution containing sodium hypochlorite together with a slight excess of alkali is mixed with boric acid in such quantity that the solution is acid to phenolphthalein suspended in water but still alkaline to litmus. The resultant solution contains a balanced mixture of hypochlorite and polyborates of sodium with small amounts of free hypochlorous and boric acids. Thus the irritating action of free caustic alkali is avoided, for even if momentarily formed it would be at once neutralized by the boric acid or acid borates present in the solution.

The preparation of a solution of suitable concentration for direct application, containing 0.5 to 0.6 per cent. of sodium hypochlorite is carried out as follows: One hundred and forty gm. of dry sodium carbonate (Na_2CO_3), or 400 gm. of the crystallized salt (washing soda), is dissolved in 10 liters of tap water, and 200 gm. of chlorid of lime (chlorinated lime) of good quality is added. The mixture is well shaken, and, after half an hour, the clear liquid is siphoned off from the precipitate of calcium carbonate and filtered through a plug of cotton; 40 gm. of boric acid are added to the clear filtrate, and the resulting solution is ready for use. A slight additional precipitate of calcium salts may slowly occur, but it is of no significance. The solution should not be kept longer than one week. The boric acid must not be added to the mixture before filtering, but afterward.

A stronger solution may be prepared by decomposing chlorid of lime with sodium carbonate in the proportion of 150 gm. of the former to 105 gm. of the latter dissolved in a liter of water. The mixture is filtered and a measured portion of it (20 c.c.) is rapidly titrated with a boric acid solution of known strength (31 gm. per liter), using phenolphthalein suspended in water as indicator, in order to determine the amount of solid boric acid to be added to the rest of the filtrate. An excess of boric acid should be avoided, so that it is best to add slightly less than the calculated amount. An ordinary alcoholic solution of phenolphthalein cannot be used as indicator, as the alcohol is at once attacked. The concentrated solution thus prepared contains about 4 per cent. of sodium hypochlorite, and should be mixed with six parts of water before use. It can be kept for a month without serious decomposition.

Presse Médicale, Paris

August 26, XXIII, No. 39, pp. 313-320

18 Indirect Injury of the Nervous System from Air Concussion. P. Ravaut.
19 Therapeutic Injection of Human Blood Serum. P. Tariel.

Archiv für klinische Chirurgie, Berlin

CVII, No. 1, pp. 1-194. Last indexed August 21, p. 745

20 *Generalized Fibrous Ostitis with Tumors and Cysts. (Von Recklinghausen'sche Knochenkrankheit, zugleich ein experimenteller Beitrag zur Aetiologie der Knochencysten.) F. Lotsch.
21 Gunshot and Shell Wounds of the Brain and Their Operative Treatment. (Verletzungen des Gehirns.) W. B. Müller.
22 Muscle Grafting to Correct Paralysis of Shoulder Muscles. (Ueber Muskelüberpflanzungen am Schultergürtel.) M. Gerulanos.
23 Technic for Resection of the Stomach. (Nochmals zur Technik der Magenresektion.) H. Finsterer and H. v. Haberer.

20. **Generalized Fibrous Ostitis with Tumors and Cysts.**—This study of von Recklinghausen's disease of the bones fills 137 pages. Lotsch analyzes what has been written on the subject and also on similar disease affecting a single bone; then he describes the clinical experiences with it at the Charité Hospital at Berlin and the pathologic anatomic findings, and concludes with the report of considerable experimental research in the effort to learn the cause of the trouble. He thus gives the details practically in full of thirty-seven cases from the literature or his own service. The bones grow smaller and seem to crush down, an "Insichzusammensinken." It is a systemic affection of the skeleton, and the cause must be some noxious influence reaching the entire bone system by way of the blood. A direct bacterial cause he regards as extremely improbable, but there is much to sustain the assumption of an indirect influence from bacterial infection, the latter inducing some upset in the system of glands with an internal secretion. His fifty-two experiments on twenty-six rabbits demonstrate that a purely traumatic origin of bone cysts is apparently out of the question. Six double plates accompany the article.

Berliner klinische Wochenschrift

August 9, LII, No. 32, pp. 841-864

24 *Surgeon's Disinfection Dermatitis and Hand Eczema. P. G. Unna.
25 Experiences with Tetanus in the Western Battlefields. O. Klieneberger.
26 Recent Studies in Pancreatic Secretion. M. Einhorn (New York).
27 Treatment of Fracture of the Femur in War. (Oberschenkelschussfrakturen im Kriege.) M. Alexander.
28 *The Mosquito Plague. (Zur Stechmückenbekämpfung.) A. Zucker.
29 Typhus and Its Prophylaxis; Possibility of Air Contagion. (Flecktyphus als Kriegsseuche.) F. Wolter.

24. **Surgeon's Hand Dermatitis and Eczema.**—In this first instalment of his eighteenth "War Aphorisms of a Dermatologist," Unna comments on the revolution in ideas regarding the germs already in the skin. They are no longer regarded as very dangerous, and it is now realized that no amount of scrubbing will get rid of them all. Consequently surgeons aim now merely to cover up and hold back the germs already in the skin. This can be done with rubber gloves but Unna says that the same effect can be realized, while at the same time warding off dermatitis, by soaping the hands thoroughly with a good overfatted base soap, the basis for medicated soaps. This soap froth is thoroughly rubbed into the hands; then the hands are wiped off with a dry towel, not rinsing with water, and this leaves a coating of soap on the hands, like a varnish. If it rubs off, it can easily be renewed at any time during the operation. But the great advantage of this base soap coating is that it soothes the skin and protects it against injury from the disinfectant used afterward, mercuric chlorid, for example, which works into the soap and is readily rinsed off with the soap later. Interposing the base soap thus, between the mechanical and the chemical sterilization of the surgeon's hands, wards off dermatitis or heals it if already developed. Certain skins are more sensitive to certain disinfectants than others, and by changing the disinfectant the resulting dermatitis usually heals of itself. The use of the base soap renders unnecessary any scrubbing with hard brushes, which, he declares, dermatologically speaking, is the worst that could befall a surgeon's hand: it never ensures absolute asepsis, while it throws open the portals to the real foes, the pus cocci. He discriminates carefully between disinfection dermatitis and eczema, remarking that pure forms of either are rare, the two being generally associated. The base soap interlude, however, is the most effectual means for preventing the development of eczema.

28. **Mosquitoes.**—Zucker remarks that the hot summer of 1915 has bred unusual numbers of mosquitoes and he describes the various methods in vogue for killing or repelling them. He adds that when the mosquito sucks blood it injects into the wound a secretion from its salivary gland which contains formic acid and lactic acid. Treatment should aim to neutralize this acid, and almost any alkaline fluid will accomplish this if applied at once. After the local reaction has set in, benzin is an excellent means to soothe the itching.

Deutsche medizinische Wochenschrift, Berlin

August 19, XLI, No. 34, pp. 997-1024

30 Diagnosis of Heart Disease by the Ordinary Methods of General Practice. (Diagnostik der Herzerkrankungen.) H. Rosin. Concluded in No. 35.
31 *Innervation of the Kidney. (Innervation der Niere.) L. Asher.
32 *The Anatomic Changes with Inherited Disease, Especially Diabetes. (Die anatomischen Veränderungen bei erblichen Krankheiten.) H. Ribbert.

33 Absolute Unreliability of Certain Tablets Claimed to Sterilize Water in Fifteen Minutes. (Katacid-Tabletten.) P. Köthner.
34 *Isolated Vestibular Neuritis After Antityphoid Inoculation. C. Hirsch.
35 Technic for Wholesale Production of Cholera and Typhoid Vaccines. F. Ditthorn and W. Loewenthal.
36 Changes in Fundus of Eye After Skull Wounds. (Zur Kenntnis der Augenhintergrunds-Veränderungen nach Schädelverwundungen.) A. v. Szily.
37 *Thyrotoxic Heart Disturbances, etc., Among the Soldiers. (Bedeutung und Verbreitung der Thyreose im Heere.) L. Caro.
38 Stereoscopic Localization of Projectiles. G. Martin.
39 *Fatal Alveolar Pyorrhea. W. N. Clemm.

31. **Innervation of the Kidneys.**—Asher has been studying the secretory innervation of the kidneys by a new method of research. Among the facts learned by it is that the kidney possesses a nervous apparatus both for stimulation and for inhibition. The latter is much the stronger of the two. The kidneys do not require these nerves for their functioning. The metabolism alone gives plenty of stimulation for their secreting work, but in case this stimulation should be excessive at any time, the nervous system is ready to check and regulate it.

32. **The Anatomic Changes in Inherited Disease.**—Ribbert thinks that important information might be derived from comparison of conditions in the organs of cadavers with inherited and acquired forms of a disease. It might be possible thus to discover certain differences which might throw light on the etiology of the disease. He found an abnormally small number of the islands of Langerhans at necropsy of a man of 31 with fatal diabetes. In a series of twenty-five sections of the pancreas he found only one unmistakable island and none at all in numerous other sections taken from different parts of the organ. It is possible that one or more of the structural "building stones" may be lacking. In examining the pancreas in diabetes, it should be noted whether the disease is of the inherited or acquired type, and the differential features should be recorded.

34. **Isolated Neuritis Following Inoculation against Typhoid.**—Hirsch comments on the few serious by-effects that have been observed following antityphoid vaccination. He knows of only the three cases reported by Toenissen in which severe acute infection followed the inoculation; and one patient had actual typhoid with a fatal outcome. More or less disturbance of the general health is common, sometimes with nausea and vomiting or slight diarrhea, headache or dizziness. The latter is comparatively frequent in women inoculated during a menstrual period. He has recently encountered a case in which the first injection was borne with only a slight reaction but the second was followed after an interval of twenty-six hours by vertigo which became so intense in half an hour that the patient, a staff surgeon, was unable to stand. He vomited and at the slightest movement of his head vomited anew. During the night his pulse went down to 60 and the respiration rate was also reduced and he felt cramps in the temporomaxillary articulation, numbness in the fingers, cold sweat and buzzing in the head. No material improvement was observed during the following days, and he was convinced that some local cause, embolism or thrombosis or an abscess in the left cerebellum was responsible for the symptoms, and applied for operative relief. There was a pronounced tendency to stagger toward the right side, and the right tympanic membrane looked red. The eye findings were normal but the symptoms and responses to various tests indicated irritation of the vestibular branch of the eighth nerve. Typhoid is known to affect this eighth nerve at times, but the neuritis usually retrogresses, so that only three cases with histologic examination are known. In the cases on record the cochlear part of the nerve was involved; this isolated disturbance in the vestibular branch is exceptional. The symptoms in this patient have been gradually subsiding so that by the end of the fourth month he had resumed his surgical work in his home. There is no dizziness now except occasionally slight vertigo on abrupt movement of the head.

37. **Thyrotoxic Heart Disturbances Among the Troops.**—Caro relates that in the fortress hospital in his charge at Posen, he found signs of excessive or perverted functioning of the thyroid as the main disturbance in 66 of his first 600 patients; and in 420 others it formed part of the clinical picture. In the 66 cases of actual thyrosis, as he calls it, 11 presented gastro-intestinal symptoms as the principal disturbance and these were manifest also in 64 of the group of 420. Thus gastro-intestinal disturbance was evident in one sixth or one seventh of all the cases. It was mainly in the form of gastralgia, loss of appetite, eructations and sometimes a tendency to vomit. This is the more remarkable. Caro adds, because in the 4 among the total 600 in which there was actual gastro-intestinal disease, there were no signs of thyroid disturbance. In 34 of the group of 66 there was an unmistakable tendency to goiter, and in 254 of the group of 420 mentioned above the thyroid could be palpated. Among the total 486 men with thyroid symptoms he found signs of an apical process, probably of tuberculous origin, in 210 cases. He warns expressly against iodin when there is a possible tendency to thyrosis. The predisposition to the latter rests on a congenital instability of the vasomotor nervous system, and this in turn rests on the unstable balance of the organs with an internal secretion. The thyroid plays the leading part, as a rule, as it is so readily upset by nervous or psychic influences or infections or fatigue. Differentiation is important because treatment should be the reverse of that ordered with organic heart disease. The latter requires rest and sparing of the heart, while the thyrotoxic cardiovascular symptoms are benefited by exercise in the open air. Chief among the symptoms is tachycardia, with or without palpitations. It develops during exercise but rapidly subsides in repose. The heart action is lively, sometimes shaking the chest wall. This exaggeration of the heart and pulse beat is characteristic, as the blood pressure is not found high, at least during repose, unless it is a complication.

39. **Fatal Alveolar Pyorrhea.**—Clemm's case demonstrates that a simple alveolar pyorrhea of the lower jaw in an adult may lead to total destruction of the jaw bone, without involvement of any other organ, and entail fatal sepsis notwithstanding free outlet to the pus.

Medizinische Klinik, Berlin

August 8, XI, No. 32, pp. 877-904

40 *Differential Diagnosis of Hysteria, Psychopathic Constitution and Insanity in Soldiers. K. Bonhoeffer.
41 *Starch Malnutrition and Resulting Disturbances. (Mehlnährschaden.) E. Klose.
42 Improved Technic for Reamputation. E. Hayward.
43 *Mistaken Diagnoses of Pulmonary Tuberculosis in Recruits. (Die Fehldiagnose Lungentuberkulose bei Beurteilung der Felddienstfähigkeit.) K. Blümel.
44 *Attacks of Auricular Fibrillation. (Anfälle von Vorhofflimmern.) H. Popper.
45 *Deficient Thyroid Functioning in Children. (Zur Klinik infantiler Hypothyreose.) L. R. v. Korczynski. Commenced in No. 31.
46 *Formaldehyd as Fly-Killer. Wolf.

40. **Differentiation of Hysteria and Psychopathic Constitution from Insanity.**—Bonhoeffer says that the aspect of the psychiatric wards at the Berlin Charité Hospital is remarkably different now from what it was before the war. Then hysteria was practically restricted to the women's wards, but now the men's wards are crowded with all forms of hysteria and psychopathies with epileptiform traits, degenerates and actual insane. The necessity for careful differentiation is obvious as the proper treatment for one may be harmful in the others or at least waste time and effort, as when a hysteric paralysis is treated as for organic disease, or an actually insane person is isolated and treated by suggestion. Differentiation requires prolonged study of the case, as a rule, and this is practically impossible in the field. The emotional or mental reaction after some unusual action is often decisive, but objective tests fail to give reliable findings in the early stages.

41. **Malnutrition and Infant Feeding.**—Klose defines the German term Nährschaden as a pathologic composition of the body in consequence of defective utilization of the food. There is partial inanition, as when the child is unable to utilize the starch it is taking or it does not get the proper amount of indispensable elements in its food. The disturb-

ances resulting from starch malnutrition may be of three types, the atrophic, the hydremic and the hypertonic. The atrophy does not differ from that with ordinary chronic nutritional disturbances but the hydremic type is peculiar. The child looks well and plump, may even increase in weight and the mother is proud of her chubby babe. But closer examination shows that the chubbiness is due to a certain puffiness of the tissues, a doughiness. Even the fat on the body feels spongy.. In short, it is not a normal healthy taking on of fat, but a pathologic saturation of the tissues with water. This doughy habitus may gradually develop into pronounced alimentary edema. The water-soaked tissues point to some far-reaching chemical change in the tissues. Changes in the water-binding properties of the colloids and shifting of the mineral deposits accompany this hydremia. The water-soaked tissues yield readily to infection of all kinds; even slight degrees of the hydremic type entail a marked reduction of immunity. The dangers to which such infants are exposed are hence quite serious.

With the doughy and the hydremic types there is profound modification of the entire metabolism, but this is still more pronounced in the hypertonic type. The legs or arms or both are drawn up against the trunk, but the contraction can be actively and passively overcome, which is not the case with true contracture. This peculiar tension of the muscles may keep up for weeks and months in infants; even the muscles of the trunk may be involved. This hypertonic condition is usually more pronounced the younger the child, and it indicates a serious disturbance in the metabolism, changes in the chemistry and in the physical chemical properties of the tissues, particularly of muscle tissue. Conditions right themselves, even on breast milk, extremely slowly if at all. At necropsy of a four weeks' infant with the extreme hydremic type of starch malnutrition, not only the skin, but also the muscles and the bones contained an excess of water. The internal organs showed comparatively least water, with abnormally small ash content. The prognosis is always grave with severe starch malnutrition. The danger with the milder, doughy form is that parents and physician are liable to mistake the puffiness for the chubbiness of health, and hence allow the malnutrition to progress into the more serious and incurable types.

43. **Mistaken Diagnosis of Tuberculosis.**—Blümel urges that lung specialists should be sent to examine the troops as he has found that numbers of men discharged from the service on account of tuberculosis in reality were either free from the disease or it had entirely healed. When a man coughed and showed a certificate of dismissal from some sanatorium, the army medical officers sent him back from the front without further ado, but 80 per cent. of those sent back from the front on this account proved to be nontuberculous. A mistaken diagnosis of tuberculosis may blast a man's whole career and life, prevent marriage and self-support. On the other hand, actual tuberculous lesions usually prove rapidly destructive in the conditions of war. The only solution of the problem, he declares, is to have the apical lesions examined by a lung expert, and specialists should be sent around among the troops for this purpose.

44. **Paroxysmal Auricular Fibrillation.**—Popper reports the case of a woman of 63 who for years has had attacks of completely irregular heart action, which the tracings explain as due to auricular fibrillation. During the intervals the pulse ranges from 76 to 116 under excitement. The attacks of arrhythmia now return every two or three days and last from a few minutes to forty-two hours. The highest pulse noted was 190. There is no special depression after the attack, and the woman sleeps well. Physostigmin had no influence on the attacks but on two occasions a single dose of 0.5 gm. quinin seemed to abort the attack—the first time that any drug had been able to do this. It seems probable that quinin may thus be counted on for a specific action on auricular fibrillation, like that of physostigmin on heart block. There is thus one group of cases of total arrhythmia in which the disturbance occurs only transiently and at intervals over long periods of years, and it has a comparatively favorable prognosis.

45. **Thyroid Insufficiency in Children.**—A striking case is reported by Korczynski in which inherited syphilis seems to have impaired the functioning of the thyroid, hypophysis, ovaries, blood-producing organs and, through the aorta, the circulatory apparatus. The child was mentally backward. Thyroid treatment and treatment for the syphilis were given together, and a pronounced change for the better was soon apparent and has continued to progress. The mind seemed to be roused from its lethargy and, as the physical development progressed, the skin became of normal aspect, the blood production came to approximate normal, and there was a hint of development of sexual characteristics.

46. **Flies and Mosquitoes.**—Wolf has found formaldehyd an excellent fly poison, added to a little milk or beer and distributed in plates, one teaspoonful formaldehyd to ¼ liter of milk or beer. Mosquito bites cease to itch and do not swell, he states, if they are dabbed with a mixture of 0.01 part menthol, 3 parts formaldehyd and 7 parts alcohol.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

August, XLII, No. 2, pp. 95-198

47 *Epidural Anesthesia. (Erfahrungen über Sakralanästhesie bes. bei gynäkologischen Operationen.) E. Kehrer.
48 Varicose Veins in the Uterus. (Plexus venosus varicosus endometrii.) O. Frankl.
49 *Causes, Prevention and Treatment of Artificial Perforation of the Uterus in Abortion Cases. B. Schweitzer.
50 *Treatment of Febrile Abortion. W. Benthin.

47. **Sacral Anesthesia.**—Kehrer has applied the high sacral or epidural technic in 140 cases for gynecologic operations. In 82.1 per cent. of his cases the anesthesia was profound and lasted for sixty or seventy minutes; in 10 per cent. the anesthesia was not quite complete, and no effect was apparent in 7.8 per cent. of the patients; probably the injected fluid went astray in these refractory cases. The literature on the subject is cited, and over twenty pages are devoted to the summaries of his 140 cases in turn, classified according to the operation. He gives illustrations of the exact technic, and expatiates on the advantages of the relaxation of the anterior walls of the abdomen, and the total absence of postoperative nausea, vomiting and headache. He follows Cathelin's technic but injects larger amounts than others have advocated. His dose is usually 60 c.c. of a 1.5 per cent. novocain-sodium bicarbonate solution, with a little epinephrin, and other sodium salts. He regards the method as most excellent for gynecologic operations but rejects it for obstetric work and obstetric operations, for reasons which he enumerates.

49. **Perforation of the Uterus by Curet after Abortion.**—Schweitzer describes how artificial perforation is liable to occur and how it can be prevented, and the best means to treat it. In 27 cases on record in which conservative treatment was applied, 2 of the patients developed fatal peritonitis. In 36 cases treated by operative measures only one patient died from peritonitis. The difference is thus between 11 per cent. mortality in the conservative and 2.8 per cent. in the radically treated cases. The cases with preexisting peritonitis are not included in these groups. The practical conclusions from this analysis of 105 cases in the literature, including 8 from the Leipzig gynecologic clinic, are that expectant treatment is justified only when the perforation is small, and there is no suspicion of infection, the intestines not injured, and the uterus entirely empty. Under other conditions a laparotomy is required, removing the uterus if infection is installed. If the perforation is small and aseptic conditions prevail, the uterus can be sutured before the abdomen is closed. The main point in treatment, however, is to make the diagnosis promptly and place the patient in the proper hands for treatment with the least possible delay.

50. **Treatment of Febrile Abortion.**—Benthin pleads for expectant treatment at least until one's hand is forced, pointing to the morbidity of only 9.8 per cent. and mortality of 0.8 per cent., under conservative measures, in the statistics he has compiled from the literature. On the other hand, with active measures the morbidity was 29 per cent. and the mortality 9.8 per cent. Most striking of all is the mortality with hemolytic streptococci: 31.2 per cent. with active treat-

ment and zero with conservative. In Winter's service at Königsberg in ten recent cases of infected abortion with hemolytic streptococci all the women recovered under expectant treatment, while of three others given active treatment all died although all were previously robust. When no hemolytic streptococci are found, the prognosis is favorable any way, and active measures are justified and useful. The strictly conservative standpoint is reserved for the cases showing hemolytic streptococci. The curet should never be used, merely the finger, to clear out the uterus; only when the finger is unable to clear it out is the curet or forceps permissible.

Münchener medizinische Wochenschrift, Munich

August 17, LXII, No. 33, pp. 1105-1140

51 *Quantitative Color Test for Uric Acid in the Blood. (Eine Methode zur quantitativen Bestimmung der Harnsäure im Blut.) C. Maase and H. Zondek.
52 Case of Intermittent Ileus with Wandering Kidney. H. B. Hügelmann.
53 *Silver Cannula Drain for Purulent Pleurisy. (Empyembehandlung mittels Kanüle.) O. Rüdel.
54 *Night Blindness in Soldiers. (Nachtblindheit im Felde.) F. Best.
55 Cardiovascular Phenomena During Convalescence from Typhoid. (Erscheinungen am Zirkulationsapparat in der Typhusrekonvaleszenz.) F. M. Groedel.
56 Intravenous Ether-Salt Infusion in Tetanus. F. Hercher.
57 Localization of Foreign Bodies Especially After Injury of the Eye. (Fremdkörperbestimmung.) J. Duken.
58 Roentgen Localization of Foreign Bodies in the Depths. E. Gruenhagen, E. Runge and J. Cromback.
59 Electric Probe for Foreign Bodies. S. Loewenthal and J. Nienhold.
60 Device for Measuring Foreign Bodies and Growths in the Bladder. (Neues, direktes optisches Messverfahren zur Messung von Fremdkörpern und Neubildungen in der Blase.) E. Herzberg.
61 Improved Technic for Plaster Casts and Extension. H. Hans, A. Riffel and W. B. Müller.
62 The Ultimate Outcome of Gunshot and Shell Wounds of the Spinal Cord. (Das nächste und weitere Schicksal der Rückenmarksschussverletzungen; ein theoretischer Vorschlag zur Beeinflussung desselben.) R. Spoerl.

51. **Test for Uric Acid in the Blood.**—Maase and Zondek describe a technic which is comparatively simple and requires only 5 c.c. of blood and an hour and a half of time, while the findings harmonize with those obtained with the more complicated methods. Their technic is based on the action of acetic and phosphotungstic acid.

53. **Drainage with Purulent Pleurisy.**—Rüdel has been able to cure a number of patients with pleural empyema or effusion by introducing a retention drain in the form of a silver cannula about 10 cm. wide, 5 mm. thick, and about 5 cm. long. The diameter of the tube thus forms a very broad oval, so large that it fits comfortably in an interspace and permits the escape of even thick pus. This renders resection of ribs unnecessary in treatment of empyema, and his experience with this method has been extremely satisfactory during the years he has been using it.

54. **Night Blindness in Soldiers.**—Best relates that he has recently encountered thirty-six cases of hemeralopia in soldiers at the front. It was of long standing in the majority, traceable to inherited taint or some anomaly in refraction. It may not have given any trouble before, but under the stress of war pronounced hemeralopia became evident. The extreme form of night blindness disqualifies a man for service at the front.

Zentralblatt für Gynäkologie, Leipzig

August 21, XXXIX, No. 34, pp. 587-610

63 *Autoinfection of Parturients. (Ueber Selbstinfektion.) W. Benthin.

63. **Autoinfection of Parturients.**—Benthin comments on the confusion that prevails as to what is meant by autoinfection in these circumstances. The only reliable criterion is the determination of the presence or absence of pathogenic germs in the vagina. Bacteriologic control is indispensable for this, a positive knowledge of the bacterial flora. The occurrence of pathogenic bacteria in the secretions of the healthy, their varying importance in respect to the prognosis, the frequency of infection of the carriers—all these have to be considered in discussing the question of autoinfection, and all have a direct bearing on its solution. Rhinology, otology and ophthalmology have long recognized that pathogenic germs may be present in the nose, ear and eye of the apparently healthy and cause no trouble under ordinary conditions. But they are liable to start mischief at once if an operation is done or the vitality of the region is depressed from any other cause.

Bacteriologic control will reveal the presence of hemolytic streptococci, and when these are discovered in the vagina, internal maneuvers should be restricted to the utmost and operative measures entirely rejected until the hemolytic bacteria can be banished. It is scarcely possible, he remarks, to get rid of them by mechanical measures, flushing out the vagina. But they can be reached by prophylactic vaccine therapy. Bacteriologic control throws light on the prognosis and enables the carriers and the sick to be segregated. Infection brought from without is becoming more and more rare every year; the modern aseptic management of childbirth has almost reached the limits of the possible. The fact that instances of puerperal fever still occur testifies that the infection is the work of endogenous germs rather than the consequence of a broken link in our chain of aseptic measures.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 13, XXXVI, No. 56, pp. 865-880

64 *Sterilizing Rubber Gloves in Denatured Alcohol. G. Cocci.

August 23, No. 57, pp. 881-896

65 *Phenol in Epidemic Cerebrospinal Meningitis. (2 casi di meningite cerebro-spinale epidemica guariti con la cura di acido fenico alla Baccelli.) M. Bellotti.

64. **Sterilizing Rubber Gloves.**—Cocci places the rubber gloves in a large jar of denatured alcohol and relates that this sterilizes them completely without injuring the gloves in the least. Gloves have been kept for months in the denatured alcohol without apparently detracting from their strength and durability. He has been sterilizing gloves in this way for over a year, and has found it entirely reliable. The gloves are left in the alcohol for twelve hours at least. After the operation the gloves are washed in soapy hot water, rinsed in alcohol and then returned to the jar where they are left till needed for an operation. He does not mention the method applied in denaturing the alcohol.

65. **Phenol in Meningitis.**—As a last resort in acute cerebrospinal meningitis in two sisters of 8 and 11, Bellotti gave them subcutaneous injections of phenol and morphin according to Baccelli's method of treating tetanus. The dose was 0.01 gm. of phenol with 0.005 gm. or half this of morphin, dissolved in 1 gm. of distilled and sterilized water. This dose was repeated during the day and following days until the children had taken 0.75 gm. of the phenol without the urine turning black or any other symptom of phenol poisoning manifesting itself. Most of the subcutaneous injections were made by the mother whenever the fever began to go up or the pains to increase. Improvement was evident after a few injections, and by the twentieth day the children were able to sit up and play and the cure was soon complete without complications. The subcutaneous route seems better adapted for the purpose.

Pediatria, Naples

August, XXIII, No. 8, pp. 561-624

66 Malta Fever in Children. (La febbre melitense o mediterranea o ondulante nei bambini.) O. Cozzolino.
67 *Etiologic Relation Between Chronic Hydrocephalus and Inherited Syphilis. S. De Stefano.
68 Noguchi's Luetin Reaction in Inherited Syphilis. G. Gatti and E. Bellomonte.

67. **Chronic Hydrocephalus and Inherited Syphilis.**—Stefano writes from the pediatric clinic at Naples in charge of Professor Jemma to call attention to thirty-five cases of chronic hydrocephalus to show its connection with inherited syphilis. In only two of the total thirty-five was the Wassermann reaction negative, both in the children and in the parents. One of these two children had spina bifida and other deformities. Rhinitis and enlargement of the spleen were noticeable in twenty of the thirty-five cases. The causal connection between the inherited taint and the chronic hydrocephalus was thus unmistakable, but treatment based

thereon was very disappointing; the hydrocephalus showed little if any tendency to retrogress under vigorous treatment of the inherited taint. It seems to be on about the same plane in this respect as tabes and progressive paralysis.

Policlinico, Rome

August 22, XXII, No. 34, pp. 1125-1160

69 Wounds of the Ears in War. (Traumi di guerra dell'orecchio.) G. Ferreri. Commenced in No. 32.
70 Interrupter for Alternating Electric Current. G. C. Trabocchi.

Riforma Medica, Naples

August 21, XXX, No. 34, pp. 925-952

71 What Is Meant by Sporotrichosis? R. Campana.
72 Cancer of the Rectum. (Contributo allo studio dei carcinoma e sarcomi del retto.) P. Marogna. Commenced in No. 32.

Brazil-Medico, Rio de Janeiro

August 8, XXIX, No. 30, pp. 233-240

73 *Pathologic Relations Between Liver and the Spleen in the Tropics. (Relações pathologicas entre o figado e o baço; aspectos clinicos da pathologia hepato-esplenica nos climas quentes.) C. Fraga. Commenced in No. 29.

August 15, No. 31, pp. 241-248

74 The Usual Reflexes and Those Not So Well Known in Examination of the Nervous System. T. Mendes. Concluded in No. 32.

73. **Pathologic Interdependence of Spleen and Liver in Tropical Diseases.**—Fraga emphasizes the fact that the spleen is the main rallying point for the hematozoa in malarial fever, and the enlarged spleen may dominate the clinical picture. The liver becomes affected only later; in acute malaria it does not seem to suffer much and soon recuperates. Even in chronic malarial fever the lesions in the liver, he affirms, are not so serious as generally considered. The sagging of the liver may be mistaken for its enlargement. Even if it is enlarged, this is no criterion as to functional incapacity, so that it is impossible to estimate the true state of the liver without applying functional tests in addition to the physical examination. When the liver is much hypertrophied and acting badly, it will often be found that improper habits of eating or drinking contribute to its pathology. He has been systematically applying the principal functional tests to the liver in chronic malaria, and has been surprised to find how slight its influence on the liver functioning. The liver disturbances are secondary to the malarial spleen, and they soon subside, as a rule, after splenectomy. This is the rule also in Malta fever and in bacillary dysentery, but the ameba attacks the liver directly and the spleen suffers only secondarily to this. He remarks that kala-azar has not yet been recognized at Bahia, where he is professor of internal medicine. In Chagas' "American trypanosomiasis" the liver becomes much enlarged, showing in acute cases a fatty degeneration comparable only to the steatosis of the viscera in yellow fever. In the chronic form the liver suffers principally from the weakness of the heart infested by the parasites. Fraga is inclined to think that the liver disturbances in tropical countries are unjustly ascribed to the climate in many instances when in fact the liver is suffering from the results of unhygienic living, aping the diet and clothing of colder countries, excesses in drinking and in the use of pungent condiments and of canned or dried meats, etc.

Semana Medica, Buenos Aires

July 1, XXII, No. 26, pp. 1-28

75 Classification of Chronic Nephritis. J. J. Viton.
76 Vaccine Therapy of Streptococcus and Gonococcus Affections. (Caso de septicemia estreptococcica curado con la vacuna colibacilar Kraus-Mazzo.) J. R. Goyena. (Algunas Vacunas.) A. Gutierrez. (La nucleo-proteina gonococcica en el tratamiento de las complicaciones de la blenorragia.) E. F. Solari.

July 8, No. 27, pp. 29-56

77 Argentine Milkweed as Galactagogue. (El Tasi: Morenia brachystephana, galactogeno ideal.) A. D'Alessandro.
78 Bilateral Decapsulation and Nephrotomy for Toxic Anuria After Chloroform. E. T. Lastra.
79 *First Stage of Alimentary Decomposition (Malnutrition) in Infants on Milk Diet. (La distrofia lactea.) E. Gaing.

July 15, No. 28, pp. 57-94

80 *Gas in the Gravid Uterus; Fourteen Cases. (Fisometra ovular.) E. A. Boero.
81 Agglutination in Testing for Tubercle Bacillus. (La accion aglutinante en la investigacion del bacilo de Koch.) J. M. Hitce and R. Iribarne.

July 22, No. 29, pp. 95-124

82 *Wandering Spleen. (Caso de esplenoptosis.) J. Salvador.
83 *Four Practical Urologic Suggestions. A. F. Ortiz.
84 Artificial Pneumothorax in Pulmonary Tuberculosis. (La neumocolapsoterapia.) C. Ferreira.

July 29, No. 30, pp. 125-154

85 Serotherapy of Bubonic Plague. J. Moreno.
86 Neosalvarsan in Treatment of Gangrene. B. N. Calcagno.

79. **Alimentary Decomposition.**—Gaing applies the term "milk dystrophy" to the condition to which he refers, an upset in the nutritional balance in children on cow's milk. The organism reacts to each kind of food in a special manner, and there are as many types of this, he says, as there are combinations of infant foods. Many cases of assumed "anemia," "debility" and "defective development" are in reality merely the result of alimentary dystrophy, a pathologic make-up of the organism as the result of unsatisfactory utilization of the food supply. The child is not adequately nourished, but the blood count may be normal although the blood displays a tendency to accumulate in the abdominal organs, leaving the skin pale and dry, and setting up tympanism. The muscle system is weak and the children whimper and are restless. The pulse keeps normal but the temperature runs a zigzag course to just below the fever point. The abdominal walls are flabby, while there is pronounced hypertonicity with disturbances from a starch diet. The urine contains indican but no albumin or sugar; the stools are dry, whitish or greyish, and do not stick to the diaper as they contain insoluble fatty soaps, and there may be a tendency to constipation.

This "milk dystrophy" is essentially chronic, but the younger the infant, the more rapidly it reaches an irreparable stage. The alimentary disturbance is qualitative, not quantitative, and the principle in treatment is to reduce the fat in the milk and replace it with carbohydrates or, better yet, change to breast-milk. On this the weight generally drops off during the first few days, probably on account of the lesser quantity of salts in breast-milk and the consequent change in the balance of water. Some infants do better on buttermilk or skimmed milk on account of the large proportion of albuminoids and salts, as the infant has been losing salts so constantly during the dystrophy, especially with excessive elimination of lime.

80. **Gas in Gravid Uterus.**—Boero refers to "ovular physometra," as he calls it, that is, gases generated in putrefaction of the fetus or infection of the amniotic fluid or of relics of the ovum. He reports fourteen cases in detail to show the clinical picture presented in these various types. He adds that in each instance this complication might have been avoided if the condition of the ovum and the obstacles to its spontaneous expulsion had been recognized in time. The attending physician, he declares, had been incompetent and, what generally accompanies this, had probably sinned against asepsis. The pathognomonic sign of physometra is the resonance of part or the whole of the uterus on percussion. Irritating fluids escape from the uterus and during contractions fetid gas may be expelled. As a rule the general condition seems relatively good unless the woman is exhausted from protracted labor. Prophylaxis is the main point; every pregnant woman should be impressed with the importance of notifying her physician whenever the bag of waters ruptures. Chills without fever afterward are a sign that the fetus has recently died. He warns against artificial rupture of the fetal membranes before the cervix is entirely dilated unless serious complications compel this. With premature spontaneous rupture he keeps the woman in bed under constant oversight of temperature, pulse, vaginal secretions and fetal heart beat until labor commences. If the temperature goes up and the walls of the uterus cease to be relaxed, that is, retract instead of contracting, and if there is escape of meconium and the pulse rate accelerates, he advises to empty the uterus at once, as also when labor has continued for twenty hours with a primipara and twelve for a multipara.

The child born living from the gas-filled uterus must receive special preventive care, washing with some antiseptic soap and anointing it with a mixture of 5 parts formaldehyd in 50 parts each of alcohol and glycerin. The mouth, nostrils and ears should be sterilized with a 1 : 1000 solution of oxycyanid of mercury. The cord should be painted with tincture of iodin and wrapped in medicated gauze. A castor oil purge should also be given to carry off any septic fluid it may have swallowed.

82. **Movable Spleen.**—The woman of 33 had movable spleen and movable right kidney. The other kidney had also been movable and had been fastened in place five months before but the disturbances persisted and were traced to the movable spleen. Splenopexy was done, putting an end to all further trouble from this source.

83. **Technic for Incising the Meatus of the Urethra.**—Ortiz gives an illustration of a grooved aluminum cone with ring handle. The cone is inserted in the urethra and the incision is made down into the triangular groove. Another device which he has found extremely useful is a ball-shaped tip to the cannula used in making the Janet injections into the urethra.

Russkiy Vrach, Petrograd

XIV, No. 20, pp. 457-480

87 Apparatus to Illustrate Blood Pressure. B. P. Babkin.
88 *The Suprarenals as Toxin Neutralizers. M. N. Cheboksaroff.
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99 Closure of Gunshot Perforation of Rectum with Flap from Its Mucous Membrane. N. V. Markoff.
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88. **Suprarenals Do not Annul Toxic Action.**—Cheboksaroff injected guinea-pigs with blood or serum from the suprarenals after mixing with diphtheria antitoxin. He came to the conclusion that epinephrin does not neutralize toxins, whatever the dose used.

91. **Quinin and Urea Hydrochlorid as Local Anesthetic.**—Samsborsky's experiments confirm the local anesthetic action of chininum bimuriaticum carbamidatum which he used in a 1 per cent. solution in 40 c.c. doses. With such doses he never observed any toxic effects, but the tissues became edematous at the place of the injection, and the surgical cut showed marked hyperemia. The anesthesia sets in ten or fifteen minutes after the injection and persists for several hours, while there is slight diminution of sensation for several days. This absence of postoperative pain makes the injections of this quinin preparation valuable, but the motor nerves should be avoided for fear of their possible paralysis. He used this drug in thirty-eight cases of various disorders. Only in three very old people the healing of the edges of the wounds was unduly protracted, and gangrene developed in one of them.

92. **The Duodenum Content.**—Lichtendorff studied the duodenal juice by means of Einhorn's duodenal tube and bucket. He used the tube dry, on an empty stomach. When the capsule or the bucket passes the pylorus, an indicator shows, which took place in five minutes, thirty minutes, or one and one-half hours after the tube was introduced. The color of the duodenal juice is light, sometimes brownish, and transparent. If it is turbid, this is due to admixture of acid stomach juice, or to admixture of white corpuscles. In icterus no bile was found in the duodenal juice, but all the three ferments of the pancreas, amylopsin, trypsin and steapsin were present. Repeated absence of bile testifies to complete obstruction of the common bile duct. There is normally no mucus in the duodenal juice, which is alkaline, sometimes neutral in reaction, or even acid from admixture of gastric juice. Blood when present indicates an ulcer. Microscopic examination shows the presence of pavement or cylindric epithelium, neutrophil leukocytes, eosinophils and some lymphocytes. He gives the histories and duodenal findings in thirteen cases. The clinical value of these examinations is evidently insignificant.

93. **Differentiation of Hemorrhagic Effusion.**—Petroff draws the suspected fluid from the pleural cavity or the joint into a test tube, adds four to six times the equal volume of distilled or plain water, shakes and waits two or three minutes. In case of hemorrhagic fluid the blood lakes to a red transparent solution. In the presence of pus, the solution is turbid and contains floating flakes or shreds. This hemolytic reaction should be inspected at once after the fluid is drawn, as even an hour of waiting renders the fluid in both instances transparent, with a sediment on the bottom.

95. **Changes in the Nervous System in Experimental Chlorosis.**—Zagorovsky produced in dogs artificial anemia by repeated blood letting and feeding them on food poor in iron, such as rice, potatoes and milk. The hematologic examinations invariably showed chloranemia when the dogs were killed by puncture of the fourth ventricle. The nerve cells of the anterior horns, fourth ventricle, cortex (pyramidal cells) and cerebellum (Purkinje) were studied with Nissl's method. This showed that chlorosis undoubtedly causes changes in them. These changes are in the form of chromatolysis, and changes in the shape and size of Nissl's granules, while the nucleus remains unchanged. The fibrils of the nerve cell become hypertrophied and break up in fragments, but the nonstaining substance shows comparatively little change. He gives illustrations of the various changes encountered at different points.

97. **Desquamation of Epithelium of Urinary Tract as Sign of Exudative Diathesis in Children.**—Schkarin determined the amount of cellular elements (epithelial cells, white cells) in the urine of children that suffer from constitutional disease or the exudative diathesis, and compared the findings with those in the constitutionally healthy and with a few cases of some inflammation of the urinary tract. In the group with the exudative diathesis, the urine invariably showed an increase of the cellular elements (cyturia), but this was still higher with urinary disease. The amount of cellular elements is not in proportion to the gravity of the process, and may be absent when the external signs, such as conjunctivitis, geographic tongue, prurigo, eczema, etc., are present and vice versa. On the other hand, desquamation of the epithelium may eventually be the sole sign of the exudative diathesis, which only later may develop other symptoms. The presence of white corpuscles indicates an inflammatory condition of the urinary tract. This is a frequent complication in constitutional diseases of children. The urine was centrifuged three times before the count was made.

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GASTRIC CANCER AS A SEQUEL TO GASTRIC ULCER *

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This paper is presented to call attention to three propositions: I. Gastric cancer originates from gastric ulcer much more often than was formerly believed. II. We have no diagnostic methods to tell us positively when a chronic gastric ulcer has become malignant, until the change is far advanced. III. Surgical treatment should be recommended for gastric ulcer more frequently in the future and with less delay.

I. ORIGIN OF GASTRIC CANCER

The literature of this subject goes back to Cruveilhier,[1] who first segregated simple chronic ulcer of the stomach from chronic gastritis on the one hand and cancer on the other; and whose observations and descriptions were so complete that gastric ulcer is still referred to in French literature as "Cruveilhier's disease." Even at the early date at which he wrote, 1829 to 1835, he noted the coexistence, at times, of ulcer and cancer and the possible relation of one to the other. From time to time after that others recorded the same observation, and their contributions are referred to in most textbooks, systems of medicine and magazine articles of the present century, dealing with this subject. To review here all the literature from Cruveilhier's time to this, on the topic of gastric cancer as a sequel to gastric ulcer, would be impossible. Suffice it to say that it includes contributions from German, French, Russian, Polish, and Italian, as well as from English and American investigators; and that there is almost unanimous agreement that gastric cancer does originate as an ultimate sequel to chronic gastric ulcer. As regards the frequency with which this happens, however, there has always been disagreement among observers. Some have insisted that cancer rarely developed on an ulcer site, others that it was a common occurrence. But from statistics obtained from many sources, in different countries, as years went by, the conclusion was gradually reached that about six to ten cases of gastric cancer in every hundred originated from gastric ulcer; and this percentage, generally accepted by authorities and handed down from textbook to textbook lulled the profession into a sense of indifference, because it did not seem to offer any special menace.

During the past decade, however, as resections of the stomach grew more common and as the pathologist examined more carefully the tissues removed at operation, it became evident that the accepted percentage of frequency was too low. Surgeons were the first to emphasize this fact. In England, Robson,[2] as early as December, 1904, in his Bradshaw lecture, claimed that in 38 out of 64 cases of operatively demonstrated cancer of the stomach, that is in 59.3 per cent., gastric ulcer had preceded. Moynihan,[3] in 1906, reported that 16 out of 22 cases of gastric cancer, or 72.1 per cent., gave a previous history of gastric ulcer; and remarked: "the sequence of gastric ulcer and carcinoma, so far as clinical evidence can support it, seems to be definitely established in more than half the total number of cases that come to surgical treatment." In 1909, Moynihan,[4] basing his conclusion at that later date on 100 operations for gastric cancer, stated "of all patients operated upon by me for cancer of the stomach, approximately two in every three have had a history of previous gastric ulcer." In America, W. J. Mayo,[5] so far back as 1907, announced that in 54 per cent. of 69 resections for gastric cancer, the clinical histories and pathologic examinations made it certain that the cancer had its origin in ulcer. Rodman,[6] in 1908, felt convinced that he could say the same in at least 50 per cent. of his cases. In Germany, Payr,[7] writing in 1910, and reporting the results of his studies of specimens obtained by resection for chronic gastric ulcer, stated that 26 per cent. showed either beginning or moderately advanced cancer formation; though in the vast majority of these, macroscopic examination gave no evidence of malignancy. Küttner,[8] in 1910, reported that 43.4 per cent. of resected tissues which at operation were pronounced callous ulcer, on microscopic examination proved to be carcinoma, and concluded; "it is in many cases neither clinically, nor with abdomen opened, nor even in macroscopic preparations, possible to distinguish callous ulcer from carcinoma—only microscopic investigation decides."

It is most interesting to note how at the Mayo Clinic with increasing experience the percentage of cases of gastric cancer as a sequel to gastric ulcer gradually rose. Graham,[9] writing in 1906, said it had been possible to demonstrate in 1903 that 15 per cent. of gastric cancers had an ulcer base; in 1904, the percentage rose to 18; and in 1905 it reached 47 to 49 per cent. Writing again in 1908 Graham[10] was able to show that

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* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Cruveilhier: Anatomie pathologie du corps humain; Maladies de l'estomac, Paris, 1829-1835.

[2] Robson, Mayo: Cancer and Its Treatment, London, 1905, p. 23.

[3] Moynihan: Brit. Med. Jour., Feb. 17, 1906.

[4] Moynihan: Brit. Med. Jour., April 3, 1909.

[5] Mayo, W. J.: Ann. Surg., June, 1907.

[6] Rodman: Tr. Am. Surg. Assn., 1908, xxvi, 189.

[7] Payr: Deutsch. Arch f. klin. Chir., 1910, xciii, 436.

[8] Küttner: Deutsch. Arch. f. klin. Chir., 1910, xciii, 410.

[9] Graham: Boston Med. and Surg. Jour., Aug. 23, 1906.

[10] Graham: Boston Med. and Surg. Jour., Nov. 12, 1908.

62 per cent. of all the patients operated on for gastric cancer gave a precancerous or nonmalignant ulcer history.

The contribution, however, that particularly brought the profession to a realization that old percentages were too low, came from the pathologists of the Mayo Clinic, Wilson and MacCarty,[11] who announced in 1909 that from 153 cases of undoubted carcinoma of the stomach, 109 or 71 per cent. showed sufficient gross and microscopic evidence of previous ulcer to warrant labeling them "cancer developing on previous ulcer." In 1913, in a later statement of his findings, covering all material examined to Nov. 15, 1913, Wilson[12] reported on 530 cases of gastric tumor obtained at operation or necropsy. The ordinary chronic lesions of the stomach he classified pathologically in three groups: Group A, chronic ulcer; Group B, lesions in all respects like those in Group A, except for the additional presence of carcinomatous areas in the border; Group C, lesions carcinomatous throughout. Of the specimens showing cancer, about 60 per cent. were in Group B and about 40 per cent. in Group C. The latest paper by Wilson,[13] published in December, 1914, reports on 445 gastric carcinomas examined in the laboratories of the Mayo Clinic, 399 specimens resected by the surgeon and 46 removed at necropsy. His conclusions in this are even more advanced than in any previous communication, for he says:

> When one considers the clinical evidence in relation to a careful histologic study of a large series of operative cases of gastric cancer, he is led to the opinion that, in all probability, very few cases of gastric cancer exist which have not taken their origin at the site of a previous ulcerative lesion of the mucosa; in other words, the pathologic findings show that gastric ulcer first develops and cancer is implanted thereon.

MacCarty and Broders[14] also reviewed the Mayo clinic material and published their results earlier in the year 1914. Of 684 specimens resected from the stomach, 191 were simple chronic ulcers in which no histologic evidences of carcinoma were present, 472 showed the characteristics of simple ulcer, plus the presence of carcinoma; while in 21 specimens of ulcer the presence of cancer was doubtful. They conclude first, that single and multiple chronic gastric ulcers occur with all the characteristics of simple ulcers plus the presence of carcinomatous cells in their borders, minus the presence of similar cells in their bases; second, simple and multiple gastric ulcers occur which present the macroscopic characteristics of simple ulcer plus the presence of carcinoma in the borders and bases, with glandular involvement and metastases. They call attention to the possibility that any gastric ulcer may not only become but may actually be carcinomatous at the time the diagnosis is made. They insist that the differential diagnosis is to be reached only by the pathologist after removal of tissue, and not by the clinician or surgeon; and that there is no other method that positively answers the question, except exploratory laparotomy and microscopic examination of tissue. They conclude with the significant remark:

> Whenever the clinician feels positive of the clinical diagnosis of chronic gastric ulcer, he should consider that carcinoma can not be ruled out by our present methods of clinical investigation.

German pathologists, however, during the past decade have not been able to discover any such close relation between gastric ulcer and gastric cancer as that just described. Hauser,[15] writing in 1910, quotes A. Schmidt's remarks in the discussion on this subject at the Twentieth Congress for Internal Medicine, in 1902. Schmidt had suggested that in at least a part of these cases ulcer is really secondary to cancer. Hauser, while accepting this view, admits that it could not explain reported cases of long-standing chronic ulcer with ultimate cancerous degeneration; but believes that these after all are very rare and not well proved. Aschoff,[16] in the 1911 edition of his "Pathological Anatomy," asserts that the transition of simple ulcer into cancer is not so frequent as has been claimed; and that one must think rather of the secondary origin of ulcer on cancer, through closure of vessels by the growth. In a communication in 1912 to current medical literature, Aschoff[17] makes this remarkable statement in criticizing Küttner's report:

> The fact that a number of chronic stomach ulcers, which were designated by the surgeon as callous ulcers and which resembled the form of the usual stomach ulcer, were shown microscopically to be cancer, proves less that an ulcer secondarily becomes cancerous than that a cancer may change itself into a typical ulcer.

Gruber,[18] writing in 1913, likewise asserts that instead of carcinoma developing on the floor of an old peptic ulcer, the ulcer forms on the base of a carcinoma or close beside it, due to plugging of nutritive vessels and subsequent necrosis. He admits that cancer may sometimes develop on an ulcer base, but concludes that frequency of such an occurrence can not be possible.

It is significant that in none of these articles by German pathologists is any mention made either in context or bibliography of the article by Wilson and MacCarty published in 1909, nor do they give any record of any such series of cases as Wilson and MacCarty report. But for that matter there is no other series of similar importance in the literature of this or any other country, nor has their work ever been repeated on such an extensive scale.

The main protest against the position assumed by surgeons and pathologists of the Mayo Clinic has come after all from clinicians, elsewhere than at this clinic; who do not find cancer developing as a sequel of ulcer in anything like the proportion of cases claimed. This opposition has been voiced particularly by Friedenwald,[19] who in his clinical study of one thousand cases of cancer of the stomach found only 23 per cent. that gave a history of any previous digestive trouble, and only 7.3 per cent. in which this previous history could be interpreted to mean chronic gastric ulcer. The writers of recent textbooks on diseases of the stomach do not seem to be much impressed by the pathologic reports quoted. Lockwood[20] says that among 174 cases of gastric cancer he found only 7 per cent. that gave a history pointing to previous ulcer. Stockton[21] places the percentage between 5 and 15.

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[11] Wilson and MacCarty: Am. Jour. Med. Sc., December, 1909.

[12] Wilson: Mayo Clinic Papers, 1913, p. 149.

[13] Wilson and McDowell: Am. Jour. Med. Sc., December, 1914.

[14] MacCarty, W. C., and Broders, A. C.: Chronic Gastric Ulcer and Its Relation to Gastric Carcinoma, Arch. Int. Med., February, 1914, p. 208.

[15] Hauser: München med. Wchnschr., 1910, No. 23, p. 1213.

[16] Aschoff: Pathologische Anatomie, 1911, p. 719.

[17] Aschoff: Deutsch. med. Wchnschr., 1912, No. 11.

[18] Gruber: Ztschr. f. Krebsforsch., 1913, xiii, p. 105.

[19] Friedenwald: Am. Jour. Med. Sc., November, 1914.

[20] Lockwood: Diseases of the Stomach, Philadelphia, Lea & Febiger, 1913, p. 224.

[21] Stockton: Diseases of the Stomach, New York, D. Appleton & Co., 1914, p. 416.

Both Aaron[22] and Kemp[23] offer no statistics as to how often gastric cancer follows gastric ulcer. Boas[24] says, without giving figures, "Such a metamorphosis (ulcer to cancer) is not to be numbered among the frequent occurrences."

The reason for this wide divergence between pathologists and clinicians lies apparently in the point of view. One set of investigators base their opinion on microscopic evidence furnished by resected tissues; the other on clinical histories, clinical course and final outcome. But so far back as 1908 Graham[10] called attention to the fact that a long-standing precancerous ulcer history was not essential to the conclusion that cancer was a sequel of ulcer; and showed that three types of history preceded the development of cancer: first, the long series of repeated attacks, throughout years, clearly diagnostic of chronic ulcer; second, an initial attack, with symptoms more or less severe, then months or years of quiet, and finally the development of malignant symptoms; third, acute symptoms of malignancy, attacking the patient in the midst of apparently perfect health, because the early history had been overlooked by the physician or the patient thought it not worth mentioning.

Further evidence that clinical and pathologic findings are not so far apart after all, is furnished by Smithies.[25] Reviewing, in 1913, 566 cases of cancer of the stomach from the Mayo Clinic, the diagnosis proved by operation, he found that 60.5 per cent. of these had a clinical history and findings such as belong to the picture of chronic gastric ulcer, prior to the time that the case assumed the picture that we take to mean malignancy. Again in 1914, reviewing 500 cases of gastric ulcer, demonstrated by operation, Smithies[26] calls attention to the frequency with which ulcers become malignant and remarks "certainly it would seem that more cases of cancer develop from previous benign ulcer than has heretofore been generally recognized."

Finally Wilson,[12] in his later communication, in 1913, answers the objections made by clinicians to his former paper in 1908, with a review of the clinical histories of 566 consecutive cases proved to be gastric cancer at operation. When the clinical and pathologic diagnoses of cancer-on-ulcer were compared case by case, they were found to agree in more than 80 per cent. of the cases. The 20 per cent. margin of disagreement was explained first by cases diagnosed clinically other than gastric—as gallstones; second, cases diagnosed clinically as ulcer but showing pathologically early cancer; and third, cases diagnosed clinically cancer-on-ulcer but with cancer so far advanced that pathologic evidence of previous ulcer had been destroyed.

From all the foregoing it seems to be proved that gastric cancer originates from gastric ulcer much more frequently than was formerly believed. Not every ulcer becomes cancer, but every ulcer is potentially cancer. Just how frequently the change takes place is still unsettled; but that at least half the cases of cancer develop on an ulcer base, seems to be a conservative estimate.

II. TRANSITION OF ULCER TO CANCER

How then are we to know when the transformation has taken place from a chronic ulcer to cancer? Is there any way to distinguish those ulcers still benign from those becoming malignant? We are compelled to answer that this is impossible, until the cancerous change has gone so far that little hope remains for successful operation. In the early stages, there is no method of diagnosis that can make us certain. The clinical history of chronic ulcer, commonly accepted as characteristic, is one of periodicity of attacks, with remissions or intermissions for days, then recurrence constantly for weeks; chronicity of such attacks, throughout years; pain the most constant symptom, but with no constancy as to its exact site, type or radiation; particularly the time that this pain occurs after food and its relief by taking food or alkalies; the occurrence of vomiting in some cases, of the vomiting of blood in others. If cancer ultimately develops, the symptoms described usually merge gradually into those of the malignant invasion, the principal new evidences being loss of weight, increasing anemia and more constant pain, not relieved by food. These additions, however, may not be marked, even though cancerous change has occurred, or may appear even when it has not. In another group of cases the ulcer symptoms may have disappeared entirely for weeks or months; then if these recur anew, they are taken to mean no more than previous attacks, even though they really are due to beginning malignant growth. As regards the physical examination of the abdomen, it is usually negative in uncomplicated gastric ulcer. If a tumor becomes palpable, no one can be certain whether it is due to new growth of cancer or to cicatricial tissue of ulcer; unless it is so large and well defined that with certainty in diagnosis comes hopelessness in prognosis. Gastric analysis after test meals does not settle the question; for, contrary to old views, high percentages of free hydrochloric acid are not inconsistent with the presence of cancer, and low percentages are not diagnostic of its presence. Smithies[27] has recently given us most exhaustive information on this and other questions connected with gastric analysis, based on the examination of 7,041 gastric contents. Blood in gastric contents, either visible or occult, is too common after test-meal extraction to be of any great significance. As regards microscopic examination, for Boas-Oppler bacilli, yeasts, sarcinae, etc., Smithies[27] concludes: "There is no characteristic microscopic picture of early gastric cancer other than that associated with gastric ulcer of the retention type." Finally, as regards evidence obtained by roentgenoscopy, all authorities agree that it is inconclusive in the early stages, when certainty is most desired as to whether ulcer or cancer is the real lesion present. There can be no better testimony than that of Carman[28] on this subject, who says: "At present none of the Roentgen-ray signs of cancer or ulcer is pathognomonic; the relative value of these signs, singly or in groups, can be learned only by experience; nor should the diagnosis rest on them alone." After this survey of the situation, we arrive finally at the conclusion expressed by MacCarty and Broders:[14] "Whenever the clinician feels positive of a clinical diagnosis of chronic gastric ulcer, he should consider that carcinoma can not be ruled out by our present methods of clinical investigation."

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[22] Aaron: Diseases of the Stomach, Philadelphia, Lea & Febiger, 1911.

[23] Kemp: Diseases of the Stomach and Intestines, Philadelphia, W. B. Saunders Company, 1910.

[24] Boas: Diagnostik und Therapie der Magenkrankheiten, Ed. 6, 1911, p. 566.

[25] Smithies, Frank: The Significance of Gastric Ulcer with Respect to Gastric Cancer, The Journal A. M. A., Nov. 15, 1913, p. 1793.

[26] Smithies: Interstate Med. Jour., March, 1915.

[27] Smithies: Am. Jour. Med. Sc., February, 1915.

[28] Carman, R. D.: The Technic of Roentgen-Ray Examination of the Gastro-Intestinal Tract and the Interpretation of Screen and Plate Findings, The Journal A. M. A., Aug. 2, 1913, p. 321.

III. TREATMENT

In the light of these facts, where does our duty lie? Admitting the frequency with which cancer follows ulcer and the difficulty about determining when the change has taken place, how is this to influence treatment? It seems logical to conclude that surgery should be advised more frequently and more promptly hereafter than heretofore. Cases of chronic ulcer occur in two clinical groups; those with food retention and those without. When to the clinical picture of chronic ulcer as previously outlined are finally added the evidences of pyloric obstruction, furnished by repeated vomiting of retained food, the presence of food refuse in the fasting stomach, the occurrence of a peristaltic wave and the demonstration of bismuth residues by roentgenograms, there can be no further doubt about the proper course to pursue. Mechanical obstruction demands mechanical relief, no matter whether it is due to the cicatrix of ulcer or the new growth of cancer.

But treatment of the second group, without food retention, remains as debatable ground. The mere possibility of malignant degeneration need not prompt us to advise operation as soon as a diagnosis of gastric ulcer is made; for even if we accept the extreme view that cancer never originates except at the site of a previous ulcer, it does not follow that every ulcer becomes cancer. Many ulcers heal, with or without medical treatment, as scars found at necropsy prove. But if after systematic medical treatment a cure is not effected, or if relapse occurs and the symptoms take on the characteristic chronicity, then the possibility of ultimate malignant change must certainly be taken into account in deciding what course to pursue.

In advising surgery, however, what can we expect to accomplish by it? Three methods of operation are employed at present: resection of the ulcer, gastro-enterostomy and a combination of the two. Resection would seem the ideal plan, in order to avoid the possibility of malignant degeneration; but resection alone does not assure against the development of a new ulcer, which not infrequently occurs. Gastro-enterostomy affords primarily drainage of the stomach, thus prevents further irritation of an ulcer and so permits healing to take place; but it also permits regurgitation into the stomach of duodenal and jejunal contents and so brings about an entire change in the physiology of the organ. Although duodenal ulcer is more common than gastric, duodenal cancer is rare; and in explanation of this fact Wilson[12] expresses the opinion that in the duodenum there is some protective mechanism against malignancy. Statistics show that by gastro-enterostomy this duodenal immunity to cancer is in some way conferred on the stomach; for after gastro-enterostomy for chronic ulcer, without excision of the ulcer, cancer rarely develops. Many surgeons at present insist that the plan giving the greatest possible assurance of permanent cure is the combined operation of resection of the ulcer with gastro-enterostomy.

Questions of surgical technic must be settled by surgeons themselves. But it seems reasonable to conclude that surgical operation, in any case of chronic ulcer that persists after attempts at cure by any of the well-known medical plans, gives our patients a better chance for escape from ultimate malignancy than we can promise without operation; and that we ought to advise this resort sooner than has been the rule heretofore, without waiting for urgent symptoms that indicate pyloric obstruction or suggest cancerous degeneration.

Shreve Building.

ABSTRACT OF DISCUSSION

Dr. Frank Smithies, Chicago: We should thank Dr. Cheney for his open-minded summary of this vital subject. There has been great misunderstanding regarding the interpretation of ulcer and cancer statistics. There has been a confusion of viewpoint. Because we have shown that in a large group of surgically and pathologically demonstrated cancer cases there is an antecedent history in over 60 per cent., which, clinically, we are not able to differentiate from that of peptic ulcer, it has been assumed and stated that the reverse is true, namely, that some 60 per cent. of gastric ulcers terminate in cancer. These things are entirely different. Given a gastric ulcer, nobody can prognosticate the course of that ulcer. It is impossible to say whether it will heal without deformity, whether it will continue as a benign ulcer or whether it will eventually terminate as cancer. That is the crux of the entire situation. We do not know the life history of any gastric ulcer, acute or chronic. We have based our diagnosis too often on symptomatology. It has been shown ulcer symptomatology may be closely simulated (particularly in patients under the age of 30) by lesions not in the stomach at all. These lesions are commonly in the gallbladder or appendix. They are commonly associated with pyloric spasm. The symptoms are so much like those of ulcer that this symptomatology has firmly established itself in the literature as that of gastric ulcer. Until gastric lesions have a certain time factor connected with them—a certain periodicity—or unless they have been associated with definite, gross, hemorrhage, and not necessarily hemorrhage revealed by chemical tests, we cannot say absolutely that we are dealing with gastric ulcer. We are told that the majority of cases of ulcer of the stomach occur in early life—from 25 to 35 years of age. That has not been proved. It has been shown at the operating table and at necropsy that proved gastric ulcers are present with greater frequency at a later period than 25 to 35 years. We must realize that we know nothing of the life history of gastric ulcer. In addition to symptomatology, our knowledge is based largely on the effects of treatment. Until perforation or severe hemorrhage occur, the course of gastric ulcer varies and often cures occur spontaneously. Equally good cures are reported by clinicians following many different types of therapy. We know that many cancers give previous history which it is impossible to separate from that of ulcer in a large majority of instances, and such history usually begins well after the age of 35. We do not know exactly when malignancy begins. It is important to bear this in mind when deciding when to advise operations. We internists have before us the responsibility of the problem of the prophylaxis of cancer of the stomach. When an ulcer is chronic in course, if the individual is approaching the cancer age and is having a continuous rather than an intermittent type of gastric disturbance, we should urge exploratory operation. The mortality from this is less than one-half of 1 per cent. In gastric cancer, unoperated, the mortality is 100 per cent.

Dr. Max Einhorn, New York: Dr. Cheney is favorable to the surgeons when he states that 60 per cent. of cancer is formed on ulcers. That does not tally with my experience. I must say that I do not make diagnosis of gastric ulcer on the symptoms of too much acidity and chronicity alone. Separating this group and speaking only of ulcer cases in which there are more cardinal symptoms, such as vomiting of blood, very severe pains with the finding of blood in the stools, there is only a small percentage that undergoes cancerous degeneration. If I should select only the cases in which I could make a diagnosis of cancer based on an ulcer, I would have a proportion of one in twenty or perhaps still less. For us clinicians this is of great importance, we must treat these cases according to our own experience. Many of the patients with hemorrhage get well and a large percentage of them remain well for years, possibly with a few relapses. In a few the improvement is not steady. But it would not be justifiable to treat all ulcers according to the method that would be applicable to the minority of cases. The pathologists have often confused these cases with those in which cancer becomes necrosed and forms an ulcer on its base, which is of frequent occurrence. That was demonstrated a long time ago but no especial attention was paid to it. There is practically always more or less ulceration in cases of cancer, but that is an entirely different proposition from the development of cancer on a true ulcer of the stomach. The pathologists who first demonstrated cancer beginning on an ulcer of the stomach, state that it is to be found only very rarely, the proportion being about 1:20. Rosenheim, who was next to demonstrate cancer on an ulcer, found it only in 1:15-20 cases and I think most clinicians will agree with his findings. So that it is not necessary that we should treat ulcer of the stomach with the idea that all such ulcers will turn into cancer. The cases we would lose at operation would be greater in number than the cases we would lose otherwise later on from cancer. If the patient has ulcer of the stomach and does not do well under medical treatment, we may conclude it is a case for surgery. If the hemorrhages are so great that they endanger life we should operate, preferably during the interval. In cases in which pain persists under medical treatment, we should try surgery. The results of surgery are not altogether good in cases of persistent pain. We may occlude the pylorus, do a gastro-enterostomy and still the patient will have pain. But we should recommend surgery in persistent cases as affecting the most hope of relief.

Dr. F. A. Speik, Los Angeles: If I heard correctly, Dr. Cheney made no division of the ulcers which should be treated surgically or those which cause mechanical obstruction. A recent article by Sippy in The Journal states that mechanical obstruction at the pylorus is due in some cases to pyloric spasm and inflammatory swelling, which disappears under energetic medical treatment, proper feeding and the use of alkalies. I too have taken cases with as much residue as a quart for eight hours, with sarcinae and high acidity. Under treatment they improve steadily. Possibly there may be some recurrences, but the majority do not recur. Although the narrowing may be quite complete, the opening seems to become wider and the food passes through. I had a recent case, a Jewish patient about 65 years of age, who had been to three surgeons. He had lost 17 pounds in weight, was vomiting old food with high acidity and could not retain sufficient food to nourish him. He was not satisfied to have an operation until he consulted three men. He then entered the California Hospital, but when they began to administer ether he jumped off the table, grabbed his clothes and dressed outside the hospital, so they could not catch him. He went to the county hospital, where I made a diagnosis of pyloric ulcer with inflammatory swelling. I then treated him. He has not vomited since, and has gained 50 pounds in weight. If he had been operated on he might have died. If he recovered it would have been a surgical cure. As you know, these gastro-enterostomies are not all done by the Mayos. The loss of life is almost as great from such operative procedures as it is from cancer of the stomach. What can we do to prevent this great loss of life and cancer of the stomach, and do away with the complications of ulcers that require surgery? We should recognize ulcer of the stomach early and treat it energetically. It is the early recognition of this disease that is most important. It is partly the fault of the layman, the press and the physician that these patients do not oftener receive early and proper medical treatment. The layman may think he has nervous dyspepsia or indigestion and not go to a physician. Or the advertisements in the press may induce the patient to take remedies that obtund the patient's sensibility and thus delay recognition of his true condition. If the patient does go early to the physician, he may not pay sufficient attention to the case, and prescribe without making an accurate diagnosis. We should educate the public to do away with so-called stomach cure advertisements and work harder to make an accurate diagnosis. Early, energetic medical treatment would reduce the cases requiring surgery and do away with the tremendous loss of life from cancer of the stomach. Heal the ulcer and prevent cancer!

Dr. Thomas McCrae, Philadelphia: Two points might be emphasized. Dr. Cheney has discussed one reason for the difference in view; another is the difference in material. The material that goes to a surgical clinic—and they are getting more and more cases without previous study—is very different from the cases that come to a medical clinic. The same difference is true regarding hyperacidity. Some surgeons often say that hyperacidity always means ulcer. Many have learned after operating, that hyperacidity may be present without ulcer. Another point is the criticism made by many surgeons regarding the past history of patients with neoplasm. They say to us, "You do not take a careful history; if you had taken your history carefully, you would find a history of ulcer in the past." I must protest against this. Such a claim certainly is not true in the cases reported by Dr. Cheney, nor in the series mentioned by Dr. Einhorn.

Dr. William Fitch Cheney, San Francisco: As has been brought out, all ulcer is not ulcer. What is ulcer is to be taken up in the next paper. But the patients who recover medically are not always ulcer patients. However, it is perfectly justifiable to treat the patient awhile medically to see if he will get well. Not all cures are cures. How are we going to tell when a man is cured? I have practiced long enough to find that many cases I have considered cured were not cured. They often come back a number of years later worse than when you first saw them. All surgery is not surgery. If the medical man makes a diagnosis of gastric ulcer, I would not for a minute contend that he should at once refer the case to a surgeon. He should try by medical means to cure the patient, for patients repeatedly get well following medical treatment. But if the patient does not recover or has a relapse, then he should have a surgical operation. When it comes to the surgical operation, it is just as much the duty of the medical man to provide a competent surgeon as it is to provide any form of treatment. He must assume the responsibility of what he advises his patient to do, and he should select the best possible surgeon. I make an earnest plea that we do not let our gastric ulcer cases go so long hereafter before we send them to the surgeon.

BIRDSHOT REMOVED FROM THE VITREOUS THROUGH THE PUPIL *

KASPAR PISCHEL, M.D.
SAN FRANCISCO

A. G., boy, aged 12 years, was brought to my office Feb. 12, 1907 (Journal No. 314). Two days previously, while quail hunting, a birdshot No. 9, fired from his companion's gun, at a distance of about 50 yards, had entered his left eye. The sight was immediately gone. The local physician gave him 10 c.c. streptococcus serum.

Right eye: Sight 5/4, fundus normal.

Left eye: One mm. up inward from center of cornea a triangular gray flap, lens cataractous, swollen; iris shows a tear in pupillary margin corresponding to the corneal wound. Fundus not visible. Pupil dilates irregularly with several posterior synechias after atropin. The roentgenogram shows a shot to be in the vitreous downward inward from the center.

In consultation, the opinion was divided between the removal of the eyeball and preserving it.

I decided to remove the cataract with the idea that I might then be able to see and remove the shot.

I find in my case book the following notes:

March 8, 1907: Projection of light only reliable horizontally outward. April 13, 1907: Eye nearly pale. Patient was sent home to the country. April 26, 1907: Pupil in upper part

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

clear. With transilluminator; gray floating membranes seen in vitreous.

When the patient returned again, May 3, 1907, he gave the following history:

The day before while wrestling with a boy he fell on him and bumped his head against the other boy's. He immediately felt a sharp pain in the left eye, lasting several hours.

To my great astonishment the shot lay now in the lowest part of the anterior chamber, whence it was removed under a general anesthetic. Apparently the fall forward and the striking of the head had caused the shot to pass through the pupil into the anterior chamber. The eye quieted down rapidly.

May 8, 1907: Eye pale, upper part of the pupil clear, in lower part secondary cataract. With transilluminator: grayish folds in lower part of vitreous. Sees movement of hands.

April 7, 1915: Sees movement of hands. Field (with a white piece 3 cm.) small, only outward. The cornea shows up inward from center an irregular scar at the point of entrance of the shot. The pupil is slightly irregular, oval up outward, 4 by 6 mm., clear, surrounded by a ring of secondary cataract. The fundus cannot clearly be seen. Behind gray bands in the vitreous I can make out extensive whitish patches and probably folds of detached retina.

This accidental occurrence shows us a way for the therapy in such cases. I would suggest removing the cataract as soon as possible and then trying to bring the shot into the anterior chamber through the pupil by methodical stooping exercises and even judicious bumping of the forehead while lying flat on the stomach.

Butler Building.

ABSTRACT OF DISCUSSION

Dr. John A. Donovan, Butte, Mont.: The results in this case justify the practice of the immediate removal of the traumatic cataract when secondary symptoms are not marked. The next procedure, to await developments, taking time to study the case, not being sure of the proper course to pursue, was more than justified by the results. This case but emphasizes the absolute necessity of studying every case of eye injury singly. These injuries should suggest to us the necessity for some enterprising shotgun artist among us to supply us with a complete table on ballistics, especially as to penetration. You will notice No. 9 shot is unusually small, therefore, its penetration is but little compared with the average size of shot. Again, at 50 yards, the penetrating effect of this very small shot is much reduced. Its effect when dropping into the vitreous is proportionally lessened; so that in another case the size of shot, distance from gun, caliber and proportion of shot to powder will assist us in determining its effect. I just saw a patient treated by my associate, Dr. A. W. Morse, during my absence a year ago. A grain of No. 4 shot struck his eye from across a river, leaving a wound which separated the iris from its junction, the eye being filled with blood. The patient was put to bed to await developments. The Roentgen ray showed shot in the orbit, but unfortunately a defective outfit gave unsatisfactory results as to location. Some days later the patient rubbed the shot out from between his lids. At present the eye shows a red reflex between iris and sclera at the point of injury, a black line and an enlarged black spot just opposite this in the choroid; vision is good. Puzzle: Did the shot go through the eyeball and how did it come out? At first we thought not; now we believe it went through the eyeball and worked itself out. I have had several patients in whom shot was imbedded in the posterior orbital tissue and no harm has been done by leaving it. If in the eyeball and loose, I would attempt removal as early as possible. If imbedded in the posterior wall, I would watch developments.

Dr. Adolf Barkan, San Francisco: The interesting case described by Dr. Pischel brings to mind cases of a similar nature, in which treatment was not always so successful. I should like to mention briefly one which came to me in an earlier period when this most valuable remedy for locating foreign bodies in the eye was not at our disposal. It was a case of a young boy in the country whose eye was injured by his cousin while quail hunting. We were in doubt as to the existence of a shot in the eye. About the fourth week after the injury, sympathetic irritation of a very severe nature appeared in the other eye. We removed the injured eye. When I shook the enucleated eye I then enjoyed the most pleasurable tactile sensation that I ever experienced in my life, for I felt the shot moving within. The other eye recovered. The method suggested by Dr. Pischel is one which most of us may have occasion to apply. I recollect several cases of cataracts luxated into the vitreous, which we successfully removed from the eye by systematically bending the patient's head down after enlarging the pupil, bringing forward the cataracts into the anterior chamber and then extracting them.

Dr. Edward Jackson, Denver: With a shot so small as this, the doctor should be congratulated on getting it readily out of the anterior chamber. I remember one case in which the shot entered the anterior chamber but did not penetrate the iris. When the anterior chamber was opened the shot disappeared and we thought it had passed into the posterior chamber through the iris. Then it reappeared under manipulation. We have not generally realized the difficulty thus encountered, and that the angle of the anterior chamber is to be seen only with the ophthalmoscope. This particular shot, which I think was about the size of the one Dr. Pischel passed around, disappeared absolutely when we attempted to extract it from the anterior chamber. But in changing the patient's position so that the eye was face downward, the shot again presented itself and we got hold of it and it was extracted. Bird shot may be made of cast iron, and in Europe such a shot has been extracted by the use of the magnet. That should be borne in mind; but so far as I know such shot in this country is all made of lead.

Dr. A. E. Ewing, St. Louis: Dr. Pischel is to be congratulated that he was able to obtain this shot at all. I have had a similar experience in the last two years, the case differing in that the shot passed into the eye from above through the sclera and the vitreous and returned to the lower position of the anterior chamber. Its removal was accomplished by keeping the head forward and by pressing the sclera against the lens in the ciliary region below, thus preventing its return to the vitreous, which was threatened several times.

Dr. Joseph L. McCool, Portland, Ore.: I recall a case very similar to the one reported by Dr. Pischel which presented some unusual features. A young man while chopping wood was struck in the eye by a small chip of steel, which passed through the cornea, iris and lens. With both the ophthalmoscope and oblique illumination what resembled the foreign body was located apparently in the substance of the lens. Repeated applications of the Parker magnet through a corneal incision failed to dislodge the steel into the anterior chamber. After making another examination I assumed that the chip of steel had passed through the entire thickness of the lens and dropped down into the vitreous. The magnet was again applied in such a way as to draw the steel through the zonule and up from behind the iris through the pupil into the anterior chamber. It was delivered through the artificial incision in the cornea made twenty-four hours before. The unusual feature in this case was the appearance of the lens; what looked like a small, thin piece of steel embedded in the substance of the lens was in reality the edges of the wound which, due to the difference in refraction from the center of the wound and the surrounding lens substance, gave the impression of a foreign body.

Dr. Kaspar Pischel, San Francisco: I would like to add that several shots were taken out of the face and that we tried magnetization of the shots but unfortunately they were not attracted by the magnet.

STONE IN THE KIDNEY AND URETER

A CRITICAL REVIEW OF 157 CASES *

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BOSTON

This paper is based on a careful study of 157 cases occurring on the surgical service of the Massachusetts General Hospital during the seven years prior to Jan. 1, 1914.

AGE

The interest attaching to the age of these patients centers, not above their average age, but about the time at which stones causing symptoms are most likely to occur. It is therefore most interesting to study them by decades. The ages at the time of entrance were divided as follows:

First decade	1
Second decade	8
Third decade	56
Fourth decade	45
Fifth decade	27
Sixth decade	14
Seventh decade	2

It was further interesting to subtract from the age at entrance the time during which these patients had had symptoms obviously due to stone in the kidney, thereby obtaining a table which more nearly approximates the age at which the stone became troublesome. Again divided by decades, the result is as follows:

First decade	9
Second decade	28
Third decade	56
Fourth decade	36
Fifth decade	14
Sixth decade	9
Seventh decade	1

Morris,[1] in a similar inquiry as to the age of 188 patients coming to him with stone in the kidney, obtained the following results, which are strikingly similar to ours:

First decade	1
Second decade	30
Third decade	54
Fourth decade	50
Fifth decade	34
Sixth decade	17
Seventh decade	2

From these results it will appear that the greatest number of patients have come for operation between the ages of 20 and 40, and that between the ages of 20 and 50 there were 128 out of 153 cases in which the age is noted. If, on the other hand, we consider the time of the onset of symptoms we find that it occurs at a very much earlier period, that a large number of cases undoubtedly begin between 10 and 20, that the largest number is found between 20 and 30 and that between 10 and 40 there occurred 120 out of 153 cases, while after 40 the frequency of occurrence of stone of sufficient size to require operation fell off very rapidly.

SEX

In this series there were 108 men and 46 women, a ratio which does not agree with the figures of most other observers and is perhaps due to the rather small number of cases. It was interesting to consider the side most frequently involved. Thus in the men the right side was involved in 41 cases, the left side in 53 and both sides in 14. In the women the right side was involved in 20, the left side in 16 and both sides in 10. It thus appears that in this series of cases the right side is more frequently involved in women and the left side in men. The frequency of involvement of the right side in women has been commonly explained as due to the more frequent occurrence of mobility of the right kidney with accompanying renal retention, an explanation which I believe has merit.

SYMPTOMS

Pain which could be described as colicky occurred at some time in ninety-six cases, or about two-thirds of the total. It was the presenting symptom, however, in only fifty and in the remainder was an occasional or unimportant symptom and frequently elicited only on careful questioning. In the remaining cases the presenting symptom was as follows:

Dull pain referred to the region of the kidney	32
Pain in the right lower quadrant	12
Backache	8
Pain referred to the bladder	7
Hematuria	7
Vague abdominal pain	4
Pain in the sacro-iliac or lumbar region	3
Epigastric pain	2
Chills and fever	1
Vomiting	1

The direction in which the pain was referred was inquired into in forty-two cases and resulted as follows:

Pain referred along the course of the ureter	13
Referred to the glands	10
Referred to the back	9
Referred to the groin	3
Referred to testes	2
Referred to the thigh	3
Referred upward toward the chest	1
Referred to the opposite side	1

CONDITION OF THE URINE

Accurate examinations of the urine were carried out in 150 cases with the following results:

The urine was entirely and persistently normal in	22 or 14 + %
Albumin in varying amounts was present in	111 or 74 %
Blood, either microscopic or macroscopic, was present in	103 or 68 + %
Pus was present in	109 or 68 + %

Of the cases showing a persistently normal urine, fifteen were cases of stone in the ureter and seven were cases of stone in the kidney.

RESULTS OF ROENTGENOGRAMS

Reports of the roentgenograms were found in the records of 127 cases, of which 8, or 6 + per cent., were persistently negative. As I have had occasion to point out elsewhere, I believe this showing is more favorable than will be found in a larger series of cases, and it is likely that of the cases in which no Roentgen-ray report is recorded a considerable number were in fact negative. I believe that the Roentgen ray as used at the present time in competent hands fails to detect stone in between 10 and 15 per cent. of the cases.

MORTALITY

In this series there were 140 operations with 5 deaths, or 3 + per cent., which were distributed as follows:

Nephrectomy	2 deaths
Pyelotomy	1 death
Ureterotomy	1 death
Nephrotomy	1 death

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Morris: Diseases of the Kidney and Ureter, 1901, ii, 58.

Postoperative hemorrhage of notable amount occurred in two cases, but did not prove fatal in either. The various operations done in these cases were as follows:

Nephrectomy	20
Pyelotomy	47
Ureterotomy	36
Nephrotomy	37

At the present time pyelotomy is the operation of election with us and is done in all cases in which the stone can be extracted through the pelvis. Many of the cases of nephrotomy in this list belong to an earlier period.

On the question of comparative mortality it is interesting to note the results of others. Watson and Cunningham[2] collected from various sources 309 cases of nephrolithotomy, with 29 deaths, or 9.3 per cent., and 136 cases of nephrectomy, with 41 deaths, or 30.1 per cent.

Schmieden, quoted by Thomson Walker,[3] had 54 cases of pyelolithotomy with 6 deaths, or 11.1 per cent. He also notes that in this series 36, or 66.7 per cent., healed kindly, while 12, or 22.2 per cent., had persistent urinary fistulas. In our series there were no urinary fistulas, and we think that with modern technic this may be disregarded as a complication.

PREVIOUS UNNECESSARY OPERATIONS

One of the most striking facts brought out by this investigation was that a considerable number of these patients had been subject to previous operations without relief for symptoms afterward proved to be due to stone in the kidney or ureter. Twenty-six patients had had such operations distributed as follows:

Appendectomy without relief of symptoms	10
Exploratory laparotomy	7
Fixation of the kidney	4
Operation for gallstones	1
Adhesions not found to exist	1
Decapsulation of the kidney	1
Salpingo-oophorectomy	1
Suprapubic cystotomy	1

RESULTS

Though I have previously reported[4] the study of the results obtained in these cases, it may be proper to repeat the outstanding facts here. Eighty-five patients were examined by us at the clinic more than two years after operation, this examination including a general physical examination, examination of the urine and Roentgen ray. Patients were classified as well who showed a normal urine and a negative Roentgen ray. Patients were classified as not well when the urine showed pus, blood or albumin and the Roentgen ray showed a shadow, probably a stone. The result of this examination was as follows:

Of 64 patients operated on for stone in the kidney, 33, or 51 per cent., were well and 31, or 49 per cent., were not well. Of 21 patients operated on for stone in the ureter, 15, or 71 per cent., were well, and 6, or 28 per cent., were not well.

From this investigation the outstanding facts seem to me to be the following:

Stone in the kidney too large to pass occurs most commonly between the ages of 10 and 40, and with us has come to operation most commonly between the ages of 20 and 50, an observation which carries with it the conclusion that the diagnosis of stone in the ureter is not made with great promptness.

Renal colic is absent in a considerable proportion of the cases, and the pain caused by renal calculus may closely simulate that caused by various other abdominal lesions and is frequently mistaken for such lesions.

The urine is persistently normal in a proportion of cases sufficiently large to make it an uncertain guide.

The Roentgen ray is persistently negative in enough cases to make it dangerous to depend wholly on this evidence, but the combination of unusual pain symptoms, a negative Roentgen ray and a persistently normal urine is fortunately rare.

As I have had occasion to point out in an article published three years ago, the number of cases in which unnecessary abdominal operations are done through failure to detect a stone is far too large to be a credit to the medical profession.

87 Marlboro Street.

STONES IN THE URETER*

WILLIAM F. BRAASCH, M.D.

AND

ALEXANDER B. MOORE, M.D.

From the Mayo Clinic

ROCHESTER, MINN.

Of the 654 cases of lithiasis of renal origin operated on at the Mayo Clinic up to June 1, 1915, 363 stones were removed from the kidney and 230 were found lodged in some portion of the ureter. To this number should be added sixty-four cases in which a stone lodged in the ureter was either removed at the time of the cystoscopic manipulation or was passed immediately after, making a total of 294 cases of stone in the ureter for consideration. It is our purpose to review a few of the various clinical data involving their diagnosis.

Localization of Pain.—Pain as a result of stone in the ureter occurs from two conditions: namely, (1) because of intrarenal tension as a result of urinary obstruction, and (2) because of localized infectious changes.

A review of the localization of pain in our series of cases is of interest. Pain was referred largely to the renal area in 197 (67 per cent.) of the cases; to the upper abdominal quadrant in forty-five (15 per cent.) of the cases; to the region of the lower ureter in twenty-eight (9 per cent.) of the cases; and to the suprapubic area in three cases. No definite radiation of pain was reported in sixteen cases and no pain whatever in five cases. It is obvious, therefore, that either an exploratory incision over the renal area or a roentgenogram of the renal area alone would fail to disclose the actual lesion. It is probably true that renal colic as a result of lithiasis is caused more frequently by stone lodged in the ureter than in the kidney. In a large number of cases in which the pain was referred to the upper abdominal quadrant it is easy to see how confusion with lesions in the upper abdomen might follow. In fact, in a number of cases, the radiation of pain was so typical of disease in the gallbladder that in the absence of urinary findings surgical exploration of the gall-bladder would have been justifiable without a preliminary roentgenographic examination. Of particular interest is the localization of the pain referred to the area of the lower ureter. It is probable that this group of cases is most frequently confused with appendicitis, particularly when the pain is on the right side. The localization may be so suggestive of appendicitis that, in case the urinalysis was negative, an exploration of the appendix might be justifiable without preliminary roentgenographic examination. The localization of pain to the region of the lower abdominal quadrant occurs usually as a result of ulcerative changes in the ureteral wall and subsequent periureteritis. A history, therefore, of previous colic referred to the renal area with subsequent pain localized to the lower ureteral quadrant would be suggestive of an impacted ureteral stone with periureteritis. This would be particularly true if the pain, previously periodic, became continuous over a period of a week or more. It should be noted that there was a considerable number of patients who did not complain of definite radiation and a few who did not have attacks of severe pain. These patients came to operation either because of a consequent renal infection, urinary symptoms or indefinite abdominal symptoms. It is undoubtedly true that stone in the ureter may exist for a long time, even a year or more, without being the cause of pain. Mechanical irritation caused by the stone itself will seldom produce pain. Occasionally, however, a history is obtained in which the patient claims to have been able to feel the stone in its passage from the kidney to the bladder, which in all probability is the result of a lesion in the mucosa subsequent to the passage of the stone. Eight patients gave a history of radiation of general abdominal pain, without localization, and with symptoms of vomiting and intestinal spasm suggestive of intestinal obstruction. Of this number three had previously been operated on elsewhere for intestinal obstruction. This peculiar radiation of pain, together with secondary intestinal symptoms, is evidently due to reflex action of the sympathetic intestinal nervous system. In twelve cases the degree of pain was secondary in importance to symptoms of gastric disturbance. The patients complained more of general nausea, epigastric distress and indigestion than of the pain referred to the urinary tract. Such reflex disturbances are in keeping with the secondary symptoms observed with lesions in other extragastric conditions.

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[2] Watson and Cunningham: Genito-Urinary Diseases, 1908, ii, 191 (nephrolithotomy); 193 (nephrectomy).

[3] Walker, Thomson: Genito-Urinary Surgery, 1914, p. 273.

[4] Cabot: Tr. Am. Assn. Genito-Urin. Surg., 1915.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Occurrence of Vesical Irritability.—Vesical irritability was reported in 218 patients (74 per cent.). This condition occurs so frequently that its absence is of distinct value in differential diagnosis. Although it more often occurs only at the time of the pain, it may continue for a day or two following. Occasionally it may be persistent over longer periods and may be the predominant symptom. This is particularly true when the stone is lodged in the vesical portion of the ureter. When the stone bulges into the meatus it may in fact be considered a vesical stone so far as its effect on the bladder is concerned.

The Value of Urinalysis.—The practical value of the presence of a few red blood cells or pus cells in the urine in the diagnosis of ureteral stone has been exaggerated. Similar microscopic elements are found so frequently in the urinary sediment with slight lesions in the lower urinary tract that its diagnostic value is greatly lessened. The presence of a few red blood cells or pus cells in the urine, however, necessitates a careful roentgenographic examination of the urinary tract even though the subjective symptoms are of negative value. On the other hand, the absence of pus or red blood cells would not exclude the possibility of stone in the ureter. Whereas catheterization of the ureter may localize the origin of the pus cells, because of the possibility of traumatic hemorrhage it is of no value in localizing a few red blood cells. Neither pus nor red blood cells were found in thirty-five (12 per cent.) of the cases. An occasional red blood cell only was found in twenty-six (9 per cent.) of the cases. An occasional pus cell only was found in seven cases. Both red blood cells and pus cells to a varying degree were present in the remaining cases.

Gross hematuria was reported in forty-one (14 per cent.) cases of stone in the ureter, while with renal stone it was found in 56 per cent. of a series of cases of renal lithiasis previously reported.[1] It should therefore be regarded as a symptom of less importance with ureteral stone than with renal stone. Persistent bleeding with stone in the ureter occurred in seven cases and was the result of ulceration in the ureteral wall. In one case the stone had caused necrosis of adjacent blood vessels with considerable resultant hemorrhage.

Palpation of the Stone.—Stone in the ureter is rarely palpable through the abdominal wall. We have observed one case, however, in which the stone could be rolled under the hand on deep pressure in the inguinal area. The stone on removal was 4 inches long and 1 inch in diameter. Our attention has recently been called to the value of palpation through the vagina or rectum in the case of stones lodged in the lower end of the ureter. Israel[2] claimed that he was able to feel the stone per vaginam and rectum in 39 per cent. of his cases. In the last eighty cases of stone in the lower ureter in which a special effort was made to feel the stone through the vagina or rectum, it was definitely palpated in only nine cases. Of these eighty cases forty-eight occurred in the male and in only three cases could the stone be definitely felt through the rectum. This leads us to conclude that rectal palpation is only exceptionally of definite value in localizing stone. The various conditions simulating stone which may cause localized nodular change in the prostate, seminal vesicles and ducts lessen the value of rectal palpation. In the thirty-two female patients the stone could be felt per vaginam in seven (22 per cent.) cases. In a few other cases an area of thickening could be felt in the vault of the vagina but was not definite enough to be of practical value. In order to be definitely felt per vaginam the stone should be at least a centimeter in diameter and should be situated within or immediately adjacent to the wall of the bladder. Unless so situated, stones of even several centimeters in diameter will not permit of palpation. It should be remembered that nodular changes in the lower ureter as the result of tuberculosis may occasionally simulate a stone. The fact that localized inflammatory areas of thickening may occur in the vaginal mucosa may also confuse the findings.

Treatment.—In the consideration of ureteral stone its renal origin should be borne in mind. In forty-one patients a definite history was ascertained of one or more stones having been passed previous to the examination, and in twenty-one varying amounts of sand or fine gravel had been passed. Some of these gave a history of colic at intervals during a period of more than a year before passing the stone. The majority, however, passed the stone with the first attack of pain or with the second or third attack. In all probability the majority of stones in the ureter pass spontaneously, and for this reason surgical interference is seldom indicated with the first attack of pain. While no rule can be adopted, it would be rational, in the majority of cases, to wait at least two or three months until Nature has made several attempts to dislodge the stone. On the other hand, repeated violent colic, the danger of renal destruction and other complications as the result of an obstructing stone may necessitate its removal before this period has elapsed. Before an abdominal operation is attempted, the passage of the stone may be aided by the various methods offered by endoscopic technic, namely, (1) catheter manipulation, (2) injection of sterile glycerin or oil, (3) fulguration, (4) ureteral dilatation, (5) cutting of the meatus, and (6) ureteral forceps. By means of these various methods we have been able to remove stone lodged in the ureter in sixty-four cases.

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[1] Braasch, William F.: Clinical Data on Renal Lithiasis, Journal-Lancet, 1913, xxxiii, 561.

[2] Israel, James: Ueber Operationen wegen Ureterstcinen, Folia Urol., 1913, vii, 1.

It has been claimed that the injection of oil and glycerin into the ureter would both increase the peristalsis and lubricate the walls of the ureter so that the stone would slide out. This theory, however, is not borne out by extensive observation. It is difficult to conceive how the natural efforts of peristalsis or how the natural lubrication in the ureteral mucosa could be improved on.

Forcible dilation of the ureter below the stone by means of ureteral dilators may be of value, particularly if the position of the stone is altered in so doing. Not infrequently it is possible to grasp a small stone situated in the wall of the bladder by means of the ureteral forceps. Those well above the wall of the bladder, however, can be removed in this manner in exceptional cases only. Slitting the meatus and adjacent ureter may occasionally be indicated with intramural stone. That no harm should follow the destruction of the ureterovesical valve has been demonstrated experimentally.[3]

It is our impression, however, that many of the stones lodged in the ureter which can be removed by means of these various methods will be passed spontaneously after dislodgment by means of the ureteral catheter. The stone becomes lodged in the ureter and subsequent colics may make its anchorage in the mucosa firmer. The passage of the ureteral catheter dislodges the stone, changes its axis, and the next colic forces it out. If this method should fail, an attempt should be made to thoroughly dilate the ureter below and, if possible, to grasp the stone with ureteral forceps. The use of the high-frequency current may occasionally be of value in disintegrating a small, frail stone. It should not be forgotten, however, that change in the position of the stone as the result of such manipulation is fully as effective as that caused by ureteral catheterization.

Sources of Error in Diagnosis.—A greater percentage of error in the roentgenographic diagnosis of stone in the ureter will result from incorrect interpretation of a shadow than from failure to show it. Although there are a number of generally recognized data in regard to form, size and density of the shadow which are regarded as characteristic of stone and of extra-ureteral bodies, respectively, such data cannot always be relied on. In fact, it is doubtful if an accurate diagnosis of stone in the ureter can be made from roentgenographic data alone in more than 60 per cent. of cases. The greatest percentage of error will probably occur in regarding extra-ureteral shadows such as phleboliths, glands, etc., as explanatory of abdominal pain with subsequent negative exploration. Next in frequency will be the interpretation of stone shadows as caused by extra-ureteral conditions, and last in the list of diagnostic errors charged to roentgenography will be the stones that fail to cause a shadow in the roentgenogram. In our series the roentgenographic report was negative in thirty-two (11 per cent.) of the cases. The various causes to which the failure was ascribed are in the order of frequency as follows: (1) error in roentgenographic technic, (2) position of the stone, (3) size of the stone, and (4) the character of the stone.

1. Many various possible sources of error in roentgenographic technic make it practically impossible to make an ideal roentgenogram in every case in the course of routine roentgenography. There will always remain a few cases in which if the preparation of the patient, the condition of the tube, and the condition and development of the plate had all been better, the stone shadow, which was otherwise missed, might have shown.

2. It occasionally happens that the shadow of the pelvic bones obscures that of an overlying stone. Such error may be obviated by adjusting the angle of the ray so as to exclude the shadow of the pelvic bones. It is not always possible to do so, however, and in the course of routine roentgenography there will always remain an occasional stone which is overlooked because of the pelvic bone shadow.

3. The degree of obstruction is not dependent on the size of the stone. Not infrequently a very small stone, even as small as a pin head, lodges in the ureter and causes inflammatory reaction in the adjacent ureteral mucosa with stricture so as to cause marked periodic urinary obstruction. Such a stone shadow will frequently be either misinterpreted or entirely overlooked in the roentgenogram.

4. Least in frequency among the causes of roentgenographic failure should be considered the character of the stone. Whether or not a stone is demonstrated depends largely on the calcium content. Although a stone composed of uric acid or phosphatic elements may not cast a distinct shadow, nevertheless the great majority of stones are composed of a mixture of calcium with the various other salts and the absence of a shadow is usually to be explained by the previously mentioned reasons.

Localization of Stones.—A review of the 230 cases with operation for stone in the ureter demonstrates the occurrence and position of the stone as follows:

Ureteropelvic juncture	26 cases
Upper third	28 cases
Middle third	1 case
Lower third	159 cases

The last group was subdivided as follows:

Iliac crossing	4 cases
Pelvic portion	90 cases
Ureterovesical juncture	41 cases
Intramural	22 cases
Meatus	2 cases
Not definitely located	3 cases

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[3] Draper, John William, and Braasch, William F.: The Function of the Ureterovesical Valve, The Journal A. M. A., Jan. 4, 1913, p. 20.

It will be seen that 159 (74 per cent.) of the 214 cases localized were found in the lower third of the ureter and that the greatest number were found in the so-called pelvic portion of the ureter, which term includes that portion of the ureter extending from the point of narrowing at the iliac crossing to the ureterovesical juncture. The majority of the stones in the pelvic portion were not lodged exactly at the point of narrowing at the ureterovesical juncture but a short distance above it. The same is true of the stones described at the ureteropelvic juncture, the majority of which were found a short distance above the point of narrowing. The stone was impacted within the wall of the bladder itself in twenty cases, a proportion of operative cases which will no doubt be reduced in the future as the result of the recent improvement in operative cystoscopy. The small number noted which were lodged at the meatus was due to the fact that although a number of others were so situated, they were all removed by means of endoscopic technic. The small number found at the point of iliac crossing and in the middle third is surprising. It is difficult to explain the large number of stones found in the upper third of the ureter. They were found well below the point of narrowing and at the ureteropelvic juncture, and their presence on exploration offered no explanation for this unusual condition. The majority of such stones, however, were of considerable size. The average size found in the lower third of the ureter was much smaller than those found in the upper ureter. As a general rule, stones situated in the ureter at points other than those of natural narrowing were larger and caused more renal destruction than the others. This series does not include a number of stones which were demonstrated at the preliminary roentgenographic examination to be situated in the ureter, but which at operation or subsequent to ureteral catheterization were displaced into the pelvis of the kidney when they were removed.

Occurrence of Stone.—In regard to the occurrence of stone: in 134 cases it was found in the left ureter and in 144 cases in the right—practically no difference as to the side. Single stones were found in 261 and multiple stones in seventeen cases (93 per cent.). Stone occurred in both ureters in six cases; in the kidney on one side and in the ureter on the other in eleven cases; or a total bilateral occurrence of seventeen (6 per cent). It is evident that bilateral occurrence of stone in the ureter which comes to operation is much less than that in the kidney. This discrepancy may be at least partially explained by the frequent spontaneous passage of ureteral stones. Stone occurred in the kidney as well as the ureter on the same side in twelve cases (4 per cent.).

It will be noted that the stone in the ureter was not found on exploration in thirteen cases. In three of these cases the stone was pushed into the bladder during operation and passed afterward. In three other cases the stone was found to have been passed during the few days intervening between the clinical examination and the time of operation. In four cases the stone was passed after the operation. In five cases no stone was found at operation and there was no subsequent history of a stone having been passed, which can be explained only by error in the diagnosis. It is obvious, therefore, that should there be an interval between the last clinical examination and the operation, another secondary roentgenoscopy should be made just prior to the operation since the stone may either have passed during this interval or it may have greatly changed its position. Particularly is this true if a cystoscopic examination with ureteral catheterization has been made. The patient should be questioned whether or not severe pain has been experienced following examination. It should also be remembered that in spite of the absence of colic, the position of the stone may have greatly altered.

PLASTIC SURGERY OF THE KIDNEY PELVIS AND THE URETERS *

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Conservative plastic surgery of the kidney pelvis and the ureters has scarcely received the attention it merits when we consider that Kroiss,[1] in 1908, in a very comprehensive paper on the subject, was able to collect reports of only 102 cases, and Weinberg,[2] in 1911, added reports of but forty-nine operations to the literature on the subject in his exhaustive article. The limited scope of the present study does not permit more than a hasty review of the seventy or more cases I have been able to gather since June, 1911, exclusive of my own unreported cases.

Weinberg's paper includes several personal observations, notably three ureteropyeloneostomies from his Heidelberg clinic. A subsequent cystoscopy in two of the cases showed that the ureter was definitely obliterated in one case and probably so in the other. Strange to say, the latter patient experienced no discomfort whatever from the condition, so that this case may be considered a cure. Weinberg also claims five Fenger extrapelvic operations to his credit; these, together with seventeen previously reported cases, comprise nineteen cures. He also publishes reports of six new cases of ureteropyeloplasty (Fenger) in literature, making altogether twenty-six cures, four failures, two deaths, and one case of persistent postoperative fistula.

Eliot[3] collected 111 reports of cases of conservative plastic operations on the kidney pelvis and the upper urinary tract, seventy-four for hydronephrosis and thirty-seven for pyonephrosis, comprising fifty-seven clinical cures, and seventeen cures by chromocystoscopy, ureteral catheterization, etc.

Although the function of a hydronephrotic kidney is impaired, the organ is not useless, and it does not regain its normal function after the obstruction has been removed. Walker[4] experienced this in a case in which he resected a portion of the kidney pelvis on one side, and performed a similar operation on the other side in a few weeks. After the second intervention the patient began to lose flesh rapidly and showed gradually increasing symptoms of renal failure, death ensuing six weeks afterwards.

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* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

1. Kroiss: Beitr. z. klin. Chir., 1908, lviii, 423.
2. Weinberg: Beitr. z. klin. Chir., 1911, lxxii, 779.
3. Eliot: Jour. d'urol., 1913, iii, 161.
4. Walker: Proc. Roy. Soc. Med. (Surg. Sec.), 1913, vii, 59.

Resection of the hydronephrotic portion of diseased kidney pelves is reported by Rumpel[5] in two cases, both of which presented double kidney pelves and reduplicated ureters. The operation in the one case was done by making an incision into the firm part of the parenchyma and leading downward to the internal substance so that the renal pelvis, previously exposed, was not separated from the resected portion. After the corresponding ureter had been properly ligated, it was cut and the wound closed with drainage tubes inserted. In the second case, after the ureter of the hydronephrotic portion was exposed and ligated, the hilum was exposed. A coarse catgut thread was wound around the entire circumference of the kidney at the junction of the normal and the diseased parts. A second thread, leading from this same point downward, was passed around the diseased portion. After the latter was secured, the stem was separated by two Péan clamps. The median portion of the kidney was then cut below the upper thread. The hydronephrotic part now connected only with the corresponding ureter, and cutting the latter completed the operation. In addition to circular suture of the delicate ureter, the central end of the one corresponding to the normal half of the kidney was invaginated into the periphery of the dilated ureter, its passage into the bladder having been tested by means of a catheter. A urinary fistula persisted for a period of six weeks but finally closed.

Grégoire[6] reports a successful ureteropyelotomy for intermittent retention which was found to be due to a stout artery, which, coming from the renal body and leading down to the lower pole, passed in front of the ureter. The latter, as it emerged from the pelvis below the line followed by the artery, was forced up and had wound itself around the artery in order to find its way posteriorly into the pelvis. The orifice of the ureter was not contracted, but there was considerable dilatation below the point where the artery passed the ureter. At operation the ureter was ligated at its opening into the pelvis and cut below this point; the upper stump was then cauterized. A longitudinal opening was then made at the lower part of the pelvis and sutured at this point to the extreme upper part of the ureter. A second tier of sutures covered the first, and involved the superficial layers of the ureters and the kidney pelvis. The wound was closed with drainage.

Gayet[7] did the rather unusual operation of orthopedic resection of the renal pelvis (only seventeen similar ones are reported in literature) in a case of intermittent acute renal colic persisting for eight years. The patient recovered completely in about three months.

In the matter of treating the wound in the kidney pelvis and the ureters after removal of stones, that is, between suturing or drainage, Pierre Bazy and his son, Louis,[8] obtained the better results with sutures. In eleven out of eighteen cases in which it was done they had nine uneventful recoveries. Although the other five patients did well, the flow of the urine through the wound persisted for some time. They advocate suturing whenever the prolonged operation presents no added risk for the patient; they find it especially indicated when the incision is a long one.

Darrach,[9] in a case of stone which was located at the pelvic brim, made an incision from the tip of the twelfth rib downward and forward toward the anterior spine. Both the kidney and the ureter were enlarged and distended. The kidney capsule could not be delivered into the wound on account of its short pedicle. The ureter was freed and the stone felt at the pelvic brim. It was milked upward until it could be reached through the wound and removed through a half-inch longitudinal incision. The upper route was chosen in this case on account of the necessity of inspecting the kidney itself. The kidney was spared because it was hydronephrotic and also because of functional impairment of the other kidney.

Brentano[10] used the vaginal incision for removal of stone from the ureter with the unpleasant result of return of renal colic nine days afterward. This was found to be due to a stone left in the bladder. A ureterovaginal fistula had developed owing to the penetration of the stone through the sutured ureter. Two more operations were required to close the fistula. The patient recovered.

In a case reported by Michailov, the proximal end of a dilated ureter protruded into the renal pelvis and prevented the flow of urine. The kidney was soft and atrophied. The protrusion of the ureter was removed and its roots tied with catgut. The edges of the wound in the kidney pelvis were sutured to the skin with silk. A few days after the operation the kidney was washed several times with collargol. A plastic operation was done two weeks later to close the fistula. The patient was reported well two months subsequently.

Payr[11] suggests a pedunculated flap of the capsula fibrosa for securing the pyelotomy incision. He makes the flap about two finger breadths in width, with the stem toward the hilum and turned at an angle of 180 degrees, laying it on the kidney pelvis at the beginning of the ureter, surrounding the latter like a cornucopia. The flap thus formed is attached to the kidney pelvis with a number of fine catgut sutures, and accommodates itself without tension to its new position.

An original technic for circular ureterorrhaphy is described by Proust and Buquet.[12] They first prepare the mucosa of the upper end of the ureter and evert it, then do the same to the lower end. After dilating the upper portion of the lower stump by separating the blades of a fine forceps introduced into the lumen, the ureter is divided longitudinally between two artery forceps for about 1 cm. Invagination is the next step in the operation, and inversion of the lower end the last one. These authors believe that coalition is better by this disposition of the surfaces than that obtained by the action of sutures, for, no matter how soon the catgut is absorbed, the two ends will not separate.

The technic of ureterorrhaphy for total section of the ureters is also discussed by Sejournet.[13] He cites numerous old and also recent cases in which one or the other method of suturing was used for ureters accidentally or purposely cut (principally during gynecologic operations). His observations lead him to conclude that cicatrization of end-to-end sutures of the ureter is the simpler method, producing more perfect coaptation of the two fragments. Suture by invagination causes absorption of the invaginated portion, which undergoes a sort of reptation (crawling) and the two stumps finally meet end to end. This secondary cicatrization forms favorable conditions for future stenosis.

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[5] Rumpel: Ztschr. f. urol. Chir., 1914, ii, 33.
[6] Grégoire: Jour. d'urol., 1912, i, 83.
[7] Gayet: Jour. d'urol., 1912, i, 625.
[8] Bazy, P., and Bazy, L.: Jour. d'urol., 1912, ii, 645.
[9] Darrach: Ann. Surg., 1913, lvii, 761.
[10] Brentano: Deutsch. med. Wchnschr., 1911, xxxvii, 666.
[11] Payr: Centralbl. f. Chir., 1912, xxxix, 1505.
[12] Proust and Buquet: Jour. de chir., 1913, x, 417.
[13] Sejournet: Rev. de gynéc. et de chir. abd., 1914, xxii, 199, 287.

An accidental severing of a ureter during an operation led Forssell[14] to devise the following method of repair. Making a slit into the wall of the vesical ureteral stump, he removed the mucous membrane for a distance of about 0.5 cm. He then invaginated the renal end into the vesical one by means of a mattress suture, which included the walls of both stumps a few millimeters from the membrane-free periphery, just opposite the slit, and was tied to the outer surface of the lower stump. The slit in the latter was then closed with interrupted catgut sutures, and its transverse incised surface united with the outer layer of the stump.

McKechnie[15] advocates the abdominal route and the inverted position in operations on the ureters. He believes that if "modern technic can master the problems presented by operations on the bile tract, the bowels and the tubes, it can surely be made to answer for the ureters, and a formidable and difficult operation rendered safe and easy." He reports two successful cases in which he repaired the ureter injured during an ovariotomy in one case, and supravesical hysterectomy in the other. With the patient in the Trendelenburg position, the operation was done through the abdominal wound and the ends of both ureters implanted, divided above the points of leakage, into the bladder, the remaining distal portions being left to "look after themselves."

Much divergence of opinion exists as to the treatment of ureteral fistulas. The intraperitoneal implantation of the proximal end of the ureter into the bladder seems to be the procedure of choice in fresh lesions not too remote from the bladder and for fistulas when the corresponding kidney and the bladder are normal. Suturing the ureter does well for small lesions, but it is not in favor, as we have seen, for extensive lesions, since a sutured ureter always shows a tendency to produce stenosis. While nephrectomy has really never disappeared from the operative repertory for ureteral fistulas, the opinion today appears to be that it is best not to interfere with the kidney so long as it does no harm, in other words, so long as the urinary tract is healthy. Implantation into the abdominal wall, as we all know only too well, produces uretero-abdominal fistulas, but the danger of ascending infection into the kidney is one of its greatest disadvantages. While some authors have reported brilliant results with simple ligation of the proximal end of the ureter, experimental studies have shown that the ligatures develop a pronounced tendency to fistulous formation by the wearing away of the ureteral wall. Frankenstein,[16] for example, considers simple tying off of the ureter equivalent to removal of the kidney as far as the beneficial effects on the patient are concerned. While doing a supravaginal hysterectomy for tumor he found that the neoplasm extended subperitoneally into the entire vascular cavity. A part of the ureter ran along the linea innominata through thick, friable, caseous tumor masses, and precluded free dissection of the ureters. He therefore ligated the central portion of the ureter and resected it. After removing the tumor and the uterus, he again ligated the central portion of the ureter and dropped it into the subperitoneal cavity. The laparotomy wound was closed with drainage. In spite of the happy outcome of this case, Frankenstein would not again content himself with simple ligation, as he is well aware of the dangers to which I have just referred. With this risk in mind, Stoeckel,[17] in two cases of advanced carcinoma of the ovary, modified his operation by treating the ureter as follows: After a ligature was placed at about 7 cm. above the free end, the latter was turned back on itself and again ligated at the same point, producing a double kink. The two arms of the ureteral tube met at this point and the suture knot was placed on the upturned portion of the distal part of the ureteral kink, in order to provide a secure fastening by supporting the knot rather than by the angular kinking of the ureteral tube. The results were excellent.

In a case of accidental injury to the ureter during a radical Wertheim operation for carcinoma of the cervix, Ebeler[18] produced artificial compression of the ureteral lumen by kinking it about 1 cm. above its proximal end, ligating it with silk, and after a second kink allowing it drop down. The patient survived the operation thirty-six hours. Subsequent examination of serial sections showed that stenosis had taken place at the point above the ligature. While at the first kink the lumen of the ureter was only slightly compressed, the more distal part showed a high degree of compression, the condition pointing to an apparent incipient obliteration of the entire lumen.

Some of the troubles resulting from the treatment of ureterovaginal fistulas by reimplantation of the ureter are illustrated by Fraisse.[19] Three months after accidentally severing a ureter during a vaginal hysterectomy, he did an oblique implantation, suturing the ureter with fine catgut. A stubborn cystitis developed two years after the operation, and it was found that two fused stones had formed at the two ends of the ligature. A few months afterward three more pieces of the ligature were spontaneously passed by the patient. Eleven years subsequently a second attack of cystitis was thought to be due to a stone at the right angle of the vesical trigon. An incision into the bladder, under local anesthesia, demonstrated the erroneous diagnosis. The calculus had developed in the terminal portion in the efferent head of the injured ureter, a small canal which had formed acting as a deep diverticulum in the thick vesical wall. All traces of the suture threads had disappeared. The patient was placed in a semi-Fowler position immediately after the operation. Toward the thirty-fifth day she was allowed to recline full length in bed, and immediately a severe polynephritis and pyuria developed. It was concluded, of course, that the ureter had become permeable.

Goldberger[20] was more fortunate in the results of a retroperitoneal ureterocystotomy for ureterovaginal fistula, by high incision above Poupart's ligament. After locating the ureter he dissected it out as far as possible. The fistula, however, could not be reached in this way and Goldberger decided to "short-circuit" the urinary canal by transplanting the ureter above the fistula, leaving the fistulous part out of the canal and leaving the upper part of the ureter free in the wound. By means of a sound passed through the urethra into the bladder, the fundus of the latter was pushed up into the wound and a small opening made into the bladder. The ureteral end was then split to avoid further constriction and stricture of the opening; the ureter was passed into the new opening in the bladder and fixed by a loop of suture on both sides. The bladder opening was then closed around the ureter and the latter fixed to the bladder with several interrupted sutures. A cigaret drain was inserted to provide for leakage. The peritoneum, being allowed to fall back into its natural position, covered the ureter, the bladder and all underlying structures. Recovery was good.

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[14] Forssell: Centralbl. f. Chir., 1911, xxxviii, 1369.
[15] McKechnie: Canad. Med. Assn. Jour., 1912, ii, 320.
[16] Frankenstein: Gynäk. Rundschau, 1914, vii, 431.
[17] Stoeckel: Ztschr. f. gynäk. Urol., 1911-1912, iii, 51.
[18] Ebeler: Ztschr. f. Gynäk., 1913, iv, 181.
[19] Fraisse: Paris Chir., 1913, v, 616.
[20] Goldberger: Am. Jour. Surg., 1913, xxvii, 330.

In a case of persistent fistula, resulting from the accidental inclusion of the ureter in the ligatures during a difficult pelvic operation, Barbat[21] (San Francisco) repaired the defect by implantation into a loop of the ileum, an operation already described by him in 1901. The old fistulous opening, near McBurney's point and leading back 3 inches, from which clear urine flowed, continued to discharge and a new one formed fourteen days after the operation, in the median scar. When the patient was examined two and a half years after the operation, the ureteral catheter passed only for 1½ inches. The cystoscope could not be passed into the lumen of the intestine, the opening of which appeared as a black hole. The patient was in good health and had gained in weight. The amount of urine secreted was normal, indicating that there was good functional activity of the kidney and that infection had not as yet taken place.

Conservation of the kidney is not always possible, and we find that Brongersma,[22] after resecting a portion of the ureter for myoma and implanting its central end into the bladder, was obliged to do a nephrectomy. The results, however, were good.

Much time and attention have been given to the study of the implantation of the ureter into the intestine since Chaput (1910) reported the first successful operation on man. His patients survived the intervention for periods varying from six months to five years. Beck,[23] in two cases, used the oblique method of implantation, modifying it by allowing the free portion of the ureter to dangle into the lumen of the bowel, hoping in this way to prevent infection, and by excluding the lumen from the cicatrix of the bowel to insure patency. In his first case, however, only one lumen remained patulous, the other being very much contracted. The patient did well for eighteen months and was able to control urine very satisfactorily. He came from a tuberculous family and later developed pulmonary tuberculosis. Up to the time of his return to the hospital with pyelitis, there was no indication of a return of the kidney trouble, and even then the lung condition was so much the more pronounced of the two disorders that Beck was not sure which of the two had caused death. In his second case the same operation was done except that Beck was obliged to implant the right ureter into the appendix. Recovery was prompt and the patient is able to control the urine for a considerable length of time. Only a few months have elapsed since this operation and the patient, Beck believes, will also develop pyelitis. But in the meantime the bladder will have had a chance to recover and reimplantation into the bladder may then be done should it be preferred to the present "tolerable condition."

Transplantation into the bowels is also the method of choice of Iljin,[24] who finds it more satisfactory than transplantation into the skin, apparently a favorite method with Russian surgeons. In eleven personal cases he obtained seven cures. There were four deaths, two of them being in children 14 and 17 months of age respectively. Postoperative treatment with a lactic acid ferment preparation for peritonitis and autogenous colon vaccine for pyelitis, gave good results in his cases.

"An ideal method" for obtaining aseptic conditions of the intestinal section and for minimizing the danger of ascending infection, is the term Dechanow[25] uses in describing a modified Maydl operation done by him in a case of vesical ectopia. He combined two modifications—anastomosis between the afferent and efferent end of the sigmoid flexure (Berglun and Borelius) and ligation of the afferent end immediately below the anastomosis (Mysch). A longitudinal incision was made into the sigmoid flexure below the ligature and the ureter placed in the wound of the isolated portion of the bladder, so that the orifice of the left ureter was directed upward and that of the right one downward, and the walls of the bladder and the intestines were brought into apposition. The intestine with the included ureter was dropped into the abdominal cavity. A large part of the abdominal wound was closed with two-tier sutures, while the lower defect was left open for future tamponage. A drainage tube was placed in the rectum. The operation lasted two hours, and the patient required transfusion. Recovery was established in six weeks, the patient being discharged in good condition. A small portion of the lower abdominal wound failed to heal. Dechanow proposes to cover this shortly with a flap from the scrotum.

Another modification of Maydl's operation is described by Dietlen.[26] He applied it in a case of vesical ectopia in a boy of 5 years. There had been a tumor present in the lower abdomen since birth. The navel was replaced by cicatrized skin and the tumor was located below this area, the inverted bladder, epispadias and a gaping symphysis completing the clinical picture. Operation consisted in dissecting off the bladder mucosa and extraperitoneal mobilization of the bladder, resecting the latter and leaving a small section (ureteral orifice). After the abdominal incision was made anastomosis was established between the two ends of the sigmoid flexure by an incision of about 4 cm. and the sigmoid colon clamped and ligated. An incision 4 cm. long was then made below the ligature into the sigmoid flexure and the remaining portion of the bladder with the colon opening sewed without tension. The patient was dismissed cured in six weeks, and has been free from trouble since.

The idea of anastomosis of the ureter and the appendix occurred to Babcock[27] in a case of advanced carcinoma of the bladder, and also to Kennedy[28] during an operation for carcinoma of the uterus. Kennedy was not able to carry out his plan owing to various complications, but subsequent study on the cadaver and on the dog demonstrated to him the feasibility of the maneuver. The condition of Babcock's patient necessitated implanting one of the ureters into the rectum, so that only one was implanted into the appendix. He was a poor operative risk at best, and died two days after the intervention. Babcock does not believe that the uretero-appendiceal anastomosis possesses any great advantages, as it does not avoid contraction of the scar of the divided end of the ureter, the resulting stenosis being one of the main causes of renal infection after this type of operation.

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[21] Barbat: California State Jour. Med., February, 1915, xiii, 70.

[22] Brongersma: Centralbl. f. Chir., 1913, xl, 1300.

[23] Beck, Carl: The Implantation of the Ureters into the Large Bowel, The Journal A. M. A., Nov. 8, 1913, p. 1691.

[24] Iljin: Diss. St. Petersburg, 1913; abstr. Surg., Gynec. and Obst., 1913, xvii, 670.

[25] Dechanow: Folia Urol., 1911-1912, vi, 666.

[26] Dietlen: Inaug. Diss., 1913, Munich; abstr. Ztschr. f. Urol., 1914, viii, 413.

[27] Babcock: Surg., Gynec. and Obst., 1914, xviii, 119.

[28] Kennedy: Surg., Gynec. and Obst., 1912, xv, 464.

A successful implantation of the ureter into the loin is recorded by Martin,[29] in a case of carcinoma which necessitated removal of the bladder and the uterus. With the exception of a tendency of the epithelium to cover the orifice of the ureter, which made dilatation necessary from time to time, the condition was all that could be desired. Symptoms of suppurative inflammation of the kidney sixteen months after the operation led to a nephrotomy, from which the patient made a good recovery and is reported well and comfortable seven months afterwards.

Implantation into the rectum with good results is reported by Arumugum,[30] of Bungalore, India, in two cases of extroversion of the bladder. Both patients were seen again four and a half years after the operation and both (the younger a boy of 13) were able to control urine five or six hours during the day and eight hours or more during the night.

The care of the ureters, we thus see, presents many difficulties and the "ideal method" has not yet been devised. Investigators are busily engaged in experimental studies that may possibly lead to the Eldorado of this branch of surgery. I regret that I can do no more than mention in this connection the excellent and brilliant work, among others, of our own Eisendrath,[31] Coffey,[32] Jones[33] and Barber;[34] that of Schmidt and Kawasoye,[35] in Germany; Chiasserini,[36] in Italy; Zaaijer,[37] in Holland; and the Russians, Shisko,[38] and Iljin.[24]

An unusual case of double ureters with intravesical ballooning of the lower ends is described by Young.[39] Both ureters opened into the bladder through a diverticular orifice. This diverticulum could be turned inside out at will, and whether so turned or not it was seen to be made up of a greatly dilated ureter. A plastic hernia operation was performed with apparently favorable results, as there was no evidence of intravesical ballooning when the patient strained. In a cursory review of the literature Young failed to find another like instance.

In a case presenting three ureters, one opening extravesically, Furniss[40] operated by making an incision into the mucosa, covering the under surface of the urethra over the catheter. Unfortunately the incision went into the much-dilated ureter. A sound was then passed into the bladder, and its mucosa and the mucosa of the sac were united with fine catgut in such a way that the distal end was obstructed. Thus the ureter was made to enter the sac, and from there to the bladder a fistula was formed. At a second operation, thirteen days after the first one, the ureter was dissected backward for 1½ inches. It had increased in size toward the renal end. A suture was placed through the end of the ureter and a sound passed into the bladder. This made the bladder bulge backward and to the left; a small incision was then made into this. The suture was held to the sound and the ureter pulled into the bladder, where it was held with one suture through the bladder and a part of the ureter. The suture pulling the ureter into the bladder was attached just below the clitoris. Postoperative cystitis yielded to treatment and recovery was perfect.

An aberrant, supernumerary ureter was treated by Hartmann[41] by resecting the dilated portion, freeing it for about 1.5 cm., and implanting it into the bladder per vaginam. The results were good. Subsequent cystoscopy showed that the implanted organ had become somewhat flattened. The two normal ureters were entirely independent of the implantation point.

Duplication of the ureters is not an unusual phenomenon, but the abnormality is frequently not suspected until some postoperative condition calls attention to the possibility of its existence. After an operation for cancer of the cervix, during the course of which Worrall[42] had traced the ureters to the bladder and isolated their pelvic portion, the meager amount of urine passed by the patient and her general poor condition led to the suspicion of the presence of double ureters, and that the main canal on each side had been tied. A second operation was done. The ureters were easily located, as they were both dilated above the ligatures. They were disinterred and after splitting their ends, were implanted into the bladder close to the other ureter on each side, which could be plainly seen. Leakage persisted for several months, but complete recovery was finally established seven months after the operation.

While operating in a case of carcinoma of the rectum, Samborski[43] found reduplicated ureters separated from the surrounding tissue and connected with each other by the intervening cellular tissue. He transplanted the two organs as one; the cellular tissue connecting them served conveniently for attaching them to the intestines. The fold of the rectum covered both ureters as if they were one body, and the orifices of the two ureters were sutured in as one, with a single opening of the rectum. The right (single) ureter was somewhat dilated; this was also sutured into the rectum. Metastatic lesions were found in the right ureter. The patient did well up to the twelfth day, when he gradually began to fail, though there was no rise in temperature. Death ensued on the seventeenth day.

Intravesical cysts, while not very rare, have not frequently been diagnosed by means of the cystoscope as Gayet[44] was able to do. He removed the growth by a hypogastric incision, a method not usually employed for the purpose. After the incision was made, the cyst could be seen in the right ureter and the fluctuation of the tumor showed that urine had found its way into the cyst, although no orifice could be detected. An incision was made at the base of the tumor and a pouch, from which a certain amount of urine escaped on pressure, was removed. A crown suture of fine catgut was placed at different points through the ureteral and the vesical mucosa. The bladder was sutured and space allowed for drainage tube. A permanent catheter was introduced. On examination of the pouch, the orifice could be located only by means of a magnifying glass. The lesion was evidently a congenital one.

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[29] Martin: Ann. Surg., 1911, liii, 423.
[30] Arumugum: Am. Jour. Surg., 1911, xxv, 169.
[31] Eisendrath, Daniel N.: The Repair of Defects of the Ureter, The Journal A. M. A., Nov. 8, 1913, p. 1694.
[32] Coffey, R. C.: Physiologic Implantation of the Severed Ureter or Common Bile Duct into the Intestine, The Journal A. M. A., Feb. 11, 1911, p. 397.
[33] Jones: Am. Jour. Obst., 1914, lxx, 329.
[34] Barber: Ann. Surg., March, 1915, p. 273.
[35] Kawasoye: Ztschr. f. gynäk. Urol., 1913, iv, 107.
[36] Chiasserini: Policlinico, Rome. 1912, xix, sez. chir., p. 247.
[37] Zaaijer: Beitr. z. klin. Chir., 1915, xciii, 235.
[38] Shisko: Vrach. Gaz., St. Petersb., 1913, xx, 1604.
[39] Young: Tr. Am. Urol. Assn., 1912, vi, 161.
[40] Furniss: Med. Rec., New York, 1914, lxxxv, 589.
[41] Hartmann: Ztschr. f. Urol., 1912, ii, 83.
[42] Worrall: Jour. Obst. and Gynec., 1914, xxvi, 159.
[43] Samborski: Russk. Vrach, 1913, xii, 568.
[44] Gayet: Lyon méd., 1912, cxviii, 1460.

Pietkiewicz[45] attributes cystic dilatation of the vesical ends of the ureters primarily to a stenosis of the ureteral orifice, and resulting in urinary stasis in the lower portion of the ureters. He describes two such cases with prolapse of the ureter through the urethra. This is perhaps one of the most unusual diseases of the urinary system. Ten cases have been reported as occurring in little girls, but Pietkiewicz knows of only two other cases besides his own, one reported by Simon and the other by Hartmann, in Jena. Diagnosis was made at operation in all these cases. Pietkiewicz was the first to use the high incision for the operation (1909).

The tumor in his first case was seen on examination at the dilated meatus of the urethra, and preliminary treatment consisted of removal under light narcosis. At cystoscopic examination the tumor was seen, the base of which covered the greater part of the trigonum. The right ureteral orifice was not visible. The left one appeared in the form of a club-shaped pulsating protrusion, the point of which was concave with a tiny, scarcely visible, ureteral opening. At operation the cavity of the cystic dilatation was found to communicate directly with the dilated lumen of the ureter. The walls of the growth were dissected off and the wound closed with sutures. A wide gaping orifice was now visible, from which urine flowed periodically. Cystoscopy a week later showed normal bladder mucosa and the urine flowing in a rhythmic stream from a normal ureteral orifice. The correction of the stenosis on the other side was postponed for another occasion. In the second case described by Pietkiewicz, the bladder tumors were unusually large and the condition was complicated with pyelonephritis. The tumors were removed at several sittings, without anesthesia, by means of a knife encased in a blunt-end metal sheath introduced through the urethra. All symptoms disappeared as soon as the stenosis at the ureteral orifices was removed.

Pietkiewicz sketches the pathologic process thus: The club-shaped protrusion (Case 1) of the left ureteral cushion represents the initial stage of the dilatation, the pear-shaped tumors of Case 2 being the second stage. The condition around the ureter in Case 1 showed that the right kidney was secreting urine, but no regular rise and fall of the tumor could be noted after the prolapse had been corrected. This stationary form, which differs little from a genuine cyst, would represent the last stage of the dilating process. As long as the dilated ureteral end remains in the first or in the second stage, that is, as long as the walls of the tumor retain their muscular function and take an active part in the ureteral peristalsis, there is little or no danger of a prolapse. It is the third stage, when the tumor has attained a certain size and its walls have lost their muscular power, that represents a favorable condition for prolapse. The dilated end of the ureter may easily be carried by the force of the urinary flow into and occasionally tampon the inner urethral orifice. The urinary troubles that result force the patient to help by means of pressure and bring about the prolapse.

Algave and Papin[46] describe a case in which the ureter abnormally opened into the urethra and had caused enormous dilatation of the pelvic and lumbar regions. They succeeded in passing the catheter into the abnormal orifice, which seemed dilated into a wide pouch, from which pus was evacuated. The collargol picture showed that this abnormal ureter was markedly dilated for its entire length. The kidney was fused with the suprarenal capsule and was removed with difficulty. These authors seem to think that this condition is a more frequent occurrence than is generally supposed, and that it is seen more often among woman than among men.

Juvara[47] mentions a case of aberrant ureter opening into the vulva to the right of the ureteral orifice. The abnormal canal was found to join the ureter at a sharp angle directly below the kidney pelvis. It was resected for a distance of 18 cm. Under the microscope it presented typical ureteral structure.

Hernia of the ureters is not frequent. Gilberti[48] has collected reports of thirty-three cases. He advises burial of the ureter into the bladder as the most successful procedure when conditions permit.

REPORTS OF CASES

Case 1.—Mrs. W., aged 27 years, was admitted to the Jefferson Hospital complaining of pain in the right lumbar region. There is a family history, on the maternal side, of cardiorenal disease for several generations back. The patient herself, with the exception of an attack of pneumonia at 24 years, had always enjoyed good health. She is the mother of two healthy children, 12 and 9 years of age. Menstrual periods have always been more or less painful.

Her present trouble dates back two years, with the sudden onset of pain in the right lumbar region, radiating along the course of the ureter into the right labia. Intermittent attacks (usually coming on before the menstrual period) have recurred since then with more or less violence. Of late during the greatest distress the pain radiates to the left labia and the left thigh; there is some dyspnea, and urine seems to be decreased followed by an increased flow. The attacks last several hours and are always followed by nausea, vomiting, soreness and exhaustion.

The left kidney could not be palpated at examination. A smooth mass, moving with respiration, was palpated in the right hypochondrium; tenderness was marked over the right kidney.

Cystoscopic examination showed a normal bladder; the ureteral orifices were also apparently normal. The pyelogram disclosed a displaced right kidney, small stone in the kidney pelvis, kinked ureter and hydronephrosis. In the left kidney region there was no collargol shadow seen, which suggested a unilateral right kidney.

At operation the kidney was approached through the Koenig incision. The upper part of the ureter was distended and kinked, the elbows of the kink being firmly adherent. The renal pelvis was also much distended. When the adhesions surrounding the kidney and ureter were loosened up, the second ureter was found and traced to the extreme upper portion of the dilated kidney pelvis. The pelvis was then incised, and, after the calculus was removed, a part of the renal pelvis was resected and repaired by double-line suture. A nephropexy was then done—four sutures, two on either side through the renal capsule, incorporating a small amount of cortex—and the organ sewed in position. Considerable fat and fascia were transplanted along the ureter at the site of kinking in order to prevent another angulation. After the kidney was fixed, the position of the ureter at its outlet from the pelvis was found at the lowest point of the repaired renal pelvis. The second ureter was traced down to the lumbar vertebra, where it crossed over to the left side, entering the bladder approximately in a normal position. This ureter was ligated and resected. The patient made an uneventful recovery, being discharged five weeks after operation. When seen again eleven months later, she was in the best of health, and had had no recurrence of the renal pain.

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[45] Pietkiewicz: Ztschr. f. gynäk. Urol., 1910-1911, ii, 261.

[46] Algave and Papin: Bull. et mém. Soc. de chir. de Paris, 1913, xxxix, 110.

[47] Juvara: Bull. et mém. Soc. de chir. de Paris, 1913, xxxix, 100.

[48] Gilberti: Riv. veneta di sc. med., 1913, lviii, 86.

Case 2.—H. M. P., aged 32 years, came under observation Sept. 13, 1913, with a history of repeated attacks of left renal colic, during the past eighteen months, increasing in severity as time went on. Five roentgenograms taken during this period, as well as a sixth one after his admission to the hospital, all gave a negative picture. The catheter introduced into the left ureter met an obstruction at about 10 cm. from the orifice. The stricture, thus found, was treated by gradual vesicle dilatation for one month on alternate days, resulting in relief. The patient was dismissed apparently well. Another severe attack during the next month obliged him to return for further treatment. It was now decided to explore the ureter. The incision was made along Poupart's ligament and the great vessels exposed at the ileosacral junction. The ureter was easily recognized, a catheter having been previously inserted. The ureter was dissected from its peritoneal attachment to the point of narrowing, above which it was somewhat distended; a small stone was detected on palpation and removed through a longitudinal incision approximal to the stricture; the incision was continued for about 1.5 cm., dividing the stricture freely. A transverse line of two-tier sutures was inserted, increasing the constricted lumen beyond that of normal caliber. The wound was closed with a cigarette drain to provide against leakage. No leakage occurred; the patient made an uneventful recovery and is well, one and a half years after operation.

I desire also to report a case of successful implantaken of the ureter into the loin.

Case 3.—W. B., hotel clerk, aged 33, came under observation, November, 1904, with a history of sudden attack of severe renal colic, referable to the right kidney. The patient had had four severe attacks prior to his admission into the hospital. By palpation over the right loin a large painful mass was detected. The urinary analysis showed a large quantity of pus and red blood cells. The Roentgen ray revealed a shadow of a good-sized stone in the pelvis of the kidney. The patient was profoundly toxic. At operation pyonephrosis was found, with stone in the pelvis. It was decided, owing to the grave condition of the patient, to drain the kidney, preliminary to doing a nephrectomy. It was also found convenient at this time to bring the ureter into the loin, where it was fixed in position with a few interrupted sutures, with a view of expediting the secondary operation. The patient improved rapidly and refused further operation. He was discharged from the hospital the thirty-third day following his admission. Nearly twelve years have elapsed since the ureteral implantation. The patient has enjoyed the best of health and says that he does not experience much inconvenience from the urinary drain in the loin.

1819 Walnut Street.

Rufus of Ephesus.—To generations of practitioners unworthy to hand him ligatures Rufus of Ephesus (Reign of Trajan, early part of second century A.D.) was known by the "pilulae Ruffi," "the pills I would not be without"—"pilulae sine quibus esse nolo"—still in the British Pharmacopoeia as the pill of aloes and myrrh. In the brilliant Ionian profession of the early days of this era Rufus doubtless had predecessors and teachers, but he stands out a strong, clear figure, a great "magister chirurgiae," a title justly earned by his remarkable contribution to the surgery of haemostasis.—Osler.

URETERO-ENTERIC ANASTOMOSIS

A FURTHER EXPERIMENTAL STUDY *

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NEW YORK

The problem of the disposition of the ureter that has been separated from the bladder by accident or reason has engaged the attention of many thoughtful and ingenious surgeons for the past sixty-five years. The feat has been attempted from different points of view. To prevent peritonitis, Lloyd and Simon[1] worked extraperitoneally. To preserve the immediate ureteral vesical relations, Pisani, Peterson,[2] Maydl and Moynihan transplanted both of the ureters and the adjacent portions of the bladder involving the area of the trigonum vesicae. To accomplish both at once, Bergenhem[3] removed the ureterovesical rosettes separately and extraperitoneally.

Again, to protect the transposed ends of the ureters from contamination by the fecal stream, Gersun,[4] Tizzoni, and Pozzi substituted for the bladder evaginated intestine and transplanted the severed ureters into it. Martin,[5] Kryinski,[6] Fowler,[7] Boari[8] and numerous others, without removing any portion of the bladder or without creating one artificially, anastomosed the ureters to the lower bowel directly. They endeavored to elaborate a defensive barrier in the union of the extreme caudal ends of the ureters with the normal bowel. Tuffier, Coffey[9] and Beck[10] attempted the same result, but allowed the ureteral ends to protrude into the intestinal lumen. All these workers[11] have striven to produce, largely through anatomic study, a perfectly functionating entero-ureteral anastomosis.

Reviewing these different technics in entirety, they appear to have been suture methods (with the possible exception of Boari's, in which a button was used) and contrivances retaining the ureterovesical valve or its equivalent. Especially painstaking seem to have been the efforts spent to create resistance at the caudal end of the ureter equivalent to that presumably present in the normally intact ureter. Fowler[7] pertinently criticized the Maydl operation for "making no allowance for the changed pressure conditions of the rectum" and for involving "extensive dissection," and Kryinski's method in that the "pressure exerted was fallacious in accomplishing the result" desired, while at the same time Fowler buried his ureter for an arbitrary distance and consequently with an unknown resistance in the muscular fibers of the rectum. Coffey[9] called his enteric implantation of the ureter "physiologic," while simulating the anatomy of the ureterovesical termination. The latter method has been followed by C. Mayo[12] in four cases recently reported by him. It seems to me, however, that the physiology of the ureter has for the greater part been disregarded, for it is believed at the present day that the ureterovesical valve is negligible physiologically. This dissimilarity between the pressure conditions of the intestinal tube and the closed urinary bladder further emphasizes the impertinence of a vesical ureteral termination in the bowel.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Laboratory of Experimental Surgery, New York University and Bellevue Hospital Medical College.

[1] Simon, Lancet, London, 1851, ii, 375.

[2] Peterson, Reuben: Anastomosis of the Ureters with the Intestine: An Historical and Experimental Research.

[3] Buchanan, J. J.: Remote Results of Bowel Implantation of the Ureters into the Bowel for Exstrophy: A Consideration of the Extraperitoneal Method of Bergenhem, Surg., Gynec. and Obst., 1909, viii, 146.

[4] Gersun: Wien. klin. Wchnschr., 1898, No. 43, p. 990.

[5] Martin, F. H.: Implantation of the Ureters into the Rectum, The Journal A. M. A., April 1, 1899, p. 709.

[6] Referred to by Connell, F. G.: Exstrophy of the Bladder, The Journal A. M. A., March 9, 1901, p. 637.

[7] Fowler: Implantation of the Ureters into the Rectum in Exstrophy of the Bladder, with a Description of a New Method of Operation, Am. Jour. Med. Sc., 1898, cxv, 270.

[8] Boari: Ann. d. mal. d. org. génito-urin., 1896, xiv, 1.

[9] Coffey, R. C.: Physiologic Implantation of the Severed Ureter or Common Bile Duct into the Intestine, The Journal A. M. A., Feb. 11, 1911, p. 397.

[10] Beck, C.: Chicago Med. Recorder, November, 1899.

[11] Rickets, B. M.: Surgery of the Ureter: an Historical Review, 1905, p. 1585. Hartley, F.: The Operative Treatment of Exstrophy of the Bladder. See also Footnotes 2 and 6.

A further objection to all the operations to date is appropriately described by Matas,[6] thus:

> The operator who cuts off both ureters from the bladder and transplants them into the colon, must experience a certain and unavoidable anxiety—an anxiety that only further experience will overcome, that is born of the feeling that he has burned his ship behind him and has staked all his patient's chances, all his hopes, in the hazard of the game. It is the utter hopelessness of remedying the evil that must make any conscientious operator vacillate many times over before deciding to embark on so perilous an undertaking.

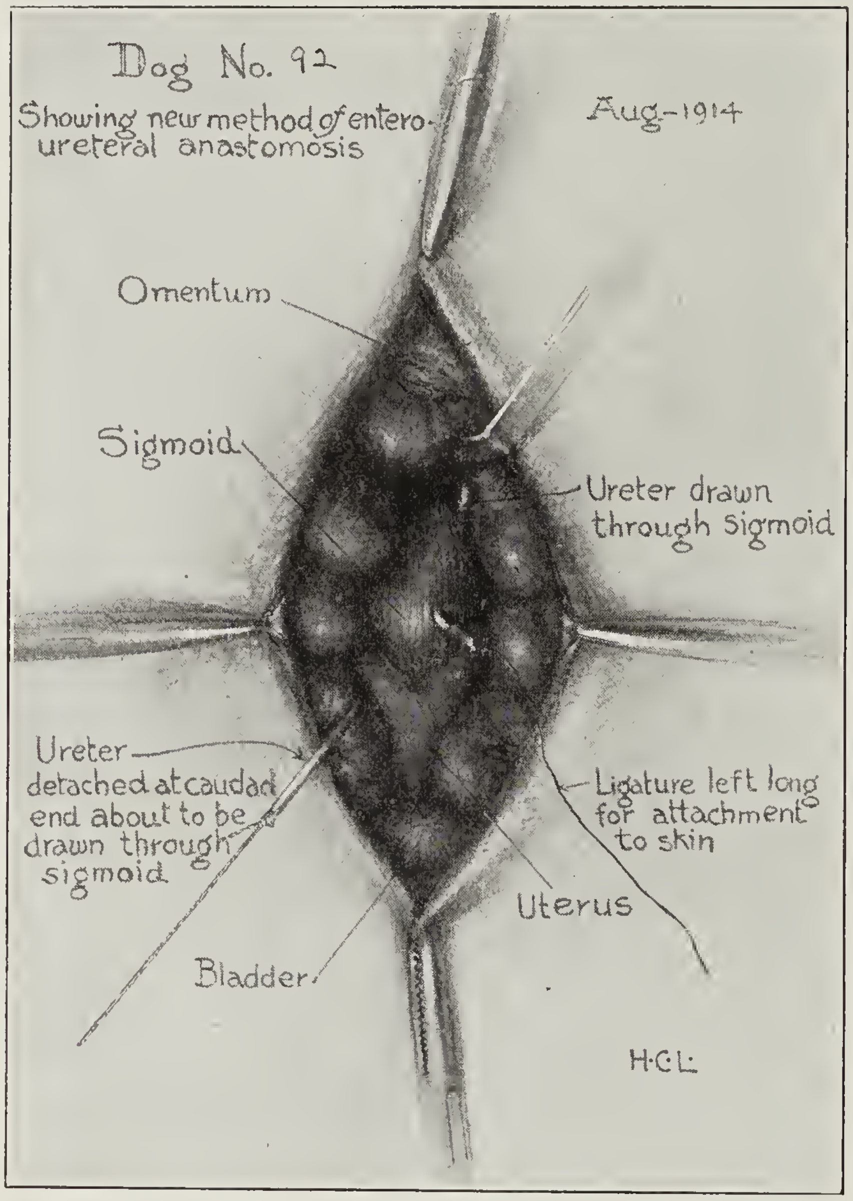
Dog No. 92
Showing new method of entero-ureteral anastomosis
Aug-1914
Omentum
Sigmoid
Ureter drawn through Sigmoid
Ureter detached at caudad end about to be drawn through sigmoid
Ligature left long for attachment to skin
Uterus
Bladder
H.G.L.

Fig. 1.—New method of entero-ureteral anastomosis.

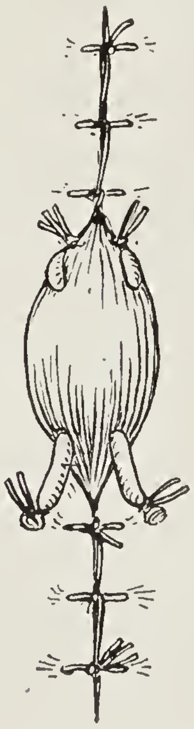

Fig. 2.—Ventral view.

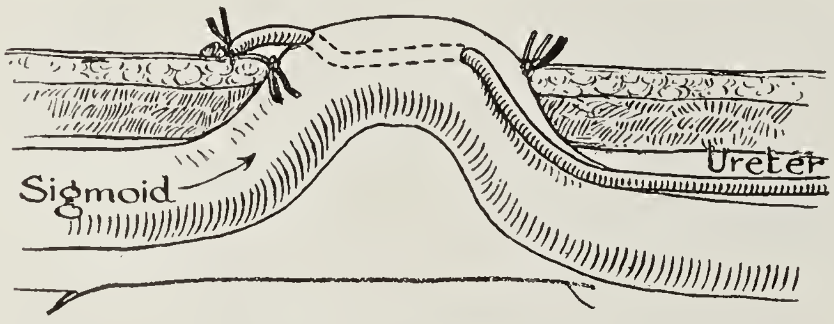

Fig. 3.—Lateral view, semidiagrammatic.

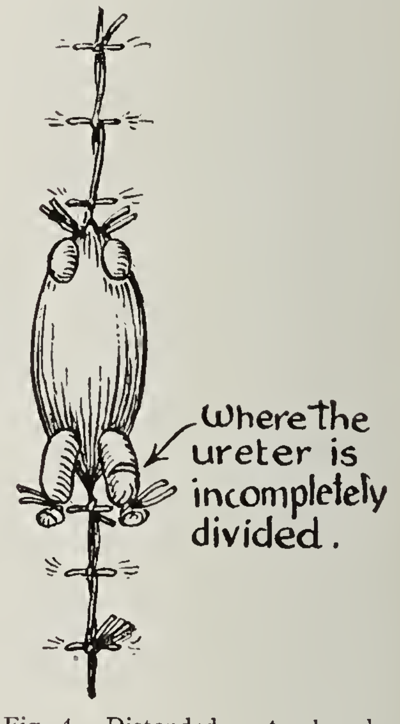

Fig. 4.—Distended ureteral ends.

A number of salient physiologic facts were brought out by our laboratory studies during the past two years. It was determined by Draper and Braasch[13] at the Mayo Clinic in 1911 that the ureterovesical valves may be destroyed in the presence of purulent cystitis without probable kidney infection. It was evidently probable from the studies[14] presented at Atlantic City in June, 1914, that of the two factors, namely, the ureteral peristalsis and the mechanism of the ureterovesical valve, the peristaltic factor is often the vitally important one in the determination of a possible renal infection. Furthermore, it was shown that when this ureteral function was seriously impaired, amounting virtually to a ureteral paralysis, and the ureterovesical valve function was left intact, hydronephrosis followed in 75 per cent. of cases.[15] The latter experiments have been repeated during the past fall with the following results:

In Dogs 16 and 17, the infected vesical body had become a ureteral calculus. The expected results followed in a more accentuated form, but because of this new variant, these experiments have been omitted from consideration.

Dogs 6 and 22 are negative.

Of the remaining, 50 per cent. are hydronephrotic and 83⅓ per cent. are hydronephrotic or have dilated ureters. These results may be seen to compare favorably with those already referred to.

Hence, it appeared that an operation to have substantial functional value must, above all, involve the least possible traumatization of the ureter. Furthermore, it must be granted that some degree of traumatization is inevitable and that its peristaltic efficiency is proportionately impaired. Therefore the caudad resistance must be proportionately decreased if the ureter is expected to empty itself. For this reason, not only the resistance of a normal valve appeared too great, but also all resistance arising from artificially created plastics appeared too great. The problem then remains: How anastomose the ureters with the lower bowel with the least interference with their peristaltic function and with the establishment of caudad resistance physiologic for them in their necessarily impaired states? [16]

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[12] Mayo, C.: Exclusion of Bladder, an Operation of Necessity, Collected Papers of St. Mary's Hospital, 1913.

[13] Draper, J. W., and Braasch, W. F.: The Function of the Ureterovesical Valve, The Journal A. M. A., Jan. 4, 1913, p. 20.

[14] Barber, W. H., and Draper, J. W.: Renal Infection: A Further Experimental Study of Its Relation to Impaired Ureteric Function, The Journal A. M. A., Jan. 16, 1915, p. 205.

[15] Stewart and Barber: Hydronephrosis: An Experimental Study, Ann. Surg., December, 1914.

TABLE 1.—REPORT ON SECOND SERIES OF URETERAL TRAUMATIZATION, DEC. 7, 1914

Dog No.	Days of Life	Pathologic Condition of Urinary Tract
23	50	Dilatation of cephalad ureter cystitits
6	23	Purulent cystitis
16	12	(Abdominal organs negative.) Left hydronephrosis; hydro-ureter; pyelonephritis. Right pyelonephritis. Sup. cystitis; acute vesical retention; urethral calculus.
14	15	Left hydronephrosis; cystitis
17	15	Cong. kidneys. Left hydro-ureter; cystitis; urethral calculus
13	15	Cong. kidneys; cystitis. Dil. of cephalad ureter
15	14	Left hydronephrosis; cystitis
24	9	Left hydro-ureter; hydronephrosis; cystitis
80	21*	Left hydronephrosis; cystitis
82	11	Left pyonephrosis; hydro-ureter; cystitis
5	50*	Left dil. of cephalad ureter; cystitis
22	10*	Negative
83	20*	Left hydro-ureter
81	16	Left hydronephrosis; hydro-ureter; cystitis

* Etherized.

The following operation represents an attempt to correlate the experience of others with the recently obtained physiologic knowledge of the ureter:

A mesoventrad incision is made in the lower abdomen. The bladder is drawn toward the wound. One or both ureters may be created as follows: identify, doubly ligate, and cut between ligatures; attach a large, straight cutting needle to the cephalad end by its ligature, and penetrate the sigmoidal wall in the plane of the mesenteric reflection. Drive the needle with the aftercoming ureter obliquely for from 1.5 to 2 cm. through the wall, with the colon held on the stretch. At a point approximately 1 cm. obliquely distant from the point at which the needle enters the lumen of the sigmoid, penetrate the colon perpendicularly, drawing the ureter out on the skin. Suture the ureter to the skin by its ligature and close the wound about that part of the sigmoid traversed by the ureter. It is of advantage to strip the ureter in its caudad one fourth and to free the distal two fourths digitally to avoid angulations, torsion or harmful tension. It is important to see the ureteral ends distended before the closure of the abdominal wound in order to make certain that the urine flow is not obstructed. It is convenient to divide the ends incompletely to free the urine after completion of the operation, although this may be delayed six hours apparently without resultant ureteral or renal injury.

The technical results of this procedure may best be appreciated by a review of the experimental series tabulated herewith.

The following points with reference to Tables 1 and 2 are noteworthy:

1. The results of the preceding operations are operative only, for none of the animals received postoperative surgical attention.

2. Plus physiologic caudad ureteral resistance is manifested first by dilatation of the cephalad end of the ureter.

3. Continued incomplete ureteral obstruction leads to a dilatation of the second and third portions of the ureter and a dilatation of the renal pelvis.

4. Direct ureterosigmoidal entrance is more obstructive than the oblique entrance and the more oblique (from 1 to 2 cm.) the less that obstruction.

CONCLUSIONS

1. Ureterosigmoidal plastics are tedious for the operator and unsafe for the patient.

2. Operations in which the caudad ends of the ureters are allowed to protrude freely or fixedly within the sigmoid are meritorious in so far as the intramural portions of the ureters are unobstructed. Time spent in elaborating the terminal relations of the ureters is therefore valueless.

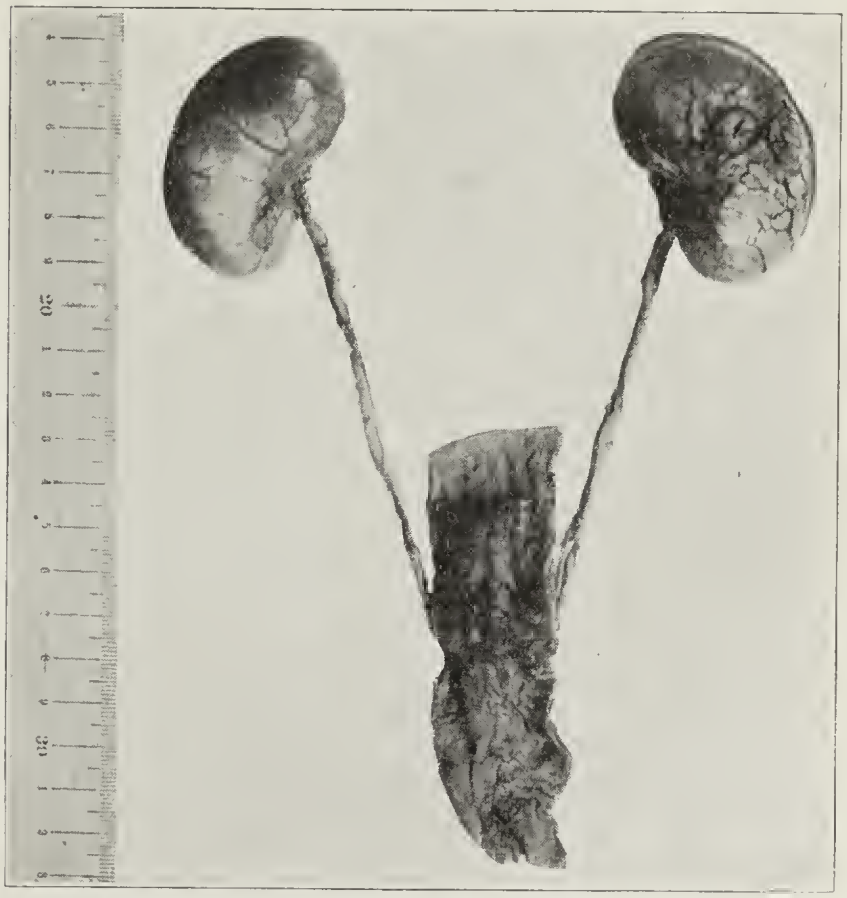

Fig. 5 (Dog 199 B 2).—Left kidney with foci of infection and right kidney normal fourteen days after transplantation of left ureter perpendicularly and right ureter obliquely for 2 cm. into sigmoid. Note sacculation of sigmoid with caudad ends of ureter firmly embedded in its mesenteric wall.

3. Oblique entrance from 1.5 to 2 cm. and the least foreign substance including blood and injured tissues are conducive to the least reactive inflammatory occlusion of the intramural portions of the ureters. These are most conveniently accomplished by the needle and ligature.

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[16] Barber: Uretero-Enteric Anastomosis, Ann. Surg., March, 1915. In addition to the foregoing references, the following may be consulted:
Reynolds, Edward: A Case of Vesical Implantation of the Ureter by Dudley's Forceps Method After Failure of Several Plastics, Boston Med. and Surg. Jour., Jan. 24, 1901.
Cabot: Am. Jour. Med. Sc., 1892, ciii, 43.
Harrison: Lancet, London, 1897, p. 1091.
Matas: Treatment of Exstrophy of the Bladder by Making a Receptacle for the Urine out of the Lower Cecum, Utilizing the Appendix for the Urethra, Zentralbl. f. Chir., Aug. 13, 1910.
Thomson: Ztschr. f. Geburtsh. u. Gynäk., 1893, p. 173.
Bottomley, J. T.: Operative Treatment of Exstrophy of the Bladder by Transplantation of the Ureters on to the Skin of the Loin, The Journal A. M. A., July 13, 1907, p. 141.
Berg: Treatment of Exstrophy of the Bladder, Nord. Med. Ark., Surg. Sect., 1907, No. 1.

4. By leaving the ureterosigmoidal field exposed, an enteric diverticulum is formed for urinary storage, and the ureters remain accessible to investigation if desirable.

104 East Fortieth Street.

TABLE 2.—SUMMARY OF EXPERIMENTAL DATA INCIDENTAL TO A STUDY OF URETERO-ENTERIC ANASTOMOSIS

1. Unilateral Transplantation

Dog No.	Technic	Duration of Ex. in Days	Pathologic Condition	Conclusion
311	Maydl	4	Sloughing of transplant; peritonitis...	Technical failure
299	Maydl	3	Ureteral stenosis; soiling; peritonitis	Technical failure
19	Direct anastomosis to aboral end of cephalad third of colon; ureter traumatized	6*	Caudad stenosis; hydro-ureter; hydronephrosis; marked injection of colon	Plus caudad ureteral resistance; oral colon intolerant to urine
33	Oblique anastomosis for 0.5 cm. to caudad third of colon	7*	Omental adhesions; hydro-ureter; hydronephrosis	Plus extra-ureteral resistance
34	Direct anastomosis	26	Caudad stenosis; hydro-ureter; hydronephrosis	Plus caudad resistance
45	Oblique; 0.5 cm. to caudad colon; least traumatization of ureter	26*	Caudad stenosis; hydro-ureter; hydronephrosis	Plus caudad resistance
46	Direct; ureter traumatized........	5	Necrosis of ureter from overtension; hydro-ureter; hydronephrosis	Plus caudad resistance
47	Oblique; least traumatization of ureter	5*	Caudad stenosis; hydro-ureter; hydronephrosis	Plus caudad resistance
50	Oblique; 0.5 cm.; least traumatization; digital freeing of ureter	17	Caudad stenosis; hydro-ureter; pyonephrosis	Plus caudad resistance
51	Direct; traumatization	32	Caudad stenosis; hydro-ureter; hydronephrosis	Plus caudad resistance

2. Bilateral Transplantation

Dog No.	Technic	Duration of Ex. in Days	Pathologic Condition	Conclusion
92	Direct; least traumatization.......	3	Leakage from right; caudad stenosis in left	Right) compression and sloughing. (Left) plus caudad resistance
109	U-catheter used	4	Perforation by catheter; peritonitis..	Stiff catheter dangerous
136	Oblique; least traumatization......	?	(Records incomplete)..............	
137	Catheters used; oblique...........	?	Sloughing of ureter; peritonitis......	Overtension of ureter
130	Oblique; traumatization	7	Left dilated ureter; kidney congested. Right plus dilated ureter; edematous kidney	Caudad resistance less, but still plus physiologic
147	Oblique; 1 cm.....................	9	Pneumonia. Left ureter distended. Right ureter dilated slightly caudad	Anastomosis well balanced
178	Oblique; 1.5 cm.; digital freeing...	5	Ureters dilated cephalad; pelves dilated; kidneys edematous	Resistance too great for impaired ureters
186	Oblique; 1.5 cm..................	7	Left ureter dilated plus cephalad; pyonephrosis. Right ureter dilated slightly cephalad; kidney normal	1.5 cm. adequate resistance
187	Oblique; 1.5 cm..................	9	Left ureter dilated cephalad; pelvis dilated slightly. Right ureter dilated caudad	1.5 cm. adequate resistance on left side; ? on right side
188	Oblique; 1.5 cm..................	10	Ureters left intact on skin; therefore:	Resistance plus
199	Right oblique; 2 cm.; freeing of caudad third. Left direct	17	Right normal ureter and kidney. Left pyonephrosis	Right; resistance adequate Left; resistance plus

* Etherized.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BRAASCH AND MOORE, LOUX, BARBER AND CABOT

Dr. Robert C. Coffey, Portland, Ore.: In a paper published in the December, 1909, *Annals of Surgery*, p. 1238, we showed by experiments on six dogs that when the bile duct was reimplanted into the duodenum by direct implantation it was invariably found dilated when seen at a later operation. In one instance it was as large as the intestine. In six dogs in which the duct was made to run directly under the mucous membrane for some distance before emerging into the lumen of the intestine, no dilation of the duct took place. The only rational conclusion is that a valve is necessary to protect the duct from intra-intestinal pressure. We reported this at the meeting of the Southern Surgical Association at Hot Springs, Va., five years ago, and at that time suggested that it was probable the ureter could be implanted in the same way with the same results. We tried direct implantation of the ureter experimentally and found that in every instance ascending infection and destruction of the kidney took place. We used the indirect or submucous implantation and found that in not one did dilatation take place. Of nine dogs, three died of peritonitis due to faulty technic. None of the six surviving had ascending infection of the kidneys five months later. I exhibited the kidneys at St. Louis in 1910, showing these results. The technic of the operation with illustrated results were published in The Journal, Feb. 11, 1911. As will be seen by these illustrations, a probe could be passed into the duct running under the mucosa demonstrating the valve. No one had previously succeeded in implanting the ureter into the intestine of a dog in such a way as to prevent ascending infection.

Dr. Charles Mayo was the first to apply this technic in the human. He has had six patients in whom he has implanted twelve ureters into the intestine. He does the operation in three stages; first, one ureter, later the other ureter, and finally removes the bladder. He has had no deaths and no ascending infection. The patients are in good condition. All have been for exstrophy of the bladder. I have had two cases with implantation of three ureters. One was made necessary by the removal of 4 inches of the left ureter during an operation for uterine cancer. The patient died of recurrence nine months later. I did not get the kidney but was informed that it functionated to the last without evidence of trouble. This was a trying case, as the ureter was dilated when the operation was done. My other case was one of exstrophy in a 2-year-old child. One ureter was implanted into the sigmoid Jan. 3, 1914; the other three months later. The child is now in perfect health, eighteen months after operation. Thus with Dr. Mayo's twelve and my three implantations we have fifteen ureterosigmoid implantations without death or ascending infection, as far as can be determined.

Dr. Bransford Lewis, St. Louis: I want to congratulate Dr. Braasch on the number of cases in which he has removed a stone from the ureter by cystoscopic methods—sixty-four cases. That is a good many more than I have done, but I am working up to that number gradually. For a number of years I have been advocating such a procedure before subjecting a patient to laparotomy. Some of you may be interested in the developments that have been made on that subject, and the several instruments that have been submitted by various authors to accomplish such a result. I am yet to be convinced that it has any legitimate danger. One contributor at the Pan-American Congress last week mentioned that he had, previous to operating, run in a stiff instrument of some sort and he had penetrated the ureter, and in operating he had been surprised to find out that it was outside of the ureter instead of inside. I do not think that comes within the scope of what might be expected. One should use instruments which are not of sufficient strength or stiffness to do that kind of damage.

Wappler of New York has lately constructed for me a ureteral dilator that has enabled me to go up into the ureter four or five inches, and by a special method I am permitted to dilate the narrowed part of the ureter. This is modelled like a Kollman urethral dilator, using two prongs instead of four, with a blunt end that is brought into contact with the stone, and then gradually, under the control of the operator on the outside, by means of the handle, the dilator is forcibly distended. In certain cases I have been able to get the stone down with this dilator when I had been unable to do so by other instruments and technic. This I consider an advance. Undoubtedly there have been several hundred cases that have been successfully reached in this way, which is sufficient evidence that these methods should be applied or resorted to before a kidney operation is had.

Dr. Frank Hinman, San Francisco: It seems to me that the significant feature in the analyses of these cases by Drs. Braasch and Cabot is the finding by one of 17 per cent. absence of blood and pus, and by the other of about 20 per cent. It is usual to consider absence of blood and pus after careful microscopic examination as strong presumptive evidence of the absence of stone. Both of these men also report a high percentage of failures of the Roentgen ray, considered by Dr. Cabot as being as high as 20 per cent. The symptoms, as shown by these analyses cannot be relied on for diagnosis. Therefore, we must have other means of diagnosis of stone in the ureter. The absence of blood and pus cannot be given much significance if absent in over 20 per cent. of cases, and the failure of the Roentgen ray in over 20 per cent. of cases means that a negative Roentgen ray does not eliminate the possibility of stone. The use of the wax-tipped catheter has not been mentioned, but it is the most accurate means of diagnosis at our command and should be used in every doubtful case. I wish to report a practical and simple method of application of the wax-tipped catheter in the male. A soft rubber urethral catheter, (No. 9 or 10 F.) which passes loosely through the operating telescope of the cystoscope, is cut off and slit up at one end so that when these ends are turned back over the telescope entrance they will hold the sheath in position with its distal end just beyond the lever of the instrument. The wax-tipped catheter may be passed through this rubber sheath without any danger of scratches from the lever or beak of the instrument, and this has the added advantage that several waxed tips may be passed at the one time and all withdrawn for examination without previously withdrawing the cystoscope. Functional study and pyelography may also be done at the one cystoscopy.

Dr. John W. Draper, New York: I am interested very much in the subject from the standpoint of experimental surgical physiology. I had the privilege of working with Dr. Braasch on the matter of this valve. The work was started by Dr. Lewis originally. I do feel that we showed conclusively by our experiments that the valve was of very little value. Its protective power against renal infection is perhaps about 10 per cent.; that of the physiologic integrity of the ureter itself, 90 per cent. I am therefore very much interested in listening to the discussion of the members of the section on this subject. Dr. Coffey's work is certainly a very important one and I congratulate him on its success. I feel that whatever the outcome of these studies may ultimately be, a great deal of credit is due to Dr. Coffey for the experimental work that he has done. Equal credit is also due for the more extensive experimental work that Dr. Barber has done.

I think, Mr. Chairman, a very important part of Dr. Barber's paper which may not have been made clear is the relationship which he draws between the neuromuscular tubes of the genito-urinary system and of the alimentary canal, in reference to dilation. Those matters in the future should receive more attention than they have in the past, and dilatations of the hollow viscera can be understood only through the interpretation given by comparative mammalian experimental studies. The close relationship between, a dilated stomach and a dilated kidney will thus become clear.

Dr. Granville MacGowan, Los Angeles: Dr. Cabot, what do you mean exactly when you say that your patients are not well after the operations?

Dr. Cabot: I mean they are not cured of their difficulties. A majority of the patients who were reported as well now have stone in the kidney.

Dr. MacGowan: Did you originally take all of the stones out of the kidney or have new stones formed?

Dr. Cabot: I have no data on that.

Dr. Martin Krotoszyner, San Francisco: In connection with Dr. Cabot's statement that in 14 per cent. of his cases of nephrolithiasis no blood or pus could be found on repeated and persistent urinalysis, I would like to ask if the search was made immediately or shortly after an attack of kidney colic? I have always looked on the findings of microscopic blood after an attack of renal colic as an important and, occasionally, the only guide to a correct diagnosis.

Dr. Hugh Cabot, Boston: Dr. Barber's work seems to me an important piece of experimental work on the question of the formation of a valve, and yet I do not believe that the creation of a valve will prove to be a matter of any importance.

I am thoroughly familiar with Dr. Coffey's work, which was based on a most ingenious conception, skilfully worked out. He has just commented on the fact that the common duct, and I believe also the ureter, was found dilated above the implantation when done by former methods, and he therefore concludes that this is satisfactory evidence of undue resistance at the intestinal end. With this conclusion I am unable to agree. We have, during the last four years, had a good many cases in which implantation of ureters was necessary and the most striking single fact has been the regularity with which dilatation of the ureter has occurred, even in the entire absence of stricture at the lower end. Dr. Barber's paper suggests to me that this dilatation is due not to obstruction, but to injury to the nerve supply of the ureter. We are dealing here with an active muscular organ and not a simple conducting tube. Its nerve supply is unquestionably segmental, and injury to this nerve supply is likely to be followed by paralytic dilatation. This paralytic dilatation will readily become an objectionable source of obstruction. That obstruction in some form is a factor of importance in causing renal infection may readily be admitted without assuming that it is the only or the most important factor. It is my present opinion that the infection takes place generally from the cut end of the ureter and by lymphatic channels, and that this source of infection, which was pointed out by Stewart and Swett, has been too little taken into consideration. I am interested in Dr. Coffey's conclusion based on his communication from C. H. Mayo to the effect that infection of the kidneys has not taken place in the cases in which his method was applied. In consideration of the great difficulty of drawing conclusions as to the integrity of the kidney in cases in which the urine is secreted into the bowel, and the well-known fact that extensive kidney infection may occur and exist without producing symptoms, one may be pardoned for being unwilling to accept this evidence as conclusive. We know that important grades of pyelonephritis may show their presence only by a slight trace of albumin in the urine and a persistent bacilluria. We are not furnished with evidence sufficient to warrant the opinion that these kidneys have remained free from infection.

Dr. George Lee Eaton, San Francisco: Mention has been made of the transplantation of the ureter into the appendix. I would like to make a statement in regard to the transplantation of the right ureter into the appendix which was reported to the San Francisco Urological Society some four years ago. I performed the operation of transplanting the ureter into the appendix, as it was impossible to transplant into the bladder, which was injured during a former operation. Up to four months ago the patient has shown no ill effects due to ascending infection, and to prove the kidney is functionating, the least diuretic in the way of water causes an immediate purgation.

Dr. W. F. Braasch, Rochester, Minn.: Dr. Barber deserves a great deal of credit for the work he has done in demonstrating certain facts concerning the physiology of the ureter. The outcome of the operation for ureteral transplantation depends, largely, on whether or not the kidney becomes infected. Renal infection will usually be the direct result of obstruction in the urinary drainage. If drainage from the kidney is obstructed, infection will follow. The degree of natural resistance will also be a factor in overcoming a slight interference with drainage. I believe that the success of Dr. Coffey's operation is due to the fact that the urinary drainage has not been interfered with. In regard to Dr. Cabot's paper, it is unfortunate that he has confused the consideration of stone in the kidney with that of stone in the ureter, since they may have widely different symptoms and pathology.

In regard to the number of stones found on either side, I believe that in a large series of cases it will be found practically equal. As far as the proportion of occurrence in the male and female is concerned, it is undoubtedly true that urinary lithiasis occurs much more frequently in the male. The same is true with the various forms of renal infection. I am under the impression that the similar relative proportion in lithiasis and renal infection is corroboratory of the fact that a like etiologic factor exists in both conditions.

Dr. Hiram R. Loux, Philadelphia: I was much gratified to hear the report of Dr. Coffey. It has an important bearing on the momentous question pertaining to conservatism in surgery. I believe that frequently one may save a kidney, whereas it is possible to sacrifice it unnecessarily. After the discussion this afternoon, and the reports of these cases, and the methods of transplantation, I think the tendency of this meeting is toward transplantation. I believe, however, that as Dr. Braasch just stated, it is a question of resistance added to the question of infection of the ureter as to whether the recovery is complete or whether we have an early infection higher up.

Dr. W. Howard Barber, New York: This brief paper on anastomosis has simply been a surgical study of the transplanting of the ureter physiologically. We all enjoyed Dr. Coffey's excellent description of his operation. It is interesting that Dr. Coffey secured better results when he made his anastomosis somewhat oblique after the manner suggested by the common bile duct entrance.

Last summer Dr. Braasch, at Atlantic City, commented on the care with which the Coffey operation was done, and contended that in that way the neuromuscular control of the ureter had been preserved. The importance of the neuromuscular apparatus of the ureter was brought out then by us and finds present agreement in the remarks of Drs. Cabot and Draper.

Dr. A. J. Crowell, Charlotte, N. C.: What percentage of stone formations in your series have returned, and what percentage followed with infection which caused you to claim they are not well?

Dr. Cabot: Of this 49 per cent., how many of them had stones and how many of them had other things?

Dr. Crowell: Yes.

Dr. Cabot: I could not be particularly accurate on that, because the report had to be based on the finding of shadows. The plates showed shadows which we believed to be due to stone, but we do not know they were due to stone. These were cases recently collected for investigation and none of the patients has been operated on.

In reply to Dr. Krotoszyner I will say that many of them were not examined immediately after an attack, for the reason that patients will not have an attack when you want them to. They come to the hospital and you keep them there, put them under a variety of conditions of diet and exercise, and yet they will not have an attack. Send them home and they will at once have one, especially if they live at a great distance. We cannot examine them always in the immediate period of an attack.

In regard to Dr. Braasch's discussion, I am entirely willing to accept his criticism. This would have been a more valuable study had it been divided, but it was not possible to do so. A good many of them were cases of both stone in the kidney and the ureter.

I am not at all in accord with the view expressed by Dr. Braasch in regard to the greater frequency of infection in the male than in the female. I believe that precisely the opposite is true, that renal infection is much more common in the female, but of lesser degree and severity. In the female child the occurrence of pyelonephritis, as compared with the male child, is ten to one. Take the frequency of pyelonephritis in cases of first pregnancy, and the number is very large in my part of the country. We have a large number of cases in women, much larger than at the same age in men. Many of these cases are comparatively transitory, and many of the women have comparatively little trouble for many years. I am not at all prepared to believe that infection of the kidney is more common in the male. I do not believe that infection is an important cause of stone formation. I am inclined to regard renal obstruction of some type as a very important factor.

Improvers of the Race.—There has been an increasing interest in the question of the improvement of the race during recent years. Unfortunately, discussion of the matter has not remained in the hands of competent persons, but pretty much every one who has a babbling tongue or who can scribble, and who either feels it his mission to remake the world, or who has discovered how easy it is to become famous via the cheap magazines, has taken part. Psychology and psychiatry are subjects that have a curious attraction for the eccentric, the borderland insane, the half educated, and the emotional, and as many people of these types have a ready tongue and pen, a great deal of harmful as well as harmless silly stuff has been printed. We in this country suffer more than some other parts of the world from self-appointed improvers of the machinery of the universe, because every man's opinion is as good as another's in a democracy, and . . . because the political and scientific paranoiacs, who seize every opportunity to be in the front of every popular movement, and sometimes for a time succeed, always have a large following.—Charles W. Burr, M.D.

FRACTURES

NEW IDEAS AND NEW INSTRUMENTS*

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It is fortunate that a paper on new surgical treatment of fractures does not imply that all fractures shall be treated by open surgical methods. However, it does imply correctly that neither the closed nor open methods are as efficient as they should be. Within a short time the entire subject of closed treatment will have to be rewritten on a selection of entirely different basic mechanical principles.

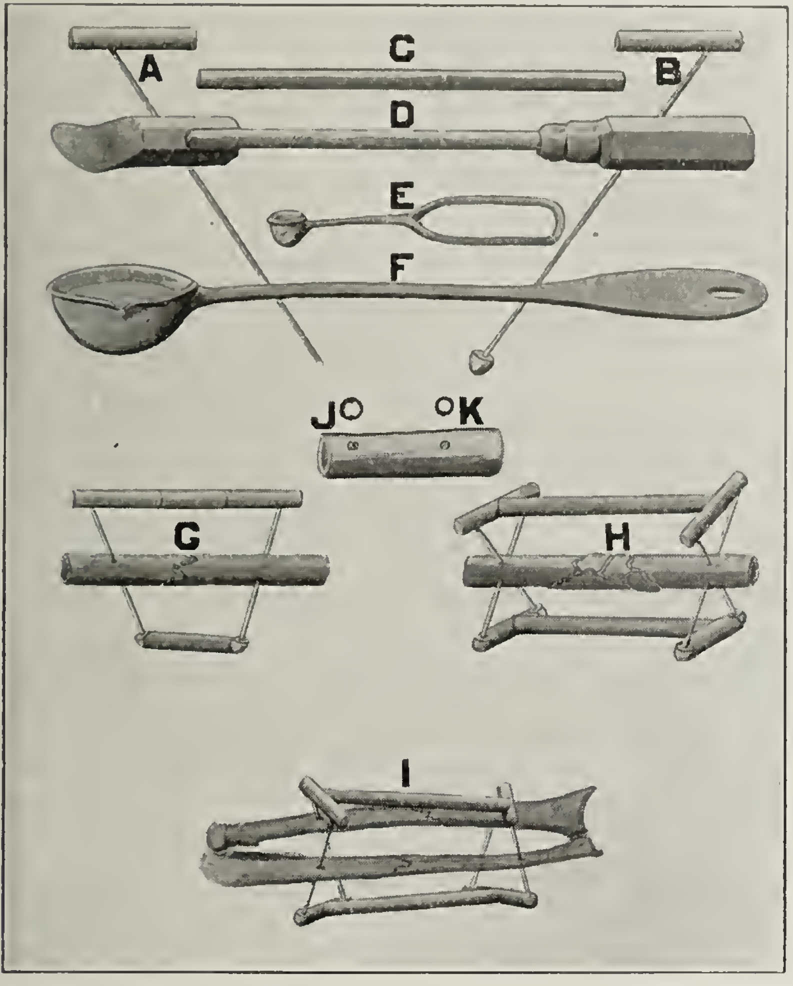

Fig. 1.—*A, B,* bone pins with low melting alloy handles (160 F.). The drill point on *B* has cast on it an alloy button used to couple it with another drill point. *C,* a bar of low melting alloy for joining drill handles in case they are not long enough to reach each other without such extensions. *E,* ladle for casting alloy buttons on points of drills. *F,* a large ladle for melting alloy over flame or in hot water. *J, K,* different shaped holes, *J* due to reciprocating movement of flat drill, *K* due to continuous rotation of any form of drill. *G,* diagrammatic scheme for holding fragments of broken bones in accurate reduction. The two pins do not lie in the same plane. Each represents a scheme for holding fractured ends by using constant normal distance rods. *I,* fracture of radius and ulna. Note the process of preserving normal length and proper separation of fragments. No rotation, angularity or overriding is permissible under this system.

The conventional methods still in practice, since the days of Columbus, when the world was flat, depend on most excellent mechanical principles. These principles, sound and unalterable as they are, happen to be absolutely inappropriate for the mission expected of them. Their absolute soundness does not guarantee their appropriateness any more than the unsoundness of ancient argument guaranteed for us a flat earth. Man alone is responsible for the misuse of judgment in selecting inappropriate ways and means.

In new open surgical treatment it is naturally consistent to find a composite mixture of modern sparkling ingenuity within the calcified shroud of St. Christopher. Surgical ingenuity is not efficient because of ingenuity alone. It must be coupled with additional qualities in order to be sufficient. A Lane plate for instance, involves a trace of ingenuity; but, in my opinion, to leave a foreign body permanently embedded in a wound borders on bad surgery, whether that permanent foreign body be a pair of forceps or a pair of spectacles or a bunch of screws, loose or penetrating the holes of a steel plate. To leave a foreign body permanently embedded in a wound is at least an unnecessary procedure.

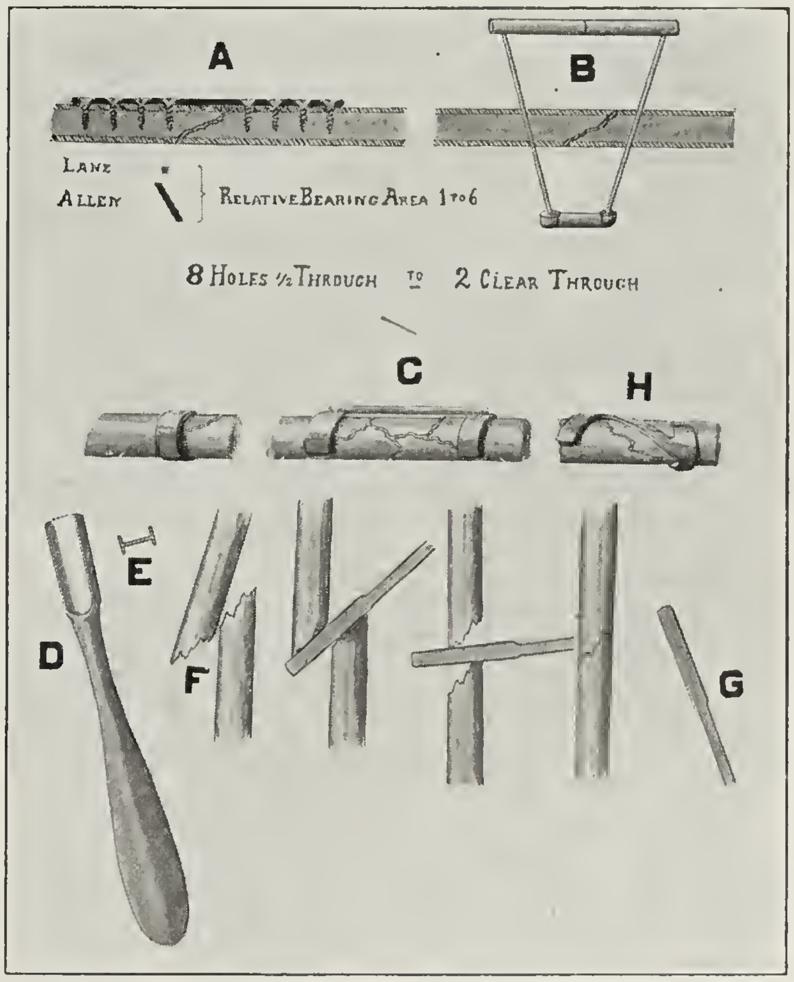
A
B
Lane
Allen
Relative Bearing Area 1 to 6
8 Holes ½ Through to 2 Clear Through
C
H
E
D
F
G

Fig. 2.—*A,* Lane plate with eight screws all parallel; only one-sixth of their entire length traverses hard bone. The portion within the canal of the bone is hopelessly without function. *B,* Allen system, providing long, hard, bony bearings and providing outside control over inside conditions. *C,* bone cleats welded cold on bone. *H,* metal welded on ordinary calling cards without burning the cards. *D,* Allen's bone-adjusting lever. *E,* cross-section showing the I-beam features which prevent bone fragments from slipning laterally. *F* to *G,* methods of using lever in overriding bone displacement.

Up to the present time we have seen outside and inside bone splints of various kinds. Those outside remain dry, those inside wet, of course. Now comes a new variety of amphibious appliances existing both inside and outside at the same time. There are several varieties. A few will illustrate the generic qualities of all. They are protruding nails elevating, depressing and anchoring cleats, protruding wire loops thrown around bone and secured to an outside straight edge, and, lastly, the bone gimlet with its low melting alloy handle. All of these devices are amphibious, that is, they extend from bone out through soft tissues into the open air. They are all silver or silver plated, with polished smooth sides. After union occurs, they have served their purpose and are removed without secondary surgical operation. They do not remain as permanent foreign bodies. To install them, the length of incision and the amount of dissection about the bone is greatly reduced. They do not come in contact with the fracture zone. They do not compress periosteum or bridge across fractured areas. They are applied remote from the fracture zone unless desired to traverse it. They are not inadjustable, but at all times provide excellent outside control over inside conditions, and up to the present time, no case of infection can be attributed to them, although in my hands and in the hands of others, they have passed through external pus areas without producing deep or internal infection.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

To say that children and patients of all ages do not suffer or complain while wearing these transfixing or protruding devices would at first suggest straining a point in veracity; but, on second thought, you may correctly compare these devices to deep sutures. If your patients do not complain of pain from their deep sutures, they will not complain from these protruding devices, because, at the time of their application, all soft tissue strain is relieved by overstretching or by insignificant incision. Furthermore, a suture has a compression and constriction element, which is here absent. From the foregoing suggestions and other good reasons and from my past and from your future experience, I have dared to make the statement that this method is comparatively free from pain.

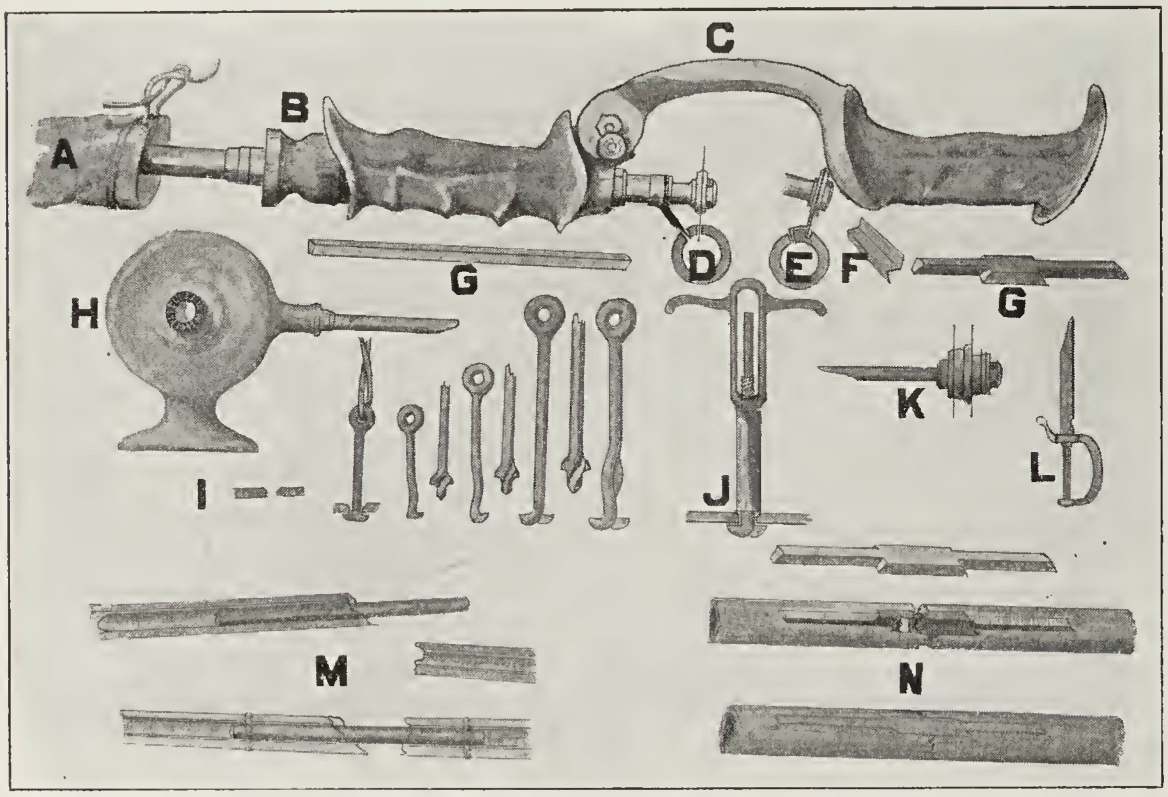

Fig. 3.—*A, B, C, D,* Allen's bone saw assembled in the process of cutting a wedge-shaped bone graft by one of its two methods. *A,* sterile sleeve to cover driving cable from motor to saw. This saw may be driven by any motor desired; hand-driven motors are by no means to be overlooked, as they will work regardless of electrical conditions. *B,* junction of driving cable from motor to this draw-knife or spoke shave type of saw. · *C,* movable or lockable left handle. *D,* wedge-shaped cutting device assembled. *E, F,* different devices for cutting wedges. *H,* dowel pin cutter. *I* to *J,* elevation and depression tools with their countersinking shouldered drills. *K,* adjustable double saw. *L,* routing tool attachable to saw. *M,* telescopic bone grafting scheme. *N,* double wedging automatic locking bone graft.

While waiting for the first case of infection, it may be well to recall that, of all safe drainage material, nothing surpasses silver, and of all known methods of drainage, none excels through-and-through drainage. The combination of through-and-through silver drainage may play a very important part in the absence of infection.

The use of protruding nails, cleats, etc., and wire loops secured to outside straight edges is self-evident after a moment's observation of the illustrations, Figures 4, 5 and 6. My practice with the wire loops is to use soft steel wire silver plated. The loop passing around the bone should never constrict the bone or the periosteum. It should have as near 180 degrees bearing on the bone as possible. As it enters the skin it approaches the bone at a tangent, passes 180 degrees around the bone, and then leaves as a tangent out through the soft tissues and skin to its outside straight edge attachment. In case more bearing is essential, at least 60 degrees of unrestricted circumference should be provided. In this event the wires must be twisted five times on each other to the right. Then in order to remove them, after bone union occurs, they are to be untwisted five times to the left, and the loop pulled out. (Fig. 5 *A, B, C, D, E, F*). In employing silver plated wire nails, one should be sure to use very long thin "finishing nails." The heads protrude far enough so that a good hold may be taken on them with extracting forceps, as they sometimes become tightly *embedded.* (Fig. 4 *B*).

The flat silver plated drills with their alloy handles may be used with or without an exploratory incision over the zone of fracture. Usually, I make the incision in order to secure an absolute and accurate reduction, and I should announce here that absolutely accurate maintenance of reduction is possible with this system of treatment. The bones are brought into absolute reduction, the bone adjusting lever being used if necessary. (Fig. 2 *D, E, F, G.*) The exploratory incision provides digital and ocular inspection. The bone pins are passed through the bone an inch or so on both sides of the fracture zone. While the reduction is held absolute and accurate, the low melting handles are brought into line, touched with the soldering iron and the ends are fused together. The operator releases his hold on the bones, and they remain locked in absolute reduction as if by magic. An alloy button is then cast on the end of each drill, and a segment of the alloy fused to each button, thus affording additional stability in locking the broken ends tight together. The exploratory wound is sutured, and a wet antiseptic dressing is applied over it and around the projection of each transfixing pin. It must be remembered that no two pins should lie in the same plane. It is difficult to put them parallel and in the same plane. Fortunately, the easy unparallel way is the correct way, and the more the drills depart from parallelism, the more secure this system becomes. If a carpenter desires to make a studding stand erect on a floor he does not drive all of his nails parallel or in parallel planes. He "staggers" or "toe nails" the nails into place, and the studding "stays put." A Lane plate and all similar devices depend on parallelism of screws. (Fig. 2 *A, B*). Furthermore, the screws have only from $\frac{1}{16}$ to $\frac{3}{16}$ inch bearing for their threads. The long end of the screw projects into the bone canal or fragile cancellous tissue, and is totally and absolutely devoid of function. The transfixing pins have bearings in both layers of hard bone, which are more remote from each other than the diameter of the bone. This is due to the fact that the drills pass obliquely through the bones.

Every man who has bored round holes in bones for wires or screws or nails knows from his roentgenograms and secondary operations that in about a fortnight these round holes have become oval or egg shaped. With a Lane plate there is no chance to take up the slack. With the transfixing pins one has absolute outside control over inside conditions and can take up as much slack or correct as much rotation as desired without a secondary surgical operation. One merely melts or cuts the handles apart on one side, separates or rotates them as one likes, and then fills in the gap between the handles with a drop or more of the low melting alloy. When the Roentgen ray shows bone union, one is at liberty to melt the alloy off of both ends of the drill rods, paint the rods with iodin, and allow them to dry thoroughly, when they will be easily pulled through the holes originally made. These holes, it must be remembered, form a free working hole through both hard and soft tissues. Gentle traction with the fingers is sufficient to extract them. The alloy melts at about 160 F., so that warm water will melt it; or if one is in a hurry, the knife-bladed soldering iron may be used. (Fig. 1 *D*.) Twist drills and continuous rotation with flat drills should not be used; they should be sent through the bones with a reciprocating movement passing through a working arc of about 165 degrees and not through as much as 180 degrees (Fig. 1 *J*, *K*). In this way two things happen: the nerves and blood vessels are pushed aside, and the hole through the bone is not a complete circle, but has a pair of internal opposed bone ridges which guarantee a tight fit against the drill shaft as shown in the illustration. A twist drill with its uninterrupted rotation not only drills a round hole, but also will wind up and extract loose soft tissues on itself.

Concerning bone grafts, I desire to present two methods. One is known as the telescopic bone graft and the other as double opposed wedge graft, which automatically locks itself and the fractured bones together (Fig. 3 *M*, *N*).

If a portion of a shaft of a long bone is absent, the gap may be bridged as follows: A deep canal or tunnel is drilled into the axis of the longer fragment, and a shorter canal into the shorter fragment; a long dowel pin is turned up to fit the bored canal, the dowel pin slipped down into the long canal, the two canals brought into line and the dowel pin worked toward and well into the short canal (Fig. 3 *M*). The short end is pinned with a transverse bone pin, and then when the broken bone is pulled to its normal length, the long telescoped end is secured with another transverse bone pin as shown in Figure 3 *M*. If desired, the dowel pin need not be circular, but may have a flat side with periosteum still intact. The ends of the periosteum may be stripped up and put in contact with the periosteum at each end of the fracture.

Another interesting bone graft is the double opposed wedge graft. It involves the use of a wedge-cutting saw, like the one presented, which has two different ways of cutting wedges, as shown in Figure 3 *A*, *B*, *C*, *D*, *E*, *F*, *G*. The male wedge and the female, or the positive and negative wedges, must be accurately cut. The ends of the wedges are cut with opposing wedges or bevels. The broken bone is pulled far enough apart to let the wedge drop into place (Fig. 3 *N*). The traction is then released, the soft parts drag the bone fragments tight into place, and by the double opposed keystone or opposed wedges the bones are locked in place, requiring no bone pins to hold them together. Before attempting this operation, one must become adept in accurate bone cutting. In this form of graft the periosteum may be left intact throughout the entire length and breadth of the graft.

The last method of bone cleating may have some novel features of unusual interest. It consists of a process of welding any desired metal on a bone in the form of a cleat or key or wedge or "C" clamp or any pattern desired. The metal to be used is atomized and the minute particles of metal are impelled against the recipient area until they are welded cold on each other to any desired thickness. The specimens presented to you show the bone is not burned. The periosteum of one bone is still intact, although it is scraped away from the other bone. The pasteboard calling card has metal welded on it, although the card is not burned (Fig. 2 *H*). Around one of the bones a German silver band is welded; about the other is a band first of steel, then copper and then brass; then on this practically any other metal may be welded on cold. Interesting as this may be, I cannot recommend its use, because any foreign body permanently left in a wound is, I believe, not only unnecessary but borders very closely on bad surgery.

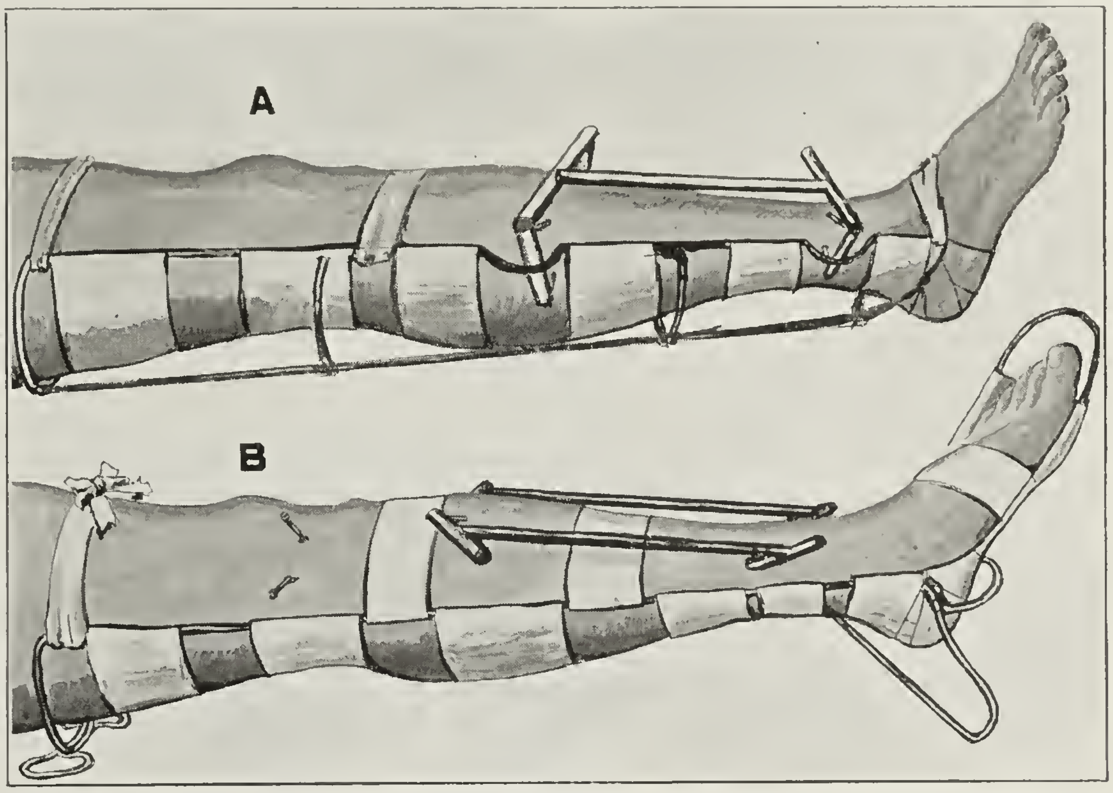

Fig. 4.—*A*, wire and adhesive plaster brace used in connection with bone pins and constant distance rods in treating a shattered tibia and fibula. *B*, use of protruding nails in securing broken off portion of the tibial head; also constant distance rods and bone pins with low melting alloy handles. Note that the wire brace among other duties keeps the bed clothes from resting on the foot and also prevents the leg from rolling.

Concerning the splints used in connection with all of these new methods, I cannot refrain from making an appealing request. Please use wire and adhesive plaster braces or splints. They are simple, light, strong, sanitary, cheap, durable, adjustable and betray the first requisite of new fracture work. If a man is not mechanic enough to make these little things, he is unfit to attempt accurate fracture work. When you go home buy some tinned steel wire and practice making them. They do not hide the work you should be proud of, but leave it always open for free examination and inspection. You can treat other conditions aside from fractures with wire and adhesive plaster appliances. They are appropriate to many deformities and make excellent framework over which gauze may be stretched in employing open air treatment. The gauze is kept from the wound or lesion and the gauze is a filter against dust. When you learn to use them, no one can lead you back to plaster of Paris. In the new treatment of fractures I most certainly include these new wire braces among the new ideas and new instruments.

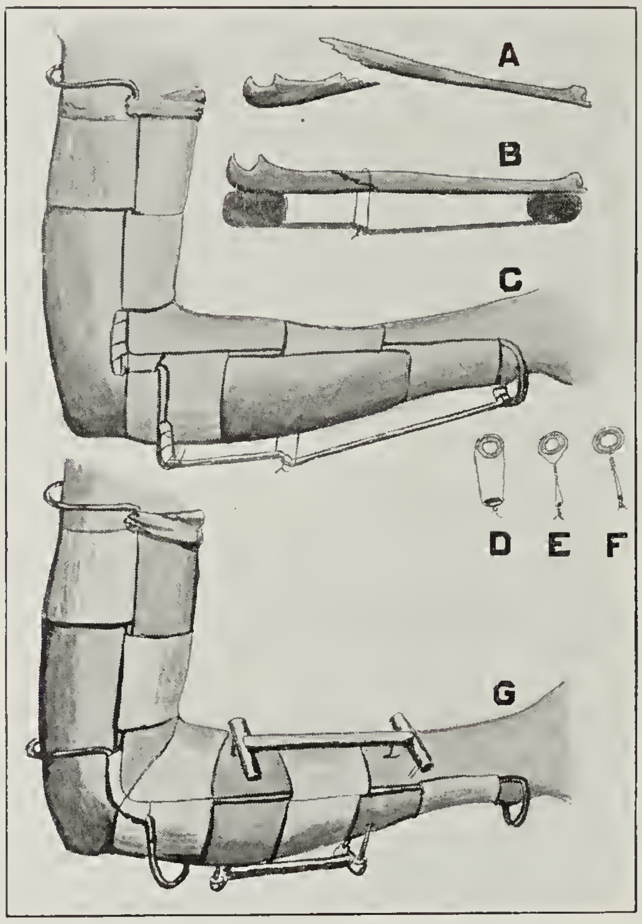

Fig. 5.—*C*, wire and adhesive plaster braces used in connection with the wire loop method of treating fractures. *A*, *B*, conditions of fracture and the three lever points essential to fixation. *G*, wire brace and bone pins employed in fracture of both radius and ulna.

ABSTRACT OF DISCUSSION

Dr. P. C. H. Pahl, Los Angeles: I read an article by Steinman in which he said he produced traction on the tibia, fibula and I think also the femur by means of nails passed through the bones. It has occurred to me many times that there were cases of fracture of both tibia and fibula and of the femur in which it was very difficult to produce traction by the means of adhesive plaster. Sometimes the adhesive plaster irritates, and sometimes the tissues are lacerated. When there are many fragments, bone grafts and Lane plates are out of the question; traction then is the only thing, and in order to gain this I have made what I have called a spine tractor—two thorns that go into the bone through little incisions, and then traction is applied. I have done this in twenty-one cases. I am very sorry to say that two of the patients subsequently died, although I did not personally have absolute control over them. It is possible to produce traction, and I have produced as much as 65 pounds in the beginning and gradually reduced this to twenty-five pounds, the treatment lasting for two months and a half. I did this in a Mexican who had a fractured femur, in the upper end, in which there were five fragments. Personally, I have not had the experience which warrants cutting down to the bone on a man who has five fragments in his femur. In this case I put the spines into the condyle of the femur, making the traction vertical, with the leg flexed. I have never been able to make traction vertical with the knee extended, but with the knee bent, it is possible to do so. The first traction was so much that the patient was lifted up in bed, and, of course, there was much lack of apposition, but finally the fragments came into proper position, and the man got a functional leg. What Dr. Allen says about positive fixation has also occurred to me. I have an instrument which I call a "multiple spine splint." I made one for the tibia. I place two spines on the lower end and two on the upper end of the fibula and tibia. I make, if necessary, a small incision over the fracture, reduce the fracture, and then tighten these four spines, or two sets of spines, which really make a bone vise. These cases were all satisfactory. I must say, however, that prejudice against them is very great, and in a municipal hospital where there are many men, it is almost impossible to use them.

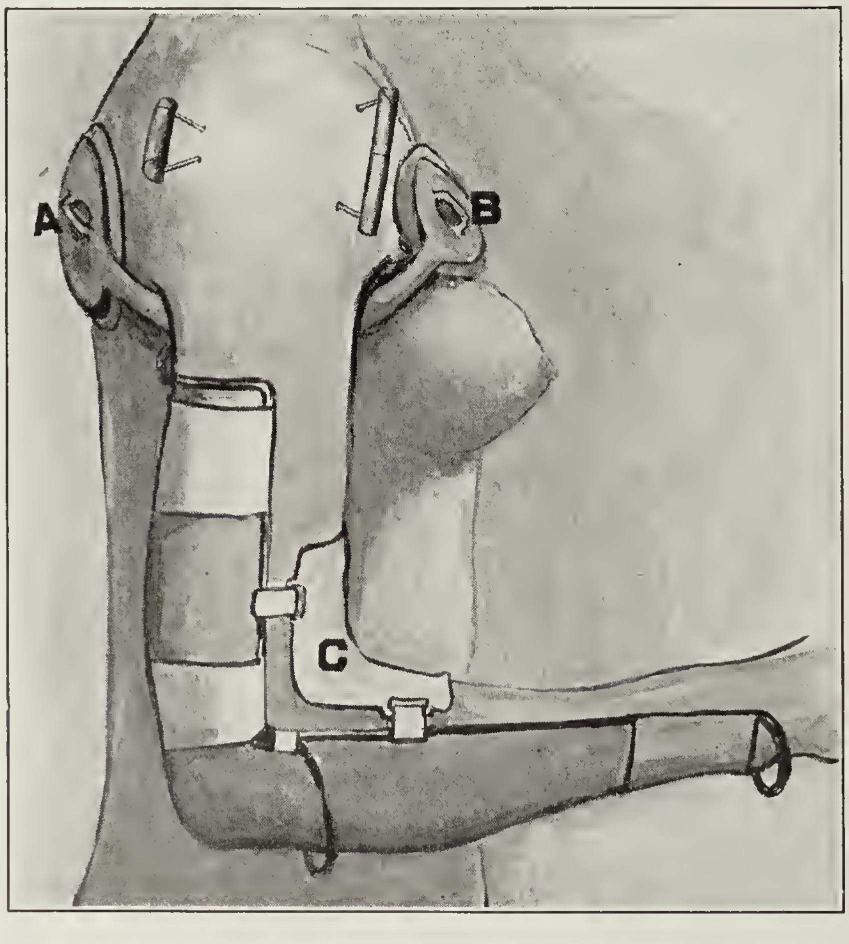

Fig. 6.—Brace and bone pins for fracture of head of the humerus. The pins prevent rotation of the fractured head on shaft. Absolute and accurate maintenance of reduction is possible by this method. The crutch under the arm and the anterior elbow plate provide fixed points for the application of fixation forces. In case the axilla is burned or from other causes cannot be used for superior fixation point, adhesive bandages upon the back, abdomen and side attached to loops *A* and *B* constitute a stable superior fixation base which may be depended on.

Dr. H. M. Sherman, San Francisco: I was much impressed with one statement which Dr. Allen made, and that was the fact that he never got infection. Now a long time ago I began to nail the neck of the femur in fractures of that part of the skeleton, and it always became infected if the nail head was on the surface. Longer ago than that, Parkhill devised this scheme of fastening bones, but all the openings which passed through the skin became infected. The Lambotte scheme, and all the variations and modifications of that, where a drill point or a nail goes through the skin and then into the deeper tissues and remains there, always call for infection. We are now making what we call skeleton traction by a pin through the femur, instead of a Buck's apparatus, and it is a method by which we always get local infection. Dr. Allen says he puts those bits of wire pegs through an infected area into the deeper parts, and never gets an infection. I want him to tell us how he avoids infection, because if he will tell us that, he will put into our hands not only his own apparatus, ingenious as it may be, but he will give us the most important piece of information in his possession—one for which surgery is anxiously waiting—and we will all begin to look around for mechanical ideas and will be able to take care of fractures as easily as he.

Dr. Allen cites the fact, which is perfectly well known, that a screw in a bone bearing weight always causes a necrosis of the part of the bone against which it is pressing so that the holes become oval; and they become even more than that; they become quite large places. I put two screws in a dog's bone, setting them in the bone very firmly, about an inch apart, and then put a little elastic band around them and sutured the wound. The wound healed and in about a month I opened it and found that both of those screws had been pulled out of the bone by that little elastic. The pull of a little piece of india rubber was sufficient to make a round hole oval, and then to pull the screw out of this oval hole. Does not Dr. Allen get the same kind of pressure, absolutely, with the wire pegs which he puts through the bones, so that we can expect the same results under these circumstances? These are things I should very much like to have Dr. Allen explain to us.

Dr. H. R. Allen, Indianapolis: Dr. Pahl suggests the inadvisability of cutting down on a femur fractured in five places. Such a case should be treated by the application of fixation forces for fixation purposes. If any fragment remained uncontrollable under the closed method it could be cut down on and treated by the open application of fixation forces for fixation purposes. We must not delude ourselves by thinking that the irregular muscle force is in any sense a balance or counterpart of a constant force. The application of a constant force through a weight and pulley implies motion of parts desired to be kept quiet and fixed. The application for fixation forces implied absence of motion and the presence of fixation. To oppose the constant force of gravity by the irregular force of muscle necessarily leaves a plus or minus balance of force resulting in motion. Fixation forces are not concerned with motion. Dr. Sherman presents two good points: one refers to the application of a rubber band and the other to the possibilities of infection. A rubber band, of course, while inactive is inert, but during activity it represents a constant force and must be dealt with according to its own generic qualities of constancy. Concerning infection, or rather the absence of it, I am inclined to believe that my good fortune in this regard has been influenced possibly by the technic employed. The operation field should be scrubbed with soap and water, rinsed with mercuric chlorid solution, then washed with alcohol and painted with iodin, which is removed with ether. Every instrument, in fact everything, is wet with mercury solution while it is near or in contact with the wound. Each wound is thoroughly irrigated with mercuric chlorid solution, and after suturing with mercuric chlorid soaked silk a wet mercuric chlorid dressing is applied and maintained as a permanent dressing. I believe in the use of mercuric chlorid. I also believe in through and through silver drainage.

What Is Good Literature?—Unless an author takes the material on which he writes out of his own head, that is to say, from his own observation, he is not worth reading.—Schopenhauer.

I. A NEW METHOD OF PASSING THE WAX TIP

II. MODIFICATION OF THE TECHNIC OF PASSING THE WAX TIP *

BEN R. KIRKENDALL, M.D.

COLUMBUS, OHIO

I. A NEW METHOD OF PASSING THE WAX TIP

In 1894, Howard A. Kelly introduced the wax tip catheter method of diagnosis of ureteral calculi in the female through the open cystoscope. Since then many other observers have attested its value:

First, the wax tip will diagnose ureteral calculi unaided. Second, in conjunction with roentgenoscopy, it will rule out or make positive a shadow in the line of the ureter.

Third, it will diagnose ureteral calculi which have been entirely missed by the Roentgen rays.

Fourth, the gynecologists for several years have been able to locate the site of ureteral calculi by passing a ureteral catheter, with a series of wax bulbs, through the open cystoscope.

Three years ago, Burton Harris devised a method for the use of the wax tip with the male catheterizing cystoscope by passing the wax tip into a filled bladder and threading the cystoscope containing its catheterizing barrel onto the catheter, through the urethra into the bladder.

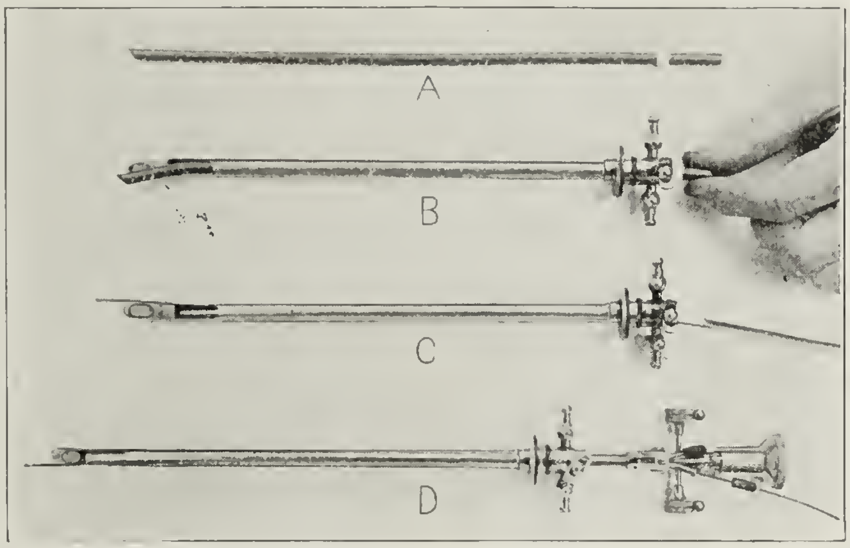

Fig. 1.—*A*. The rubber catheter with distal end cut on an angle of 90 degrees to allow its easy escape from the fenestra of the cystoscope. *B*. Rubber sheath introduced into the outer sheath of the cystoscope and rotated between the fingers to allow its escape from the fenestra. *C*. Wax tip bougie or catheter which has been introduced into the instrument through the protective rubber sheath and held in position while this sheath has been pulled out from around it. *D*. Threading the catheterizing barrel onto the wax tip catheter.

This procedure excites more pain and produces more trauma than an ordinary cystoscopy by the increased dilatation of the urethra and the liability of the open fenestra of the instrument to scrape or tear the mucous membrane. It requires a separate instrumentation for the introduction of the wax tip, and also requires the removal of the cystoscope before the wax tip can be withdrawn for examination.

A much simpler method with more possibilities is proposed as follows: An ordinary catheterizing cystoscope is used. The lumen of the outer sheath is lined with a loose fitting rubber tube to protect the wax tip in its passage into and out of the bladder. The tube is made from a soft rubber catheter, about a 16 or 18 F. The eye end of the catheter is cut off on a slant or angle of about 90 degrees. On this slant-cut end depends the ease of the following manipulations. The catheter, this end first, is passed into the cystoscopic sheath and out through its fenestra to the beak of the instrument.

The other end of the catheter is cut off an inch from the proximal end of the cystoscope, and it is allowed to protrude for a finger hold.

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* From the James Brady Urological Institute, Johns Hopkins Hospital, Baltimore.

The Instrumentation: With the outer sheath of the cystoscope in place in the bladder, the protective tube is introduced and passed down to its distal end. The rubber tube being turned one or both ways between the fingers, its diagonal cut end will allow it to escape easily through the fenestra of the instrument into the bladder. It is held in place with the fingers on one hand, and the wax tip catheter is passed through this rubber sheath a sufficient distance to insure its tip being in the bladder. The catheter is held with one hand in this position while the other hand pulls the rubber sheath from around it. The catheterizing barrel is now threaded onto the wax tip catheter and introduced into the cystoscope. Enough fluid will remain in the bladder to protect the wax tip. If the foot of the table is kept elevated throughout the procedure, more fluid will remain in the bladder. With the catheterizing barrel in place, the bladder fluid is now increased and the wax tip passed up the ureter. The wax tip catheter may now be removed for examination without removal of the cystoscope, by reversal of the foregoing procedure, that is, only the catheterizing barrel of the cystoscope is removed. The protective rubber sheath is reinserted by being threaded onto the wax tip catheter, and it is rotated between the fingers until it again passes out into the bladder. It is held in this position, and the wax tip catheter is gently withdrawn from the ureter and out through the rubber sheath.

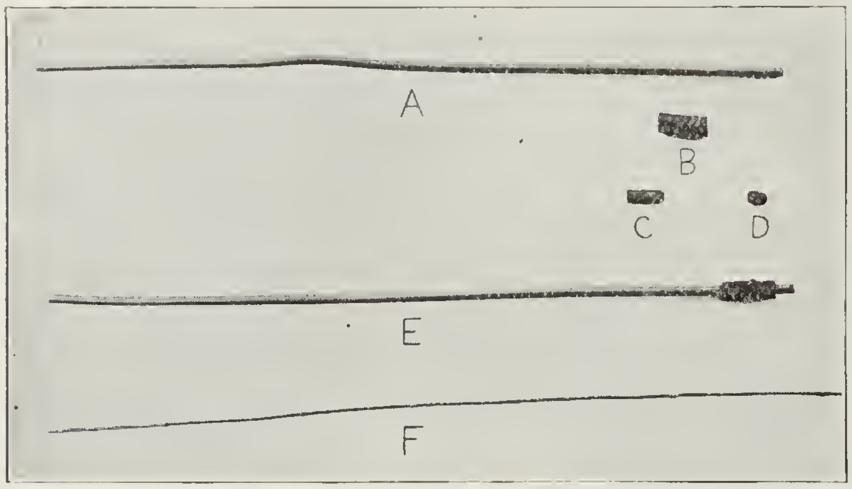

Fig. 2.—*A.* The rubber protective sheath for the operating cystoscope. *B.* The sleeve for the rubber protective sheath made from a piece of rubber tubing. *C.* An ordinary ureteral catheter tip or sleeve. *D.* Ureteral catheteral sleeve cut in half. *E.* The rubber protective sheath with its sleeve in place. *F.* The wax tip bougie with one wax tip and six wax bulbs.

Control wax tips may be passed in the same manner, both ureters may be searched for calculi at the same instrumentation, and the whole procedure can follow a ureteral catheterization, and function test, with the one introduction of the cystoscope.

If the wax tip proves to be too large to pass through the ureteral orifice, or too small to be adequate, it may readily be withdrawn and increased or diminished in size and then introduced.

II. A MODIFICATION OF THE TECHNIC OF PASSING THE WAX TIP

The presence and the accurate determination of the exact location of a ureteral calculus can be easily determined by passing a bougie, equipped with multiple wax tips or bulbs, through an operating cystoscope supplied with a catheter tube to prevent marring of the wax by the instrument. For several months I have used, with complete success, a rubber catheter sheath for the passing of wax tips in a manner similar to that described by Hinman.[1]

Instead of using a bougie or catheter with a single wax tip, it has been found to be equally practical and of far greater advantage to use a bougie equipped with a wax tip and a series of from four to six wax bulbs placed about 2 inches apart, beginning about 2 inches from the wax tip and approximately covering 12 inches of the bougie — the normal length of the ureter.

A No. 3 ureteral bougie (preferably one impregnated with bismuth, as it is very durable) is used, but a small ureteral catheter will answer equally well. The wax tip and bulbs can be easily made by dropping the wax from a heated glass rod onto the desired point along the bougie. If the rapid rolling of the bougie between the fingers does not mold the wax symmetrically, holding the point high above a flame will remelt it and allow it to be remolded.

A soft rubber catheter, 10 or 12 F., is selected to make the protective tube. It must pass easily through the cystoscope used, and be of sufficient length to protrude from one-half to three-fourths inch from the proximal end of the instrument after its distal end has passed slightly beyond the elevator. A piece of small rubber tubing three-fourths inch long is used for a tip or sleeve for the catheter sheath over which it is slipped. Its proximal end is made water-tight around the catheter by several turns of a rubber band. Enough of the catheter to hold an ordinary ureteral catheter sleeve is left projecting.

The rubber tubing sleeve is best left in situ on the catheter sheath for convenience during the introduction of the sheath into the barrel after the cystoscope has been introduced into the bladder, as in the usual cystoscopy. The elevator is slightly raised to prevent a marring of the wax-prepared bougie, which is now introduced into the rubber sheath and is capped with a catheter sleeve which has been shortened about half. It is well to have this tip removed before introducing the bougie, to facilitate the passage of the wax bulbs.

As in an ordinary ureteral catheterization, the bougie is now passed up the ureter as far as the renal pelvis, if possible. The bougie alone is now gently withdrawn from the instrument and examined for scratches. Care should be taken to observe that the catheter sheath covers the elevator throughout the procedure. The handle of the cystoscope is best kept elevated during the bougie's passage up and down the ureter. This brings the distal end of the rubber

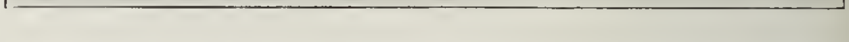

Fig. 3.—*A.* The cystoscope equipped with its rubber protective sheath. *B.* Introduction of the wax tip bougie equipped with a wax tip and several bulbs. One tip and one bulb show at the distal end of the cystoscope.

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[1] Hinman, Frank: A Practical Method of Applying the Wax-Tipped Catheter in the Diagnosis of Ureteral Stone in the Male, The Journal A. M. A., June 26, 1915, p. 2129.

sheath close to the ureteral orifice, and obviates raising the elevator to a greater angle, which would decrease the lumen of the catheter sheath. The small catheter sleeve is removed before the wax bulbs appear outside the instrument. Control wax-prepared bougies may be passed if deemed advisable.

On examination of the prepared bougie after its passage, it is obvious that if there is a scratch on the No. 1 wax tip and none on any of the bulbs, the calculus must lie in or near the renal pelvis. Likewise if all of the wax bulbs are scratched, the stone is within the ureter at or near its vesical orifice; while if some of the proximal bulbs escape the marring, the last one scratched locates the calculus at a corresponding point in the ureter.

This method is equally adaptable for use in the two sexes, and assures the accurate location of ureteral calculus without the aid of the Roentgen ray and will often diagnose calculi missed by it. The bougie being impenetrable to the Roentgen ray, a roentgenogram may be taken with it in place, if thought advisable. This will show the relation of the ureter to any suspicious extra-ureteral shadow.

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LEUKEMIA—AN INFECTION?

WITH REPORT OF CASES *

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Morphologic studies are so interesting and apparently definite that it is not surprising that there has been a tendency among medical men to spend an undue amount of time on this phase of the leukemias rather than on the more vital one of etiology.

The breaking down of the artificial borderlines of distinction between the leukemias, the leukemic changes in the blood in the presence of established infections,[1] and the variability in the findings in different patients and at different times in the same patient as shown by the report of many writers, notably Klieneberger,[2] Stein,[3] Marchet and Rieux,[4] Reschad and Schilling,[5] Moreschi,[6] Ghedini,[7] Strauch,[8] Morawitz,[9] Warren[10] and Paltauf,[11] have diverted attention more particularly of late to the cause of the leukemic process. We now hesitate to go much beyond the word "leukemia" or "leukemic state" in making a diagnosis, perhaps adding to it "lymphatic type," or "myelogenous type," as the case may be.

While the conception of leukemia as a neoplasm, fathered by Banti and others, is still extant mainly because of the tendency of enlarged glands during overgrowth to involve other structures, and the idea of Naegeli[12] that leukemia is a distinct entity rather than a neoplasm or infection has been welcomed by a few, the general trend of medical opinion seems to be more and more to regard the leukemic process as the result of an infection or a secondary toxicosis of particular parts of the body, primarily the bone marrow, spleen and lymphatic structures. This infection may be due to some one unknown organism, but present information makes it more probable that it can be caused by several different ones when the conditions are favorable. Chronicity of infection with low virulence, but with the liability to acute exacerbations, bone-marrow involvement, one infection preparing the soil for the next, are outstanding features of many of the published reports. Lymphocytosis as distinguished from leukemia has led to confusion, and borderlines are hard to draw. The recovery of patients with marked lymphocytosis or leukemia, as the case may be, has been reported by a number of observers, notably Cabot,[13] Jackson and Smith,[14] Türk,[15] and here in California we have had such patients under observation. Such high lymphocyte counts as those noted in typhoid (Herz,[16]), pneumonia and other ordinary infections (Steven,[17] Cabot,[13] Austrian,[18] Hirschfeld and Kothe[19]), and the leukemic blood changes following bone injury—fracture—and definite bone infection (Simon,[20] Herz,[16] Ward,[21] Stursberg[22]) are more than suggestive. Certainly too little attention has been given to the bone marrow as a nidus for all sorts of infection. The selective action for certain portions of bone marrow shown by the tubercle bacillus as brought out by Ely,[23] together with the lymphocytosis characteristic of that infection, is worthy of note.

Early investigators (Fraenkel, Ebstein) noted the striking resemblance of leukemias to infections, particularly the acute leukemias with fever, hemorrhages, skin lesions, splenic tumor and asthenia. Patients with the type dealt with by McCrae,[24] Lüdke,[25] Hirsch-

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* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From Division of Medicine, Stanford University Medical School.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

1. The explanation given by Döhrer and Pappenheim (Folia haemat., 1913, xvi, 145) that this is a special tendency to leukemia on the part of the blood-producing tissues, or a leukemoid reaction of the blood during sepsis ("einer besonderen leukämischen Prädisposition der hämopoetischen Gewebe," or "leukämoide Blutreaktion bei Sepsis") seems inadequate.
2. Klieneberger, C.: Das Blutbild der akuten Leukämie als Passageres Symptom, München. med. Wchnschr., 1914, lxi, 1159.
3. Stein, B.: Zur Kenntnis der Aleukämien und zur Therapie leukämischer Erkrankungen, Med. Klin., 1915, xi, 246.
4. Marchet, A., and Rieux, J.: Un cas de leucémie aiguë du type myéloïde, Arch. d. mal. du coeur, 1913, vi, 574.
5. Reschad and Schilling: Ueber eine neue Leukämie durch echte Uebergangsformen (Splenocytenleukämie) und ihre Bedeutung für die Selbständigkeit dieser Zellen, München. med. Wchnschr., 1913, lx, 1984.
6. Moreschi: Leucemia linfatica cronica ed infecione tifica intercorrente, Policlinico sez. med., November, 1913; abstr., Zentralbl. f. inn. Med., 1914, xxxv, 805.
7. Ghedini, G.: Aleukemic Myelosis, Gazz. d. Osp., 1915, xxxvi, 17.
8. Strauch, A.: Acute Leucemia, Med. Rec., New York, 1914, lxxxvi, 713.
9. Morawitz, P.: Ueber atypische schwere Anämien, Deutsch. Arch. f. klin. Med., 1906-1907, lxxxviii, 503.
10. Warren, M.: Case of Subleukaemic Lymphadenosis, Proc. New York Path. Soc., 1915, xv, 12.
11. Paltauf, R.: Leukosarkomatose und Myeloblastenleukämie: Zur Kasuistik der akuten Leukämie, Wien. klin. Wchnschr., 1912, xxv, 46.
12. Naegeli, O.: Leukaemie und Pseudoleukaemie, Vienna, 1913, p. 10.
13. Cabot, R. C.: The Lymphocytosis of Infection, Am. Jour. Med. Sc., 1913, cxlv, 335.
14. Jackson, J. M., and Smith, W. D.: Lymphatic Leukaemia in Acute Infection, after Removal of the Spleen, Boston Med. and Surg. Jour., 1915, clxxii, 137.
15. Turk, W.: Septische Erkrankungen bei Verkümmerung des Granulo-Zytensystems, Wien. klin. Wchnschr., 1907, xx, 158.
16. Herz, A.: Die akute Leukämie, Leipzig, Franz Deutricke, 1911, p. 73.
17. Steven, J. L.: A Clinical Lecture on Acute Infantile Bronchopneumonia, Lancet, London, 1902, ii, 792.
18. Austrian, C. R.: Hyperleucocytosis of High Grade in Bronchopneumonia in a Child, Bull. Johns Hopkins Hosp., 1911, xxii, 298.
19. Hirschfeld, H., and Kothe, R.: Ueber abnorm hohe Leukocytose bei schweren Infektionen, Deutsch. med. Wchnschr., 1907, xxxiii, 1255.
20. Simon, C. E.: Leukemic Blood Picture in a Case of Fracture of the Ankle, Am. Jour. Med. Sc., 1907, cxxxiii, 390.
21. Ward, G R.: Secondary or Symptomatic Leukaemia, Proc. Royal Soc. Med., 1914, vii, 126.
22. Stursberg, H.: Zur Differentialdiagnose zwischen akuter Leukämie und Sepsis, mit besonderer Berücksichtigung der "Sepsis bei Verkümmerung des Granulocytensystems," Med. Klin., 1912, viii, 520.
23. Ely, L. W.: Joint Tuberculosis, New York Med. Jour., 1915, ci, 783.
24. McCrae, T.: Acute Leukaemia in Childhood, with Report of a Case, Bull. Johns Hopkins Hosp., 1900, xi, 102.
25. Lüdke, H.: Ueber die Therapie der Leukämie, Fortschr. d. Med., 1911, xxix, 793.

feld and Dünner,[26] Beltz,[27] Strauch,[28] and Nanta and Loubet,[29] are hard to understand on any other basis. Animal (Lüdke[30]) and chicken leukemia (Ellermann,[31] Ellermann and Bang[32]), the passage of the latter through a series of animals, and the apparent leukemic change in the blood of the fowl after inoculation with that from a human leukemic patient (Wiczkowski[33]) have excited much interest. Other inoculation experiments (Sternberg,[34] Fraenkel and Hatluch[35]), the possible contagiousness of the disease as indicated by Obrastzow's patient, the familial character noted at times (Barrenscheen,[36]) and its occurrence in a baby a few days old with a right-sided endocarditis (Pollmann[37]), and the early leukocytosis observed in a number of cases, all indicate infection. Numerous organisms have been described as occurring in the blood or tissues, the seat of leukemic changes. Among these, streptococci have been reported a number of times (Nanta and Loubet,[29] Jochmann,[38] Ziegler and Jochmann,[39] W. Erb, Jr.,[40] Churchill,[41] Sternberg,[34] Gorjaew,[42] Marchet and Rieux,[43] Stursberg[22]) and also Auer's bodies (Much and Hegler,[44] E. Fraenkel and Hatluch[35] (quoted by Arndt), Ottenburg,[45] von Domarus[46]). Tubercle bacilli (Nanta[47]), corynebacterium (Steele,[48] Simon and Judd[49]), staphylococci (Herz[16]) and various mixed organisms (Lavenson[50]). Some of these may well be secondary and some, like corynebacterium, are probably common enough in various dead body tissues not to be of well-defined significance. Besides, the question of primary and secondary infection is a most confusing one in this connection (Ward,[21] Neutra[51]). The development of aleukemia in leukemia under the influence of intercurrent disease, pneumonia, diphtheria, etc., is as puzzling as the leukemic states noted in defininte sepsis. The relationship to the status lymphaticus has been considered of much importance (Barrenscheen,[36] Citron[52]) in determining the leukemic reaction to possible infection. Blood-forming tissues, when infected, react in peculiar and as yet imperfectly determined ways. Sternberg has called attention to the frequency of myelocytosis in the course of various infections. Intestinal infections (Oppenheim,[53] Peacock[54]), tonsillar foci (Gilbert and Weil[55]), and the selective action of certain infections for bone marrow present features requiring careful analysis and study.

In order to indicate some of the problems involved, and to emphasize that leukemia, although most variable, can readily be explained as due to an infection, the following three selected case histories are of interest:

CASE REPORTS

Case 1.—*Acute leukemia.* (Medical Clinic, Stanford Medical School.) April 2, 1913, H. H., an American office boy, aged 17, complained of swelling of the glands of the neck and slight cough. The family history was excellent. General health had always been satisfactory except for measles, whooping cough and mumps. Patient had had frequent toothache with swelling, the last time a year ago. Three weeks and a half ago he had pain in the upper part of the chest and swelling in the lower part of the neck, and later enlargement of the glands under the jaw and in the right groin. He noticed that he would spit up a lot of mucus, but no blood, and that his face would be puffed up in the morning, but would go down during the day. The wrists also were slightly swollen and tender. He had had some early morning sweats.

The patient was a well-built and well-nourished boy of good color. Except for the enlarged glands noted in the history, some puffiness about the eyes, hypertrophy of the tonsils and the evident involvement of the upper mediastinum with enlarged glands, no abnormalities were noted.

The blood examinations were as follows:

	April 2,1913	April 7, 1913
Hemoglobin	80%	90%
Red blood corpuscles	4,850,000	4,980,000
White blood corpuscles	8,800	8,900
Polymorphonuclears	41%	48%
Lymphocytes	54%	45%
Large mononuclears	—	5%
Eosinophils	1%	—
Basophils	4%	2%

(The lymphocytes were mostly large granular forms.)

April 8, 1913, patient was vaccinated because of previous exposure to smallpox.

April 10, a clinical diagnosis of lymphosarcoma was made, and a posterior cervical gland was removed for microscopic diagnosis. The sections showed moderate hyperplasia of lymphadenoid tissue, moderate increase in fibrous tissue which in places showed marked thickening and hyaline change. No evidence of tumor found. Chronic lymphadenitis (Dr. E. C. Dickson).

April 15, although patient seemed to feel well, the blood counts were as follows:

	April 15	April 18	April 19 (Differ. Count*)	April 28
White blood corpuscles	252,000	233,600		440,000
Polymorphonuclears	6%	—	5.5%	2%
Lymphocytes	94%	—	86.0%	97%
Large mononuclears				1%
Myelocytes (fully developed)			1.0%	
Lymphoidocytes			2.0%	
"Kern Schatten"			5.0%	
Eosinophils			0.5%	
Red blood corpuscles				3,925,000
Hemoglobin				66%

* The great majority of the lymphocytes were from 6 to 8 microns in diameter, but a few microlymphocytes were present, and a large number of macrolymphocytes.

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[26] Hirschfeld, H., and Dünner, L.: Zur Differentialdiagnose zwischen Sepsis und akuter Leukämie, Berl. klin. Wchnschr., 1915, lii, 9.

[27] Beltz: Ueber Leukämie mit besonderer Berücksichtigung der akuten Form, Deutsch. Arch. f. klin. Med., 1913-1914, cxiii, 116.

[28] Strauch, August: Acute Lymphatic Leukemia in Early Life, Am. Jour. Dis. Children, January, 1913, v, 43.

[29] Nanta and Loubet: Un cas de leucémie lymphatique aiguë, Folia haemat., 1913, xvi, 75.

[30] Lüdke: Ueber experimentelle Erzeugung leukämischer Blutbilder, Folia haemat., 1910-1911, x, 10.

[31] Ellermann, V.: Untersuchungen über das Virus der Hühnerleukämie, Ztschr. f. klin. Med., 1914, lxxix, 43.

[32] Ellermann, V., and Bang, O.: Experimentelle Leukämie bei Hühnern, Ztschr. f. Hyg. u. Infektionskr., 1909, lxiii, 231. Ellermann, V., and Bang, O.: Experimentelle Leukämie bei Hühnern, Centralbl. f. Bakteriol., 1908, xlvi, 595.

[33] Wiczkowski, J.: Beitrag zur Lehre über die Leukämie, Wien. klin. Wchnschr., 1913, xxvi, 569.

[34] Sternberg, C.: Ueber die akute myeloische Leukämie: Staphylokokkenversuche, Wien. klin. Wchnschr., 1911, xxiv, 1624.

[35] Fraenkel, E., and Hatluch, quoted by Arndt, G.: Diseases and New Growths of Lymphatic Origin, The Journal A. M. A., Oct. 10, 1914, p. 1271.

[36] Barrenscheen, H. K.: Zur Frage der akuten Leukämie, Wien. klin. Wchnschr., 1912, xxv, 293.

[37] Pollmann, L.: Ein Fall von Leukaemie beim Neugeborenen, München. med. Wchnschr., 1898, xlv, 47.

[38] Jochmann, G.: Septische Erkrankungen, Handbuch der inneren Medizin, 1911, i, 578.

[39] Ziegler, C., and Jochmann, G.: Zur Kenntnis der akuten myeloiden Leukämie, Deutsch. med. Wchnschr., 1907, xxxiii, 749.

[40] Erb, W., Jr., Septische Erkrankungen und akute Leukämie, Deutsch. med. Wchnschr., 1907, xxxiii, 833.

[41] Churchill, F.: Acute Leukaemia in Early Life, Am. Jour. Med. Sc., 1904, cxxviii, 565.

[42] Gorjaew, N.: Zur Leukanämie Frage, Folia haemat., 1913, xvi, 1200.

[43] Marchet, A., and Rieux, J.: Un cas de leucémie aiguë du type myeloide, Arch. d. mal. du coeur, 1913, vi, 574.

[44] Much and Hegler: Weitere Mitteilungen über die Erreger der Leucaemia Lymphatica, Folia haemat., 1910-1911, x, 59.

[45] Ottenburg, R.: Observations on Acute Leucaemia, with Special Reference to Auer's Bodies, Am. Jour. Med. Sc., 1909, cxxxviii, 562.

[46] Von Domarus: Der gegenwärtige Stand der Leukämiefrage, Folia haemat., 1908, vi, 337.

[47] Nanta, A.: Le rôle de la tuberculose dan l'étiologie de la leucémia myeloide, Arch. d. mal. du coeur, 1913, vi, 38.

[48] Steele, A. E.: Corynebacterium Hodgkini in Lymphatic Leukaemia and Hodgkin's Disease, Boston Med. and Surg. Jour., 1914, clxx, 125.

[49] Simon, C. E., and Judd, C. C. W.: Acute Lymphatic Leukemia: On the Occurrence of the Corynebacterium Lymphomatosis Granulomatosae, The Journal A. M. A., May 15, 1915, p. 1630.

[50] Lavenson, R. S.: Acute Lymphopenic Lymphatic Leukemia, Univ. Pennsylvania Med. Bull., July, 1908, p. 3.

[51] Neutra, W.: Ueber den Einfluss akuter Infektionskrankheiten auf die Leukämie, Ztschr. f. Heilk., Int. Med., 1903, xxiv, 349.

[52] Citron, J.: Ueber akute Leukämie, Deutsch. med. Wchnschr., 1914, xl, 629.

[53] Oppenheim, E. A.: Anaemia Splenica und infektiöses Granulom, Virchows Arch. f. Path. Anat., 1911, cciv, 392.

[54] Peacock, A. H.: A Study of a Case of Splenomyelogenous Leukaemia, Am. Jour. Med. Sc., 1904, cxxviii, 893.

[55] Gilbert, A., and Weil, E.: Contribution à l'étude de la leucemia aiguë, Arch. de méd. expér. et d'anat. path., 1899, xi, 187.

Degenerative changes were present in a large number of the cells—vacuolization and karyokinesis.

A small percentage of the large nongranular cells classed by Pappenheim as lymphoidocytes were found.

No myeloblasts or intermediary myelocytes were found, and the fully developed myelocytes or propolymorphs found were probably due to secondary bone-marrow irritation. No nucleated reds were found. (Dr. T. Addis.)

The patient was given Fowler's solution and Roentgen-ray exposures.

May 3, patient began to bleed freely from the nose and throat, the blood coming from about the uvula and the tonsils. There was a dull pain noted in the region of the spleen. Liver and spleen were both found to be enlarged and sensitive. There was hemorrhagic ecchymosis about the left upper and lower eyelid. Petechiae were noted in the pharynx and about the tonsils. The glands in the neck were distinctly smaller in size. Patient was free from pain, but felt weak and sleepy. He gradually became more restless and sleepless. Temperature ranged between 97 and 100.6 F. After two days of a comatose condition, patient died, May 15.

May 6, blood count was as follows: white blood corpuscles, 514,000; polymorphonuclears, 2 per cent.; lymphocytes, 98 per cent.

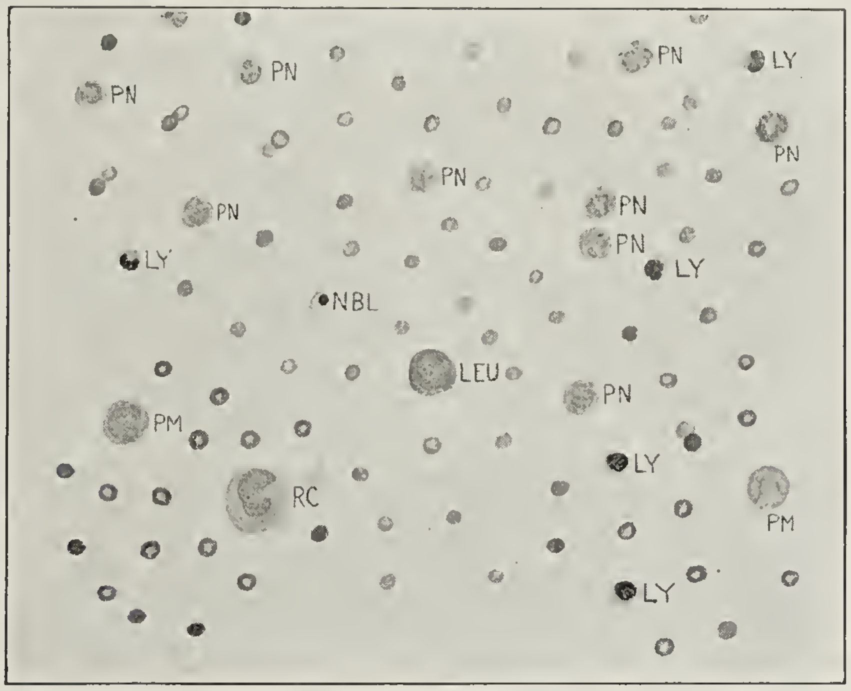

Fig. 1.—Blood, Case 3. Leukemia, myelogenous type, and anemia, pernicious type (?). *PN*, Polynuclear neutrophil; *LY*, lymphocyte; *LEU*, leukoblast; *RC*, Rieder cell; *PM*, promyelocyte; *NBL*, normoblast.

The details of the necropsy record are not available, but a marked enlargement of the mediastinal lymph glands was found and typical leukemic changes elsewhere.

Case 2.—*Acute leukemia.* (Stanford Medical Clinic; Lane Hospital.) C. F., Italian laborer, aged 38, was admitted March 3, 1915, complaining of weakness and loss of appetite. Family history unimportant. General health always good. Smallpox when 12 years of age. Never had cough or respiratory disturbance. Denied venereal infection. Drank wine with meals.

Three and one-half months ago (about Nov. 15, 1914), he began to feel weak and to lose appetite. Thought he had some fever, coughed a little, and noted small amount of blood in the sputum, and sweat considerably at night. About one month ago he consulted a doctor, who told him he had tuberculosis. Since that time cough had almost ceased, but weakness and loss of weight had continued. Had noticed increased thirst and urination. Four days ago he noted marked redness of right eyeball and surrounding tissues, occurring without trauma and without pain.

Examination on admission showed an emaciated man lying flat in bed, somewhat dyspneic. Color very pale. Marked visible pulsation of tortuous temporals. Extensive hemorrhage into right sclera and eyelids. Small ecchymoses in left sclera. Marked pulsation of carotids. Over right sternoclavicular joint was a small hard nodule, not tender, slightly movable. Percussion dulness over manubrium, extending slightly more to right than to left. Heart dulness increased slightly to right and left. Systolic murmur at apex, not transmitted. Slight abdominal rigidity. Spleen felt 5 cm. below costal margin. Slight pitting edema of ankles. Moderate enlargement of epitrochlears, axillary and inguinal nodes. Small areas of old hemorrhage scattered over skin of trunk. Temperature, 102.4 F.; pulse, 108.

Laboratory Reports.—Urine: Specific gravity, 1.015. Trace of albumin. No casts. Very few leukocytes and red cells. Blood: Red blood corpuscles, 1,123,000; white blood corpuscles, 199,600: 90 per cent. lymphocytes; 10 per cent. degenerated. Sputum: Small amount of blood. No tubercle bacilli. Stool: Occult blood present. Wassermann negative. Blood culture negative. Roentgenoscopy revealed enlarged mediastinal shadow and heart.

Course.—Temperature from 99 to 103 F. during first nine days. Fowler's solution, 5 minims, three times a day, was given. White count: March 4, 253,000; March 5, 117,000; March 7, 160,000; March 8, 81,000; March 10, 60,000. Hemorrhage into lids gradually cleared up, and that in sclera became much less. March 9, patient had hemorrhage from nose. March 10, 10 c.c. of wife's blood were given intravenously. Temperature fell to subnormal, and remained there until within a few hours of death, when it rose to 103.4 F.

Diagnosis.—Acute leukemia (lymphatic type); mediastinal glands especially involved.

Necropsy.—The principal items of interest in the necropsy, which was performed by Prof. William Ophüls, were as follows:

Smears and Cultures.—Smear of marrow of rib: Very many lymphocytic cells from two to three times diameter of red blood cells, many nucleated reds (normoblasts), moderate number of neutrophilic myelocytes, small amount of hematogenous pigment. No bacteria or other parasites found in deeply stained Giemsa specimen in spite of careful study with mechanical stage.

Smear of marrow vertebra.—Even fewer neutrophilic, eosinophilic and basophilic myelocytes. The rest of the cells have round nuclei of varying size, a very delicate finely granular protoplasm, the granules staining mostly blue with Giemsa, few of the very fine granules more reddish. Same cells but not quite so large in smear of rib.

Culture of mediastinal tumor; no growth.

Spleen: Many similar cells, few neutrophilic myelocytes, *few diplococci.*

Culture: *Many small colonies of diplostreptococci.*

Pericardium over tumor: Many endothelial cells, many degenerated vacuolated cells, no bacteria.

Retroperitoneal lymph gland: Many ordinary lymphocytes, few larger cells, no bacteria.

Liver: Many larger and smaller cells like those in bone marrow, few neutrophilic myelocytes, no bacteria. Culture: No growth.

Lung: *Many diplococci.*

Culture: *Many colonies of diplostreptococci.*

Kidney: Apparently nothing abnormal, no bacteria.

Left renal pelvis: The same.

Diagnosis.—Lymphosarcoma of anterior mediastinum. Leukemia, acute. Lungs, edema of, acute. Ganglion near sternoclavicular joint.

Tumor in mediastinum consists of framework of connective tissue in which are many large proliferative lymphocytes which show irregular distribution. Spleen shows pulp full of large lymphocytic cells. Enlarged lymph nodes: Marked hyperplasia of lymph adenoid tissue. Some show beginning leukemic infiltration of capsules.

Smears of blood taken before death show very large number of cells of lymphocytic type with large round, very deeply staining nuclei and narrow rim of hyaline protoplasm which stains distinctly blue and does not contain any granules. In some cells this protoplasm is arranged in knoblike pseudopods around the nucleus, few neutrophilic leukocytes and myelocytes, one eosinophilic myelocyte.

Case 3.—*Leukemia, myelogenous type. Anemia, pernicious (?).* James W., English laborer, aged 60, came to the Stanford Medical Clinic, Dec. 13, 1913, complaining of headache and rheumatism. Family history unknown. Patient had had malaria three times, 1894, 1897, 1907. Denied typhoid and scarlet fever. Had syphilis in 1884. Had had poor teeth; eight or ten had to be taken out. Had always been troubled with frequent colds, but had never coughed up blood or had pain in the chest.

Two months ago, patient contracted a bad cold. This disappeared after two weeks, leaving a nasal catarrh, persistent headaches, pain and stiffness in the shoulders and left elbow which had remained constant. About a month ago a diffuse macular rash appeared on the back, chest, abdomen and thighs, blood-red in color. It gradually faded without producing itching or pain. Patient had lost in weight and appetite, had coughed up mucus free from blood and had had some pain in the precordial region.

Physical Examination.—The principal features of the examination were: a poorly nourished old man with pale skin and mucous membranes, some deafness, many missing teeth with some pyorrhea, some rigidity of the neck, well-developed chest with scattered areas of impairment and a few râles; some enlargement of the heart to the left with a systolic murmur but with no irregularity; peripheral vessels definitely sclerosed, and a chain of enlarged glands along the right brachial artery beginning above the internal condyle of the humerus. There was considerable limitation of movement of the right shoulder joint. On the skin were many sharply outlined elevated, indurated, discrete, reddened papules, varying in size from a pinhead to a pea. Wassermann reaction was found to be negative in the blood and spinal fluid. No tubercle bacilli were to be found in the sputum.

Urine: Specific gravity 1.021; light cloud of albumin and a few granular casts.

First blood examination was as follows: red blood corpuscles, 5,152,000; hemoglobin, 92 per cent. (Dare); white blood corpuscles, 17,680; polymorphonuclears, 57; lymphocytes, 16; large mononuclears, 1; basophils, 26. The white cells were noted as varying greatly in size and shape.

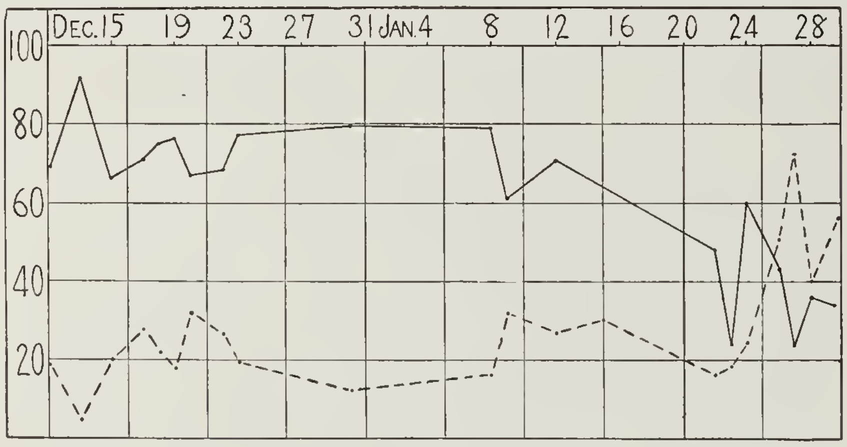

Fig. 2.—Relative numbers of normal and abnormal white cells: solid line, normal; broken line, abnormal.

There was no particular change in the patient for about a week except that the condition in the lungs improved; then he began to complain of a severe headache. The white blood corpuscles were 19,600, with 1 normoblast, December 13; 15,200 white cells, December 30.

December 16, gland removed showed simple, chronic inflammatory changes. The note is made that "the presence of large mononuclear cells with granular cytoplasm is suggestive of myelogenous leukemia, but the chronic inflammatory changes are the most prominent" (Dr. J. F. Cowan).

Later *leukemia of the skin* was diagnosed by Prof. William Ophüls on examination of a specimen removed.

Patient became more dazed with evident cerebral involvement and inclined to somnolence. In a blood culture taken December 26 there was a *growth of diplostreptococci in calcium carbonate infusion broth.*

Blood count, January 8: red blood corpuscles, 2,250,000; white blood corpuscles, 30,000; hemoglobin, 39 per cent.; color index, 0.86 per cent.

Differential Count (May-Grünwald-Giemsa stain):

Polymorphonuclears	58%	Basophil myelocytes	1%
Lymphocytes	11%	Eosinophil geta	2%
Large mononuclears	1%	Lymphoidocytes	1%
Eosinophils	0%	Immitationsform	1%
Basophils	0%	Normoblasts	1%
Neutrophils	23%		

New crops of reddened flattened papules occurred in different parts of the body from time to time, and small hemorrhages occurred about the eyes. The patient's condition varied from time to time, but he recovered from his stupidity and began to feel quite well day by day.

Negative blood culture, January 6. Later patient gradually became weaker, apparent thrombosis developed in some of the peripheral vessels, and patient succumbed January 31.

The following report of the morphologic blood changes was made by Dr. Thomas Addis:

"The routine differential count at the time when the patient was admitted showed the presence of certain atypical leukocytic forms. Further investigation revealed a blood picture of very unusual type.

"The red blood cells numbered 4,560,000, the white cells, 19,600. There were 64.5 per cent. of polymorphonuclear leukocytes, 27.5 per cent. of lymphocytes, 1 per cent. large mononuclears and no eosinophils. In general, therefore, no marked deviation from the usual percentage relationships. But here and there among these normal leukocytes were seen a few cells which gave evidence in their large size, large round faintly staining nucleus, and basophilic cytoplasm with sparse granules, of being in a very early stage of development. These cells were shown by means of the oxidase reaction to be of myeloid origin. They were the progenitors of the myelocytes, and showed as yet no sign of differentiation into neutrophil, eosinophil or basophil.

"Such cells of course are well known from their occurrence along with myelocytes in cases of myelogenous leukemia, and in themselves call for no remark. The point of interest lies in the fact that in this otherwise normal blood they appeared as a more or less isolated group, almost unaccompanied by their successors the myelocytes.

"A somewhat similar anomaly was found in connection with the red blood cells. A first glance at the smear gave no indication of anything but a very moderate grade of secondary anemia, but on further study some nucleated red cells were found. There seemed to be here again a want of some connecting link between these undeveloped cells and the great number of almost normal red blood cells.

"The further development is of considerable interest and the details are given in the chronological series of differential counts. In making these classifications the nomenclature of Pappenheim has been followed because the colored reproductions in his atlas have to some extent standardized the terms he employs. His method of using the May-Grünwald-Giemsa stain was closely followed, but quite as good results were obtained with Wright's stain. (Fig. 1.)

"The trend of development of the leukocyte changes is shown in a general way in Figure 2, which gives the relation between the number of normal white blood cells, and the number of the undeveloped leukocytes.

"As can be seen, there was no distinct change until a week before death, when the number of abnormal cells increased in number, so that toward the end there were more abnormal than normal cells. These cells were almost all promyelocytes and leukoblasts. The almost complete absence of fully developed myelocytes, which was noted as so striking in the early counts, continued to the end. On adding the percentages of all the counts made, there are only twenty-five fully formed myelocytes, as compared with 465 promyelocytes and leukoblasts. It appears as though very few of these cells had the capacity to develop into myelocytes. Their fate is probably indicated in the large percentage of unidentified degenerated cells and 'Kernschatten.'

"The red blood cells progressively diminished in number from 4,560,000 to 1,780,000 in forty-six days. At first there was a distinct secondary type of anemia, at least in so far as the color index was only 0.71, but as the anemia became more and more severe, the color index rose instead of fell until the day before death, when it was 0.92. In Figure 3, there is a graphic representation of the numbers of nucleated red blood cells found during the counting of 200 white blood cells. It will be noted that here too, as with the white cells, as the number of normal cells decreased, the number of nucleated red blood cells increased.

"During the last week the number of nucleated red cells was very large, and some enormous basic staining megaloblasts were found. The normoblasts seemed to be breaking down, and many free nuclei were thus liberated. In consequence it became difficult in many cases to distinguish between small lymphocytes and nuclei of normoblasts to which a rim of polychromatophilic cytoplasm still adhered. In spite of these large numbers of early forms of red blood cells, the non-nucleated red blood cells showed none of the degenerative and regenerative changes which are usually found when normoblasts and more especially megaloblasts are present in the blood.

"To sum up, it may be said that the blood presented the remarkable combination of cells typical of an acute myeloid leukemia (lymphoidocytes, leukoblasts and promyelocytes) and of an acute pernicious anemia (gigantoblasts, megaloblasts and normoblasts) together with a large proportion of normal well-formed fully developed cells."

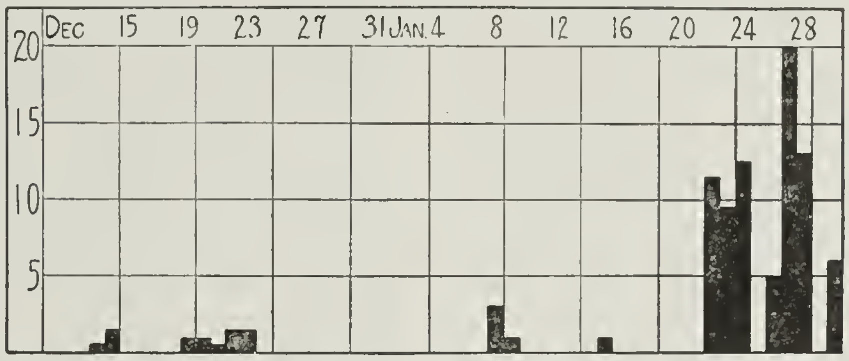

Fig. 3.—Increase in number of nucleated red cells as fall in number of normal cells takes place.

The accompanying table shows the differential counts, red and white cell counts and hemoglobin estimations from the time the patient came under observation to the day of his death.

Necropsy.—The necropsy, of which the following is a record, was performed by Prof. William Ophüls, Jan. 31, 1914.

On opening skull, some dark brown blood escapes from left side. Skull cap is normal.

Strongly built extremely emaciated man of about 60 years. Marked arcus senilis. Skin and visible mucous membranes extremely pale. Teeth fairly well preserved and poorly kept. Marked enlargement of deep cervical supraclavicular and axillary lymph glands on left side. Marked enlargement of glands in both inguinal regions. In skin over chest, both upper arms, belly, thighs and on back are large number of white projecting nodules from just visible to 3 mm. in diameter. Majority are surrounded by hemorrhagic zones. Skin over back of both hands markedly atrophied and full of hemorrhages. Irregular hemorrhagic discoloration of skin on dorsum of right foot. Left foot deeply cyanosed. Tissues shriveled and dry. No edema. Old irregular scars with pigmented margins, largest one 8 by 5 cm. in diameter. Very marked atrophy of subcutaneous fat and muscle. Peritoneum pale, moist. Liver projects 2 fingerbreadths in right mammary line. Stomach and transverse colon in normal position. Appendix back of cecum, which is distended markedly with feces. Marked atrophy of omentum. No free fluid in peritoneum. Numerous small hemorrhages in periosteum of ribs. Diaphragm fifth on left, right-fourth ribs.

Strong adhesions between anterior part of left lung and sternum. In ribs there is very little bone marrow. On pressure there escapes a thin very slightly turbid fluid. Bone marrow of sternum is light grayish red. In some places are large hemorrhages. Fairly easily broken old adhesions very nearly obliterating pleural left cavity. Similar adhesions on right base. Easily broken adhesions on right apex. Few small hemorrhages in pericardium. Extensive, easily broken old fibrous adhesions about spleen. Capsule is irregular, thickened and deeply pigmented, 12.5 by 9.5 by 5 cm. Cut surface of spleen shows brownish-red color with purple spots beneath capsule. Pulp is quite soft.

Heart is of normal size. Large milk spot over right ventricle. Large postmortem clots in pulmonary artery. Wall of right ventricle very thin, dark brown.

Along closing line of posterior part of large and of small flap of mitral, also on closing line of two of the aortic cusps, are small grayish apparently quite recent thrombotic deposits. Deposits on aortic valves are slightly thicker. Base of aorta and coronary arteries normal. Heart muscle on left side, dark brown and flabby.

Old scars at base of mesentery of sigmoid flexure. Large amount of thin yellow fecal material in sigmoid flexure and rectum. Small amount of light clear urine in bladder.

Diagnosis: Leukemia. Endocarditis, acute. Pachymeningitis, hemorrhagic. Bronchitis, acute. Bronchopneumonia.

Smears: Aortic valve: Many reds, many myelocytes, no bacteria. Mitral valve: Many reds, many myelocytes, *moderate number of diplococci.*

Marrow: Many large neutrophilic myeloblasts, few neutrophilic leukocytes, few basophilic myelocytes, very few eosinophilic myelocytes, few nucleated reds, few large vacuolated cells containing fragments of cells and of nuclei, also some pigment, *few groups of diplococci partly free, partly in phagocytes,* few normoblasts.

REPORT ON THE MORPHOLOGIC BLOOD CHANGES IN CASE 3

	December										January										
	11	13	15	17	18	19	20	22	23	30	8	9	12	15	22	23	24	26	27	28	30
Neutrophil polymorphonuclears	47	64.5	47.5	58	58	57.5	53.5	55	53	59.5	69	48	54	43	38.5	18.5	29	35	22	15	17
Lymphocytes	22	27.5	17	11	15	17.5	12	13	24.5	15	10	14	16	20	9.5	6.5	32	7.5	2	19	16
Large mononuclears	1	0	1	1	1	0	1.5	0	0	5	0	0	1	1	0	0	0	0	0	0	1
Eosinophils	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Basophils	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	1	3	0
Unidentified degenerated cells	9	2	6	0	3	3	1	2.5	2	5	3	7	1	4	8.5	16	0	1	1	10	5
"Kernschatten"	3	1	7	1	2	3	2	2.5	1	3	1	0	1	3	26.5	41.5	13	5.5	1	14	3
Metamyelocytes (neutrophilis)	3	0.5	1	4.5	0.5	0	0.3	4.3	1	3	1	1	5	8	2.5	0.5	1	4.5	5	2	3
Neutrophil myelocytes	1	0.5	1	2.5	2.5	5	0	3.5	0.5	0	0	1	0	1	0	0.5	1	2.5	0	0	2
Eosinophil myelocytes	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Basophil myelocytes	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5	0	0	0	0
Promyelocytes	5	0.5	15.5	17.5	12.5	12	16	16.5	10.5	3.5	15	14	7	14	4.5	4	3	13.5	7	7	6
Leukoblasts	8	1.5	7	2	3.5	1.5	10	1	5.5	2	1	12	13	6	7	8	18	28	61	28	42
Lymphoidocytes	0	1	4.5	2.5	2	0.5	3.5	1	0.5	1.5	0	3	2	0	2	3.5	2	1.5	0	2	4
Free nuclei of normoblasts or lymphocytes(?)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	20	10	28	19	8	22
Normoblasts	0	0	0	0	0	1	1	0	0	0	1	1	0	0	8.5	3.5	12	2.5	20	10	5
Megaloblasts	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	6	1	2.5	0	3	1
Gigantoblasts	0	0.5	1.5	0	0	0	0	0.5	1.5	1.5	0	0	0	0	0.5	0.5	0	0.5	0	0	2
Red blood cells (in millions)		4.56	....	....	....	....	....	....	....	....	2.25	..	..	..	....	....	2.00	....	1.86	1.78	..
Hemoglobin (per cent.)		65%	....	....	....	....	....	....	....	....	39%	..	..	..	....	....	33%	....	33%	33%	..
Color index		0.71	....	....	....	....	....	....	....	....	0.86	..	..	..	....	....	0.82	....	0.9	0.92	..
White blood cells (in thousands)		19.6	....	....	....	....	....	....	....	15.2	30.0	..	..	..	9.0	....	9.0	....	28.0	29.0	..

Spleen: Many neutrophilic myeloblasts, few neutrophilic and eosinophilic leukocytes, many small and large lymphocytic cells, no bacteria found.

Microscopic Examination.—Bone: Very cellular marrow rich in myelocytes, periosteum shows marked infiltration with myelocytes.

Spleen: Marked hematogenous pigmentation. Malpighian bodies small; pulp crowded with large myelocytes.

Lymph gland: Marked quite diffuse infiltration with myelocytes.

Heart valve: Shows fibrous cellular thickening on one side covered with thrombus. Thrombus is very dense, free from cells.

Section of skin shows accumulation of myelocytes about blood vessels in cutis.

Abdominal aorta: Large atheromatous ulcer.

Lung: Hyperemic, few pigmented scars. Blood in blood vessels rich in myelocytes.

Kidney shows few small arteriosclerotic scars, many small areas of myelocytic infiltration.

Liver shows moderate filling of capillaries with myelocytes, some also in periportal connective tissue.

Lung shows bronchitis and beginning bronchopneumonia.

Radial artery shows slight arteriosclerosis.

Sections of marrow show large necrotic areas apparently due to thrombotic masses in vessels. Much fibrin between necrotic cells; large hemorrhages at edge of necrosis; also quite advanced organization in some places. No bacteria found in necrotic areas. The adjoining living marrow is crowded with a moderate number of mitoses; myeloblasts; shows few red cells and very few nucleated reds. Very few eosinophilic myelocytes. Scattered throughout the marrow one finds a considerable number of large phagocytic cells which contain fragments of degenerated cells, frequently pigment and finely granular detritus. *In some of these cells groups of diplococci as described in smears. There are also few scattered diplococci free in the marrow.* One of the sections of marrow is somewhat different from the rest (probably section of vertebra, whereas others are from ribs and sternum). In this piece there are no necroses. The proliferation of myeloblasts is still more marked and occurs in the form of small badly defined tumorlike nodules which measure about 2 mm. in diameter. No bacteria found in these slides in spite of continued search with mechanical stage.

COMMENT

We have, then in the foregoing cases one of the acute lymphatic type with mediastinal tumor, a practically normal blood count when first seen and then with the clinical picture of an acute infection, rapidly increasing lymphocytosis, hemorrhage and death, another with similar mediastinal tumor but with a more prolonged course, but so evidently an infection as to be confused with pulmonary tuberculosis; and a third with slow development, typical skin and other reaction and with evidence of the involvement of the whole bone marrow, including the red blood cell forming portions (Pilcher[56]). The bacteriologic studies made of the last two cases were not at all conclusive, but were suggestive. In Case 3 streptococci were found in the blood thirty-three days before death. The early invasion of the bone marrow seems proved by the study of the blood given above, the changes in the white blood corpuscles and the appearance of megaloblasts and normoblasts, together with the progressive anemia. The definite relationship of bone-marrow infection to pernicious and other anemias and to the leukemias is certainly favored by a careful study of this patient. In infections it seems at times as if one part of the bone marrow responds, the red cell forming (Gorjaew[42]), and then in another white cell deviations occur; but here toward the end all parts of the bone marrow seem involved. This is, of course, accompanied by more or less change in the spleen, lymphatic tissues, etc. It is true that while streptococci were found in the marrow after death, they were not so placed as to be clearly present in the lesions characteristic of leukemia. This may be a secondary infection with streptococci, but clinically the picture of a progressive bone marrow infection with primary involvement of the white blood cell forming portions is difficult to lay aside. In Case 2 the streptococci are more evidently terminal invaders. The skin lesions in Case 3, with their surrounding hemorrhagic areas, certainly could readily be interpreted as metastatic (Hitschmann and Lehndorff,[57] Arndt[35]) processes such as we commonly see in streptococcic infections even of low virulence, and they speak for the infectious origin of the disease.

The well-known wide range of activity shown by the streptococcus, and its tendency to obtain and retain a foothold for long periods of years within the body in the endocardium, tonsils, bowel, about the teeth and elsewhere would indicate the strong probability that the bone marrow is often likewise infected and that streptococci may retain a hold there and so induce the more chronic types of lesions associated with leukemia. In California, low-grade diplostreptococci infections are common, such as the characteristically mild rheumatic fever erythema nodosum, probably erythema multiforme, bacterial endocarditis, at least some cases of hyperthyroidism, tonsillitis, intestinal lesions, etc. These, or tuberculosis, or both, may explain the fact that the lymphocyte count, as has been shown by Mehrtens,[58] is apt to be high, at least in San Francisco.

These points with others lend color to the belief that the actual presence of streptococci in the bone marrow has a definite etiologic part to play in the development of the leukemic picture observed. Only by further bacteriologic and perhaps protozoologic studies of the blood, bone marrow, spleen and lymph glands of such patients, and by animal inoculation from the tissues involved, including bone marrow trephined from living bone, can we clarify this problem.[59] If we can force the leukemias into the diseases of known origin we have gone a long way toward the solution of a reasonable and effective therapy. Remedies damaging the bone marrow, such as benzol (benzene, C_6H_6) and chloroform are now in common use, but they are dangerous and usually fail. We must not let the fact of chronicity in many cases divert our attention from the possibility that there is an active, even though mild, infection going on. Unfortunately there is at present not sufficient evidence accumulated to give assurance as to the real cause of leukemia, but we feel justified in the following conclusions:

CONCLUSIONS

1. The evidence thus far available points strongly to infection as the cause of the leukemias. It is probable that organisms usually of low virulence but of various kinds, perhaps working on a soil prepared by

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[56] Pilcher, J. T.: A Contribution to the Etiology of Pernicious Anaemia, Am. Jour. Med. Sc., 1913, cxlvi, 226.

[57] Hitschmann, E., and Lehndorff, H.: Ein Fall leukämieartiger Erkrankung mit schwerer megaloblastischer Anämie und eigentümlichem Exanthem, Ztschr. f. Heilk. Int. Med., 1903, xxiv, 190.

[58] Mehrtens, H. G.: The Frequency of Low Polymorphonuclear Leukocyte with High Lymphocytic Differential Counts, Arch. Int. Med., August, 1913, p. 198.

[59] Hansemann (Berl. klin. Wchnschr., 1914, li, 9) has asked that all such information be reported to him in order that he may assemble all available information pointing to infection as the cause of leukemia.

previous infections, can, when they secure a foothold in the bone marrow, spleen or lymphatic glands, bring about the leukemic reaction alone or combined with disturbance of the red blood cell forming mechanism.

2. Streptococci have been more frequently reported than other organisms in the blood and tissues of leukemic patients.

3. The attempt to classify rigidly the leukemias and pseudoleukemias on purely morphologic grounds is futile.

4. A long series of bacteriologic studies, including blood cultures and bone marrow inoculations from living patients, will be required to settle the relationship of infection to the leukemias as well as the anemias.

5. Foci of infection should be sought, and treatment directed against them. Only with the establishment of the cause can we hope for a sound therapeusis of this condition.

ABSTRACT OF DISCUSSION

Dr. Carl R. Krone, Oakland, Calif.: I must agree to Dr. Wilbur's conclusion that leukemia is an infection, in particular the result of infection of the bone marrow. My findings, important by themselves in other respects, show that twenty-four hours after administration of chloroform in a case of tuberculosis of the lungs followed a period of hematopoietic activity expressed by a gradual increase of leukocytes and a likewise gradual decrease of erythrocytes. This activity was not due directly to the 20 c.c. of chloroform inhaled during one hour at each treatment, because the result, a maximum of 19,000 leukocytes and a minimum of 1,520,000 erythrocytes, was achieved only at the end of fifteen days, when the chloroform had long been eliminated. The chloroform, however, I claim, may have dissolved the lipoid matter surrounding the tubercles; also probably extracted at least in part the waxy substances of the capsules of individual bacilli, rendering the latter less viable or more vulnerable, and carried numbers of them away in the blood stream. The leukocytogenetic function was stimulated by this sudden invasion of less virulent bacilli and we witness a powerful influence on the entire hematopoietic system. This is the fact which connects my findings with Dr. Wilbur's conclusion that leukemia is an infection. In my case the blood picture, abnormal after fifteen days, approaches the normal in thirty days more. There are no myelocytes or other abnormal white cells, indicating by their absence that the hematopoietic system has not become injured by infection of the bone marrow. However, we may not exclude a possible infection and injury of that system and consequently a possible leukemia, especially if the *causa morbi* be not *Bacillus tuberculosis* but diplostreptococcus. Dr. Wilbur sees the case at the end of the story, when the *causa morbi* cannot any more be eliminated. I see the same case at its beginning, when the hematopoietic system is still intact and responds to normal stimulation of its defensive elements against an apparently less virulent invasion. I may add that clinically my tuberculous patient is doing well under the treatment with chloroform inhalation.

Dr. Max Einhorn, New York: The question whether leukemias are infectious is very important, and the mass of experience would tend to favor such a view. In acute leukemia we have more evidence as to the infectious character of the disease. I will only mention one case in my own experience, in which sickness began with disease of the throat, an acute condition that first appeared to be an acute tonsillitis. The patient was treated for a week or so and then came to the hospital and was under my observation. In a few days he developed more throat symptoms, swelling of the tongue and larynx, and soon we were able to make a diagnosis of acute leukemia. The lymphocytes were greatly increased. I think they amounted to 92 per cent. of the white blood corpuscles. He had a very high degree of leukemia, the white blood corpuscles being one to four or five of the reds. He died in four or five weeks, the symptoms being those of an acute type of irregular fever with swellings and hemorrhages. That is the way the acute leukemias do; the patients die in a month or two. Dr. Sunderman of New York has made observations in which the acute leukemia could apparently be traced to an infection. In my own case no blood cultures were made and no definite bacteriologic proofs were obtained, but clinically it was undoubtedly an infection. In one case a streptococcus was found. Possibly that was not the real cause of it, but there must be something that leads to the infection. At any rate, these cases are of great importance and I think we should all try to furnish material for study and not rely on necropsies in the study of the leukemias. We should be able to recognize the disease before necropsy.

Dr. J. A. Lichty, Pittsburgh: I think we all agree that it would be very fortunate if we could find the cause for the primary anemias in infection. Dr. Wilbur's paper carries us one step further in this direction when we find infections such as he has described. Yet there are many questions which come up, especially as to whether the micro-organisms which he found in his case were after all the etiologic factor. In many of these primary anemias, and especially in pernicious anemia, we find an elevation of temperature toward the termination of the disease. We can hardly think of anything else but that there is an infection, probably a terminal infection. Probably the vitality of the organism is such that micro-organisms which are not harmful ordinarily for the normal body become virulent and pervade the various tissues. I regret very much that Dr. Rosenow is not here to discuss this paper, because he has done so much work along the line of the subinfections. In pernicious anemia particularly we see the terminal elevation of temperature. In a fatal case of pernicious anemia at the Mercy Hospital, Pittsburgh, colon bacilli were recovered from the bone marrow, which was very interesting but hardly conclusive. Such work as Dr. Wilbur's will have to be pursued until we prove or disprove the infectious nature of these diseases.

Dr. R. L. Wilbur, San Francisco: I have no idea of claiming that we have proved that the diplostreptococci are the cause of leukemia. But we have found the diplostreptococci, and we have much proof that leukemia is infectious. It is important to make studies of the bone marrow in these cases, particularly from living patients, which will probably advance our knowledge of this disease much more rapidly than in the past. Specimens for such study may be readily removed under general or local anesthesia. It is important to take care of foci of infection. As to the care of the tonsil in leukemia, that is a question. Are we to take out the tonsils in leukemia? There is the possibility of a lighting up of the process and the death of the patient. If the affection of the tonsils seems to be responsible for the leukemia, we should take them out.

Defects in Schoolchildren.—The *Bulletin of the Chicago School of Sanitary Instruction* says regarding medical school inspection work that it is a service rendered by the department of health for which the taxpayers pay, but unless the parents do their share by having defects attended to after their discovery by the inspectors the money expended is wasted. The department's figures regarding this matter are interesting. In 1914 there were 75,476 examinations made, 45,176 children were found defective and 35,425 were advised to seek treatment. In each of these instances the parents were informed by a note of the nature of the ailment and treatment was suggested, but only 9,244, or 40 per cent., acted on this advice. In detail the figures were as follows: Of 4,054 cases of adenoids, 737, or about 18 per cent., were treated; diseased tonsils, 5,754 cases, of which 223, or a little over 4 per cent., were treated; discharging ears, 1,254 cases, of which 118, or a little over 10 per cent., were treated; defective vision, 9,364 cases, of which corrections were secured in 1,826, or a little over 12 per cent.; diseased eyes, 7,449 cases, of which 138 were treated, or a little less than 2 per cent.

ABORTION

ITS CAUSES AND TREATMENT *

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The present age is one of conservation. In every line of human industry the effort is made to preserve and utilize Nature's forces. In the machine shop and factory, careful study is made to prevent loss of material and energy. Fortunes are acquired through the utilization of by-products which formerly were allowed to waste. The great exception to this rule is in the promotion and preservation of the race. Every gynecologist who studies the histories of those who pass under his ministration must be impressed with the terrible sacrifice of human life, purposely or accidentally, during the period of gestation. The mental attitude of many individuals is such as to impress one that they regard the sole purpose of their union to be their personal gratification, rather than to propagate the race and preserve the species. Their study is how to gratify desire, and to avoid its consequences. Procreation, the higher purpose of such association, is regarded as an unfortunate sequel to be avoided if possible, or entertained only when the conditions may seem opportune. When such a mental attitude is assumed toward the processes of life, the disappointment is grievous when the exercise of the sexual function results in conception. Such persons are distressed by and offended at the physician who informs them there is no immune period or uninjurious means to prevent it. The couple who have entered wedlock with the avowed determination to avoid the discomforts and responsibilities incident to pregnancy are mentally prepared to go further and institute measures to arrest life's processes, and destroy the life whose germination has been entrusted to their fostering care. It is a sad reproach on our civilization, an ominous danger to our nation, that those who are able to and should find delight in rearing and fostering their offspring will allow themselves to be diverted therefrom by less weighty matters. Our profession could not do a greater service to humanity and to the state than to continually impress on such patients the sanctity of human life in all its processes, and that procreation is the primary purpose for mating of the sexes. We must admire and respect those women who regard sterility as a reproach, and loss of the immature embryo as a cause for grief and distress.

Aside from any moral issue, Nature asserts her penalty on all who violate her laws. Changes occur in the genital structure of those who practice measures to avoid conception, which render them subsequently less prone to pregnancy, so that having reached a period when they desire offspring their hopes are denied. The changes are more marked in those who have interrupted the course of gestation. The inflammatory processes resulting unfit the uterine mucosa for the proper nourishment of its incumbent, and abortion becomes a habit; a habit which is to be overcome only by the restoration of affected structures to a healthy condition. It is possible for inflammation through infection to induce such injuries of the muscular structures of the uterus, tubes and pelvic peritoneum, as to render the uterus unable to enlarge sufficiently to permit the maturing of the fetus; or the tubes are so contracted that no opportunity is afforded for the union of a spermatozoid with an ovum, or the impregnated ovum is prevented from entering the uterus and a misplaced pregnancy results, adding to the gravity of the condition.

No one can consider the immediate and remote possible infective changes following interference with gestation without realizing the baneful influence of infection on the health of the individual. Pathogenic conditions are engendered which may be slight and evanescent, or there may be structural changes which absolutely preclude future procreation and handicap the individual for life — may even cause death. Although procreation may be continued, is it not possible that slight changes in the structure may so limit the nutrition of the ovum as to impair its complete development and thus affect the future mental or physical course of the offspring, and even influence its progeny? A widespread disinclination to procreation must have its influence on the interests of the nation. A nation's strength is dependent on the moral and physical courage of its men; hence, any cause which tends to limit procreation among the fit becomes a double crime, injurious to the public as well as to the individual.

Some members of the profession are advocating the legalization of abortion. Could any course be more disastrous! In all aggregations of population vice and crime are controlled through the force of public opinion. In every large city there are those who thrive as professional abortionists, who are so protected by the sympathizers with vice as to make their conviction and punishment difficult. That the production of abortion is a crime, and its practice disreputable, deters the physician who has any regard for his reputation from its employment. Its legalization, however, opens a door for its more general practice, when patient and physician could regard such a course justified by law and within the choice of the affected individual. Such a situation becomes an encouragement to vice and immorality, and prejudicial to the interests of the state. Without question every physician is familiar with unfortunate instances when girls of good family have been victimized or have yielded to overpowering temptation, but these do not justify interference with the laws of life by arresting its progress. However much the social situation of such individuals and their parents appeals to the physician, it should be an accepted dogma that those who violate the laws of society must pay the penalty.

CAUSES

Abortion may be the result of overexertion, infection or injury, but most frequently in first pregnancies through efforts to secure evacuation of the uterine contents by the administration of drugs or by mechanical measures. When the uterus is the seat of disease from previous infection or interruption of pregnancy, the pathogenic changes render the organ incapable of nourishing the incumbent until full term, and the contents are evacuated. When pregnancy recurs abortion becomes a habit. Frequently this is attributed to syphilis, which may be the cause, but it occurs more frequently independent of it.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

TREATMENT

The treatment of abortion consists in the preventive when threatened; the prophylactic when conditions exist which ensure its occurrence or when pregnancy occurs in cases in which the tendency has become a habit; and finally, completion of the evacuation of the uterus when abortion is inevitable, or has partially occurred.

Threatened abortion is best treated by absolute rest. The exclusion of all causes of excitement, the administration of an opiate, preferably by suppository or hypodermically, an easily digested, nutritious diet, the administration of laxatives and avoidance of remedies such as ergot, cotton root, quinin and strychnin, which increase the uterine irritability.

The prophylactic treatment is employed with those who have previously aborted, while nonpregnant, and consists in the improvement of the pelvic condition. The use of the curet in endometritis; surgical treatment of lacerations, extensive abrasions, eversion of the mucosa and extensive involvement of the racemose glands of the cervix should be regarded as indicated. Retrodisplacements and prolapsus should be corrected. A syphilitic history should be an indication for antisyphilitic treatment, and in all cases of habitual abortion, whether specific or nonspecific, potassium iodid will be found an invaluable agent. Its administration should not only precede pregnancy, but should be continued with more or less persistency during the early months. This drug diminishes the irritability of the uterine mucosa and ensures the continuance of pregnancy when an abortion would otherwise be inevitable.

INEVITABLE AND INCOMPLETE ABORTION

When it becomes evident that abortion will occur in spite of measures to avoid it, the early aseptic evacuation of the uterus is advisable. The natural inclination of the physician when consulted by a patient who has undergone a recent abortion is to make sure that the embryonic products have been completely evacuated, particularly if there are present symptoms of infection as indicated by elevation of temperature, rapid pulse, tenderness over the abdomen and pain in the pelvis. The friends of the patient attribute such phenomena to retention of portions of the products of gestation, and are insistent on measures for removal. When the symptoms are not ameliorated they become obsessed with the idea that the procedure has not been complete, and in many instances secure another consultant to repeat the process. No plan of treatment could be more detrimental to the interests of the patient.

During the five years, inclusive from 1910 to 1914, there have been treated in the gynecologic wards at Jefferson Hospital, 296 patients who were admitted under the designation of incomplete abortion. The great majority of these patients were suffering from symptoms of infection on admission; in many of them infection was well advanced and the condition practically hopeless. Many of them had undergone curettement prior to entering the hospital; 127, or nearly 43 per cent., were subjected to some surgical procedure after admission. There were 13 deaths in the entire number admitted; 5 of these were subjected to surgical measures after admission, while 8 were not treated surgically. The apparent percentage of mortality is 3.8 per cent. for those surgically treated, and 4.7 for the medically treated cases. At first glance it would appear that surgical measures afforded the most hope, but it must be remembered that no patients were refused admission, and only those were subjected to surgical procedures in whom local foci of infection were evident. While the profoundly infected patients were treated by supportive measures, careful analysis of the cases convinces me that a smaller mortality would have occurred had we received these patients before they had been subjected to any surgical interference, and subsequently confined our treatment to nonsurgical measures.

Nature has arranged her forces to expel the uterine contents when they have completed their function, or when they are no longer in condition to continue it. In addition she affords ample protection against infection unless her barriers are injudiciously broken down. Every examination and all manipulation of the genital structures of an aborting patient should be strictly aseptic, and when such conditions are difficult to attain, the vulva should be kept covered with clean napkins wrung out of a mixture of equal quantities of alcohol and water, while pituitary extract should be administered hyopdermically to promote expulsion of contents and closure of vessels.

It is often hard to resist one's inclination, and the importunities of relatives of the infected individual that some interference should be made in patients appearing with symptoms of infection following abortion, but it should be remembered that even admitting the retention of embryonic products, the infective organisms to not limit themselves to the local area. If they have not already invaded the blood, the manipulation necessary to explore and remove the retained tissue breaks down the barriers Nature has erected against further invasion.

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ABSTRACT OF DISCUSSION

Dr. Alfred Baker Spalding, San Francisco: Retroversion of the uterus predisposes to abortion in the early stages of pregnancy probably more than any other one thing, and often causes the death of the fetus; the so-called "blighted ovum." The attendant who corrects the retroversion is often unjustly blamed for the death or miscarriage of the fetus. I have in my laboratory several specimens of blighted ovum passed some months after replacement of a pregnant retroverted uterus which show an early stage of development at the time of death.

There has been for some years a growing tendency among gynecologists and men of experience to present to the profession the idea that the surgical emptying of the uterus is bad in principle and bad in practice. I am not one who agrees with this statement. There is undoubtedly a difference between the infected and the uninfected patient following the abortion; but in either case it has been my practice, and the practice of Dr. Somers, who preceded me in the woman's clinic of Stanford University, to dilate and curet the uterus immediately after the patient enters the hospital. I do not know what Dr. Somers' results have been, but I do know my experience. In the last three years we have had eighty-six patients enter with symptoms of incomplete abortion. All, with the exception of one, were treated surgically. One was not treated. Three were treated by means of manual curettement of the uterus and the other eighty-two patients were treated by dilatation and curettage. None of these patients had been curetted before entering the hospital, which may make a difference in the statistics. Of these eighty-six patients only one died. Dr. Stephenson gathered together as many of these histories as possible. Of the forty patients reviewed, the temperature was normal on admission to the hospital in thirteen cases and from 99 to 103 in twenty-seven cases. After operation, the temperature either remained normal from the day of operation or returned to normal in seventeen cases; ten were normal the first day after operation, making twenty-seven cases; five returned to normal on the second day after operation, making thirty-two; three returned to normal on the third day, making thirty-five; one returned to normal on the fourth day, making thirty-six; two, fifth day following operation, making thirty-eight, while only two persisted with elevated temperature for seven days. Twenty-three had a leukocytosis before operation of over 9,000, some as high as 30,000, showing another evidence of probable infection. As to the cause, twenty-four stated that abortion came on spontaneously, and sixteen acknowledged that they had brought it on criminally. Of late it has been our practice to test the mothers for syphilis in case of an unexplained abortion. In four recent cases, all gave a negative Wassermann on examination. I present these statistics, hurriedly gathered together, to show that patients can be well treated by clearing out the uterus promptly, although at the same time I am sure Dr. Montgomery can in general practice show that many patients can empty the uterus spontaneously and are better untampered with. I wish to point out, however, that at present I cannot see the reason for not emptying the uterus in abortion.

Dr. John Osborn Polak, Brooklyn: Before this section and before the American Gynecological Society we have called attention for several years to the treatment of infected cases by the so-called palliative methods (so-called judicious neglect plan) versus operative procedure, and our results have been so exceptionally good that we have rather felt that the profession should share with us in the little knowledge that we have gained by the study of this procedure.

We divide abortions into the infected and the noninfected cases. I do not believe that any of us feel that in a noninfected case the uterus cannot be entered with safety and if the evacuation is complete and clear, perhaps the convalescence of that patient will be expedited; but I do know that the infected case which has protected itself, as each infected case does protect itself, by a leukocytic wall, and if a placenta is present and thrombi are formed in the vessels in the placenta site, that the infection is spread and the patient's condition is jeopardized by the routine procedure of curettage.

The question of interference in abortion is this: Is there hemorrhage or is there not hemorrhage? If there is no hemorrhage, our experience has been, even when the temperature is 104 or 105, that those patients, if placed in the Fowler position, an ice pack put over the abdomen and elimination maintained with saline solution and intestinal rest, with no cathartics and no food, show—inside of twenty-four to seventy-two hours—great improvement; the products will separate, for they have been starved off by the formation of the round-cell deposits, and the product of conception will be delivered completely, if left alone, in the large majority of cases. If it is not delivered spontaneously, it is found with the uterus contracted and this large mass lying in the dilated lower segment of the uterus. We have, for instance, reported twenty consecutive infected cases, before the International Congress, with the complete contents of conception left *in situ;* every one of those patients made a complete recovery, the uterus expelling its contents spontaneously, and we believe just in proportion as these cases are interfered with, so is the morbidity increased. In a hundred consecutive cases, sixty-three had been curetted one or more times, and all of these showed exudates. On the other hand, in 200 consecutive cases admittedly infected, without interference, we found that in this series of cases our morbidity as to exudates and as to mortality was decreased. It is a pleasure to hear Dr. Montgomery, whose word covers such weight, protest against this active interference in abortion.

Dr. C. Lester Hall, Kansas City, Mo.: We all feel keenly the outrage that has been committed by the profession on the pregnant woman in the way of producing abortion. It is now many years since I first heard a man, or several men of high standing, in the discussion of this subject, flatly acknowledge a willingness to produce abortion in the maiden who had been unfortunately caught. My protest on that occasion, whether it had any lasting effects or not, was so emphatic that it has been my good fortune not to hear these men repeat this statement. The outrage is so monstrous that we cannot accentuate it too strongly. I feel that it is not done now as it once was done. I believe the profession is rising above this nefarious practice. In regard to the treatment of abortions, I think it depends very much on circumstances. I believe it would be justifiable in almost any case, if the obstetrician were sufficiently clean, to empty the uterus with a blunt instrument; to swab out the uterus once, and never again. It is the continual meddling that brings dire results, and even with all our care it is liable to produce septic conditions.

I know the value of the protective wall that nature has thrown out, and over and over again it has been my fortune, and I believe with good results, to stay the hand of the energetic, aspiring young obstetrician who wanted continually to meddle with these cases. We know the deleterious effect of uterine douching. In regard to giving these patients potassium iodid, that Dr. Montgomery refers to, to make a woman carry a baby to term, I would object to the giving of the potash. I think we might give iodin itself with safety, but in all these cases we are apt to have more or less kidney trouble, and I believe in giving potassium iodid we load up the system with this potash which is toxic and detrimental. I protest that in women with albuminuric conditions we should avoid the use of potassium iodid or other potash salts.

In regard to retrodisplacements of the uterus of the pregnant woman, it is a great misfortune if we cannot institute some measure whereby we can make this woman carry her child to term and prevent the recurrence of the retrodisplacements. This is the *only* nonsurgical way we can correct these displacements. This I have often done, and by the postural treatment after delivery recurrence of the retrodisplacement has been prevented. This will happen in 99 per cent. of all cases in which the retrodisplacement has existed before pregnancy.

The subject is so important, and coming from Dr. Montgomery, is so effective that I am sure if any young man here has been imprudent in the use of instruments after abortions, the doctor's paper will have a lasting good effect, and it will do us *all* a great deal of good.

Dr. S. M. D. Clark, New Orleans: It seems that we are about to agree on some standard method in handling abortions. In noninfected cases I believe with Dr. Montgomery the sanest plan is to empty the uterus with as little traumatism as possible and then leave an iodin wick for twenty four hours. The infected abortions are the ones on which there are still divergent opinions. It took a goodly experience before I could break away from the old plan of emptying the uterus in these cases. After all, the pathology should guide us, and when this is thoroughly understood, the locally inactive plan is the method that best complies with these laws. When called in consultation, how often have each of us found the physician giving daily intrauterine douches; he generally curets and if the temperature materially rises, feeling that there is still something remaining, he again curets. The pressure of the anxious family forces him into some local activity; he feels that he must be doing something, so he goes ahead douching and curetting. This daily mauling is repeated, not so much for the patient, but for the family. Where the infection is already beyond the endometrium, nothing could be more unreasonable than to expect relief by superficially fussing around in the interior of the uterus. Let such cases alone, adopt the locally inactive plan, furnish an abundance of fluids and keep the patients well nourished. The infection in practically every case will localize; an immunity will be established; the patient will autogenously vaccinate herself and the exudate either resolve or suppurate.

The importance of the lower segment of the uterus in these infected abortion cases has not been given due consideration. In many of our cases the upper segment is never involved, but rather the infection has struck directly out toward the parametrium through the richly supplied lymphatic circulation of the cervix. This is the type in which the true pelvic connective tissue abscess is found, which when drained is immediately cured. Could anything be more unreasonable than to curet in such cases? I think a point to be driven home is the extreme importance of exercising the most rigid asepsis when making vaginal examinations in diagnosing cases of abortion. The vaginal canal should be explored with the same aseptic regard as one would invade a knee joint or the abdominal cavity.

Dr. H. G. Wetherill, Denver: In the treatment of these cases it is important to determine whether one is dealing with a spontaneous abortion or a mechanically induced abortion. Infections of the genital tract are commonly retrograde infections if the abortion is mechanically induced, or if there has been gynecologic tinkering. If, on the other hand, it is an incomplete abortion, not of the mechanical type, then we certainly are justified in picking out with the placental forceps any retained portion of the product of conception which might otherwise give rise to sapremia. With this exception, I agree wholly with the principles of treatment set forth by Dr. Montgomery and I am heartily in accord with him in his strictures on the abuse of the uterine curet in such cases. So careful should we be in handling infected cases that a tenaculum or volsellum forceps should not be used to draw down and fix the cervix, as the small punctures made by the teeth of the instrument are sufficient to reinoculate a patient from the vaginal and cervical secretion.

For many years I have treated infections following abortions with alcohol after the method of Caruso. A double drainage tube of large caliber is inverted on itself, so that the solution cannot follow the tube. This tube is introduced to the fundus with strict antiseptic precautions and the alcohol which is used through it flushes the genital tract from the fundus outward with a nonpoisonous, antiseptic solution. Occasionally a solution of permanganate of potash or a diluted solution of iodin is substituted for the alcohol. In the treatment of such cases it is very easy to do too much and almost impossible to do too little. The majority of the patients will recover if let alone.

Dr. E. E. Montgomery, Philadelphia: I must confess that if called to a woman who had an abortion or was aborting, in whom a portion of the embryo had escaped, whom I had reason to feel was not an infected case, and in making a careful aseptic examination discovered a portion of the placenta projecting, I should be tempted at once to evacuate the uterus; but in cases such as one of the gentlemen mentioned in which the mass is situated within the body of the organ, the cervix, possibly, more or less contracted, the result of leaving the case to nature, treating it carefully, aseptically, will be attended with much less danger to the patient than would be the mechanical dilatation of the uterus and the removal of the structures within. I believe, also, in those cases of which Dr. Wetherill has spoken, in which a portion of the placenta remains and it is evident that sapremia exists, it is better to leave the condition undisturbed and trust nature to evacuate it rather than use mechanical measures.

Railway Accidents.—According to *Accident Bulletin 55* of the Interstate Commerce Commission, for the first quarter of 1915 the number of persons killed in train accidents on steam railways was 65, and the number of persons injured was 1,972. The total number of persons killed in all classes of accidents incident to railways was 1,650, and the number injured was 35,429. This includes 68 persons killed and 21,582 injured in so-called "industrial accidents," which are defined as accidents not connected with train operation, but occurring to railway employees, other than trainmen, on railway premises.

PLACENTAL BACTEREMIA *

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When the fetus is stillborn or the infant dies within a few days after its birth, frequently we are unable to determine the cause of death. This fact has been emphasized in the statistical analyses recently published from two American institutions. At the Sloane Hospital for Women[1] among 10,000 consecutive confinements there were 429 stillbirths and 291 infants which died within two weeks after they were born. Reviewing an equal number of confinements at the Johns Hopkins Hospital, J. Whitridge Williams[2] found 705 cases of stillbirth and early infant death. The fetal mortality in these clinics, it would seem, is practically identical. And in both series of statistics it is instructive to find that, although careful clinical observations and postmortem examinations were made, the cause of death was not ascertained in roundly 20 per cent. of the fatal cases.

Some time ago my attention was called to a cause of fetal death not widely appreciated and one which is left out of account in the reports just quoted. Whenever membranes rupture prematurely and the labor is prolonged, especially if repeated vaginal examinations are made, bacterial invasion of the placenta—placental bacteremia—may occur. This complication constitutes a serious danger for the fetus. Its relative importance as a factor in infant mortality is difficult to estimate but its practical significance is certain.

With reference to this question I have studied five hundred consecutive confinements under my care while connected with the University of California Hospital. Including infants over 40 cm. long the mortality was 5.4 per cent. (27 cases). The infant was stillborn in 21 cases; it died on the second day in 3, on the fourth in 2, and on the ninth in 1 case. A necropsy was performed in every instance. The causes of death were as follows:

	Cases	Per Cent.
Syphilis	7	26
Birth injury	6	22
Premature separation of placenta	4	15
Placental bacteremia	3	11
Congenital heart lesion	2	7
Enlarged thymus	1	3
Toxemia pregnancy	1	3
Undetermined	3	11

A number of well-known factors combine to explain why the fetal mortality is higher in case labor is prolonged. With 62 of my patients labor lasted longer than twenty-four hours and in this group 8 fetal deaths occurred (13 per cent.). Three of the deaths were due to placental bacteremia. The mothers of these infants were not seriously ill and at the end of two weeks were discharged from the hospital in good health. Such results, it will be made clear, are not always to be expected. But before considering the experience of other observers I may summarize the histories of my cases, giving only the facts pertinent to the problem under discussion.

Case 1.—Primipara; aged 20; generally contracted rachitic pelvis with diagonal conjugate measuring 11 cm. Presentation right occipitoposterior. Duration of labor twenty-eight hours: membranes ruptured six hours before delivery by midforceps. Several vaginal examinations were made but the number was not recorded. Temperature during labor, 37.8 C. (100 F.); pulse, 70. Highest puerperal temperature, 37 C. (98.6 F.); pulse, 98.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the Newborn, The Journal A. M. A., Jan. 23, 1915, p. 287.

[2] Williams, J. Whitridge: Limitations and Possibilities of Prenatal Care, The Journal A. M. A., Jan. 9, 1915, p. 95.

The child, 48 cm. long, weighed 3,080 gm. It was easily resuscitated. Death occurred on the third day. At necropsy the umbilical stump was dry and clean. The abdomen contained 250 c.c. of seropurulent fluid which showed streptococci in cover slips. There were subpleural ecchymoses over the left lung, but no intracranial hemorrhage and no meningitis. The brain was normal.

Sections of the placenta and umbilical cord stained with hematoxylin and eosin were normal. Sections of the placenta stained by the Gram-Weigert method showed a few streptococci just beneath the amnion in the neighborhood of the fetal blood vessels. Bacteria were not demonstrated in the cord.

Case 2.—Primipara; aged 23; normal pelvis. Presentation left occipito-anterior. Labor began with rupture of the membranes and after forty-five hours terminated normally. Six vaginal examinations were made. Temperature during labor, 38 C.; pulse, 108. Highest puerperal temperature was 38.2 C.; pulse, 110.

The child, 52 cm. long, weighed 3,540 gm. Resuscitation was difficult. Death occurred at the end of forty-eight hours. Shortly after its birth the infant bled from the mouth, and later patches of purpura appeared over the head, buttocks, scrotum and right knee. At necropsy a small blood clot was found on the parietal peritoneum adjacent to the umbilical vessels and another beneath the liver. The peritoneal cavity contained about 10 c.c. of uncoagulated blood but none was found in the intestines. There was no blood in the pleural cavity. Several hemorrhages the size of a pinhead were found at the base of each lung.

Sections of the placenta stained with hematoxylin and eosin were normal but the umbilical cord was infiltrated with leukocytes, most pronouncedly in the neighborhood of the vein. Stained by the Gram-Weigert method streptococci were demonstrated in the amniotic and chorionic connective tissue near the fetal surface of the placenta. Streptococci were also present in the cord.

Case 3.—Primipara; aged 38; normal pelvis. Presentation left occipito-anterior. Membranes ruptured when the cervix was dilated 5 cm., twenty-four hours before delivery was effected by midforceps. Temperature during labor, 37.8 C.; pulse, 106. Highest puerperal temperature, 38.5 C. (101.3 F.); pulse, 115.

The child, 50 cm. long, weighed 2,980 gm. For an hour before delivery the fetal heart sounds were not heard. The necropsy findings were negative except for a small cerebral hemorrhage beneath the left occipital lobe.

Sections of the placenta showed partial thrombosis of many of the vessels which pass over the fetal surface of the placenta. Large numbers of bacteria were demonstrated in the amnion covering the placenta and in the underlying chorionic connective tissue. Streptococci and also a short, stout bacillus, resembling the gas bacillus, were present. A few streptococci were found in the intervillous spaces but the chorionic villi were normal. A typical mixed thrombus almost completely blocked the umbilical vein. It contained streptococci as did also the wall of the vein and the surrounding Whartonian jelly. The walls of the umbilical arteries were slightly infiltrated with leukocytes but no bacteria were demonstrated there.

In all these cases organisms were demonstrated in the subamniotic connective tissue where they came in contact with the large fetal blood vessels which cross the surface of the placenta. In one instance it was possible to demonstrate bacteria in the act of penetrating the walls of these vessels. It is also noteworthy that in every case the epithelium which covers the villi was intact, the capillaries within the villi were of normal appearance, and no bacteria were found either on the surface or in the interior of the villi. Evidently the infection did not proceed from the maternal circulation and did not pass through the walls of the villi. The bacteria entered the placenta by way of the amniotic membrane. Most frequently, as in these cases, placental bacteremia depends on the infection of the amniotic fluid; and generally the latter complication occurs because the membranes rupture prematurely, labor is prolonged, and repeated vaginal examinations are made.

From a knowledge of the anatomy of pregnancy it is obvious that, at least theoretically, the infection of the amniotic fluid is possible by three routes; (1) organisms may pass from the maternal circulation across the decidua, the chorion, and the amnion; (2) they may travel from the peritoneal cavity down the fallopian tubes, or (3) they may ascend from the vagina through the cervical canal. In a series of animal experiments the progress of an infection along each of these paths has been demonstrated by Hellendall,[3] but only the third has a broad, practical significance in human pathology. It has not been established that the other routes ever play a rôle except under conditions that have been imposed experimentally. And yet, it is possible in human beings that hematogenous infection of the amniotic fluid may be the result of a maternal septicemia; and also that in case of acute inflammation of the appendix during pregnancy the responsible organisms may find their way down one of the fallopian tubes. At all events, in the cases I have observed, neither septicemia, appendicitis, nor peritonitis existed; on the other hand, ideal conditions prevailed for infection of the amniotic fluid by the vaginal route.

When the membranes have ruptured, an increased liability to infection is apparent; and some have taught that bacterial invasion of the amniotic cavity occurred while the membranes were intact. The evidence favoring the latter possibility, however, is not conclusive, as it has never been confirmed by bacteriologic examination. In the cases recorded by Lehmann, Carpentier, Brieglet, Lendanthal[4] and others, the foul smelling decomposed amniotic fluid which escaped when the membranes ruptured may have been due, as these observers suggest, to bacterial putrefaction; but in the absence of cultures it remains to be proved that the unruptured membranes are not an effectual barrier against the passage of bacteria from the vagina to the amniotic cavity.

Although under suitable conditions a great variety of pathologic bacteria may invade the amniotic fluid, the streptococcus has been the predominating organism found in cases of placental bacteremia. Frequently colon bacilli are associated with streptococci. In the case of tympanitis uteri during labor the colon bacillus was regarded as the exclusive etiologic factor until, in one instance, Krönig[5] demonstrated an obligatory anaerobic bacillus. Warnekros[6] has isolated the gas bacillus from blood cultures in several cases of placental bacteremia. And in one of my cases placental sections showed a short, stout bacillus corresponding morphologically with the *Bacillus aerogenes capsulatus* though its identity was not established by means of cultures.

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[3] Hellendall: Beitr. z. Geburtsh. u. Gynäk., 1906, x, 320.

[4] Lehmann, Carpentier, Brieglet, Lendanthal, quoted by Hellendall, Note 3.

[5] Krönig: Centralbl. f. Gynäk., 1894, xviii, 749; ibid., 1905, xxix, 1243.

[6] Warnekros: Arch. f. Gynäk., 1913, c, 173.

From the nature of the lesion in placental bacteremia, an infection within the uterus; generally limited to the amnion and the chorion and often most pronounced in the neighborhood of the large vessels passing over the fetal surface of the placenta, the associated clinical problem pertains both to the mother and to the child. Thus far, its maternal aspects have aroused the greatest interest. And this interest has been stimulated chiefly by a desire to determine whether a true uterine infection was responsible for intrapartum fever.

Glockner[7] thought the existence of an infection was unnecessary to explain intrapartum fever. Frequently in these cases the temperature becomes normal immediately after delivery, or presents only a slight temporary rise during the puerperium. Consequently, Glockner assumed pathogenic bacteria were not present, and ascribed the intrapartum symptoms to prolonged and violent uterine contractions. Winter[8] favored this view but also admitted that bacteria might be indirectly concerned. According to Winter's hypothesis the symptoms were occasionally explained by the absorption of toxins from a decomposing ovum. On the other hand, Hausen, Krönig, and Hellendall declared that intrapartum fever, like puerperal fever, depended on a bacterial invasion of the maternal tissues.

It occurred to Warnekros that this difference of opinion could be settled if cultures were made from the mother's blood in case her temperature during labor rose above 38.5 C. The procedure was adopted in 25 cases; the cultures from 18 cases were positive, from 7, negative. In 9 instances streptococci were isolated, in 3 staphylococci, and in the other positive cases colon bacilli, pseudodiphtheria bacilli, or anaerobic gas-producing bacilli; not infrequently more than one type of organism was isolated. Whenever a positive culture was obtained during labor, another was made on the day following delivery. The puerperal cultures were negative except in one instance—the case of a patient who died of a streptococcus septicemia on the third day postpartum.

In approximately 70 per cent. of the cases of intrapartum fever it was clear that a genuine, if temporary, infection of the mother existed. The cause of the fever in the other cases was uncertain. Consequently, the scope of the investigation was broadened, and sections of the placenta were stained for bacteria. In every instance, even though the blood cultures had been negative, organisms were found in the placenta. And, therefore, Warnekros concluded that intrapartum fever, unless attributable to some accidental cause, as tuberculosis, was due to an infection of the mother, often mild and temporary, and that a placental bacteremia was always demonstrable.

The character of the puerperium which will follow a febrile labor may best be predicted from the result of blood cultures taken the day after delivery. Generally, these are negative and a good prognosis is assured. On the other hand, positive cultures indicate the existence of a puerperal infection. Blood cultures at the time of labor have no prognostic value. Similarly, as a prognostic sign the degree of fever at the time of labor is unreliable, for Winckel[9] observed several patients who experienced a puerperal convalescence free from fever in spite of an intrapartum temperature above 39 C. (102.2 F.).

The puerperal morbidity in cases of intrapartum fever, an average based on the report of 944 cases by five observers, would seem to be about 63 per cent., the puerperal mortality 6.2 per cent.

RESULTS FOR THE MOTHER FOLLOWING INTRAPARTUM FEVER

	No. of Cases	Normal Puerperium Per Cent.	Slight Fever Per Cent.	Severe Fever Per Cent.	No. of Deaths
Ahlfeld[1]	62	35.5	29.8	35.5	3
Glockner[2] ...	211	62.5	15.16	22.27	13
Ihm[3]	190	58.43	25.27	13.69	8
Kronig[4]	37	21.6	.....	78.4	7
Hellendall[5] ..	44	6.54	63.63	29.54	1

1. Ztschr. f. Geburtsh. u. Gynäk., 1893, xxvii, 494.
2. Ztschr. f. Geburtsh. u. Gynäk., 1891, xxi, 409.
3. Ztschr. f. Geburtsh. u. Gynäk., 1904, lii, p. 30.
4. Centralbl. f. Gynäk., 1894, xviii, 749; ibid., 1905, xxix, 1243.
5. Beitr. z. Geburtsh. u. Gynäk., 1906, x, 320.

In case of intrapartum fever the outlook is much more serious for the infant than for the mother. The fetal mortality encountered by Ihm was 18 per cent., by Hellendall 19 per cent., by Winter 35 per cent., and by Kronig 61 per cent. These statistics include cases of toxemia of pregnancy, of placenta praevia, of pelvic contraction, and of malposition of the fetus. Therefore, the death of the fetus may have been due to one of several causes, and, lacking the requisite examination, it is impossible to determine to what extent the infection of the placenta was concerned.

At present I am content to emphasize the fact that intrapartum infection must be regarded as one cause of fetal death, and also to demonstrate that the umbilical vessels may be the path of the infection. Heretofore, it has been assumed that antepartum infection of the fetus depended on its swallowing or aspirating the infected amniotic fluid. At most, Krönig has said, blood-borne infections to the fetus are limited to cases in which the mother is suffering from septicemia, as in typhoid fever, pneumonia, tuberculosis or cholera. But another possibility must be reckoned with, namely this: If the amniotic fluid is infected, the bacteria may cross the amnion and invade the placental vessels which carry blood to the fetus.

In one instance I have noted an intense infection of the subamniotic connective tissue and have demonstrated streptococci in the vessels on the fetal surface of the placenta and also in the umbilical vein. In another, streptococci were found in the placenta and in the cord, not in the lumen of the vein but in its wall. As further evidence that the cord infection proceeded from the placenta rather than the fetus no inflammatory lesion of the fetal respiratory or gastro-intestinal tract was found in any case. Various fetal organs were stained for bacteria but none were demonstrated.

It is also instructive that an examination of the placenta for bacteria occasionally serves to establish the cause of fetal death. Until this examination was made, the death of one infant which presented at necropsy a general peritonitis was attributed to imperfect nursery hygiene. Obviously, that explanation was excluded by the demonstration of streptococci in the placenta. Again, in the second case of placental bacteremia, the clinical diagnosis was hemophilia, and human blood serum was administered; the necropsy added nothing to the clinical findings. Also, in the third case the cause of the death of the fetus was not established clinically nor by postmortem; without appropriate study of the placenta the diagnosis could not have been made.

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[7] Glockner: Ztschr. f. Geburtsh. u. Gynak., 1891, xxi, 386.

[8] Winter: Quoted by Meyer-Ruegg in Handb. d. Geburtshülfe, ii, Part 3, p. 2375.

[9] Winckel: Quoted by Kronig, Note 5.

Placental bacteremia is not always attended by the death of the fetus or the newly born infant. This would not be expected. Bacterial invasion of the amnion and the chorion does not mean that the fetal blood vessels will necessarily become involved. The invasion may advance in another direction. Furthermore, the period of time elapsing between the invasion of the amnion and the birth of the infant may be too short for the organisms to reach the blood vessels in question. Clinical evidence corroborates this view; in cases of intrapartum fever, at most, two thirds of the infants perish.

This series of cases is not large enough to justify an uncompromising estimate of the part placental bacteremia plays in infant mortality. The fact, however, that three of twenty-seven deaths were attributable to this cause shows that it must be taken seriously into account. Perhaps it explains an appreciable number of the fetal and infant deaths heretofore impossible of explanation. Therefore, it is pertinent to recall the frequency of certain phenomena which are usually associated with bacterial invasion of the fetus.

Premature rupture of the membranes was noted by Bassett[10] five hundred times in 4,141 consecutive confinements and by Dmelin[11] four hundred times in 4,000 confinements. Thus, the frequency of this accident may be estimated to be between 10 and 15 per cent. On the other hand, Winckel and Krönig regard 3 per cent. as a fair estimate for the frequency of intrapartum fever. Basing a calculation on these statistics, it appears, if the membranes rupture prematurely, bacterial invasion of the placenta occurs in every fourth or fifth case. In view of these facts the routine study of the placenta for the purpose of demonstrating bacteria should be undertaken not only when the labor is febrile but also if it is prolonged after the membranes rupture.

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[10] Bassett: Ztschr. f. Geburtsh. u. Gynäk., lxxiii, 566.

[11] Dmelin: Quoted by Bassett, Note 10.

Swimming-Pool Sanitation.—A valuable contribution to this subject is contained in *Public Health Reports,* Sept. 17, 1915. It is by W. A. Manheimer, Ph.D., of the Department of Bacteriology of Columbia University, and details in tabulated form the results of a bacteriologic study of the water of a number of pools under various conditions of use, without and with the use of a number of chemical disinfectants. Among the conclusions reached were that the cubic capacity of a pool affects its sanitary condition, pools of small capacity being more difficult to keep in a satisfactory condition even with the use of chemicals; the process of adding dilution water is an efficient means of reducing the bacterial content; the supervision of the plant and the class of attendance are also important factors in pool sanitation; filtration is an adequate means of clarifying the water, which is a means of preventing accidental drowning. In pools in which refiltration is not practiced the water becomes so cloudy in one day that the bottom of the pool cannot be seen; chemical disinfection with calcium hypochlorite is effective, but if added too infrequently or in too small quantity its value is largely lost. A trace of chlorin should be constantly present; the best method of keeping a pool in safe and sanitary condition is by the combined method of refiltration and chlorination.

A MODIFICATION OF THE ABDERHALDEN TEST *

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In the course of the last two years the Abderhalden reaction has been brought to the attention of the medical profession so often that it is safe to assume that the fundamental facts discovered by Abderhalden are generally known. In short, Abderhalden, as does Ehrlich, assumes that normal cells of the body are able to assimilate only those substances present in the blood as its normal constituents. The changes brought about in the composition of the blood serum by introduction of foreign substances lead to disturbances in the processes of cellular nutrition and often to cellular death. The experimental study of the phenomena of assimilation of foreign material introduced directly into the blood stream revealed a number of facts pointing to the tendency of the cells to elaborate a special mechanism, by means of which the cells are able to protect themselves in a specific manner against the injurious effects of disturbances of their normal nutrition.

According to Abderhalden, this protective mechanism consists in the formation in the cells of new and specific ferments, which directly attack the foreign material. As in the case of the antibodies of Ehrlich, these specific ferments, according to Abderhalden's conception, at a certain stage of the process, may appear detached from the cells, and be found circulating free in the blood. The presence, in the blood of animals, of such specific ferments not existing there normally, may be taken to indicate that the parenteral digestion of foreign substances is taking place in the body. According to Abderhalden and his collaborators, the presence of such specific ferments may sometimes be demonstrated in the blood of experimental animals a few hours after the parenteral introduction of foreign substances.[1]

As Abderhalden has shown, not only foreign substances introduced experimentally, or these penetrating in the tissues as a result of infection, but also autogenous substances arising in the animal body under physiologic conditions may cause the production of specific ferments as soon as such substances find their way into the blood stream. Thus for instance, he found that during pregnancy the animal body elaborates specific ferments capable of digesting placenta protein.[2] This finding led Abderhalden to propose a new method of diagnosis of pregnancy, whereby the condition of pregnancy is suspected in every case in which the blood of the individual contains specific ferments that are capable of digesting placenta tissue in vitro.[3]

A great number of investigators confirmed Abderhalden's findings, and some of them attempted to apply the method to the diagnosis of various pathologic conditions.[4] They also found these ferments specific to such a degree, that they were able to differentiate by this method different closely allied species of bacteria.[5]

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* From the Research Laboratories of the Western Pennsylvania Hospital.

[1] Abderhalden, E.: Abwehrfermente, Ed. 4, 1914, pp. 77, 78. Heilner and Petri: München. med. Wchnschr., July 15, 1913, p. 1530.

[2] Abderhalden, E.: Abwehrfermente, p. 91.

[3] Abderhalden, E.: Abwehrfermente, pp. 92, 93.

However, in spite of the great number of most enthusiastic supporters of the specificity of this method,[6] many investigators, continuously increasing in number, have not been able to fully confirm the usefulness of the method. According to some of them the reaction is absolutely devoid of specificity,[7] and others, whereas they acknowledge its value in negative cases as definitely excluding the presence of specific ferments, deny the value of positive findings;[8] others, again, think that the ferments are only relatively specific, namely, their specificity is directed toward groups of substances, but not toward the individual members of each group.[9]

Referring to these differences in opinion of different investigators, Abderhalden repeatedly stated that those unable to repeat his experiments are undoubtedly using a faulty technic, and until they obtain the expected results, they ought not to consider themselves in possession of the knowledge of the method.[10] On the other hand, Oeller and Stephan, for instance, from their experience with the test, concluded that the reasons for the discrepancies are much deeper—they believe that the study of protective ferments has already come to the point at which "further progress is possible only if the whole mass of contradictory clinical results obtained up to date is thrown overboard, and the study of the problem is started anew."[11] These authors found that although under certain conditions of the experiment the Abderhalden method gives suggestive results, still the further systematic study is impossible until we do away with such parts of the technic of the method as are responsible for the errors in the result.

Although many authors are inclined to think that the technic of the Abderhalden test is very difficult,[12] our own experience showed us that the method is much simpler than some other serologic methods. The difficulty in obtaining more constant results, lies, as we see it, not so much in the complexity of manipulations, as in the fact that the relations of the ingredients to each other are not properly understood, and, therefore, are not properly controlled in the test.

Our experiments have shown us that although in a number of cases one obtains apparently specific results, the Abderhalden reaction does not depend on the presence in the serum of specific ferments.[13] The very fact that these ferments, according to Abderhalden, appear almost immediately on introduction of foreign material, made many authors doubt the possibility of their existence.[14] Moreover, the fact that a certain number of male serums in the hands of reliable workers give rise to dialyzable split products when combined with placenta shows that the digestive properties of serum may not be specific.

In our own experiments conducted with the view of detecting the nature of the Abderhalden reaction, we came to the conclusion that in no case is the placenta digested,[15] and that the mechanism of the reaction is entirely different from that ascribed to it by Abderhalden. Namely, we found that, as first suggested by Stephan and Hauptmann,[16] the Abderhalden test is possible only with the serums containing complement, and when complement is missing, any fresh serum is able to activate the test,[17] thus showing that at least the active principle in the digestion is not specific. Moreover, it was found that the relative specificity of the test depends not on the presence of specific ferments, but on the substances, which, like the antibodies of Ehrlich, are not active by themselves, but are responsible for the specificity of the reaction.[18] We found, further, that the active principle responsible for the appearance of the dialyzable substances is, like complement, present in every fresh serum, and possesses properties of a tryptic ferment. This ferment is normally prevented from exhibiting its digestive power by the simultaneous presence in every serum of inhibiting substances apparently colloidal in nature. These under the influence of the physiochemical changes in the medium occurring during the experiments, easily lose their property to neutralize the trypsin of the serum.[19] Such changes are most easily produced through adsorption. For instance, addition to a fresh serum of a suitable amount of any organic substratum or of substances like kaolin, starch, agar, etc.,[20] changes the degree of colloidal dispersion in the serum, and the normal trypsin is set free. Although, as we have shown,[21] if such nonspecific tryptic ferment liberated from the serum is able to digest natural protein (bacteria, placenta cells, etc.), it is, however, absolutely unable to attack a denatured coagulated substratum. It is thus that we concluded that in the Abderhalden reaction the dialyzable split products originate not from the boiled substratum, but from the serum itself.[18, 19]

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[4] In close succession a number of publications described results obtained from application of this method to the study of neoplasms. (Freund, E.: Wien. klin. Wchnschr., 1913, xviii, 730; Fried, C.: München. med. Wchnschr., 1913, i, 2782; Gambaroff: ibid., July 29, 1913, p. 1644; Lowy, Otto: A Serum Reaction as an Aid in the Diagnosis of Cancer, The Journal A. M. A., Feb. 7, 1914, p. 437; Benech, J.: Compt. rend. Soc. de biol., 1914, lxxvi, 361), asthma (Kabanow: Russk. Vrach, 1914, No. 4, abstr., Deutsch. med. Wchnschr., 1914, p. 770), syphilis (Reines: Wien. med. Wchnschr., 1914, No. 10; Mahlo: Abstr., München. med. Wchnschr., July 28, 1914, p. 1695; Fraenkel: Ibid., p. 1695; Voelkel: Ibid., No. 7, p. 349; Bornstein: Arch. f. Dermat. u. Syph., 1914, cxx), rabies (Babes and Pitulesco: Compt. rend. Soc. de biol., 1914, lxxii, 207), tetanus (Urechia and Popeia: Ibid., 1913, lxxv, 591), pellagra (Babes and Jonnesco: Ibid., 1914, lxxxvii, 171), tuberculosis (Abderhalden and Andryewsky: München. med. Wchnschr., 1913, lx, 1641. Lampe: Deutsch. med. Wchnschr., 1913, No. 3, Melikjans: Ibid., 1914, No. 27. Gompertz: Beitr. z. klin. d. Tuberk., 1914, xxx, No. 1. Fraenkel and Gompertz: Deutsch. med. Wchnschr., 1913, p. 1585. Wolf and Frank: Berl. klin. Wchnschr., 1914, p. 875), nervous diseases (Ahrens: München. med. Wchnschr., 1913, p. 1857. Beyer: Ibid., 1913, p. 2450. Ahrens: Ztschr. f. exper. Med., 1914, p. 397. Binswanger: München. med. Wchnschr., 1913, lx, No. 42. Fauser: Ibid., 1913, p. 1984; ibid., 1914, p. 126), nephritis (Kotchanef and Chingarewa: Compt. rend. Soc. de biol., 1914, lxxvi, 354), scarlet fever (Schultz and Grote: München. med. Wchnschr., 1913, p. 2510).

[5] Kirchbaum and Köller: abstr., München. med. Wchnschr., June 23, 1914, p. 1415. Voelkel: Ibid., Feb. 17, 1914, p. 349.

[6] Heinemann: München. med. Wchnschr., 1913, p. 915. Daunay and Ecalle: Compt. rend. Soc. de biol., 1913, lxxiv, 1190. Sabin: Presse méd., 1913, p. 1015. Mayer: München. med. Wchnschr., 1914, lxi, 67. Schiff: Ibid., 1914, lxi, 768. Tsatchenko: Deutsch. med. Wchnschr., 1914, p. 1411. Schwartz, Henry: Value of Abderhalden's Biologic Reactions to the Obstetrician and Gynecologist, The Journal A. M. A., Aug. 1, 1914, p. 371; and many others.

[7] Heilner and Petri: München. med. Wchnschr., 1913, p. 1775. Krim: abstr., Deutsch. med. Wchnschr., 1914, p. 38. Michaelis and Lagermark: Berl. klin. Wchnschr., 1914, p. 364. Oeller and Stephan: München. med. Wchnschr., 1914, lxi, 12. Lichtenstein and Hage: Ibid., p. 915. Flatow: Ibid., p. 1168. Fraenkel: Deutsch. med. Wchnschr., 1914, p. 589; and many others.

[8] Echols, Chester M.: Limitation of the Dialysis Method as a Practical Test for Pregnancy, The Journal A. M. A., Aug. 1, 1914, p. 370.

[9] Pincussohn and Petow: Biochem. Ztschr., 1913, p. 319. Singer: München. med. Wchnschr., 1914, p. 350. Meyer, Betz and Rhymer: München. med. Wchnschr., 1914, p. 1211.

[10] Abderhalden, E.: München. med. Wchnschr., 1914, p. 233.

[11] Oeller and Stephan: Deutsch. med. Wchnschr., 1914, p. 1557 (Conclusions).

[12] Meyer, Betz and Rhymer: Note 9. Csepai: Wien. klin. Wchnschr., 1914, No. 23.

[13] Bronfenbrenner: Pennsylvania State Med. Jour., October, 1914; Biochem. Bull., 1915, p. 87.

[14] De Waele: Ztschr. f. Immunitätsforsch., Orig., 1914, xxii, 170. Heilner and Petri, München. med. Wchnschr., 1913, p. 1530. Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 3.

[15] Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 7.

[16] Stephan: München med. Wchnschr., 1914, p. 801. Hauptmann: Ibid., p. 1167. Benech: Compt. rend. Soc. de biol., 1914, lxxvi, 361. Bronfenbrenner: Jour. Exper. Med., 1915, xxl, 221.

[17] Abderhalden and Grigorescue: Med Klin., 1914, No. 17.

[18] Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 4.

[19] Bronfenbrenner: Jour. Exper. Med., 1915, p. 221.

[20] This phenomenon was noticed also by previous observers (Plaut: München. med. Wchnschr., 1914, p. 238. Kjargaard: Ztschr. f. Immunitätsforsch., xxii, 31. Herzfeld: Biochem. Ztschr., 1914, p. 1. Peiper: Deutsch. med. Wchnschr., 1914, xl, 1467. Flatow: München. med. Wchnschr., 1914, lxi, 1168).

[21] Bronfenbrenner and Scott: Proc. Soc. Exper. Biol. and Med., 1915, p. 137.

Experiments show that the number of positive reactions, obtained with specific serums, is much higher than that obtained with normal, although the substratum in the Abderhalden reaction is not digested, and the dialyzable substances originate from autodigestion of the serum under examination. Many authors who ascribe the digestion in Abderhalden reaction to nonspecific ferments, have suggested that the apparent specificity of the test must be due to the fact that during pregnancy as well as in different pathologic conditions, the serum contains a larger quantity of proteolytic enzyme than normally, and thus gives a higher percentage of positive reactions.[22]

TABLE 1.—CHANGE IN SUBSTRATUM CAUSING IT TO SET TRYPSIN FREE ACCORDING TO TEST

<table>
<tr><td colspan="4">3 c.c. of specific serum with 1 gr. of boiled substratum in glass tube on ice for sixteen hours.</td><td colspan="3" rowspan="7"></td></tr>
<tr><td colspan="4">Centrifuged</td></tr>
<tr><td>Serum separated and placed in a thimble</td><td colspan="3">Substratum (sensitized?) washed and placed in thimble with 3 c.c. of salt solution</td></tr>
<tr><td colspan="4">On ice for sixteen hours</td></tr>
<tr><td>Ninhydrin test —</td><td colspan="3">Ninhydrin test —</td></tr>
<tr><td colspan="4">Transferred to 37 C. for sixteen hours</td></tr>
<tr><td>Ninhydrin test +</td><td colspan="3">Ninhydrin test —</td></tr>
<tr><td rowspan="6"></td><td colspan="3">Same substratum (sensitized?) separated in two parts</td><td colspan="3"></td></tr>
<tr><td>A</td><td colspan="2">B</td><td>C</td><td colspan="2">D</td></tr>
<tr><td>0.5 gm. substratum with 1.5 c.c. normal serum placed in a thimble at 37 C. for sixteen hours</td><td colspan="2">0.5 gm. substratum with 1.5 c.c. normal serum placed in a glass tube on ice for sixteen hours</td><td>0.5 gm. fresh substratum with 1.5 c.c. normal serum placed in a thimble at 37 C. for sixteen hours</td><td colspan="2">0.5 gm. fresh substratum with 1.5 c.c. normal serum placed in a glass tube on ice for sixteen hours</td></tr>
<tr><td>Ninhydrin test +</td><td colspan="2">Centrifuged</td><td>Ninhydrin test —</td><td colspan="2">Centrifuged</td></tr>
<tr><td></td><td>Substratum in a thimble with 3 c.c. of salt solution at 37 C. for sixteen hours</td><td>Serum in a thimble at 37 C. for sixteen hours</td><td></td><td>Substratum in a thimble with 3 c.c. of salt solution at 37 C. for sixteen hours</td><td>Serum in a thimble at 37 C. for sixteen hours</td></tr>
<tr><td></td><td>Ninhydrin test —</td><td>Ninhydrin test +</td><td></td><td>Ninhydrin test —</td><td>Ninhydrin test —</td></tr>
</table>

Substratum is allowed to remain in contact with specific serum in a centrifuge tube on ice for sixteen hours, as before. Then the contents of the tube are centrifuged and the substratum is separated from the serum. The substratum is now washed, suspended in salt solution, and placed in a dialyzing thimble, and the serum, separated from it, is placed in another thimble and returned to the ice box for sixteen hours. As the table shows, no dialyzable substances appeared in either case. If, however, both thimbles were now transferred to 37 C., the serum gives off products of self-digestion, while the substratum does not show even traces of it. However, according to the hypothesis suggested, such a substratum must have acquired the property of removing from the serum the substances inhibiting the activity of the ferment in the serum. To ascertain if this was the case, the same substratum was separated from salt solution and placed in contact with fresh normal serum in a new thimble (Table 1, *A*). Whereas the normal serum used in this experiment, when placed in contact with fresh substratum, gave a negative Abderhalden test (Table 1, *C*), the same serum, being placed in contact with the substratum previously treated with specific serum, and from which all traces of the serum were washed away, gave a distinct ninhydrin reaction (Table 1, *A*).

Our own experiments, however, suggest another explanation. Whereas an excess of substratum is able to set to autodigestion any fresh serum, in an absolutely nonspecific manner, a suitable amount of substratum as prescribed by Abderhalden will very often react only with specific serums. It is thus possible that the reaction is specific when certain definite quantitative relations are maintained between the substratum and the serum; it is certain, however, that an excess of substratum will exert a nonspecific adsorption on any fresh normal serum. The experiments performed with the view of studying this possibility showed that boiled substratum, similarly to any antigen, is able to extract from the specific serum its antibody, and as a result this substratum is so changed that it is now able to adsorb from the fresh serum its antitrypsin and thus set free trypsin (Table 1).

The experiments reported in Table 1 thus show that within certain quantitative limits the Abderhalden reaction remains specific, but if the substratum is taken in excess, it may act mechanically and the reaction becomes nonspecific.[23]

It is thus apparent that the Abderhalden reaction consists of two consecutive phases. In the first phase of the reaction the antigen of the substratum unites with the antibody of the specific serum, and in the second phase such a "sensitized substratum" adsorbs antitrypsin and permits autodigestion of the serum. By preventing fresh serum from autodigestion immediately following the sensitization of the substances we actually separated the two phases.[24]

Using the known property of antibody to unite with antigen at low temperature, which prevents the activity of the complement and also excludes the activity of the proteolytic ferment, we found that the thimble containing placenta and pregnant serum did not give up dialyzable substances into the surrounding medium.

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[22] Solowjew: Zentralbl. f. Gynäk., 1914, No. 17. Kjargaard, Ztschr. f. Immunitätsforsch., 1914, xxii, 31. Flatow: München. med. Wchnschr., 1914, p. 1500.

[23] It is important to remember that the suitable amount of substratum, acting specifically with one serum may be unsuitable for another serum, and here is the main weakness of the method.

[24] Bronfenbrenner, Mitchell and Schlesinger: Biochem. Bull., April, 1914, p. 386.

We did find, however, that the placenta, as well as the serum, underwent changes very similar to those we should have expected if we had used a hemolytic amboceptor and corresponding erythrocytes, namely, placenta protein had adsorbed the antibody from the serum and the serum lost all its specific properties. The summary in Table 2 gives the essentials of our results.

These findings are not only of theoretic importance, inasmuch as they furnish further proof of the similarity of the phenomenon described by Abderhalden to immunity reactions in general, but are also of practical value. Those making routine examinations by the Abderhalden method, know that the blood of a patient taken under certain conditions may contain an amount of amino-acids sufficient to mask the specific reactions,[25] as for instance, when the patient has high temperature, when there is pus formation, or if the patient has recently partaken of food. Whereas, the last mentioned factor can be regulated with but little inconvenience to the patient, the blood being taken before breakfast, it is impossible to obviate the complications in other cases.[26] In such instances where the serum itself contains dialyzable ninhydrin reactive substances, the difference in the intensity of the reaction with ninhydrin in the control tube, and in the tube containing substratum as well as serum, furnishes the basis for diagnosis, but undoubtedly this may be a source of errors.[27] A modification was offered therefore, by Schlimpert,[28] who removes this source of error by subjecting the serum of the patient to dialysis prior to application of the test proper, using subsequently such serum deprived of its dialyzable material for the digestion with placenta.

TABLE 2.—ESSENTIALS OF AUTHORS' RESULTS IN TESTS WITH PLACENTA

1.5 c.c. specific serum with 0.5 gm. boiled substratum	
In glass tube on ice sixteen hours	
Centrifuged	
Substratum (sensitized?) with 1.5 c.c. normal serum	Serum (exhausted?) with 0.5 gm. fresh substratum
In thimble at 37 C. for sixteen hours	In glass tube on ice for sixteen hours
Ninhydrin test +	Centrifuged
	Substratum (sensitized?) with 1.5 c.c. normal serum
	In thimble at 37 C. for sixteen hours
	Ninhydrin test —

Our own study suggests another possible modification of the procedure of Abderhalden which would take advantage of the property of the substratum to become sensitized by the specific serum, so as later to give up dialyzable substances when placed in contact with any fresh human or animal serum. Such a method would permit the examination of serum taken at any time, no matter what the condition of the patient might be. The procedure is the following: After remaining over night in contact with suspected serum in the ice box, placenta (or any other substratum as the case may be) is centrifuged, washed with water to remove any serum which may adhere to it, and placed in a new thimble with any fresh serum that happens to be on hand. The best for this purpose is serum from a guinea-pig kept without food long enough (from six to eight hours) to free its blood from dialyzable ninhydrin reactive substances. It is necessary of course to take the additional precaution in examining for pregnancy, of using male guinea-pig serum, since fresh serum from a female guinea-pig which may happen to be pregnant may give a positive reaction when combined with placenta in the test, and this may cause grave error.

CONCLUSIONS

Abderhalden tests depend on the presence in the serum of specific substances which are not of a fermentive nature.

The substratum is not digested during the test.

Dialyzable split products originate from the serum as a result of its autodigestion, and not from the substratum.

Analysis of the test shows that it consists of two phases, and this gives a basis for a useful modification of the method.

PANCREATIC FERMENT DETERMINATION IN PULMONARY TUBERCULOSIS *

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Much attention has been given to the diet of the tuberculous. Quality and daily quantity have received consideration. Digestive disturbances, as expressed by anorexia, vomiting, dyspepsia (gastric distress), intestinal indigestion and diarrhea have long been recognized as forming parts of the general picture in tuberculosis.

In the absence of gross signs of digestive derangement, it is not unusual to see a patient eat well but fail to gain in weight. It is common to see a tuberculous patient refuse all food, especially when the system is under the influence of toxins; this may be in the early febrile period as well as in the terminal stage.

Again, we see patients with good appetites and high temperatures — far advanced patients, with no appetites and low temperatures.

Observing over 200 cases, we found that, as is well known, our patients preferred vegetables and starches; that they consumed foods of these types much in excess of body needs and their ability to digest, and that starch was passed in the feces, chemically unchanged — not alone in recognizable particles as, for example, potato, but also in the fecal mass, to be determined only by chemical test. In other cases, practically undigested meat was recovered in the stools of poor eaters as well as in those of hearty eaters.

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[25] Abderhalden: München. med. Wchnschr., Feb. 24, 1914, p. 401; Abwehrfermente, p. 257. Lange: Berl. klin. Wchnschr., 1914, p. 785.

[26] The presence of dialyzable material in the fluid in which the specific ferments are looked for, is especially important in the examination of urine, in which there is always a certain amount of such substances present.

[27] Bisgaard and Korsbjerg: Deutsch. med. Wchnschr., 1914, p. 1367. Abderhalden: Abwehrfermente, p. 289.

[28] Schlimpert and Issel: München. med. Wchnschr., 1913, lx, 1758. Forchownik: Ztschr. f. Gynäk., 1913, p. 1226. Abderhalden: Abwehrfermente, p. 291. Abderhalden and Wildermuth: München. med. Wchnschr., 1914, p. 862.

* Read before the National Association for the Study and Prevention of Tuberculosis, Seattle, June 16, 1915.

We also noted frequent stomach and bowel disorders in these cases. None of our patients has ever been urged to eat.

It soon became evident that actual digestive aberration was a factor in the problem, especially after a perusal of Permin's table,[1] which shows anacidity and subacidity in the consumptive as follows:

First stage, 23 per cent. of cases.
Second stage, 34 per cent. of cases.
Third stage, 47 per cent. of cases.
Terminal stage, 75 per cent. of cases.

As many of the cases presented no demonstrable signs of gastric origin, however, we began the closer examination of the feces with a view to study of the pancreatic secretions, amylopsin and trypsin.

Our first series of cases consisted of twenty-four moderately advanced and incipient cases and 139 far advanced cases. Among the latter were some terminal cases. Trypsin was determined by the Fuld-Gross method, amylopsin by the Wohlgemuth method, preceded by calomel and Seidlitz catharsis. The second or third stool was taken for examination. No attempt was made in this series to estimate or control the intake of foods. This comes later.

The Fuld-Gross trypsin determination method depends on the fact that casein, undigested, is precipitated by acetic alcohol, while digested casein is not so changed. The estimation is made in units, one unit representing the ability of 1 c.c. stool filtrate to transform (or digest) 1 c.c. of starch or casein solution.

Example: If a tube containing 1 c.c. of 1:1,000 fecal dilution is the greatest dilution which can digest 5 c.c. starch or casein solution, then 1 c.c. of undiluted fecal filtrate would be able to digest 5,000 c.c. starch or casein solution. This represents 5,000 units. The average normal reading is from 500 to 1,000.

To make the test, fecal solutions of 1:10, 1:100 and 1:1,000 are made and poured into nine test tubes as follows: First three tubes: 1:10 solution, 2, 1 and 0.5 c.c. starch solution 1 per cent., or casein solution 1:1,000. Second three tubes: 1:100 solution, 2, 1 and 0.5 c.c. Third three tubes: 1:1,000 solution, 2, 1 and 0.5 c.c. To each tube are added 5 c.c. of 1 per cent. soluble starch solution or 1:1,000 casein solution, as the case may be. The tube showing digestion, that is, no reaction, by the weakest fecal solution after twenty-four hours' incubation, is taken as the index of digestion. The casein reagent is, as previously indicated, acetic alcohol (1 per cent. acetic acid may be used); the starch reagent is Lugol's solution.

A large number of the cases examined showed no free amylopsin. This does not mean that no amylopsin had been secreted, but that all secreted amylopsin had been neutralized by the starch excess (Cases 4, 6, 7, 8 and 9). We should, therefore, disregard zero amylopsin readings until we estimate the starch intake. Some cases which showed amylopsin from 25 to 50 had almost no intake of food, and hence the reading possesed no value (Cases 2 and 8). More work remains to be done on amylopsin in this connection.

Trypsin indexes are much higher and seem to possess a much greater importance. Relatively few trypsin zero readings were taken but, where present, often took on a grave significance. Again, as starch excess in diet has its effect on amylopsin determination, so has protein excess a neutralizing influence on the trypsin index.

Patients with anorexia and diarrhea had high trypsin readings. As we see it, there was no neutralization of the small amount of trypsin secreted (Case 2). Patients having good appetites and weight gains usually had high or increasing trypsin readings (Cases 6 and 7). High trypsin readings are seen in terminal cases. Here the amount of trypsin is small, but it remains free in the feces (Case 1).

Some patients with low initial trypsin indexes were put at rest, and kept on liquids or light diet until the appetite returned. Directly improvement in symptoms appeared, increase in trypsin occurred (Case 6). Following out the rest idea, trypsin indexes were taken after pneumothorax. They were always found to be higher (Cases 3, 7 and 9).

We now took a second series of over sixty cases and controlled the protein intake. It was discovered that, while under general diet, patients would show a high trypsin reading, after definite amounts of meat and eggs had been given, as 100, 250 or 300 gm., the index rapidly dropped. The explanation for this is that, on "general diet," the patient avoided his protein, and hence his high trypsin index. On graded protein diet he neutralized, even with small amounts, his trypsin. The results often showed almost an atrypsia (Case 4).

In one case with anorexia, the trypsin index was low, 100. Amylopsin, however, was 700. Protein was stopped, and amylaceous diet ordered. Improvement was marked and, afterward, accelerated by a pneumothorax. Incidentally we present readings on one case of diabetes with tuberculosis (Case 5).

We have also examined salivas, but the results gained are so variable as to preclude, for the present, any codification.

PROTOCOLS

The protocols show trypsin and amylopsin to be reduced in the tuberculous under influence of toxins. In favorable cases, disappearance of toxin is accompanied by increase of trypsin. Amylopsin is less frequently found because of the excess of starch found in the feces of the tuberculous; the ferment is neutralized by this excess. Trypsin indexes may be large in presence of anorexia and gastro-intestinal complications by lack of protein neutralization; also, because of actual improvement. Constantly low trypsin index is present in failing cases. Rising index with good appetite is favorable.

Case 1.—Frida S. Far advanced.

Oct. 30, 1914, amylopsin, 10,000; no trypsin demonstrable. Absolute anorexia. Death. No food intake, and hence no neutralization of ferments. Therefore, high amylopsin reading.

Case 2.—Percy K. Terminal.

Oct. 25, 1914, amylopsin, 100; trypsin, 500. Diarrhea (tuberculous).

Dec. 31, 1914, amylopsin, 25; trypsin, 10,000. Death.

Diet was fluid, chiefly; some starch, no protein, hence high trypsin readings, due to non-neutralization.

Case 3.—May S. Far advanced.

May 30, 1914, amylopsin, 700; trypsin, 100. Weight, 118½. Anorexia.

July 25, 1914, artificial pneumothorax. Weight 118¾.

Oct. 15, 1914, amylopsin, 25; trypsin, 5,000. Weight, 129¼.

Oct. 29, 1914, amylopsin, 50; trypsin, 10,000. Weight 135. Convalescent.

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[1] Permin: Internat. Beitr. z. Path. u. Therap. d. Ernährungsstörungen, 1910.

Intake, starches, no protein. After artificial pneumothorax, appetite for meat increased, weight increased, trypsin increased. Here, lung collapse reduced toxemia, and thus freed the digestive system from the influence of infection.

Case 4.—Margaret S. Far advanced.

March 2, 1915, amylopsin, 100; trypsin, 100. Weight, 93½.

March 5, 1915, pneumothorax (bilateral and extensive).

April 15, 1915, amylopsin, 0; trypsin, 5,000; general diet.

April 17, 1915, amylopsin, 0; trypsin, 100; 100 gm. protein.

April 19, 1915, amylopsin, 0; trypsin, 25; 250 gm. protein.

April 21, 1915, amylopsin, 0; trypsin, 0; 300 gm. protein. Weight, 89.

Losing ground; daily fever.

This was a bilateral, febrile case; appetite fair, worse lung collapsed to reduce septic absorption; fever dropped somewhat, cough and sputum ceased. April 15, the determinations were made on a general diet, which was chiefly starch; very little protein. In quantitative test, 100 gm. protein reduced the trypsin reading to 100 units, 250 gm. to 25 units, while 300 gm. entirely neutralized the secreted trypsin. Patient losing ground; febrile.

Case 5.—William S. Far advanced. Diabetes with tuberculosis. Protein diet.

Oct. 17, 1914, amylopsin, 50; trypsin, 0; wasting.

Starches given; weight gain at once. General improvement until influenza, bronchopneumonia, death.

Jan. 12, 1915, amylopsin, 0; trypsin, 100. Mixed diet. Death.

Case 6.—Hannah S. Far advanced. Weight on admission, Dec. 1, 1914, 107¾. No trypsin. Bed rest one month.

Dec. 12, 1914, amylopsin, 100; trypsin, 0.

Jan. 7, 1915, amylopsin, 0; trypsin, 100. Weight, 119 (a gain of 11 pounds); appetite better.

Jan. 13, 1915, pneumothorax. Trypsin index steadily rose after this.

Feb. 5, 1915, amylopsin, 0; trypsin, 0. Weight, 120. Appetite good.

March 3, 1915, amylopsin, 0; trypsin, 250. Weight, 122.

April 24, 1915, amylopsin, 100; trypsin, 1,000; 100 gm. protein.

April 26, 1915, amylopsin, 0; trypsin, 5,000; 250 gm. protein.

April 28, 1915, amylopsin, 0; trypsin, 10,000; 300 gm. protein.

General condition excellent.

Case 7.—Howard C. Far advanced. Weight, 122. Fever. Anorexia.

Jan. 5, 1915, amylopsin, 0; trypsin, 1,000. Weight, 117. Gastric distress.

March 22, 1915, amylopsin, 0; trypsin, 100. Weight, 116¾. No fever.

April 23, 1915, pneumothorax. Weight, 116¾. Fever.

May 1, 1915, amylopsin, 0; trypsin, 250. Weight, 117. General diet.

May 2, 1915, amylopsin, 0; trypsin, 10,000; 100 gm. protein.

May 3, 1915, amylopsin, 0; trypsin, 250; 250 gm. protein.

May 5, 1915, amylopsin, 0; trypsin, 1,000; 300 gm. protein.

No fever since pneumothorax. Weight, 125. Appetite good.

This patient was wasted, febrile and dyspeptic. Four months of rest in bed led to little improvement. Then pneumothorax on the worse lung was followed by almost instant change for the better; gastric symptoms disappeared. Trypsin index, May 1, was 250 units. May 2, the protein diet was reduced to 100 gm., resulting in a trypsin index of 10,000, with 300 gm. protein. May 5, trypsin was 1,000 units, or double the normal.

Case 8.—Hugh C. Far advanced.

Nov. 14, 1914, amylopsin, 25; trypsin, 50.

Jan. 5, 1915, amylopsin, 0; trypsin, 25.

March 6, 1915, amylopsin, 0; trypsin, 50. Bedfast.

Case 9.—Hannah P. Far advanced.

Nov. 20, 1914, amylopsin, 100; trypsin, 250. Weight, 136¾.

Dec. 23, 1914, amylopsin, 0; trypsin, 250. Weight, 137¼.

Feb. 1, 1915, amylopsin, 0; trypsin, 50. Weight, 134¼.

Feb. 19, 1915, pneumothorax.

March 6, 1915, amylopsin, 0; trypsin, 0. Weight, 135. Invalid.

Cases 8 and 9 both show low trypsin indexes. Both are far advanced. Both have extensive lung involvement. Patient 8 has been for many months confined to bed. Patient 9 has had fever from time to time, and is now an invalid.

These constantly low trypsin readings are the rule in far advanced cases not presenting any gastric or intestinal disturbance.

Case 10.—Vivian K. Incipient. Weight, 106.

Jan. 23, 1915, amylopsin, 0; trypsin, 0. Weight, 108.

Feb. 20, 1915, amylopsin, 0; trypsin, 250. Weight, 110½.

Case 11.—Violet I. Incipient.

Feb. 10, 1915, amylopsin, 0; trypsin, 0. Stomach pain after eating.

March 10, 1915, amylopsin, 50; trypsin, 25. Weight, 132.

May 20, 1915, weight, 130.

Generally better. Eats well.

Cases 10 and 11 are both closed cases, with poor appetite and poor digestion; prolonged bed rest brought improvement in both.

CONCLUSIONS

1. Pancreatic secretions are seriously diminished by toxins of tuberculosis, in any stage.
2. Rest (bed rest or pneumothorax), by reducing the production of toxins, aids in the return to a normal of these pancreatic secretions.
3. Persistently low trypsin readings are prognostically bad.
4. Low amylopsin values are of lesser prognostic importance.
5. All interpretations of indexes must be made with due consideration for anorexia, overeating and diarrhea.

2733 North Clark Street.

THE USE OF A LOAN COLLECTION AND PHOTOMICROGRAPHS

IN THE TEACHING OF PATHOLOGY TO STUDENTS OF MEDICINE *

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AND
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Perhaps one of the most obvious defects in the usual method of teaching pathology lies in the restrictions which are imposed on the student. Too often the method is such that all he can do is to memorize certain statements of the textbooks and instructors, and to fix in his mind the appearance of certain slides rather than to read the cell changes going on in the tissues and thereby gain a plastic living conception of the processes at work in the specimen being studied.

It is generally recognized that the method rather than any particular content is the essence of scientific discipline. As Oertel[1] says:

"Medical education is primarily directed toward the development of the powers of observation and of a scientific method of thinking." One of the chief problems, therefore, in offering a course in pathology is to present it so that the student may be able to visualize the processes and at the same time keep the theoretical explanations separate from established facts and from

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* From the Department of Pathology and Bacteriology of the Ohio State University, College of Medicine.

[1] Oertel, Horst: The Anatomic Histological Processes of Bright's Disease, Philadelphia, 1910, p. vii.

his own observations. This must be done with minimum loss of time and energy. The time which can be allowed pathology in the medical curriculum is, at best, altogether too short. Every minute must be used, therefore, with the greatest degree of efficiency.

It is the purpose of this paper to give an account of the method in use in the laboratory of pathology at the Ohio State University, College of Medicine, in the course offered to second-year students of medicine. By the use of a loan collection and photomicrographs, a solution has been reached, to a certain extent, at least, for the problems outlined above.

Formerly much time was consumed in the mounting and staining of sections. This was cut down somewhat by staining the sections before handing them out to the class. The giving out of sections to all the members of a class each year necessitates the use of some rather indifferent material. For, as Dr. Mallory[2] says, "It requires patience often extending over many years to collect the tissues most suitable for study and teaching purposes." If this is true in the larger medical centers, it is the more applicable elsewhere. Further, the time consumed in the preparation and sketching of sections limits very decidedly the amount of work which can be covered in the time allowed to pathology in the medical curriculum.

Experience has taught us to agree with Drs. Steenland and Weiskotten[3] that much valuable time may be saved and much better preparations can be presented by the use of a loan collection. On the introduction of such a collection, we were able to increase the number of slides studied over 50 per cent. This, therefore, not only gives an opportunity to present slides typical of the various lesions which could not be introduced into the course before on account of a lack of time, but also allows the introduction of more stages in the development of the lesions than could be taken up with the student under the previous method. In this way the lesions can be traced in their development from the simplest to the most complex. The presentation in this way of the subject in its order of sequence gives the student training in the analysis of biologic problems. This training will stand him in good stead later in the study of clinical cases in which he will meet the same consequents and their causal antecedents. The use of this method affords the student a larger experience and, what is more important, it presents to him more of the evidence on which conceptions of pathologic processes have been built in the past. In this way he gains a sense of the reality of his own conceptions. The subject of pathology becomes something more than a series of dry facts to be memorized. It becomes a living process.

It may seem that this works a hardship on the student by depriving him of his collection of pathologic sections, but the man who will really need a personal collection after the course is finished is the man who is especially interested in the subject. If the student "goes in for pathology," he must do more work than is covered in the regular courses of the medical curriculum. In that case the advanced work will give him ample opportunity to make his own collection, and a collection made in this way will have far more value to him than one which has been prepared for him.

The sketching of a microscopic preparation is very apt to become a mechanical process unless each student is given a great deal of painstaking, personal attention, and at best it consumes much time. In our laboratory, this time has been utilized in another way and with better results for our classes. As stated before, photomicrographs have been made of the important areas in each section. Each student in the last four classes taking the work has been given a set of these photographs to be pasted in his laboratory notebook.

In making these photomicrographs, the degree of magnification has been determined for each section. Where it is advisable to show the cellular elements out of which the lesion is built, a high dry or 1.9-mm. oil immersion lens is used; where it would appear better to orient the student first and then allow him to work out the cytology for himself, a 16-mm. lens is employed, and the fields to be given special attention are marked on the photograph. Even with the higher magnifications, it is of advantage to have the important areas marked in such a way that the student may locate them readily and indicate them specifically in his notes.

The method of conducting the class in the laboratory is to give out the numbers of the slides to be studied (the organ or injurious agent whose reaction is to be considered having been previously assigned). After the section, together with the photograph and the text has been studied by the class, an informal quiz is given. Various members of the class are called on to give their interpretation of the processes under consideration, and a description of the areas or cellular elements which are marked on the photograph. The remainder of the class follow the progress of the student being quizzed by observing their own sections, photographs and notes, making such corrections in the latter as they deem necessary. After the quiz is over, the demonstrators pass around the class in an endeavor to clear up such obscure points as may be necessary for the individual student. Frequent slide reviews are given in which "unknown" sections are used. Free access is allowed to textbooks, notes and other references. Often the gross specimen or an abstract of the case record or both are given out with the sections. The student is required to write his description and interpretation of the cases under consideration. The papers are then read and discussed with the class.

By this method, the student has most of his time for study and the correlation of the conditions observed in his specimens. Another advantage found in the use of the photomicrographs is that in the recitation definite objects are under consideration, and the discussion can be limited to an accurate description which every one can readily follow.

By this method, we have been able to increase the amount of work covered about 60 per cent., or about 110 per cent. over that which was covered before the introduction of the loan collection and photomicrographs.

The saving of time in this way allows not only for introduction of various experimental demonstrations fashioned after the suggestion of Professor Pearce,[4] but also for the exhibition of many more gross specimens illustrating the anatomic lesions at the same time that the histologic changes are being studied. It also permits of more frequent slide reviews, which are of great value in stimulating the students to make more careful observations.

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[2] Mallory, Frank B.: The Principles of Pathologic Histology, Philadelphia, 1914, p. i.

[3] Steenland, H. S., and Weiskotten, H. G.: The Histologic Loan Collection and Relieving the Curriculum, The Journal A. M. A., Jan. 10, 1914, p. 125.

[4] Pearce, Richard M.: The Teaching of Experimental Pathology and Pathological Physiology to Large Classes, Bull. Johns Hopkins Hosp., 1912, xxiii, 170.

The laboratory notebooks obtained by this method are in every way superior to the ones which had been obtained formerly. At the end of his course, the student possesses a manual in which the photomicrographs have been neatly mounted, beneath which there is a brief but careful description of the lesion pictured, together with an abstract of the textbooks and the lectures. Such a manual possesses considerable value to the student as a work of reference. This method, used as a routine in the laboratory, has met and overcome several of the objections usually raised to the course in pathology. It has secured greater application on the part of the students during the laboratory periods, a greater amount of outside reading, more concise and accurate descriptions in the notebooks, and increased efficiency in the slide reviews.

No doubt there is a valuable training to be derived from the sketching of histologic preparations by the student, but we are convinced that the sacrifice of time is too great for its employment in the regular course in pathology offered to second-year students of medicine. In those courses in which accurate observation of fixed morphologic structures is the important thing, as it is in normal histology, sketching should be employed; but in pathology it is more important that the student should develop the ability to give an accurate word picture, and still more important that he should be trained to visualize the changes taking place so that they become a living progressive process to him.

The labor and expense attached to such a method are not excessive. After the negatives are made, the prints may be done by a professional photographer, who can be induced to do large lots at a very reasonable rate. The photographs can be sold to the student at cost, and the price will not exceed that of laboratory books in the other branches. The cost can still further be reduced, we have found, by the use of engravings made from the photomicrographs.

Students, of course, are given the privilege of making a collection of slides for themselves, and it has so chanced that with each succeeding class trained by this method, more men are preparing their own collections. Only those men in whom a real interest for pathology has been aroused avail themselves of this opportunity.

SUMMARY

The use of the loan collection and photomicrographs in the teaching of pathologic histology possesses the following advantages:

1. It compels the student to write concise and accurate descriptions of the specific cellular elements and of the lesions which they build up.
2. It allows the discussion or quiz to be followed in detail with much greater ease.
3. It gives time for the introduction of more experimental demonstrations.
4. It permits of closer correlation between the gross and the histologic pathology.
5. It enhances the value of the notebook.
6. Most important of all, it opens a greater opportunity for the student of medicine to do some thinking for himself.

ORBITOPALPEBRAL EMPHYSEMA CAUSED BY PERFORATION OF A DENTAL CANAL

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Orbitopalpebral emphysema is not a very common condition, but when it is found it is always of traumatic origin. Ordinarily it is the result of a fracture of the nasal, lacrimal or ethmoidal bones. It may, however, occasionally be caused by the dentist during the process of drilling the dental canal, as can be seen from the case which I here report. The condition is practically harmless and requires no treatment beyond a pressure bandage.

The diagnosis of the condition is comparatively easy. There is a sudden swelling of the lid and adjacent tissues, with no signs of inflammation, no redness, no pain. The swelling does not pit on pressure, but quickly rebounds, and there is a peculiar crackling sensation felt by the palpating finger, which results from the movement of air bubbles under the fingers. There is no exophthalmos in this variety of emphysema. Exophthalmos is present in emphysema of the orbit, but not in emphysema of the lid. Properly speaking, this form of emphysema should be termed "palpebrofacial," for usually the face is involved in the edema in addition to the lids. None of the textbooks mention mechanical perforation of the dental canal as a possible cause of emphysema, therefore this case should be placed on record.

Miss L. came to me accompanied by her dentist, who gave me the following history. While drilling on the mesial root of the right upper first bicuspid tooth he felt as if his burr entered a vacuum. He then tried to explore the region with a broach, which went in for a considerable distance. During this operation the patient felt no pain except some pressure sensation, which she attributed to the pressure of the dentist's thumb on her cheek. When the broach was withdrawn her lids suddenly began to swell, so much so that the right eye was entirely covered by the swelling of the upper and lower lids. The swelling spread all the way down the face and even the neck. I saw the patient about an hour and a half after, and found the face swollen, the lids, very markedly edematous, covering the right eye. The lids, however, could easily be separated. The asymmetry of the face as a result of the unilateral swelling gave the patient a hideous appearance. The skin of the lids and face was not tense and had no signs of inflammation. There was no pitting on pressure as the skin quickly rebounded. There was, however, marked crepitation under the finger's touch all over the lids and face and even down the region of the neck. Sneezing or blowing the nose had no influence on the swelling. My diagnosis was of course clear and easy: Palpebral emphysema caused by perforation of the dental canal into the antrum of Highmore and the upper bony roof of the antrum, through which the air must have gone into the subcutaneous tissues. This condition could easily be differentiated from a cellulitis by the sudden onset and the absence of inflammatory symptoms, such as redness and pain, and, of course, by the crackling sensation under the finger.

I applied a pressure bandage and the next day the swelling was considerably less. On the fifth day, while the swelling was practically all down, there was still present a slight crackling sensation indicating that not all the air had been absorbed. Seven days elapsed before all the symptoms disappeared. No other treatment was given except the pressure bandage for two days.

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AN UNUSUAL TYPE OF GROSS CARDIAC ARRHYTHMIA *

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Gross irregularity of the pulse signifies, as a rule, that fibrillation of the auricles is present with the resultant ventricular arrhythmia. Rarely a gross sinus arrhythmia not dependent on respiration or an auricular flutter with irregular grades of heart-block may produce a condition of the pulse simulating that of auricular fibrillation.

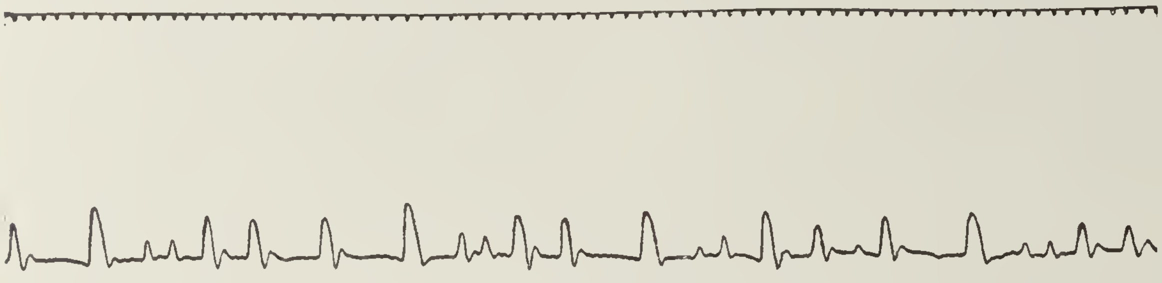

Fig. 1.—Radial pulse tracing showing marked arrhythmia. Time interval, 0.2 second.

In the case here described, an unusual cause of the gross arrhythmia was found, consisting of a curious aggregation of ectopic contractions arising from at least three different points in the ventricles, with now and then an aberrant beat of supraventricular origin slipping in (Figs. 1 and 2). The time intervals between the ventricular complexes are shown below the electrocardiogram. On several occasions while the patient was under observation at the Massachusetts General Hospital this arrhythmia was found. At other times there occurred a bigeminy due to ventricular premature beats alternating with the beats of supraventricular origin (Fig. 3). Rarely a short run of beats of normal rhythm occurred, and on such occasions pulsus alternans was found to be present. Electrocardiograms showed the existence of defective conduction in the right branch of the atrioventricular bundle.

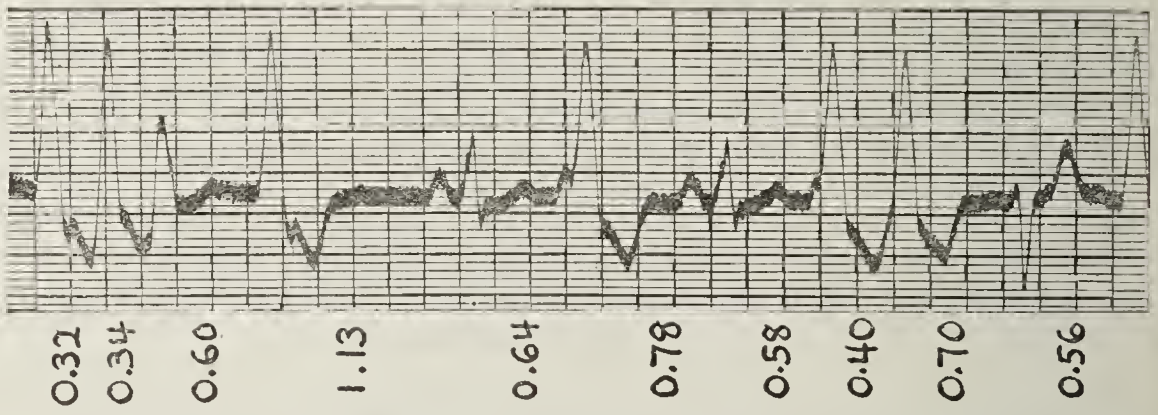

Fig. 2.—Electrocardiogram, Lead II, showing eleven ventricular complexes, of which nine are ectopic and only two produced by the cardiac impulse arising in the auricle. These two beats of normal rhythm are aberrant, that is, distorted, as the result of a damaged atrioventricular conducting system. Below the electrocardiogram there are recorded the measurements in fractions of a second of the intervals between the ventricular complexes. Abscissa, 0.2 second; ordinate, 10^{-4} volt.

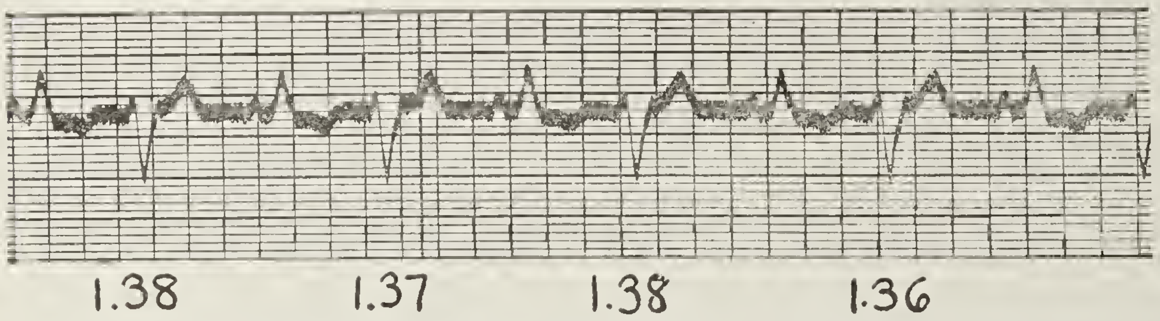

Fig. 3.—Electrocardiogram, Lead I, showing the bigeminy due to ventricular premature beats alternating with the beats of normal rhythm. Below the electrocardiogram are shown the intervals in fractions of a second between the beats of normal rhythm. Abscissa, 0.2 second, ordinate, 10^{-4} volt.

CLINICAL RECORD

History.—F. H. R., man, aged 61, married, packer in a candy factory, entered the wards of the Massachusetts General Hospital, April 8, 1915, for the relief of dyspnea and spells of weakness. Family and past history were unimportant save for the fact that his wife had had two miscarriages. One son was living and well. Patient denied venereal disease. No alcohol or tobacco was used.

The present complaint begins with the story that twelve years ago while walking home from work he fell unconscious in the street and was taken to a hospital, where he remained for three hours, rapidly recovering his senses and strength. He was told at that time by the doctors that he had "heart trouble and must take things easy." Ever since this experience the patient has noticed that he has been dyspneic on exertion. Six weeks before admission to the hospital the dyspnea increased so that he became short of breath on slight exertion. Four weeks later he was seized with an attack of syncope lasting half an hour shortly after he had carried a hod of coal up a flight of stairs. Following this attack he became more dyspneic, and suffered severe epigastric pain necessitating his staying in bed during the week following. For the four or five days just preceding admission to the hospital he had somewhat improved.

Physical Examination.—The patient was lying comfortably flat in bed without dyspnea or cyanosis. Pupils reacted sluggishly to light. Heart enlarged; apex in the sixth interspace, transverse measurement of heart by Roentgen ray, 17 cm.; width of great vessels at second space, 5.5 cm.; systolic murmur heard over precordia, reduplication of second sound at base. Pulse irregular (Fig. 1). Liver not enlarged. No edema of lungs or extremities.

Clinical Observations.—Blood pressure, from 145 to 150 mm. Hg systolic, and from 70 to 90 diastolic. Urine normal. Blood normal. Wassermann test negative. Spinal fluid normal. No fever. Respiratory rate from 19 to 28 per minute. Pulse rate from 90 to 110 per minute.

The effect of exercise, atropin (1/10 grain subcutaneously), and vagal pressure on the cardiac arrhythmia was tested, but no change in the degree of irregularity was observed. April 24, 1915, the patient left the hospital feeling somewhat improved after his sixteen days' rest in bed. No digitalis was given. July 15, 1915, an electrocardiogram showed a bigeminy very similar to that of Figure 3, but at times interrupted by numerous ectopic ventricular contractions.

SUMMARY

An instance is recorded of periods of gross cardiac arrhythmia due not to auricular fibrillation or sinus arrhythmia but to an unusual combination of ectopic ventricular contractions.

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* From the Medical Service of the Massachusetts General Hospital.

TRICHINOSIS SIMULATING FRONTAL SINUSITIS

A REPORT OF THREE CASES

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During the past two years I have seen three cases of trichinosis, each referred as a probable case of frontal sinusitis. Two of these cases were seen in private practice and the third was referred to the Department of Laryngology at the Vanderbilt Clinic.

As is well known, the symptomatology of trichinosis is most variable. Most textbooks emphasize its resemblance at the onset to typhoid fever and its symptoms are usually classified under (1) intestinal or choleriform stage; (2) rheumatic or typhoid phase. It sometimes simulates appendicitis and is frequently called "rheumatism"—that facile term so often connoting only our ignorance. From a fairly comprehensive search of the literature I find no mention of cases simulating frontal sinusitis.

Case I.—Mrs. B. R., aged 31, a physician's wife, was first seen with Dr. C. G. Coakley, Feb. 10, 1913. The patient at that time complained of a severe "cold in the head," excessive thick nasal discharge from both nares, and headache. Duration, three or four days. Examination revealed infection in both maxillary antrums. The antrums were cocainized and punctured beneath the inferior turbinates and a large amount of thick mucopurulent secretion was washed out of both antrums. The antrums were washed out daily for about ten days, when the patient was discharged cured. Patient remained apparently well until March 15, 1913, when she began to have pain in and about the left eye and left frontal region. In view of the fact that she had but recently recovered from an infection in her antrums, her husband suspected that she might have frontal sinusitis and sent her in to the office. Examination of the nares revealed only a slight amount of congestion of the mucous membrane. Transillumination of the sinuses showed that the left frontal sinus illuminated well over a moderate sized area; the right frontal illuminated poorly over a very small area; the antrums illuminated equally and well. She was referred to Dr. E. W. Caldwell for roentgenograms of the sinuses and to Dr. John E. Weeks for examination of the eyes. The roentgenograms showed an absence of a frontal sinus on the right side, a fronto-ethmoidal cell taking its place; on the left side the frontal sinus was of moderate size and of normal appearance. The antrums were also normal. Dr. Weeks reported the eye examination as negative. Nasal examination remained negative. It was now noted for the first time that the patient had an edema of both upper lids, but no edema elsewhere. Trichinosis was suspected and on questioning the patient it was learned that she had recently eaten pork and that she had had a slight amount of muscular soreness in the region of the left deltoid insertion. She was sent to the Rockefeller Institute, where the diagnosis was confirmed and the following blood count reported: white blood cells, 14,000; eosinophils, 22 per cent. The case ran a mild, uneventful course terminating in recovery.

Case 2.—Mr. A. was referred to the nose and throat department of the Vanderbilt Clinic from the outpatient department of the Knapp Memorial Eye Hospital. He complained of pain in and about the left eye. As examination of the eyes at the hospital had been negative he was referred to the clinic as having a probable frontal sinusitis. Examination revealed an edema of both upper lids, more marked on the left than the right, but no edema elsewhere. Nasal examination was negative. His frontal sinuses illuminated equally and well as did also the antrums. A diagnosis of trichinosis was made and a differential blood count, made at once in the college laboratory, showed 20 per cent. eosinophils. This patient gave a history of having indulged freely in pork and also stated that he had had "rheumatism" in many of his long muscles. He was referred to the Presbyterian hospital but did not enter there and was consequently lost track of.

Case 3.—Miss L. B. B., aged 32, a settlement worker, was referred to me by Dr. T. H. Russell on June 28, 1915. Patient had been ill for about a week, suffering from nausea and vomiting, pain in the right shoulder and in right chest posteriorly. Physical examination had been negative except that a small area of dulness was found in the right chest posteriorly; no change in the breath sounds, no râles or friction rubs were heard. On the day I saw her she had complained of pain in the region of the left upper lid and left frontal sinus, and as she had a slight "cold in the head" it was thought well to eliminate the possibility of an acute frontal sinusitis. Examination showed edema of both upper lids and a moderate amount of puffiness of the face, but no edema elsewhere. There was no muscular tenderness. Examination of the nose and accessory sinuses was negative. She gave a history of having eaten pork frequently. A diagnosis of trichinosis was made and a blood count ordered. The count was as follows: white blood cells, 15,000; polymorphonuclears, 77 per cent.; lymphocytes, 16 per cent.; eosinophils, 6 per cent.; transitionals, 1 per cent. The next day she developed very severe muscular pains in both lower extremities and in the left wrist and left hand, and a moderate pericarditis. Vomiting persisted and the patient was extremely ill for the next week. Two more counts were made at intervals of three days each and showed an increase of eosinophils, first to 14 per cent. and later to 22 per cent. Her symptoms gradually subsided and she made a complete recovery.

The diagnosis in all three cases rested on (1) edema of the lids (and in Case 3 of the face also) with absence of edema elsewhere; (2) negative nasal findings referable to the accessory sinuses; (3) the history; (4) the eosinophilia. It will be noted that in all these the "presenting symptom," as Cabot so well terms it, was pain in the region of the eye and frontal sinus; in only one case (Case 3) was the so-called choleriform stage present.

41 West Eighty-Third Street.

Chloroform in the Treatment of Insolation.—Case 1.—Man, aged 37, was found in a state of unconsciousness from insolation. After two hours of futile effort to revive the patient, I concluded to try chloroform as an experiment. I gave it very lightly for five or ten minutes by inhalation, and rapid improvement in symptoms occurred. This led me to further experiment in the two cases following.

Case 2.—A robust, well-nourished boy, aged 4, after three hours of unconsciousness, was found with a temperature of 107, pulse above 200, stertorous respiration, profound stupor and complete relaxation. The patient was stripped of clothes and laid on a bed, and chloroform was administered cautiously by inhalation. No other treatment was given the first half hour. In twenty minutes the pulse had dropped to 160, the respiration was quieted, and in half an hour the pulse was 145, the temperature 105, respiration was greatly improved, tonicity of muscles was returning, and the child manifested some return of consciousness. From this time on, the ordinary treatment was given with uneventful recovery.

Case 3.—Man, aged 25, was overcome by heat while working in the hayfield in the afternoon. On arriving at 8 p. m., I found the patient in a profound stupor and complete relaxation, pulse 165, temperature 106.6. Except for the removal of some light clothes, chloroform cautiously given by inhalation was the only treatment in the first half hour. Results were similar and equal to those in Case 2, followed by uneventful recovery under the ordinary treatment.

George C. Hanson, M.D., Charlson, N. D.

New Instruments and Suggestions

A SIMPLE INSTRUMENT FOR THE INDIRECT TRANSFUSION OF BLOOD

Bertram M. Bernheim, M.D., Baltimore
Instructor in Clinical Surgery, Johns Hopkins University

Briefly, the apparatus consists of two needles, one of which is inserted into a vein of the donor, the other into a vein of the recipient, and a U-shaped tube, at the midpoint of which is a pocket into which a hollow revolving plug is fitted. This plug is open at one end so as to accommodate the nozzle of a record syringe (the plug may be made to fit any other form of syringe desired), but is closed at its other end. the point of exit being in one side so as to correspond to the openings of the two arms of the U into the central pocket. The distal ends of the arms, then, fit into the needles which have been placed in the donor's and the recipient's vessels. A circuit having been completed in this manner, blood is withdrawn by means of a syringe from the donor, and the plug is gently rotated for a half circle until its lateral opening faces the opening of that arm of the U leading to the recipient's vein, whereupon the syringe is emptied. Reverse rotation brings the plug's opening into apposition with the intake tube, whereupon the syringe is again filled only to be promptly emptied into the recipient by a half rotation of the plug similar to the first movement. In other words, the syringe draws up blood from an intake tube and empties it into an outgoing tube, the rotating plug acting as an intermediary between the two tubes.

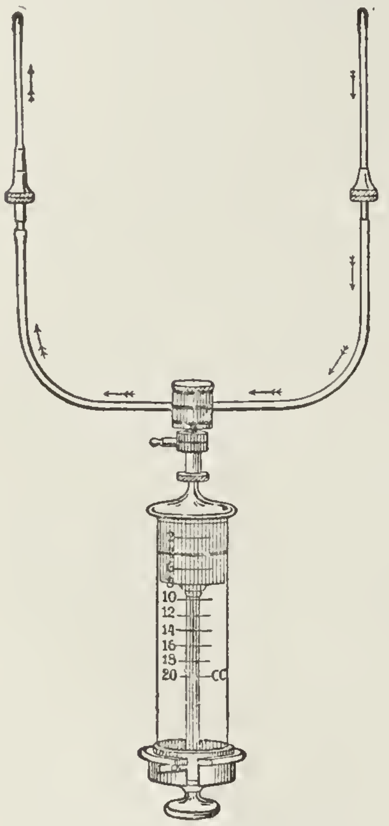


Fig. 1. — Instrument for indirect transfusion ready for use. Arrows indicate direction of blood current.

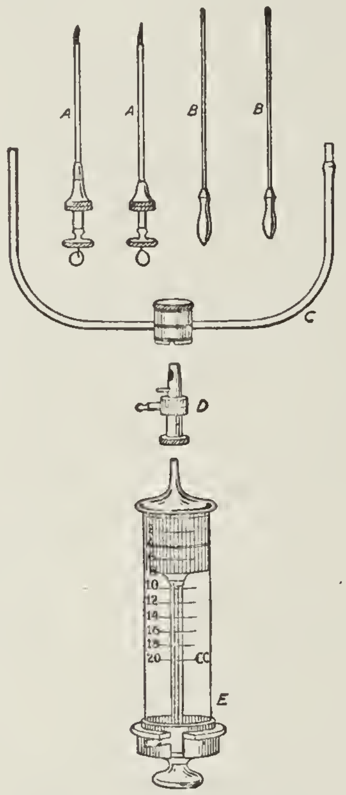


Fig. 2. — Instrument disconnected: *AA*, needles; *BB*, obturators; *C*, U tube; *D*, revolving plug; *E*, syringe.

A small metal ball attached to the plug facilitates its rotation, and another metal pin prevents its rotating more than a half circle by working in a specially constructed slot. Furthermore, the plug is ground into its pocket, and, though easily removable, fits so perfectly as to prevent entrance of air into the syringes. Worthy of note, too, is the fact that when the lateral opening of the plug is "set" for one arm of the U, the other arm is effectually blocked, thus preventing any leakage.

In this manner successive syringefuls of blood may be withdrawn from the donor and emptied into the recipient with accuracy, precision and rapidity. And inasmuch as no syringe should ever be refilled more than two or three times without cleansing, it is quite simple as well as advisable to wash a few cubic centimeters of salt solution into each arm of the U as each fresh syringeful is taken up. Thus clotting is avoided. Should, however, a clot arise or should it be necessary for any reason to discontinue the transfusion temporarily, the entire apparatus may be disconnected, washed out and held ready for continuing the operation.

The bore of the needles and tubes is 2 mm., and the arms of the U are separated from each other by 12 cm., a distance quite sufficient to permit of easy manipulation when applied to apposed arms of donor and recipient. It might be added, too, that in addition to being constructed to fit special needles, this U tube is also made to fit the two-pieced tube devised by me for direct transfusion (The Journal, April 6, 1912, p. 1007). This was done because occasionally it is impossible to see the desired veins, and incision is required. In such a contingency the two-pieced tube may be easier to work with than the needles. And there is no reason why, if one is in a great hurry, the intake tube should not be placed in the radial artery instead of a vein.

2313 Eutaw Place.

A NEW MUSEUM JAR FOR THE PRESERVATION OF EYE SPECIMENS

Henry Albert, M.D., Iowa City, Iowa

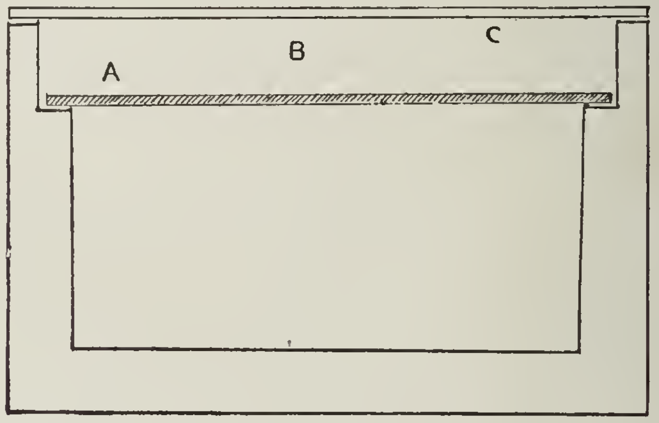
The difficulties encountered in the proper mounting of specimens of eyes in a permanent form have been so great that many persons who obtain eye specimens are deterred from mounting them because of the fact that a supposedly permanent preparation usually proves a disappointment in the course of a year or two.

There is room for much improvement in the present-day methods of mounting and labeling museum preparations of eyes.

The features desired in a museum jar are:

1. Ability to display well the structures desired.
2. Good appearance and convenience of handling specimen jar.
3. Permanency of the preparation.
4. Proper and permanent method of labeling the specimen.

Several of the museum jars for the preservation of eye specimens, now on the market, display the first two features.



Jar for the permanent preservation of eye specimens. *A*, inner cover of opaque white glass; *B*, space between two covers to be filled with cement; *C*, outer cover of transparent glass beneath which label is attached.

None of them, to the proper degree, exhibit the last two, especially when all of the desired features are considered.

With the idea of remedying such defects, I have so modified one of the commonly used jars as to insure both permanency of the specimen and proper labeling, in connection with the other desirable features which the jar already possesses (see illustration). This is accomplished by a double cover which is, as usual, placed behind the specimen. The inner of the two covers is made of white glass to furnish the proper background for the specimen. The outer cover is made of transparent glass beneath which the label is placed—thus insuring the permanency of the label. Between the two covers is a space which is filled with the proper kind of sealing material. This entirely prevents evaporation of fluid from the jar and insures the permanency of the specimen. The distinct advantages of the jar here described, over the jars now on the market, are that it insures: (1) permanency of the preparation; (2) neatness and permanency of the label.

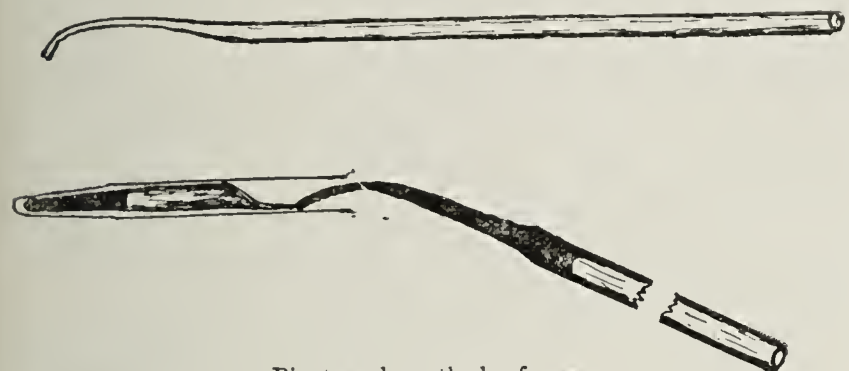
The jar here described is manufactured by F. A. Hardy & Co., Chicago.

Medical Laboratory Building.

A NEW PIPET

J. E. Huber, M.D., Peoria, Ill.

Some time ago I had difficulty in removing small quantities of separated serum from a small, narrow centrifuge tube. The usual method of capillary attraction with a fine-bore glass tubing pipet failed, owing to the fact that if I tipped the tube sufficiently for the pipet to act, the serum movement would cause the sediment to mix, defeating the object, which was separation of the serum. In a wide tube it is not difficult to raise the capillary point of the pipet higher than the finger end, high enough to increase the flow materially.



Pipet and method of use.

Narrow tubes are much more of a problem. My experience with Wright's pipets for blood collection gave me an idea which I have not seen mentioned. The end of the drawn out part of the pipet, a millimeter in diameter, is carefully flamed so that it curves about 45 degrees, say about one quarter-inch from the tip, as in the accompanying illustration. With such a pipet it is possible to withdraw fluids from watch crystals held on the flat, and from tubes which are too small to permit the use of a straight pipet. It is only necessary to have a clean pipet, and touch the curved end to the liquid, keeping the finger end lower than the curved end. Capillary action will fill the narrow tube beyond the distal curve, and the siphon action does the rest. Its action is instantaneous with aqueous liquids; with serum it is a little slower, but it will drain completely any kind of a tube, straight or curved.

It is simpler than the rubber nipple pipet, and is under better control, as the release of pressure on the nipple sometimes is great enough to cause currents that whirl up the sediment and spoil the experiment.

THE PAINLESS DRESSING

S. S. Gale, M.D., Roanoke, Va.

The dressing is yellow petrolatum with 10 per cent. boric acid incorporated in it. This boric acid ointment is prepared by the druggist and placed in a tin can. The regular petrolatum can of 1 to 5 pounds is an excellent container.

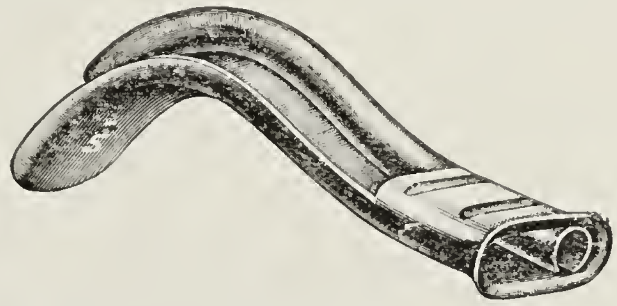
At each dressing the can containing the ointment is placed in a water bath and allowed to melt. This melting also resterilizes the ointment for each dressing. After the ointment has thoroughly melted it is poured into a large, flat, sterile pan. Pieces of gauze of various sizes and thickness, depending on the nature of the wound, are saturated with this melted ointment. After the wound has been sponged off, preferably with alcohol and normal saline, warm dressings are applied directly to the wound surface. These dressings are changed as often as is necessary, depending on the nature of the wound. When large areas are to be covered, it is usually best to have rolls of gauze about 8 inches broad and as many thicknesses as are necessary. These rolls are placed in the melted ointment and thoroughly saturated; then they are unfolded and applied directly to the wound. The greasy dressing can then be covered with plain gauze and held in place with a roller bandage.

This dressing does not dam back secretions, nor does it allow the granulations to embed themselves in the meshes of the gauze, and it can be removed absolutely without any pain. It will not dry out for several days. To my mind it is the ideal dressing in a large number of cases in which there is a large raw area to be covered.

A PHARYNGEAL TUBE COMBINING REBREATHING AND INSUFFLATION

Frank Wilcox Pinneo, M.D., Newark, N. J.

In all inhalation anesthesias the most frequent and important embarrassments to respiration are obstructions in the air way. Of all causes of obstruction the tongue falling back on the glottis is altogether the most common. As this fault in technic is within the control of the anesthetist and always removable, means to facilitate holding the tongue forward are practicable without the necessity of holding the jaw forward with the hand. There has been developed in insufflation an improved method over any kind of mask for administering ether, and pharyngeal insufflation has proved that the advantages in almost all kinds of cases may be secured without the necessity of intratracheal apparatus. When the nasal catheters are not used, but introduction by mouth is preferred, the combination of a rebreathing tube, to keep the tongue forward, and a tube for insufflation of the ether is a great convenience, and for this purpose the one shown in the illustration has been devised. It is a one piece metal blade with upturned sides to fit the contour of the tongue, having a channel for introduction of an oral catheter, 5 inches long; is curved from lips to pharynx, the mouth end being a flattened tube and adjustable for different sized patients. Its advantages are: 1. It provides for automatic holding of the tongue forward without other means. 2. It has not the objections of a closed tube, being an open blade with channels easily cleaned. 3. It can be used in patients of different sizes. 4. It has a channel for introduction of an oral catheter for pharyngeal insufflation, the catheter not being part of the pharyngeal tube. 5. The anesthetic may therefore be stopped while the blade remains in place. 6. It is efficient in holding the tongue forward without being so cumbersome as a tube like Connell's or a fenestrated frame like Lumbard's. 7. It is efficient for rebreathing, keeping the teeth and lips apart and the tongue forward. 8. It does not get clogged with mucus or blood.



Rebreathing tube combined with a tube for insufflation of ether.

199 Garside Street.

The Returns of Medical Practice.—For a livelihood, the practice of medicine brings in slow return, depending on location and opportunity. Success is laggard, as a rule, and even when emoluments balance expenditures, the profit in the practice of medicine is not considerable. The exceptional physician may grow well to do through fortunate investment, but outside of the larger cities, few get rich.—Isadore Dyer, M.D., *New Orleans Med. and Surg. Jour.*

Therapeutics

LEUKEMIA

Three papers on this generally fatal disease appear in the *California State Journal of Medicine*, September, 1915. The writers of these articles very practically present the treatment of leukemia which has shown the greatest success in prolonging a fatal termination.

Oliver (*loc. cit.*, p. 355) defines leukemia as "a malignant (idiopathic) hyperplasia affecting the leukocytic forming tissues, which results in an enormous increase in the production of white blood corpuscles." Only one type of white corpuscle is generally increased; the other types may be diminished. Occasionally more than one type of corpuscle is increased. The classification now accepted is that of Ehrlich, viz., the lymphatic and the myeloid, depending on the kind of cell that is increased in number. In lymphatic leukemia not only the lymph glands but also the spleen and other lymphoid tissue of the body may be affected, and even the bone-marrow. At any time during the course of the leukemia an acute infection may cause a rapid diminution in the numbers of leukocytes. Even slight infections in these cases of leukemia may cause death, or, if the patient recovers, the number of leukocytes rapidly again increases.

Boardman (*loc. cit.*, p. 348) has treated three cases of leukemia with benzene, and has also reviewed the literature since Korányi first suggested this treatment of leukemia, in 1912. Boardman comes to the conclusions that the benzene treatment of leukemia is the most successful yet offered; that the treatment is applicable to all forms of chronic leukemia; that when properly administered there is little danger from the treatment, but that the improvement is generally perhaps only temporary. In combination with the Roentgen-ray treatment, however, benzene treatment should be tried in all cases, except perhaps when there is nephritis.

BENZENE TREATMENT

Benzol is a trade name for benzene. It is used particularly in German literature. The benzol of commerce is impure and variable in composition. Selling[1] showed that the action of "benzol" is that of benzene. "Benzene, Medicinal," is described in New and Nonofficial Remedies, and Merck has a product on the market complying with this description.

There seems to be, as Boardman states, "abundant experimental and clinical proof that benzene acts on the leukoblastic tissues, causing a marked decrease in their functional activity in both normal and abnormal states."

During its administration benzene can cause headaches, dizziness, gastro-intestinal disturbances, and skin eruptions. It may cause too great a loss of leukocytes, hemorrhages, and nephritis, and, of course, it can cause death. The most frequent unpleasant symptoms from the therapeutic administration of benzene are gastric disturbances, which range in all degrees from simple irritation to loss of appetite, vomiting, hiccough, etc. This action on the stomach can generally be prevented by combining the benzene with olive oil and giving it in gelatine capsules during a meal. If in spite of such a method of administration the benzene tends to disturb the stomach, the capsules may be coated with phenyl salicylate, which will generally prevent their solution until they reach the intestines, where the alkalies will dissolve and break up the salicylate. More or less persistent headache and dizziness and kidney and bladder irritability should be danger signals, and heeded by withdrawal of the drug. It should also be noted that the action of benzene persists for some time after the patient ceases to take it; therefore too great care cannot be taken in watching the results of its administration. Not only must unpleasant symptoms be noted and good judgment used as to whether or not the drug should be continued, but the blood must be repeatedly counted, and when the white corpuscles are reduced to 20,000 the treatment should be immediately discontinued. The occurrence of anemia, which is occasionally produced, should also be the signal for discontinuance.

Boardman and other clinicians, notably Barker and Billings, caution against the administration of benzene while the patient is ambulatory. A patient with leukemia under the administration of benzene should certainly be at rest, and perhaps best in a hospital. The drug seems to be equally beneficial in chronic myelogenous and chronic lymphatic leukemia.

The method of its administration, as mapped out by von Korányi, and found by Boardman to be the most satisfactory, is to give it in gelatin capsules prepared just before the administration, each capsule to contain 0.50 gm. of benzene, with an equal amount of olive oil, these capsules to be swallowed during the meal. On the first day four capsules, representing 2 gm. of the benzene, should be given; on the second day 3 gm. or six capsules; on the third day 4 gm., eight capsules; on the fourth day, and to continue at this dose, 5 gm., ten capsules. This latter dose should not be exceeded, and should be reduced if the symptoms show undesired action. The drug should be stopped, as above stated, as soon as the white corpuscles have become as low as 20,000 per cubic millimeter.

ROENTGEN-RAY TREATMENT

Ruggles (*loc. cit.*, p. 355) briefly describes this treatment of leukemia. He finds that since Schultz, in 1901, and Pusey, in 1902, and Senn, in 1903, reported their first cases of leukemia treated with Roentgen ray, thousands have been so treated. The usual result of such treatment has been a more or less rapid diminution of the white count and an improvement in the general condition. There are records of patients so treated being still alive after five years, and some of them apparently well. Recurrences, however, generally take place. Ruggles finds the contraindications to Roentgen-ray treatment of leukemia to be acute forms and the coincident condition of profound anemia, and cachexia or fever. The primary effect of the treatment is that "in ten to fourteen days the lymphocytes, myelocytes, myeloblasts, and even polynuclears show swelling of the nuclei and a fragmentation of the chromatin." Later the protoplasm of the cells becomes clear or vacuolated and then the cells disappear. After a prolonged course of roentgenation the myeloid cells completely disappear from the lymph nodes and the spleen, the latter becoming "a fibroid mass containing scattered lymphoid cells."

The best results in leukemia are obtained by exposing both the long bones and the spleen to the Roentgen ray.

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[1] Selling: Bull. Johns Hopkins Hosp., 1910, xxi.

To sum up, the best treatment of leukemia, as far as our present knowledge goes, is the combined treatment of Roentgen ray and benzene. Benzene is a dangerous drug, and its action must be carefully watched. The Roentgen ray is a very potent force and may do harm, but the disease has always been, with unexplained intermittencies, almost invariably fatal; hence radical measures are excusable in its treatment. The old treatment of arsenic in enormous doses doubtless caused more deaths than can be attributed to benzene or to any late secondary action of the Roentgen ray.

INFANTILE SCURVY

This nutritional disturbance is becoming less frequent with the better understanding of what constitutes the proper artificial food for babes and young children.

Most proprietary foods, many cereal gruels, and overpasteurized or sterilized milks are deficient in one or more elements necessary for health and nutrition. Rarely even a mother's milk may be deficient in such elements as to allow scurvy in her nursing child.

The importance of the various amino-acids for the growth and nutrition has been shown by Osborne and Mendel, and their work has clarified many of the empiricisms while furnishing many surprises in food values. Suffice it to say that some of the amino-acids are vitally important for nutrition, and if they are absent a child will not grow normally.

In scurvy the child seems to be short of alkaline salts and the food must have been insufficiently supplied with these; or, in the case of cow's milk, too long boiling or sterilizing has so changed the normally contained alkalies as to make them unavailable for nutrition. Supplying these alkaline salts to the child generally cures the condition quickly. These salts are readily offered by the juice of fresh oranges or grapes, or by a potato soup.

This condition of infantile scurvy is referred to because, as it occurs less and less frequently, it is often overlooked or confounded with rheumatism. Infantile scurvy most frequently occurs after 6 months of age and before the age of more general feeding, that is, while the child's diet is still limited to one or two articles of food. On the other hand, rheumatic fever is very rare in children during the first eighteen months of life.

The symptoms of infantile scurvy are joint pains, muscle soreness, crying on being handled, not much fever, loss of appetite principally because the mouth and gums are sore, bleeding from the gums or slight hemorrhages into the mucous membrane of the mouth and gums. If the child has been long sick and long refusing food, he is pale; and he is anemic if there has been much bleeding. If the condition is early recognized, the child may not be ill nourished. The Roentgen ray will often show more or less swelling or infiltration of the bones, and a chest examination, according to Hess,[1] will show "an enlargement of the heart, and more especially of the right side."

Besides the oranges or potato food, the child should be given 1 drop of the tincture of ferric chlorid three or four times a day. The mother or nurse may add this drop of the tincture to each feeding of orange juice. The amount of orange juice given should be that from one or two ordinary sized oranges per day. If diarrhea is caused, grape juice or potato soup may be substituted. Diarrhea should be prevented, as it makes the prognosis less favorable.

The joints may be kept warm with cotton, much as is done in rheumatism. A proper food for the child should be selected, and he should be rolled in a comfortable carriage into the fresh air. He should not be handled more than is absolutely necessary until he has recovered from his soreness and joint pains. The gums may be gently massaged by the mother or nurse. A little cold water frequently given the child is very acceptable in relieving the burning and irritation of the mouth. If there is bleeding, swabbing with boric acid solution and touching oozing spots with suprarenal solutions is advisable. If there are large bleeding areas in the mouth, swabbing with hydrogen peroxid solution is efficient. It may also be well to give the child an extra amount of lime as presented by the glycerophosphate of lime in 0.05 gm. powder, three times a day.

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[1] Hess, A. F.: Infantile Scurvy, The Journal A. M. A., Sept. 18, 1915, p. 1003.

New and Nonofficial Remedies

The following additional article has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Its acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

RADIO-REM, OUTFIT NO. 4.—An apparatus designed for the production of radioactive drinking water by the action of radium sulphate. It imparts about 1.8 microcurie (5,000 Mache units) to 500 Cc. water daily. (The exact efficiency is stated and guaranteed at the time of sale.)

Actions, Uses and Dosage.—See general article on radium, New and Nonofficial Remedies, 1915, p. 262.

Radium Therapy Corporation, New York (Schieffelin and Co., New York). No U. S. patents or trade-marks.

Radio-Rem Outfit No. 4 consists of two wide-mouthed glass-stoppered bottles of about 250 Cc. capacity, each containing a fired, porous clay (terra cotta) plate, stated to contain radium sulphate. While each plate is designed to impart about 0.95 microcurie (2,500 Mache units) to the water which fills the bottle in twenty-four hours, the efficiency of each tablet is stated at the time of sale and the manufacturers agree to replace the tablets and to pay for the test, if examination by the U. S. Bureau of Standards shows them to be deficient.

A test made for the Council demonstrated that during the impregnation of the water with radium emanation, no radium is dissolved in the water.

Praises for New Hanover County, N. C.—In a recent issue of the *Public Health Reports,* the United States Public Health Service calls attention to the sanitary progress that is being made in the city of Wilmington and the county of New Hanover. During 1914, 1,856 flushed closets were installed in Wilmington alone; in Cape Fear township every home has a water closet and in Masonboro township, the same condition is found. The actual field work in this county has been done by sanitary policemen and through persuasion rather than by court measures. The Wilmington City Council has voted to make available the sum of $50,000 on loan for the exclusive purpose of changing privies to flushed closets.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 9, 1915

THE IMPROVEMENT OF THE PUBLIC HEALTH

Anniversary and other formal public addresses before scientific audiences are likely to be reminiscent in character, reviewing the achievements of the past and sounding the praises of those who are responsible for them. An uncommon and distinctly meritorious feature in the recent address of Prof. W. T. Sedgwick, as president of the American Public Health Association, is the frank and vigorous presentation, not only of the record of American progress in public health work but also of some of its shortcomings and failures.[1] A few of the latter deserve to be brought to the attention of a larger medical audience because they involve aspects of our daily life which are of primary concern to the physician and regarding which he may properly be expected to assume an attitude of vigorous advocacy. Usually it takes considerably more courage and initiative to condemn inertia or indifference in public authorities than to commend the successes for which they are responsible.

Among the much-needed sanitary improvements which we have failed thus far to achieve in proper degree Sedgwick classes the sewage disposal systems. The public water supplies are today receiving an increasing amount of intelligent consideration from health authorities; but there is too little care devoted to the problem of human excretory waste. Public comfort stations and comparable public sanitary conveniences are among the rarities in American cities and towns. This almost universal lack, in this country, concerns one of the very elements of public health.

Sedgwick maintains that typhoid fever has not yet been reduced as far as it should have been in America. He also is frankly critical regarding the situation in respect to American infant mortality. "We have as yet," he remarks, "and in spite of ample knowledge, failed to make our American milk supplies what they should be. This is partly because we have been too timid to insist that good milk not only costs more to make but is worth more for food, and must therefore be paid for, and partly because we have not yet taught the public as we should that the only safe milk is cooked milk, and for infants, milk that is pasteurized—preferably in the final container."

Among other items which receive the charge of "conspicuous failure" are present rural and industrial hygiene and sanitation, and the problems of alcoholism and venereal disease. We are reminded that in many cities the streets—the playgrounds of the poor—are disgracefully dirty, and that we have not done all we might for the prevention of blindness, of tuberculosis or of cancer. Our vital statistics are not yet either complete or trustworthy; our health boards are too often loaded up with political refugees, political doctors, and ignorant or incompetent laymen. Our health officers are frequently untrained, ill-paid, or only part-time employees of a no-time board. It is not denied that great progress has been witnessed in many of these fields of public health endeavor. Sedgwick's attitude is rather that of a scientist impatient at the slowness with which modern contributions to knowledge have been put to use in public practices.

Sedgwick makes a further timely comment in directing attention to the neglect of what he terms preventive personal hygiene in contrast with preventive medicine and preventive sanitation. By this he means the study and care of the individual in those aspects of correct living to which we recently referred.[2] It may not be comforting to be told that even our best medical schools pay but scant attention to the manifold aspects of preventive hygiene and sanitation and that "the best teaching of today is to be found, not in the text-books or the schools, but in the leaflets issued and distributed by certain leading boards of health and life insurance companies." Criticism becomes a reproach only when it is never heeded and the better paths to which it points are never followed.

EFFICIENCY OF THE BODY AS A MACHINE

Ever since Count Rumford first suggested that the muscular work of two horses produced enough heat to boil water, speculation has been rife as to how much heat man loses during work and how efficient the human body is as a machine. The relationship between the energy consumption and the output of work has been extensively studied with various methods and machines. Dumas and Boussingalt,[3] by determining that a man used 300 gm. of carbon in climbing Mont Blanc, computed the efficiency of the body as 33 per cent. Frick[4] found that under the best conditions isolated muscle has an efficiency of 25 per cent. Gautier estimated that a working diet is 1,780 calories in excess of a resting diet, and that a man produces 270,000 kilogrammeters of work per day, which is equal to 588 calories. But of the 270,000 kilogrammeters, 100,000 are lost in the different movements of the body and "in the friction of the machine," so that the useful work is 150,000 kilogrammeters, or 352 calories. Therefore, of the 1,780 calories but 352 are transformed into work, giving a net efficiency of 20 per cent. Smith[5] found that, of the total heat incidental to muscular work, only one fifth was used in the production of mechanical work.

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[1] Sedgwick, W. T.: American Achievements and American Failures in Public Health Work, Science, Sept. 17, 1915, p. 361.

[2] The Love of Health, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1116.

[3] Dumas and Boussingalt: Essai de statique des êtres organisés, 1884; cited by Amar: Le rendement de la machine humaine, Paris, 1910, p. 21.

[4] Frick: Arch. f. d. ges. Physiol. (Pflüger's), 1878, xvi, 58.

There are notable inaccuracies, however, in each of these methods; hence the careful studies and the improved methods used by Benedict and Cathcart[6] in determining the efficiency of the body are especially valuable. These investigators used a bicycle with an accurately calibrated electric brake. The amount of oxygen consumed and the carbon dioxid produced by a man riding this bicycle ergometer was determined with a new form of respiration apparatus. Benedict and Cathcart thus determined the amount of heat that was eliminated per minute and the nature of the materials that were burned in producing this heat. All tests were performed twelve hours after the last meal, so that the food materials used were those stored in the body. By computing the relationship between the heat equivalent of the external muscular work as measured by the ergometer and the total heat output, they found that the net efficiency varied from 9 to 24 per cent., depending on the various speeds and loads that were placed on the bicycle rider. These differences are easily explained on comparison with a steam engine. A certain amount of steam is used in keeping up heat when the engine is not working at all. Slow revolutions and also too rapid revolutions of the fly wheel are less efficient in the production of work. In short, there seems to be a certain rate of speed for each engine at which it is most efficient. So it is with man in work production. Benedict and Cathcart found the average net efficiency of a professional cyclist and of four untrained men to be about 21 per cent. for each person. They found that the output of heat was constant per ten revolutions of the bicycle pedals, but that the increase in effective muscular work was not constant; there was a falling off as the higher rates are reached. The optimum efficiency was at 70 revolutions per minute. One objection to the accuracy of these results is that the cutaneous respiration is not considered, but this is a minor factor and would influence the final result but little.

Chauveau first found that during muscular work there is an excessive combustion of carbohydrates, so that in the subsequent period the catabolism is that of a body deficient in glycogen. Benedict and Cathcart have confirmed this and have demonstrated that the more severe the muscular activity, the heavier the draft on the carbohydrate material in the body. On the cessation of work the so-called "specific working catabolism" disappears, and for a time a much lower portion of carbohydrates is burned for the total energy output than during a usual resting period. Chauveau has also contended that when the supply of glycogen is depleted, fat may be converted into glycogen. According to Chauveau, 30 per cent. more energy per unit of work is liberated than when carbohydrate is burned, since heat which cannot be otherwise utilized is set free during the conversion of fat to glycogen. The transformation of fat into glycogen, however, lacks conclusive proof, and Benedict and Cathcart have not observed the additional heat loss even in work experiments so severe that fatigue resulted.

This question of body efficiency is closely linked with athletic training, a subject about which we are still poorly informed. From this work it would seem that training influences metabolism but little and that diets are not so prominent a factor as we have assumed.

RADIUM AS A FERTILIZER

Discoveries, so long as they are novel, naturally excite expectant optimism as to their application. This is the stage at which honest but undiscriminating enthusiasm and deliberate fakery both flourish. Radium, the possibilities and limitations of which are still undefined, is an instance in point. Time and experience are needed to reduce to rational limits the many claims made for it.

One of the uses suggested for radium is the stimulation of plant growth. Various experimenters have investigated the effect of radium emanation on the growth of plants under laboratory conditions. Gager, Fabre and Stocklasa have each reported stimulation of the growth of plants or the germinating activity of seeds under the influence of an optimum strength of radium, while a greater strength retarded growth.

The results of these laboratory experiments aroused interest in the possibility of using radium as a soil fertilizer under practical agricultural conditions. H. H. Rusby, professor of materia medica in the College of Pharmacy of Columbia University, has made experiments in this direction. He arranged with the Standard Chemical Company of Pittsburgh to use as a fertilizer the powdered residue carnotite ore left after the extraction of all the radium possible. This residue, or ore tailings, is said to contain about 2 or 3 mg. of radium to the ton. It was applied, mixed with fertilizer, on various contiguous plots in proportions of about 25, 50, 100 and 200 pounds to the acre, respectively. Control plots were treated in the same way except that they did not receive the radioactive mixture.

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[5] Smith: Phil. Tr., 1859, cxlix, 681.
[6] Benedict and Cathcart: Muscular Work, Publication 187, Carnegie Institution of Washington.

Rusby's report[1] is published in the house organ of the Standard Chemical Company. It describes in glowing terms quite remarkable results, which, if they could be accepted, would mark a new era in agriculture. Nearly all field crops showed an increased yield. Many garden vegetables in treated plots attained a larger size than those in untreated plots. Mere proximity to treated plots seemed to affect favorably the size of vegetables in untreated plots. Rusby also believes that the quality and palatability of vegetables and the size and brilliancy of flowers were improved by the influence of the radium ore mixture.

These results are not confirmed by field tests recently made at the University of Illinois. C. G. Hopkins, professor of agronomy, and W. H. Sachs,[2] chief in agronomy and chemistry at the Agricultural Experiment Station, report field tests of radium fertilizer made at the University of Illinois during 1913 and 1914.

In these tests the radium was used at three rates of application, 0.01 mg., 0.1 mg. and 1 mg. of radium per acre, costing, respectively, $1, $10 and $100 per acre. On one series of plots the radium was applied in the form of radium barium chlorid solution diluted with distilled water. The check plots received the same quantity of distilled water without radium. Another series of plots received solid radium barium sulphates, thoroughly mixed and pulverized with dry soil from the field. The control plot received the same weight of soil without the radium. Hopkins and Sachs explain that the amount of radioactive substance applied in these tests was made small in order to avoid any appreciable effect from the substance other than that due to radioactivity. Some effects might conceivably be obtained from the application of 100 or 200 pounds of mineral salts per acre. In the heaviest applications the amount was less than 5 pounds of total salts per acre.

Corn was grown on the land in 1913 and soy beans in 1914. The work of the two years comprised 144 tests with corn and 240 tests with soy beans.[3] In all these tests the average variation from the controls was so slight and so evenly distributed, for and against, as to compel the conclusion that radium, at any of the rates applied, had produced no effect on the crop yields either the first or the second season.

It will be observed that, whereas the University of Illinois investigators avoided applying any large bulk of salts, Rusby applied his radium in the form of refuse carnotite ore. Of this he used from 25 to 200 pounds per acre, as against the small amount (less than 5 pounds per acre) employed at the University of Illinois. That is, of course, Rusby applied practically from 25 to 200 pounds of the constituents of carnotite (a hydrated vanadate of uranium and potassium) along with the radium. The amount of radium with which he treated the soil per acre, taking his own highest estimate of 3 mg. to the ton of ore tailings, must have been approximately from 0.3 mg. to 0.04 mg. as against the 1 mg., and 0.1 mg. and 0.01 mg. used at the University of Illinois.

A *reductio ad absurdum* of the radium fertilizer theory is given by R. R. Ramsey,[4] associate professor of physics in Indiana University. It is well known that radium is universally distributed, being present in most substances, however, only in minute traces. Taking Rutherford's average value for the amount of radium in the crust of the earth, Ramsey figures that the amount of radium element in the upper 5 inches of an acre of soil is 1 mg. Thus the maximum amount of radium used by Hopkins and Sachs (1 mg.) merely doubled the amount of radium element in the upper soil; the maximum amount used by Rusby increased the amount of radium element by only about one third. The amount of radium emanation which issues from an acre of soil, however, is not confined to the emanation from the radium element in its superficial 5-inch layer; it is from 50 to 100 times as much. Hopkins and Sachs increased the amount of radium emanation in the soil by only about 1 or 2 per cent.; Rusby increased it by only a fractional percentage.

As remarked earlier, experiments indicate that it is possible to increase vegetable growth, under laboratory conditions, by the application of radium. It may be that eventually some means will be found by which radium can be utilized in practical agriculture. At present, however, the best evidence we have does not encourage us to regard this as an immediate possibility.

GAS DIFFUSION IN THE LUNGS

With increasing altitudes the pressure of the air is reduced, and the oxygen tension becomes lower and lower. At a height of about 15,000 feet the barometric pressure is little over half an atmosphere, and the oxygen tension therefore only about 11 per cent. of an atmosphere. The presence of man at any considerable altitude necessitates an adjustment on his part so that the persistent undiminished oxygen requirement of the organism can be satisfied under the enforced changes of atmospheric conditions. Otherwise serious symptoms, which go under the designation of oxygen starvation, may arise. They doubtless play some part in the malady familiarly known as mountain sickness.

One of the adaptations to the barometric conditions prevailing at considerable heights is an increased pulmonary ventilation. There is an augmentation in both depth and frequency of respiration. The increase in pulmonary ventilation diminishes the alveolar carbon dioxid tension, increases the oxygen tension, and improves diffusion. Another important means of rapid adaptation is associated with changes in the circulation. A deficient passage of oxygen from the lungs to the blood may, so far as heart and tissues are concerned, be accommodated for by increasing the rapidity of the blood flow. This is effected by a quickened pulse rate. Such responses are due solely to the low tension of the oxygen, as the recent experiments in the pneumatic cabinet at the Finsen Institute in Copenhagen have demonstrated.[1] Again, there may be an increased quantity of hemoglobin or of red corpuscles. If this response occurs, the necessary amount of oxygen can be transported with a slower rate of circulation, and the arterial oxygen tension can be raised.

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[1] Rusby, H. H.: The Influence of Radioactive Earth on Plant Growth and Crop Production, Radium, January and February, 1915, pp. 68 and 94.

[2] Hopkins, Cyril G., and Sachs, Ward H.: Radium Fertilizer in Field Tests, Science, May 14, 1915, p. 732.

[3] Detailed data are given in Bull. 177, Univ. Ill. Agric. Exper. Station.

[4] Ramsey, R. R.: Radium Fertilizer, Science, Aug. 13, 1915, p. 219.

Some years ago, Haldane and his collaborators arrived at the conclusion that, even when these facilitating adjustments and adaptations are taken into account, as soon as any considerable altitude is reached the necessary supply of oxygen cannot be furnished through the lungs to the blood satisfactorily by the mere process of physical diffusion of the gas. The expedition of the Duc d'Abruzzi in the Himalayas, in which a height of 24,600 feet, corresponding to a barometric pressure of 312 mm., was attained, has been recited as a striking example of the insufficiency of the simple diffusion theory. The problem concerns the forces by which oxygen is transported from the alveolar air into the blood. If the tension of oxygen in the blood is under certain circumstances higher than that of the alveolar air, there can be no doubt that forces other than diffusion must come into play. Haldane and his collaborators have maintained that this is, in fact, the case. The Anglo-American expedition of Douglas, Haldane, Henderson and Schneider to Pike's Peak in 1912[2] furnished further carefully selected observations which have been interpreted in favor of the newer hypothesis that the acclimatization at considerable altitudes is accomplished by an increased arterial oxygen tension due to active secretion of oxygen through the alveolar epithelium.[3]

Dr. Marie Krogh[4] of the University of Copenhagen has taken exception to this widely quoted hypothesis that simple diffusion of gases through the lungs of man is insufficient to explain intakes of oxygen measured under the most adverse conditions, and especially during muscular work at low oxygen pressures. On the contrary, it is maintained, as the result of the newest investigations, that diffusion alone will account for the gas exchange between the alveolar air and blood in all cases which have been examined in sufficient detail, both at low oxygen tension and during the heaviest muscular work. According to Dr. Krogh, during work at low oxygen pressures, it will as a rule be diffusion through the lungs which sets the limit for the intake of oxygen; during work at normal atmospheric pressures, the heart will probably in most cases be the limiting factor.

There are other newer results respecting the combustion processes in the lungs which harmonize well with these conceptions.[5] The discovery of the adequacy of simple physical processes to account for physiologic functions is always a source of satisfaction. The critical studies of Dr. Krogh make it seem unnecessary to assume any cellular activity on the part of the alveolar wall, either in the form of a direct secretion of oxygen, or in the nature of a combustion of intermediate metabolites supposed to increase the mean oxygen tension difference.

THE CAUSE OF RAT-BITE FEVER

It sometimes happens that a carefully formulated description of an unfamiliar group of symptoms serves to arouse sufficient consideration to bring to light other similar or closely related instances. Cases grow in number, and as medical attention is focused on them, a condition which was infrequently recognized or diagnosed may lose its rarity and enter into the group of less exceptional diseases.

With these thoughts in mind we refer to Crohn's recent contribution to the subject of rat-bite fever,[6] known in some of the foreign tongues as Rattenbiss-Krankheit or sokodu. This disease, best known in Japan, where it is recognized by the medical profession, occurs among the classes liable to be bitten by rats. The symptoms are incident to a bite and are followed after a variable incubation period by a single paroxysm or by regularly recurring paroxysms of chills, fever and sweats, lasting a few days, and associated with the occurrence of a local or diffuse bluish-red exanthem. The disease is often characterized by marked nervous symptoms. The course of the malady is signalized by progressive emaciation and weakness; the duration is variable, often very prolonged. Fatal cases are not infrequent.

From a study of about fifty cases reported in the world's literature, some of it dating back several decades, along with personal experience at the Mount Sinai Hospital, New York, Crohn has speculated on the nature of rat-bite fever as a disease. He notes that in the nature of its course it resembles most clearly relapsing fever, the febris recurrens of the Asiatics and Europeans. The diseases resemble each other in the intermittency of the symptoms; the incubation period in both is variable. In its favorable reaction to salvarsan the disease has a common factor with both syphilis and relapsing fever, but more particularly with the former. The finding of a spirochete as the cause of both the latter diseases suggests this as the etiologic factor in this malady. In the prominence of the nervous symptoms and the postfebrile paralyses, rat-bite fever recalls relapsing fever. The one reported postmortem examination in this disease revealed a serous meningitis, with increase of cerebrospinal fluid. The irregular paraplegias and atrophies recall the tabetic lesions of syphilis.

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[1] To What Are Due the Effects of Altitude on Man? editorial, The Journal A. M. A., Sept. 25, 1915, p. 1112.

[2] Anglo-American Expedition to Pike's Peak, editorial, The Journal A. M. A., Aug. 10, 1912, p. 449.

[3] Douglas, Haldane, Henderson and Schneider: Phil. Tr. Roy. Soc., London, B, 1913, p. 203.

[4] Krogh, Marie: The Diffusion of Gases Through the Lungs of Man, Jour. Physiol., 1915, xlix, 271.

[5] Evans, C. L., and Starling, E. H.: Jour. Physiol., 1913, xlvi, 413. Henriques, V.: Biochem. Ztschr., 1913, lvi, 230.

[6] Crohn, B. B.: Rat-Bite Fever, Arch. Int. Med., June, 1915, p. 1014.

Many authors have indicated a belief in one of the species of protozoa as the etiologic factor, but with the exception of the statements of Ogata, whose work has unfortunately not been confirmed, such parasites have not been observed. Many of the symptoms of the malady might, in Crohn's opinion, be the result of a powerful toxin elaborated at the site of the wound and transmitted along the regional nerve paths to the central nervous system, in a manner similar to the propagation of the toxin of tetanus. The point in favor of a spirochete as the causative agent is the similarity of the disease to relapsing fever and syphilis, as regards both the marked nerve symptoms and the apparent curability by salvarsan. In favor of a protozoan cause is the alternation of the paroxysms with afebrile periods, recalling the effects of the malarial plasmodia, though this occurs also in spirochetal diseases.

Now that attention has been turned more prominently to the possibilities involved, new cases will undoubtedly be brought to light in greater number. We shall then perhaps be in a position to ascertain conclusively whether or not the disease is actually caused by living parasites, a conclusion to which much of the evidence presented strongly points.

Current Comment

THE COMPLEMENT-FIXATION REACTION IN TUBERCULOSIS

The presence in the serum of tuberculosis patients of a substance which is capable of binding complement in the presence of suitable antigen has been repeatedly demonstrated. Why this reaction has not come into more general use as an aid in the diagnosis and prognosis of tuberculosis is not apparent. Recent French literature contains observations on the diagnostic importance of this reaction. Besredka and Manoukhine[1] report the results of complement-fixation experiments in guinea-pigs, rabbits and human beings, using as antigen a tuberculin prepared from egg-broth cultures of tubercle bacilli. The test was positive in guinea-pigs after the fourth day of infection, and remained so with fluctuations until shortly before death, when it became negative. In man these observers found the reaction uniformly positive in the early stages of tuberculosis and in a majority of cases in the second stage. They observed partial or negative results in the third stage and regarded a negative reaction in advanced tuberculosis as a sign of approaching death. Debains and Jupille[2] report observations on a series of 600 individuals, including patients in all stages of tuberculosis, patients having various other diseases but no signs of tuberculosis, and apparently normal persons. Some of the latter gave feebly positive reactions. Also patients with a strongly positive Wassermann gave a positive reaction with tuberculous antigen, owing, it is suggested, to lipoids derived from the egg constituents of the medium which react with syphilitic serum in a manner similar to tissue-extract antigen. In advanced cases of pulmonary tuberculosis with cavitation and cachexia feeble or negative reactions were often obtained. In cases of tuberculous pleurisy with effusion negative reactions were frequent. These are explained on the supposition that in advanced tuberculous infections the antibodies in the serum have already been bound or neutralized by substances produced by the large numbers of bacilli present. Experiments with rabbits indicate that the complement-fixing activity runs parallel with the resistance of the animals to infection. If the same conditions obtain in human cases, the test would give valuable information to the clinician regarding the course of the disease. It would seem, from the evidence accumulated by workers in this field, that the complement-fixing reaction can be used with advantage in the diagnosis and prognosis of tuberculosis. The procedure certainly merits trial in hospitals and institutions dealing with tuberculous patients.

HEREDITY IN TWIN BIRTHS

In no field of study is the possession of accurate statistics more necessary than in problems of heredity. An interesting problem concerns the question of the likeness of animals and their offspring with respect to birth as singles, twins, or triplets. Heape,[3] in an analysis of the English statistics available, says that there is reason to believe that twin lambs produce more twins than single lambs, and that the influence of heredity is brought to bear. Rietz and Roberts[4] have taken up the question as determined by the statistics available in this country. In the classes of sheep studied in this instance—registered Shropshire sheep—they .found that in general the twin parents give a larger percentage of twins among offsprings than do parents born as singles. They call attention to the fact that as it requires large numbers to establish the significance of the difference found, and it would not be surprising if within a flock of fair size—one hundred—one may in some cases get even a larger percentage of twins from single parents than from twin parents; but such fluctuations would not occur in the large majority of cases. What the significance of these results are for the human being can be determined only by a similar study of heredity in twin births.

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[1] Besredka and Manoukhine: Ann. de l'Inst. Pasteur, 1914 xxviii, 569; Compt. rend. Soc. de biol., 1914, lxxvi, 197.

[2] Debains and Jupille: Compt. rend. Soc. de biol., 1914, lxxvi, 199.

[3] Heape: Jour. Roy. Agr. Soc., England, 1899, x, 236.

[4] Rietz, H. L., and Roberts, E.: Degree of Resemblance of Parents and Offspring with Respect to Birth as Twins for Registered Shropshire Sheep, Jour. Agric. Research, 1915, iv, 479.

EDIBLE SNAILS

To most Americans the idea of using snails in the diet will not awaken gastronomic enthusiasm; but there are people in various parts of the world to whom the suggestion of the use of other mollusks, such as oysters and clams, would be repugnant. It is not necessary to go back to the days of the elder Pliny for evidence that edible snails have had a place on the menus of many countries. It is stated that during our own oyster season, from September to April, more than 200 million snails are disposed of in Paris alone. The daily consumption of "escargots" in the French capital has been estimated at 50 tons when trade is at its best. In the belief that the American people can be educated to see the true worth of the edible snail, which might be grown with profit in the United States, a government expert has collected some facts bearing on their use.[1] The European war has added a further interest to the possibility of snail culture. Comparatively few Americans have ever tasted snails, know of their preparation as food, or even consider them a fit article of diet. Among the foreigners in our population, snails have a limited sale. Those sold in the fish markets of our larger cities have practically all been imported from France. Abroad, snails are by no means regarded in any sense as a national dish. They are included in the dietary much as is the oyster in this country, as a table luxury or delicacy. In respect to composition, the two groups of mollusks furnish about the same yield of nutrients. In Europe, snails are raised commercially under an intensive system of culture in many places in snaileries. Rust[1] believes that although snail culture may not be very profitable in Europe, where economic conditions are different, in that the food for the animals must be grown and supplied to them regularly and everything done with much labor on restricted areas of land, in the United States snail farming might, with judicious publicity, and in time, become profitable. Whether or not it is advantageous, from the standpoint of nutrition, to attempt to introduce a new food to the American table is a question of individual preference. Almost every one, Rust writes, who has ever eaten well-prepared snails, admits their gastronomic worth, from the points both of nutritive value and of flavor, and there are many states where they could be grown and kept fresh until used, and where they would prove a very welcome addition to the somewhat limited menu of the locality. In the Mississippi Valley, for instance, where conditions for their cultivation are almost ideal, they could be grown at practically no cost (either in money, time or labor), and might be used to a great extent in place of oysters, which they greatly resemble in flavor when properly prepared. Such a practice would be advantageous, for the snail is possibly preferable as an article of human consumption. It is cleaner, feeding daintily, as it does, only on the cleanest of vegetable tissues, while oysters, not being able to move about in search of food, must take what comes to them in the water, are sometimes fattened in water impregnated with bacteria-laden sewage, and thus, occasionally, act as carriers of typhoid and other diseases. At any rate, we can be prepared to receive the suggestion of the addition of snails to the American menu without the revulsion of feeling which it awakens in many at present.

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[1] Rust, E. W.: Edible Snails, Yearbook U. S. Dept. Agric. for 1914, p. 491.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Fresno Gets State Society Meeting.—The Council has decided that the 1916 meeting of the Medical Society of the State of California is to be held in Fresno in April.

Personal.—Fire in Caruthers, September 10, destroyed the office of Dr. George A. Meracle.——Dr. Lyle G. McNeile has been appointed deputy health commissioner of Los Angeles.

State Board Changes.—On September 2 Governor Johnson appointed Dr. Wilbur A. Sawyer, Berkeley, a member of the State Board of Health to succeed Dr. Donald H. Currie, Sacramento, the secretary of the board, resigned, and Dr. Robert A. Peers, Colfax, to succeed Dr. James H. Parkinson, Sacramento, term expired.——At a meeting of the Board, September 4, Dr. Sawyer was elected secretary.

State University Happenings.—Dr. James Craig Neel, San Francisco, has been appointed instructor in obstetrics and gynecology (on an academic basis); Dr. William Boericke has been appointed clinical professor of homeopathic materia medica, and Dr. Sanford B. Hooker and Carl L. A. Schmidt have been appointed research assistants in pathology in the University of California to undertake researches as to typhoid fever and in problems of biologic specificity, provided for by the Edith J. Claypole Memorial Research fund in pathology and George Williams Hooper Foundation for Medical Research.

Ordinance Regarding Diphtheria Carriers.—Among the cities in California which have ordinances providing for the isolation of diphtheria carriers are San Francisco and Berkeley, in both of which places opposition has arisen to the enforcement of the ordinance. In San Francisco an attempt was made in the Board of Supervisors to repeal the ordinance, and in Berkeley Assemblyman George Gelder has threatened to appeal to the courts to prevent the enforcement of the isolation ordinance. A number of his children had been affected by the law, being excluded from the schools on account of the discovery by the school inspectors that they were diphtheria carriers. Assemblyman Gelder, it is said, has been opposed to a number of health regulations, among them the laws in regard to vaccination against smallpox. Dr. George E. Ebright, San Francisco, president of the State Board of Health, takes the stand that the repeal of the isolation ordinances would be a deadly menace to the health of the community. He says that the carriers in San Francisco quarantined at the Isolation Hospital are comfortable and are treated with the greatest care. The State Board has found little difficulty in controlling diphtheria in other parts of the state, but little opposition having arisen on account of attempts at regulation.

ILLINOIS

Personal.—Dr. Frank A. Stubblefield, medical director of the Alton State Hospital, who has been ill in St. Joseph's Hospital, Alton, is reported to be improving.

Foot and Mouth Disease.—Two herds of Guernseys and Holsteins, 204 in number, belonging to Arthur Meeker, found to be infected with foot and mouth disease, have been slaughtered.——Of the Guernsey herd of Mrs. Durand, two have died from secondary infection and a stricter quarantine has been put into effect at Crab Tree Farm.——The animal health commissioner of Iowa has notified the assistant state veterinarian that there must be no exchange of stock of any kind between Illinois and Iowa, owing to the outbreak of foot and mouth disease in Illinois.

Chicago

Diphtheria Carriers.—Almost 500 diphtheria carriers have been discovered among the schoolchildren of Chicago since the opening of school on September 7, according to the records of the department of health.

New Armory Dedicated.—Field Hospital Companies Nos. 1 and 2, Ill. N. G., dedicated their new armory in Chicago, October 1. Major William J. Swift, M. C., Ill. N. G., commanding Field Hospital No. 1, presided as toastmaster.

Personal.—Dr. John A. W. Fernow was painfully injured in a collision between street cars, October 3, but rendered first aid to the others who were injured.——Dr. Anthony Balcerzak has been elected chief medical examiner of the Polish National Alliance.

KANSAS

Personal.—Dr. Joseph M. McKamey, Kingman, sustained a skull fracture in a collision between his motor car and a train, September 12.

Baby Week at Topeka.—During baby week, held at Topeka, October 5-8, under the auspices of the State Board of Health Division of Child Welfare, Dr. Lydia Allen DeVilbiss, director, and Dr. Harold B. Wood, 159 babies were registered for examinations. Picture films were lent by the National Association of Tuberculosis, Cincinnati Department of Health, Kansas State Board of Health and the University of Kansas. There was an exhibit of A. M. A. placards (cartoons), other placards, and sketches and water color designs by Dr. Wood. There were also displays of baby clothing and furniture and a pure milk exhibit. Programs were given afternoons and evenings.

KENTUCKY

Personal.—Dr. James Bruce has been reappointed house physician and chief of interns, at the Louisville City Hospital, succeeding Dr. Thomas L. Harris, resigned.——Dr. John H. Taylor, Providence, was operated on September 13, in St. Mary's Hospital, Rochester, Minn. The gallbladder and appendix were removed.

Hospital Notes.—A contract for a new tuberculosis hospital at Henderson was awarded September 15.——A hospital is to be built at once in connection with the Stuart Robinson College, Mission School, Blackey, near Whitesburg. About $10,000 is to be expended for hospital and equipment.——Dr. Thomas O. Helm, Bowling Green, has disposed of his lease and interest in St. Joseph's Hospital to Drs. Morton M. and Robert C. Moss.

New State Officers.—The sixty-fifth annual meeting of the Kentucky State Medical Association was held in Louisville, September 21 to 24, under the presidency of Dr. John J. Moren, Louisville, who at the first session yielded the chair to the president-elect, Dr. James W. Kincaid, Catlettsburg. Hopkinsville was selected as the next place of meeting and the following officers were elected: president-elect, Dr. Ap Morgan Vance, Louisville; vice-presidents, Drs. Myrvin E. Hoge, Quicksand; Amos M. Davis, Denton, and James B. Mason, London; secretary, Dr. Arthur T. McCormack, Bowling Green (reelected); delegates to the American Medical Association, Drs. Carl Lewis Wheeler, Lexington; and W. W. Richmond, Prestonsburg; councilor for the Fifth District, Dr. Charles W. Hibbitt, Louisville; nomination for members of the State Board of Health, Drs. Charles Z. Aud, Cecilia; Daniel M. Griffith, Owensboro; and Robert C. McChord, Lebanon. Dr. Edwin A. Stevens, Mayfield, was selected as orator in medicine; and Dr. William L. Gambill, Jenkins, as orator in surgery.

MASSACHUSETTS

Changes in Harvard Faculty.—The Harvard corporation has made the following appointments for the year opening September 27: Dr. John L. Morse, formerly associate professor of pediatrics, has been made full professor.——Dr. Frederick T. Lewis, formerly assistant professor of embryology, has been appointed associate professor.——Dr. John Warren, assistant professor of anatomy, has been made associate professor.——Dr. John L. Bremer, assistant professor of histology, has been made associate professor.——Dr. Francis W. Peabody has been appointed assistant professor of medicine and Dr. Herbert S. Langfeld, assistant professor of psychology.

Personal.—Dr. Fred P. Moore, Foxboro, has been appointed health supervisor of schools of Des Moines, Iowa.——Dr. Clarence H. Leland, Lowell, was severely cut and bruised by the overturning of his automobile in Lexington, September 13.——Drs. Roger I. S. Lee and Charles A. Porter, Boston, members of the Harvard Medical unit, returned from abroad, arriving in New York September 12.——Dr. William H. Devine, Boston, has been appointed director of school physicians by the Boston School Board.——Dr. Henry Colt, Pittsfield, has been appointed medical examiner for Berkshire County.——Dr. Milton J. Rosenau has resigned as a member of the Public Health Council of Boston and has been succeeded by John T. Wheelright.——Dr. Thomas F. Harrington, Boston, deputy commissioner of labor and industry, has been seriously ill at his summer home in Lynn with ptomain poisoning complicated with appendicitis and phlebitis.——Dr. Moses G. Parker, Lowell, was reelected president of the Parker Historical and Gynecological Society at the fifth annual reunion held in Lexington.——Dr. Lemuel F. Noble, Boston, has returned after several months' war service in Europe.——Dr. Francis D. Donoghue, Boston, arrived in New York from Europe, September 2.

MARYLAND

Meeting of Faculty.—The semi-annual meeting of the Medical and Chirurgical Faculty of Maryland will be held in Westminster, October 28.

University of Maryland Medical School Reopens.—The formal opening exercises of this institution were held October 6. Dr. Arthur M. Shipley, acting dean, presided, and the speakers were Dr. Randolph Winslow, of the University of Maryland, Dr. Harry Friedenwald, of the College of Physicians and Surgeons, and Dr. Ridgely B. Warfield, of the old Baltimore Medical College.

Protest Against Dr. Jones' Removal.—The Baltimore City Medical Society held a special meeting on October 1, adopting resolutions indorsing warmly the services rendered by Dr. C. Hampson Jones, as assistant health commissioner and protesting against his removal. The meeting was marked by intense feeling. The society has appealed to Dr. John D. Blake, the new commissioner of health, to use his prerogative by reappointing Dr. Jones.

Mosquito War Near End.—The first move to end the mosquito work has been completed and fifty inspectors have been laid off. The force will probably be broken up October 15. Sanitary Engineer W. D. Wrightson of the U. S. Public Health Service and his four inspectors will remain on duty until that date. Maj.-Gen. Wm. C. Gorgas, Surgeon-General of the U. S. Army and Surgeon-General Rupert Blue, of the U. S. Public Health Service, will make a final inspection of the work before that date.

Personal.—Dr. William H. Welch of Baltimore, a member of the Rockefeller Medical Mission, who is on his way to China, has reached Tokyo, Japan, where he with the other members of the mission were entertained by the Japanese premier.——Dr. John D. Blake, Baltimore, has been appointed commissioner of health by the mayor, to succeed Dr. Nathan R. Gorter. Dr. Gorter has been appointed a member of the State Board of Health by Governor Goldsborough.——Dr. Robert H. Crawford, Baltimore, has returned after several months' duty with the Red Cross unit in Silesia.

MISSOURI

Cancer in Missouri.—The department of preventive medicine of the University of Missouri, as a part of the campaign against cancer in that state, has published in the University *Bulletin* a special article on the early diagnosis of cancer, by a member of the faculty of the university. The purpose of the bulletin is to call the attention of the laity to the general subject of cancer and especially to the importance of regarding the earliest symptoms. The bulletin especially warns the people against quacks and bogus testimonials regarding the cure of cancer.

St. Louis

Hospital Unit Not Needed.—The St. Louis University hospital unit, recently organized for service abroad, has been notified by the director-general of the royal army medical staff that for the present he is unable to use any more American hospital units.

Memorial Resolutions.—At a joint meeting held by the board of trustees and staff of the St. Louis Eye, Ear, Nose and Throat Infirmary, September 22, resolutions were adopted setting forth the high and honorable standing of Dr. Horatio N. Spencer and expressing deep sorrow at his death.

Personal.—Dr. Malvern B. Clopton sailed from New York September 25 for work with the American ambulance in Paris.——Dr. Guthrie McConnell has been placed in charge of the pathologic and bacteriologic laboratory of the Waterloo (Iowa) Medical Society.——Dr. Frederick Hagler has returned after six months' work in military hospitals in Serbia.——Dr. Milton Schaic has resigned as medical director of the Jewish Home for Chronic Invalids and Consumptives of St. Louis.——Dr. Ralph L. Thompson has returned from service in the British War Hospital in France.

NEVADA

To Muzzle Dogs.—The State Board of Health and the Hygienic Laboratory, September 18, issued a bulletin calling attention to the necessity for muzzling all dogs, on account of the prevalence of rabies, chiefly among coyotes. The disease existed in many parts of the state, it is said.

State Sanitary Survey.—Surgeon Carroll Fox, U. S. P. H. S., has completed a sanitary survey of the state in company with Dr. Simeon L. Lee of the State Board of Health. He believes that the State Board of Health should be completely reorganized; that the State Hygienic Laboratory, and Pure Food and Drug Commission should be placed under the control of the State Board of Health instead of the State University, and that a state sanitary engineer should be appointed. Dr. Fox, in his report, called attention to the fact that Nevada is the most poorly equipped state in the Union in the matter of its health service; that the State Board of Health was allowed an appropriation of only $6,500 while the Fish and Game Commission was allowed $8,000, and furthermore, that the latter commission expended last year $10,000 above this appropriation and the succeeding legislature passed a bill approving the extra expenditure. In the belief of Dr. Fox, at least $14,500 should be appropriated for the State Board of Health.

NEW YORK

Personal.—Dr. Smith Baker, for more than forty years a practitioner of Whitestown and Utica, announced his retirement from practice, September 25.——Dr. Alexander C. Calisch, Oswego, has been appointed a member of the Board of Civil Service Commissioners.

Psychopathic Ward Needed.—Drs. Walter S. Goodale and B. Ross Nairn, Buffalo, appeared before the aldermanic finance committee, September 23, to endeavor to secure an appropriation of $2,000 for the establishment of a psychopathic ward for suspected insane and alcoholic cases at the Buffalo Municipal Hospital.

New York City

Crile Speaks Before Academy.—At the stated meeting of the New York Academy of Medicine, October 7, Dr. George W. Crile, Cleveland, delivered the Wesley M. Carpenter lecture on "Kinetic Drive—Its Phenomena and Its Control."

Personal.—Dr. Louis T. Klinker has suffered a mental breakdown and has been taken to Bellevue Hospital for observation.——Dr. Abraham L. Wolbarst began a series of public genito-urinary clinics at the West Side German Dispensary and Hospital, at 8:30 p. m. October 7. He also began a similar series of clinics on October 5, at 3 p. m. at Beth Israel Hospital and Dispensary.——Dr. Mary M. Crawford, Brooklyn, who has been serving for about a year in the American Hospital just outside of Paris, has returned to this country.——Dr. J. W. Brown, Dr. and Mrs. H. Holbrook Curtis and Dr. John E. Jones have sailed for Europe.

Columbia University Opens.—President Nicholas Murray Butler opened Columbia University's one hundred and sixty-second year on September 29 and in his address gave the assurance that within five years the project launched by the University and the Presbyterian Hospital for a great medical center will have been begun. He said that the $7,000,000 which the University must raise as its share would be forthcoming and added that plans had been adopted looking to the accomplishment of the task. Dr. Francis Carter Wood, director of the Crocker Cancer Research Fund, delivered the opening address to the students of the medical school, taking as his subject "Magic and Medicine." The point which he particularly emphasized was that the exploitation of radium cures of cancer by the lay press had been and was influencing many cancer patients to defer a resort to surgery, whereas in truth radium would cure but a small percentage of cancers and would do nothing which could not be done by surgery.

NORTH CAROLINA

Antityphoid Inoculation.—The State Board of Health reports that 47,037 patients were immunized against typhoid fever during the two first campaigns conducted by the State Board of Health.

Hospital Notes.—The Western North Carolina Methodist Conference, at its last meeting, advocated the establishment of a hospital in Salisbury.——The Tranquil Park Company has been organized at Charlotte to establish a hospital and sanatorium for the treatment of noncontagious medical diseases. Dr. John Q. Myers, Charlotte, is president and physician in charge of the institution; and Dr. John P. Munroe is vice president.——The Bloomsbury Sanatorium is under course of construction and will be ready to receive patients by the first of January. It is located on a site of 15 acres of rising ground near Bloomsbury.

OHIO

Lumber Magnate Donates Site for Hospital.—Peter Kuntz, Middletown, has purchased forty acres of land west of Dayton, which he has donated to the Sisters of the Poor of St. Francis, for a hospital. About $500,000 will be expended for the institution.

License Restored.—At its meeting July 6, the Ohio State Medical Board voted to restore the license of Dr. J. C. Ludwig of Cincinnati, which was revoked in 1907, for reasons involving moral turpitude. Many prominent citizens of Cincinnati endorsed his application for restoration. He is 77 years of age.

Not to Use Title of "Doctor" or "M.D."—The Ohio Board has adopted a regulation that limited license certificates will not confer the right to use the title "Doctor," "Dr.," "M.D.," "Physician" or "Surgeon." The regulation provides, however, that licensed practitioners in the limited branches on their cards, office signs, letter heads or elsewhere, may use the name of the limited branch specified in their certificates and may properly sign themselves as indicated.

Registration of Limited Practitioners.—In accordance with the Platt-Ellis law which gives the State Medical Board of Ohio the duty of registering practitioners of the various medical cults, blanks have been sent out to all such practitioners in order to secure a complete record. The cults mentioned in the law are chiropractic, naprapathy, spondylotherapy, neuropathy, mechanotherapy, electrotherapy, hydrotherapy, suggestive-therapy, psychotherapy, magnetic healing, massage, Swedish movement, chiropody and optometry.

Infantile Paralysis.—September 25, it was reported from Cleveland, that sixty-five homes had been quarantined by the City Health Department on account of infantile paralysis in the section of the city known as Willoughby. The death rate had been 6 per cent., which was 2 or 3 per cent. higher than the normal mortality rate. Health Commissioner Ford issued instructions as to personal prophylaxis. At Canton, September 23, the Board of Health ordered the quarantine of eight homes in which cases of infantile paralysis had occurred since September 1. In the previous week no new cases of the disease had developed. The order to quarantine these homes came from the State Board of Health.

Personal.—Dr. Oscar Theodore Schultz, formerly assistant professor of pathology in Western Reserve University, Cleveland, has been appointed professor of pathology and bacteriology in the College of Medicine of the University of Nebraska, Lincoln and Omaha.——Dr. David Marine, Cleveland, has returned from Compiegne, France.——Dr. Harry H. Snively, Columbus, in charge of the American Red Cross Hospital at Kiev, Russia, is said to have been made a general officer by the Russian government.——Dr. John F. Beachler, Columbus, fell down stairs, September 10, and sustained severe injuries.——Rev. Michael V. Halter, formerly a physician of Akron, has been appointed temporary pastor of Holy Trinity Church, Avon.——Dr. Howard W. Arndt, Lore City, was seriously injured in a collision between his automobile and a street car at Lore City and is under treatment in a Cambridge hospital.——Dr. Sylvester R. Best, Centerburg, has been appointed chief statistician for the Department of Vital Statistics.

PENNSYLVANIA

Hospital Cornerstone Laid.—The cornerstone of the Philadelphia Memorial Hospital, the gift of 11,200 Philadelphia Free Masons, was laid, September 29, with impressive ceremonies, on a part of the large tract dedicated to the care of dependent Masons, at Elizabethtown, Pa.

Changes in Pittsburgh University Faculty.—Dr. John Jenkins Buchanan, for fourteen years professor of surgery in the University, has resigned as an active teacher and has been elected professor emeritus.——Dr. Robert Talbott Miller, for the past five years a member of the surgical faculty of the School of Medicine, and lately appointed associate professor of surgery, has been appointed full professor in charge of that department.

Infantile Paralysis.—The outbreak of infantile paralysis at Erie and in that vicinity has about subsided and Drs. Fox and Rivas, sent by the State Board of Health to take charge of the situation, left Erie September 24. It was believed that very few additional cases would occur if the people took the proper hygienic precautions about which they were carefully instructed by the two experts. No new cases had been reported since September 15. Altogether there have been fifty-nine cases in the city and fifteen in the county outside, since January, 1915.

Philadelphia

Reception of Medical Club.—The Medical Club of Philadelphia will give a reception, October 15, in honor of Surgeon General Rupert Blue, United States Public Health Service, and Rear Admiral William C. Braisted, Surgeon General, United States Navy.

New Scholarships at Women's School.—Through friends of the Women's Medical College, two new scholarships are this year available for women students. The scholarships carry with them the sums of $225 and $250 a year, respectively. The faculty of the college will choose recipients from the list of applicants.

New Law on Communicable Diseases.—The Department of Public Health and Charities has issued a pamphlet edition of "An Act to safeguard human life and health throughout the commonwealth, by providing for the reporting, quarantining, and control of certain communicable diseases, and for the prevention of infection therefrom, and prescribing penalties for violations of the act," approved May 28, 1915.

Personal.—Dr. John A. Kolmer has been appointed assistant professor of experimental pathology in the University of Pennsylvania.——Dr. L. D. Englerth has been appointed chief resident physician to the Frankford Hospital.——Dr. E. E. Montgomery was operated on for hernia in Jefferson Hospital, recently.——Dr. William C. Hollopeter, for fifteen years professor of pediatrics at the Medico-Chirurgical College has resigned and has been succeeded by Dr. James H. McKee. ——Dr. William B. Swartley is on his way to join the staff of the American Ambulance Hospital in France, where he will remain about three months.——Dr. Charles K. Mills, having resigned his chair in the Medical School of the University of Pennsylvania, will devote attention to postgraduate teaching, research work and private practice.

RHODE ISLAND

State Society Holds Fall Meeting.—The Rhode Island Medical Society held its fall meeting at St. Joseph's Hospital, Providence, September 2, after dinner and sports at Hillsgrove.

Infantile Paralysis.—The occurrence of fourteen cases of infantile paralysis at West Warwick resulted in an investigation by members of the State Board of Health. It was found that there was no association of the cases, except that in two instances there were two patients in the same family. The disease could not be traced to any definite focus. None of the patients was over 7 years old.

Personal.—Dr. Olin S. Pettingill, assistant superintendent of the Rhode Island State Sanatorium, has been offered the position of superintendent of the Western Maine Sanatorium, Hebron.——Dr. Elisha A. Cohoon of the staff of the Rhode Island State Hospital has been appointed administrative officer of the psychopathic department of the Boston State Hospital and pathologist for the Massachusetts Board of Insanity.

TEXAS

For the Eradication of Infections.—A meeting of the State Board of Health and representatives of the federal government, representatives of the state agricultural and mechanical college and the live stock sanitary commission of Texas was called October 5 for the purpose of formulating a plan for the eradication of Texas fever, charbon, hog cholera, etc.

Personal.—Drs. Claude O. Harper, Thomas M. Jeter, Samuel A. Lundy, and Lyman A. Barber have accepted appointments as members of the board of health of Fort Worth.—— Dr. Jake T. Wilhite has retired from the staff of the State Hospital, Austin, to accept the position of physician-in-charge of the Pasteur Institute.——Dr. Raleigh L. Davis has been appointed second assistant physician of the State Hospital, Austin; Dr. T. N. Miller, third assistant; and Dr. Wooten D. Lightfoot, fourth assistant physician.——Dr. Frank E. Piner, formerly city health officer of Denton, returned from war service in England, September 24.

The Situation at Galveston.—Mr. Charles Saville, director of sanitation of the city of Dallas, has made a report on the sanitary conditions at Galveston following the recent storm. He recommends that the water for drinking and cooking purposes be boiled; that systematic bacteriologic analyses of the city water be taken daily; that all water mains and dead-ends be flushed out; that the use of water from private wells and underground systems be interdicted, and that a sterilizing apparatus be installed at the water pumping station for the water supply of the city. He also recommends the construction of dry closets; the systematic flushing and cleaning of sewers and catch basins; the keeping of garbage and refuse in fly-tight receptacles; the incineration of all garbage and refuse; the removal of sand from the city streets and the establishment of a high temperature refuse incinerator for permanent use.

WISCONSIN

Free Silver Nitrate.—The State Board of Health has notified the local boards of health that a 1 per cent. solution of silver nitrate will be furnished free of charge to all physicians and midwives in the state.

Personal.—Dr. Argo M. Foster, Racine, who was injured in a collision between his automobile and an electric car in August, has been obliged to undergo an operation on the skull and is under treatment in a Chicago hospital and is said to be doing well.

Legislation Helps Sanatoriums.—Five new county tuberculosis sanatoriums will be erected in Wisconsin this fall, in Marathon, Grant, Jefferson, Dunn and Fond du Lac counties. In four of these counties the county board members are already at work on the proposition and in the fifth county, the county medical society and private citizens have taken the initiative.

Madison Does Not Want Polluted Drinking Water.—Medical men of Madison, at a meeting September 9, passed resolutions based on the proposition to exchange the artesian water supply for Madison for surface water from Lake Mandota; and setting forth that the present supply is pure, that its cost is moderate and that there is an abundant supply. Furthermore, that Lake Mandota is polluted by the sewerage of the State Hospital for the Insane and the residences around the lake. They, as physicians of Madison and the vicinity, and members of the Dane County Medical Society, believe that the change proposed is perilous, and call on the city council to retain the present source of water supply, to establish a modern and adequate plant in charge of a competent sanitary engineer.

CANADA

Personal.—Dr. William Henderson, Sarnia, Ont., who has a commission with the Royal Army Medical Corps in England, has been appointed physician-in-chief of a hospital ship for the Dardanelles. The ship carries six physicians, twelve nurses and has 450 beds.——Prof. Thomas G. Brodie, F.R.G.S., and Prof. John J. MacKenzie, B.A., M.D., will shortly return from England to resume their duties at the University of Toronto. Both professors went over as supernumeraries with the University of Toronto Base Hospital. ——Dr. Fortunat Lachance, Winnipeg, mayor of St. Boniface, Man., will shortly leave for the front in charge of one of the departments of the military hospital being equipped by Laval University, Montreal. Dr. Lachance will have the rank of lieutenant-colonel.——Col. John T. Fotheringham, Toronto, chief medical officer of the Second Canadian Overseas Force, writing to Dr. Goldwin W. Howland, Toronto, says that Lord Kitchener and the inspector-general of the War Office have stated that the second force now in France both in training and physical fitness was the finest body of men that had left England for France, a place of honor up to this time held by a division from Ulster.——Dr. Robert G. Brett, Banff, is to be appointed the next lieutenant-governor of the province of Alberta.

Ontario Medical Commission Appointed.—The Ontario government has at last appointed its long-promised commission on the subject of medical education and practice in that province. The commissioner is the Hon. Mr. Justice Hodgins of the supreme court of Ontario. Wide powers are given to the commissioner as seen in the instructions issued with the appointment. To inquire into and report on all or any matters relating to education for the practice of medicine in or affecting the province of Ontario; the construction, powers, duties and regulations of any body corporate or incorporated and of any faculty or department thereof having any relation to medicine, the exercise of the same and the revenues and expenditures thereof; the situation, legal or otherwise, of such bodies in regard to each other or to the province; the establishment, creation, control and regulation of any new body intended to have relation to medicine; the existing or possible methods of examining, licensing or otherwise authorizing the carrying on by individuals of the practice of any methods having any relation to medicine and the standards prescribed and followed or proper to be established and followed; the present positions, status and practice of osteopaths, dentists, nurses, opticians, optometrists, chiropractors, Christian Scientists or others practicing or professing medicine; the existing laws of Ontario in relation of any of the foregoing and their practical operation; any matter arising out of the foregoing which it is necessary to investigate with a view of the above inquiries.

Hospital News.—In his public address in Toronto on September 27 the prime minister of Canada, Sir Robert Borden, referred to the work of the Canadian hospitals abroad. Canada has established in Great Britain, France and at the Dardanelles no less than sixteen hospitals. These are for all the forces of the British empire and not for Canadians alone. Eight of them are located in Great Britain; five are in France; three are at the Dardanelles. On the staffs of those hospitals are 2,400 Canadians, and 525 trained nurses. Sir Robert stated that he had visited nearly fifty hospitals while abroad and he considered that none were better equipped, better organized, or in which the wounded received better care and attention than the hospitals which have been organized by the people of Canada.——At Hamilton, Ont., the cornerstone of a new hospital was laid on September 24 by the lieutenant governor of the province, Sir John Hendrie. The new institution will be known as Mt. Hamilton Hospital. It will be the center of a group which it is intended to establish there. The hospital is maintained in its entirety by the civic administration. Dr. Charles O'Reilly, Toronto, formerly superintendent of the Toronto General Hospital, was present and delivered an address. Dr. O'Reilly went from the Hamilton General Hospital many years ago to the Toronto General as superintendent.——The Massey-Harris employees, Toronto, are to establish in England a convalescent home for wounded Canadian soldiers. The yearly maintenance will be about $50,000, and the original cost of equipment about $25,000. Canadian doctors and nurses will be employed.

GENERAL

Ohio Valley Physicians' Meeting.—The seventeenth annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. E. Otis Smith, Cincinnati.

Colored Physicians Hold Meeting.—The annual meeting of the National Medical Association was held in Chicago, September 1 to 3. Dr. Ulysses G. Dailey, Chicago, was elected president; Dr. Walter G. Alexander, Orange, N. J., secretary; and J. R. Levy, Winston-Salem, N. C., treasurer. The association will hold its next meeting in Kansas City, Kan.

Roentgenologists Elect Officers.—At the annual meeting of the American Roentgen Ray Society held in Atlantic City, September 23 to 25, Dr. Augustus W. Crane, Kalamazoo, Mich., was elected president; Dr. William A. Evans, Detroit, treasurer, and Dr. F. W. Manges, Philadelphia, was reelected secretary. Cincinnati was selected as the place of meeting for next year.

Clinical Congress of Surgeons.—The sixth annual session of the Clinical Congress of Surgeons of North America will be held in Boston during the week of October 25. The mornings and afternoons will be devoted to clinics and four evening meetings will be held. On October 25, the president-elect, Dr. Charles H. Mayo, Rochester, Minn., will deliver the annual address.

Missouri Valley Physicians Elect New Officers.—At the annual meeting of the Missouri Valley Medical Association held in Des Moines, September 21 to 23, under the presidency of Dr. Granville Ryan, Des Moines, the following officers were elected: president, Dr. John P. Lord, Omaha; vice presidents, Drs. Charles G. Geiger, St. Joseph, Mo.; and Hobart A. Weston, Des Moines, Iowa; secretary, Dr. Charles Wood Fassett, Kansas City, Mo. (reelected); and treasurer, Dr. Oliver C. Gebhardt, St. Joseph, Mo.

Rockefeller Foundation Expenses for 1914.—The financial transactions of the Rockefeller Foundation show that the administration expenses for the year 1914 were $13,731.60; appropriations for the International Health Commission, $133,237.06, of which $36,651.96 went to the China Medical Commission and $10,000 was appropriated for research work on governmental problems; for war relief there was expended $994,613.06 and for purchase of the Bird Refuge in Louisiana, $224,886.95. The total expenses for the year were $1,421,031.81.

Electro-Therapeutists Hold Meeting.—At the annual meeting of the American Electro-Therapeutic Association held in Atlantic City, September 14 to 16, under the presidency of Dr. John W. Torbett, Marlin, Tex., the following officers were elected: president, Dr. Jefferson D. Gibson, Denver; vice presidents, Drs. J. Willard Travell, New York; Frank B. Granger, Boston; William L. Clark, Philadelphia; Sidney A. Twinch, Newark, N. J.; and William Martin, Atlantic City; secretary, Dr. Byron Sprague Price, New York; treasurer, Dr. Emil Heuel, New York (reelected), and registrar, Dr. Frederick M. Law, New York (reelected).

Conference on Social Hygiene.—The First Central States Social Hygiene Association will be held at the Congress Hotel, Chicago, October 25 and 26, under the auspices of the Central States Division of the American Social Hygiene Association. The first session of the conference will be held in the evening of October 25, and will be given over to discussions of general features of the social hygiene movement. In the forenoon of the following day, the moral and educational features of the social hygiene movement will be taken up; in the afternoon, the medical and public health aspects will be treated; the evening session will be given over to discussions of the legal and administrative phases.

Meeting of National Safety Council.—The fourth annual safety congress of the National Safety Council will be held at the Bellevue-Stratford, Philadelphia, October 19 to 21. At the general session on October 19 the subjects considered will include: The development of the safety idea; safety as an indispensable part of an efficient manufacturing organization; the safety idea as related to the credit of a business organization; vital importance of the visiting nurse in industrial work; and the standardization of safeguards. The other meetings of the council will be sectional meetings, to be composed of groups of persons interested in accident prevention problems as they affect special industries and will consist of experience meetings and discussions of various points involved. The final meeting on October 21 will be a general meeting of all sections to discuss the question "How to Educate the Workman."

New England Tuberculosis Conference.—The second New England Tuberculosis Conference will be held under the auspices of the National Association for the Study and Prevention of Tuberculosis, October 22 and 23, under the presidency of Dr. Stephen J. Maher, New Haven, Conn. The first session will be held at the Hotel Kimball, Springfield, Mass., and will take up methods of antituberculosis work. At a second session held on the ninth floor of the Forbes and Wallace department store on Kinshon Street, sales methods of the Red Cross seal will be described. The third session will be held in the First Congregational Church at which the topic for discussion will be "Industry and Tuberculosis." The fourth and fifth sessions will be held at the Westfield Sanatorium and at these sessions programs of antituberculosis work and the diagnosis of incipient cases of pulmonary tuberculosis will be considered.

Candidates for Army Medical Corps.—The following candidates, who have passed the preliminary examination for appointment in the Medical Corps of the Army, have been invited to attend the 1915-1916 session of the Army Medical

School, Washington, D. C.: Arden Freer, Bellevue Hospital, New York City; John S. Caul, Laceyville, Pa.; Charles C. Hutter, 245 West North Avenue, Chicago, Ill.; Harvard C. Moore, 623-624 Medical Building, Portland, Ore.; William F. Rice, Government Hospital for the Insane, Washington, D. C.; Charles G. Sinclair, Providence Hospital, Washington, D. C.; Edward A. Noyes, 818 Lombard Street, Portland, Ore.; Joseph L. Furden, 1633 Monroe Street, Washington, D. C.: Herbert H. Bauckus, Town Line, Erie County, N. Y.; Robert P. Williams, 1616 North Second Street, Harrisburg, Pa.; Frederick H. Petters, 100 High Street, Buffalo, N. Y.; Edwin B. Maynard, first lieutenant, M. R. C., Fort Benjamin Harrison, Ind.; Walter E. Koppenbrink, 5324 Bartmer Avenue, St. Louis, Mo.; Frank W. Wilson, U. S. Soldier's Home, Washington, D. C.; Clarence S. Ketcham, Union Protestant Infirmary, Baltimore, Md.; Luther M. Ferguson, 91 Arlington Street, Newton, Mass.

Examination for Medical Corps of the Navy.—The next examination will be held Nov. 15, 1915, at Washington, D. C.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago, Ill.); Mare Island, Cal., and Puget Sound, Wash. Applicants must be citizens of the United States, and must submit satisfactory evidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps and embraces the following subjects: (a) anatomy, (b) physiology, (c) materia medica, (d) general medicine, (e) general surgery, and (f) obstetrics. The successful candidate then attends a course of instruction at the Naval Medical School, during which course he receives a salary of $2,000 per annum, with allowances for quarters, heat and light, and at the end of the course, if he successfully passes an examination in the subjects taught at the school, he is commissioned an assistant surgeon in the Navy. Full information with regard to the physical and professional examination may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

Pediatric Clinical Meeting.—A meeting of pediatricians of the central and western states will be held at Chicago, October 15 and 16. On the evening of October 15 a permanent organization will be effected at a meeting to be held in the Auditorium Hotel. Clinics will be held at the various pediatric centers throughout both days.

Bequests and Donations.—The following bequests and donations have recently been announced:

Brooklyn Eye and Ear Hospital, $5,000; Brooklyn Hospital, Home for Consumptives and Home for Aged Men and Aged Couples, each $2,500 by the will of Robert B. Woodward.

The German, St. Luke's, Roosevelt and Presbyterian hospitals, New York City, each an equal share in the estate of $231,158 by the will of Henry Miller.

Mexican Relief Fund, $25,000, a donation from the Rockefeller Foundation.

Hospital of the University of Pennsylvania, several beds endowed in memory of her husband, Dr. George M. Stiles, Cohocton, by the will of his widow, Mrs. Amanda Stiles.

Medico-Chirurgical College of Philadelphia, conditional bequests amounting to $150,000.

Henderson (Ky.) City Hospital, a donation of $15,000 by a citizen providing the city donate a similar amount.

Washington, D. C., Home for Incurables, $2,000 to establish the George Riggs Memorial Room; Episcopal Eye, Ear and Throat Hospital, $2,000, and Georgetown University, $4,000 for the maintenance of the Elisha Francis Riggs Memorial Hospital, by the will of Medora Riggs.

American First Aid Conference.—The American First Aid Conference referred to in these columns two weeks ago is calling on state societies for their cooperation in the form of a small committee to coöperate with the proposed organization. The following questions are also being sent to the chief surgeons of railroads, mines and manufacturers and others:

1. What has been your experience with the most available first-aid package and dressing for small and large wounds?
2. What has been your experience with the immediate employment of antiseptics in accidental wounds; what antiseptic have you used, in what strength, and how applied? Have you employed tincture of iodin; if so, how and what have been the results?
3. What in your experience has been the most efficient and most readily applied method of fixation for injuries of the (a) upper and (b) lower extremity?
4. Have you considered the construction of a stretcher, which, in addition to serving as a means of transportation of injured, will have appliances for the fixation of the upper and lower extremity, somewhat along the lines of a Bradford splint, or the Gihon naval splint?
5. Please state your views on some liquid ointment dressing which would be available for first aid in large wounds and burns with the object of preventing the usual dry-gauze dressing adhering to the wound and rendering subsequent dressings painless.

The committee asks that each question be answered on a separate sheet—each sheet signed. Those who have suggestions to make as regards this important subject should write to the secretary, Dr. Joseph C. Bloodgood, 904 North Charles Street, Baltimore.

A Real Medical Reserve Corps for the Navy.—Steps have been taken by the Navy Department to make the Medical Reserve Corps a reserve in fact for the Medical Corps of the Navy. Under the terms of a circular just issued by the department, medical reserve officers are required to bind themselves to perform active duty in the Navy whenever they are called upon by the secretary. Officers of the Medical Reserve Corps are also required to report to the Navy Department at least once in every six months as to their location and their physical fitness for military duty. Their number is limited to 300, and they are to be honorably discharged at the age of 55 years. In outlining the duties of the Medical Reserve Corps the circular says:

> When the president of the United States signs and confers a commission in the Naval Medical Reserve Corps he does so with the full realization that he is placing special trust and confidence in the ability and patriotism of the individual to whom the commission is issued, and, whether in peace or in war, this medical officer enjoys the prestige and standing that results from such recognition. Officers of this corps receive no financial return except when on active duty, and during time of peace, the number so assigned will necessarily be limited. But it is believed that love of country and pride in the possession of such a commission will influence the best among the medical profession to accept this honor and responsibility, whereby they may keep in close touch with the Navy Department, and thus be prepared to serve their country in a national emergency. Every officer of the Medical Reserve Corps will, on appointment, be required to bind himself to be subject to the laws and regulations governing said corps and to perform active duty in the Navy when called upon, at any time during a period of at least five years from date of appointment, during which period such officer will not be honorably discharged from the Medical Reserve Corps except for physical disability in the event that his services should no longer be required; this regulation, however, not to prevent any officer who desires to do so from submitting his resignation at any time. After five years from date of appointment, the resignation of any officer of the Medical Reserve Corps will, in the absence of special circumstances, be accepted when submitted. However, the acceptance of an officer's resignation is in all cases discretionary with the president.

FOREIGN

Deaths in the Profession Abroad.—Among those who have been killed while tending the wounded in the field is G. Heimann of Berlin, one of the pioneers in eugenics, and Prof. H. Piper of the Institute for Physiology, at Berlin. Piper's work on the physiology of the senses is well known, especially the results of application of the filament galvanometer in study of this subject.

Training Women Laboratory Helpers in Germany.—The Woman's College at Leipzig offers a special four semester course of training in all the branches needed in laboratory work. This Hochschule für Frauen is said to be especially well equipped for the purpose, as also for fitting trained nurses for superintendents' positions. The laboratory course includes, besides the usual branches, microphotography and Roentgen-ray work.

Imposters Seek to Benefit by Dearth of Physicians.—The *Deutsche medizinische Wochenschrift* states that one of the annoying by-effects of the prevailing lack of duly qualified medical men at many points is that impostors have sought to pose as regular physicians. Forged credentials and diplomas have been presented to the authorities at Leverkusen and elsewhere and the *Wochenschrift* warns of the necessity for being wary for a time in making appointments to medical positions or summoning a new physician.

List of Latin-American Physicians.—A series of manuscript consular reports on druggists, pharmacists, physicians, surgeons and dentists, which has been collected by the Bureau of Foreign and Domestic Commerce, Washington, D. C., includes the following Latin-American countries: Honduras, British Honduras, Cuba, Chile, Costa Rica, Dutch Guiana, British Guiana, Colombia, Nicaragua, Mexico, Dominican Republic, West Indies, Venezuela, Paraguay, Panama, Haiti, Salvador, Guatemala, Ecuador, Argentina, Brazil, Peru and Uruguay.

The New Public Health Department at Berlin.—About a year ago the authorities organized for the city of Berlin what is officially designated as the "Deputation für das städtische Gesundheitswesen" and the "Medizinalamt." The full-time medical officer appointed at the head of the system left for the front soon after the opening of the war, and there has been much dissatisfaction over his persisting absence from his post. He has finally returned and taken up his duties, and the municipal authorities have at last formally outlined the work for the new health department. It is to have under its care everything connected with the health of the populace, especially the supervision and promotion of the welfare of all municipal institutions and arrangements dealing with health and those supported by municipal funds. This includes welfare work for infants, for children of all ages before, during and after the school age, measures to repress alcoholism, tuberculosis and sexual diseases; further all measures to promote general hygiene (air, light, water, sewage disposal, food, housing, prophylaxis of epidemics, the disinfection system, food inspection, and finally, supervision of the municipal lodging house, workhouse, orphan asylums, hospitals, schools, bathing establishments, etc. The new Medizinalamt is practically the old municipal inspection system, and it is subordinate to the above department. The latter is expected to study and test all the questions arising in its sphere and to present its final decision to the municipal authorities, the magister or the single departments involved. The other departments and authorities are also expected to confer with this department before taking any important step that might affect the public health in any way.

WAR NOTES

Hospital for Wounded Aviators.—A convalescent home has been provided for wounded aviators in a chateau at Viry-Chatillon, Dr. Moujin, owner of the chateau, is medical director of the home.

Sanitary Commission to Leave Serbia.—Dr. Richard P. Strong, head of the American Sanitary Commission in Serbia, has sailed from Naples on his way home. He says that the majority of the American physicians who have been engaged in Red Cross work in Serbia, will leave that country by October 10.

German-American Hospital Unit Starts for the Front.—A delegation of physicians and nurses sent by the American Physicians' Expedition Committee sailed for Europe, from New York, September 9. The medical staff of the unit consists of Drs. Herman Fischer, Louis Brooks, Joseph J. Ling, J. L. Mathesheimer, together with four nurses.——Dr. William L. Bulach, New York, sailed on the same steamer to offer his services for work for the Red Cross abroad.

Heliotherapy for the Wounded.—An institution has been fitted up at Dürrheim in the Black Forest in Germany for systematic sunlight treatment of wounded soldiers and those with tuberculous lesions in the bones. The institution was organized by Bernhard of St. Moritz, who was the first to apply heliotherapy to war wounds, but his assistant, W. Staehelin, is now in charge. Dürrheim is over 2,000 feet above sea level. Torpid wounds, fistulas and delayed healing from any cause are regarded as indicating heliotherapy, as are also injuries from gangrene, frost bite and action of caustics, and large persistently secreting wounds.

Great Britain Needs More Surgeons.—Sir James Barr, vice president of the British Medical Association, in an appeal for surgeons for armies going abroad, says that 2,500 will be required, and that there will be no course open but to apply to the United States to fill the necessary complement of medical men if Great Britain cannot produce the requisite doctors.——The *Lancet*, in its issue of August 28, states that the medical schools will be very short of students on account of the large number of young men, of the educated class, who have joined the army. The future will see an increased demand for medical men, and consequently a greater prospect of success.

Red Cross Items.—Hon. Ira Nelson Morris, American minister to Sweden, has completed arrangements with the Russian and Swedish governments to facilitate the journey to Petrograd of nine physicians, thirty-nine nurses and a large quantity of supplies sent by the American Red Cross.——The physicians and nurses of the American Red Cross mission to Germany, who came to Berlin after the close of the hospital at Gleiwitz and Kosel, were given medals by the German government, September 22.——The members of the American Red Cross units of Vienna and Budapest have been given similar decorations by the Austro-Hungarian government.——The American Red Cross unit, which has been stationed at Kiev, Russia, was moved to Makarov, September 15.

BEHIND THE BEYOND WITH THE BRITISH ARMY

[The following is from a Canadian medical student who is with a British army medical corps.]

The attitude of the surgeons and nurses toward the wounded in the war is commendable in the highest. I have not witnessed in civil hospitals so much tenderness and compassion toward patients as has been exhibited in dealing with these boys from the front. If a patient is a bit restless at the approach of anesthesia, the administrator will gently and quietly allay the nervousness by ways and means not often used at home. In the admission and examination tent where the chaps come in fresh from the trenches, disheveled, dirty and weak, their vitality and nervous energy at a low ebb, the senior surgeons will gain their confidence and good will on the spot by quiet, tactful and sympathetic questioning, terminating in the inevitable "We'll fix you up all right, old man." In the whole wide world of suffering there is no class of helpless more deserving and more in need of tender ministrations than this broken humanity—the first fruits of war. In this phase of the war, America will have a share of the glory. Recently a British Tommy told me he was in the Chicago Hospital (a British general hospital operated by doctors and nurses from Chicago) "where they are absolute bricks. After being up there on the line for months, you forget that there is that sort of kindness floating around." A Harvard unit nearby is very popular with English soldiers too.

There is an interesting tale about that part of the organization which lands the wounded in the reception tent, a process which involves gathering the wounded in "no man's land," in the trenches and back of them, nearly all accomplished at night by the glare of the sickly bluish-white flares of the enemy, often only by the rays of the moon—and sometimes no light of any kind looks down on the horrors of those bloody wastes of France when the gloomy task is accomplished by the sense of touch. The system includes, too, the field dressing station and the field ambulance train. The field dressing station may not be a station at all, but is far more likely to be an upturned stump, a rock, a bit of ruin, anything that will afford a slight protection. The base for supplies and billet is the cellar of a ruined building, a deserted barn or sometimes a plain dugout. Moreover, this is the farthest outpost of succor for the wounded, and is the most mobile department of the army medical corps, save the stretcher bearers, for it is right up behind the line and, from the nature of its service, advances and retreats with it.

The field ambulance corps is the mobile unit which connects the "gathering" system on the front with the "end of steel" located not so very many miles behind the line.

At the "rail head" is a casualty clearing hospital, which is the first part of the organization to present any elements of permanence. The hospital is under canvas and has a normal capacity for several hundred, but, like all military hospitals, its service must be very flexible, capable of undertaking to succor in some way many times its accustomed number. One of our patients told me that a few months ago, after a now famous battle, he saw 5,000 wounded under the care of one of these institutions. Hundreds were on stretchers, but most of them were lying in a field on the ground without even the protection of a great coat or blanket. They were awaiting their turn for succor, and before they had been there long, hot soup for their stomachs and sterile dressing for their burning wounds would appear from somewhere. Thus one can understand that after a period of stress, either offensive or defensive, the pressure on these hospitals is enormous, so much so that the wonder of the whole situation is not that the service becomes congested but that it is possible at all to "sort" the cases. The casualty clearing hospital, as its name implies, is really a sieve from which patients are distributed to hospitals in the rear. In feverish haste the wounded are rushed back, back, back anywhere to a place of comfort and at the same time relieving the stress on the casualty clearing hospital. Those but slightly injured are treated at this hospital and sent back to the line. Those who are severely stricken by wounds or disease are sent down to the larger and less mobile hospitals, which are able to render more appropriate treatment.

Naturally enough, the extent of injury or illness is really the determining factor which sends a man back to the front or to a stationary, general or base hospital or, joy be, perhaps to "dear old Blightey" (England in the vernacular of the trenches). The first few days of the rush after an engagement are always the most satisfactory from the doctor's view, for in it the wounds are almost all clean and the cases are in pretty good shape. But as time goes on and the dregs of the deadly business come filtering in, the state of the wounds gets worse.

In reality, these hospitals are little more than rest camps, for most of the patients never see a bed but remain on their litters during their stop, and none remain longer than seven days. A few nursing sisters are attached to these hospitals. By the way, these women are the only military women anywhere near the front, and they are miles and miles away from it. As already stated the casualty clearing hospital is a rest camp where wounds are dressed, good hot nourishing meals are served and cases sorted for final distribution. In comparison with other branches of the system, the casualty clearing hospital is a crude sort of place, but it is a cog necessary for the smooth efficiency of the great system.

The next link in the service is the ambulance train, which connects the casualty clearing hospital with the hospital farther removed from active operations.

The main business of war, however, is to kill, and for that purpose wounded soldiers are a drug on the market. The moment they are out of a job, they are in the ranks of the unemployed. With this conception of the enterprise in mind, it may be understood why the first considerations of the transportation system—the next link—is not for broken and useless humanity. It must stand aside for the ever needful "munitions of war" men, ammunition and food and all the trappings thereto. Those who have "done their bit" must make way for those who are on their way to do theirs.

Thus the transference of wounded from the front to the rear is not so much a matter of the needs of the patients as of the requirements of that mystic and voracious district—the front.

In the early days of the conflict—those days of stress on the British line—these trains had to yield precedence at every turn to troop trains. The ambulance trains would run a few miles, back onto a siding and wait, wasting hours while wounds cried out for dressings and men sick unto death lacked proper treatment. But the dispatch of these trains has improved much in the year, so that now within a few hours after departure the trains arrive at their destination, usually a general hospital about 50 miles from the front. Synchronously with the departure of the train a telephone message is sent from the casualty clearing hospital to the chief of the medical district to which the train has been assigned who, in turn, advises the hospitals in his zone to prepare for the reception of a convoy. These vestibuled trains are more than palatial ambulances on wheels—they are hospitals. They are equipped to serve meals and to perform emergency operations. The trains carry a staff of about thirty-five officers, nurses and orderlies, and have accommodation for about 300 lying down patients or 400 sitting up. The usual rate of unloading is 225 stretcher cases in the hour. The atmosphere of the ambulance train is one of cheerfulness, save for the silent dark coaches where lie the grievously stricken. You see, the boys are in hopes that they are bound for a sea-port town which in the near future will mean England.

One day we walked down by the quay where the spars stick up lone and thin, down among the fisher-folk of Picardy with their sabots and corsets (arm-pit high) and the smocks of the old men. For the first time we saw an ambulance train unload. A long siding had been built, and on this the train had been switched from the main line of the ——————— Railway. A very long line of ambulances, of course all motor, was arranged along the dry clean gravel path, and these were quickly, quietly, and, be it said, gently filled with stretcher-cases by the Royal Army Medical Corps men under the direction of sisters and officers.

The poor Tommies fresh from the trenches were a pretty depressed lot. We waved to some and smiled to others, but no response was forthcoming. They were grimy and tanned brown, a severe contrast to their swathings. The boys were fagged out from their slow journey from the line. The drivers were without exception very careful of their charges. I must record, however, the very sympathetic behavior of the one woman driver. She handled her car so carefully and easily and treated those boys just as though they were her own. This incident inclines me to think that skilful women drivers would be just about the best for that sort of work.

On our way out we passed some American nurses in their pure white uniforms (they have taken over a hospital nearby and fly the Red Cross, Union Jack and Stars and Stripes). We were fortunate to get a ride on one of the laden ambulances bound for our camp. The villagers were awed as we whizzed through their sleepy street. The old curé stood with uncovered head as the car with the Red Cross passed him. The Tommies off duty removed their pipes and gaped quietly after us.

When the ambulances arrive at their hospitals they are quickly unloaded, and the patients are taken to the admission tent, examined and assigned to their wards. Thus this stream of broken humanity flows from its source (in the trenches) to the sea.

Prof. William Osler is visiting us now. His son is attached to our hospital and is a most likable young fellow —a sophomore from Oxford, by the way.

As I write we are awaiting a convoy, and I am on the "reception squad" tonight, that is, I am one of the youths who stay around, maybe half the night, taking stretcher cases out of ambulances and conducting walking cases to the various wards.

BERLIN LETTER

Berlin, Sept. 7, 1915.

Personal

Professor Gocht of Halle has been appointed to succeed the late Professor Joachimsthal as director of the orthopedic clinic of the university in Berlin.

Professor Piper, extraordinary professor of physiology, director of the division of physiology in the university institute and surgeon with the troops in the field, died on the field of battle, aged 38 years. His researches were conducted largely in the physiology of the organs of sense. He made some remarkable investigations in optics and acoustics and published interesting observations on the relationship between the physiology and psychology of the mind.

The War

EMPLOYMENT OF WOMEN PHYSICIANS

Female physicians will no longer be employed in the hospitals connected with the army medical department. The reason for this action is the fact that there is a sufficient number of male physicians available for such service, and that the female physician can be employed to better advantage at home in the care of women and children. It is quite likely that personal misunderstandings may have been in part responsible for this action of the army board.

HEALTH OF SOLDIERS

According to recent official reports, the health of the troops is entirely satisfactory in the West as well as in the East. The soldiers have been singularly free from extensive epidemics. Typhoid occurs in the West only very infrequently, much less so than a year ago. This must be ascribed to the improved hygienic and sanitary conditions now prevailing in the enemy's territory and the improved methods of living. Every effort has been made to provide the troops with suitable drinking water. Three hundred transportable drinking-water apparatuses, which furnish about 800 liters of cool, palatable and healthful water, have been furnished for this purpose. Each apparatus clarifies, sterilizes, cools and reaerates all kinds of water, thus making it suitable for drinking purposes. Where such an apparatus is not available, the sanitary authorities aim to lessen, if not prevent entirely, the dangers of poor drinking water. Some supplies are stopped entirely, others are improved by bettering the condition and locations of wells and by adding chemical substances to the water, making it potable. The medical corps is continually on the lookout for individual cases of diarrhea, and when found these patients are immediately isolated and the spread of any infection thus prevented. These measures are carried out not only with the troops, but also with the civil population in the enemy's country. Experienced sanitarians can be commanded in sufficient numbers to aid and further this work, not only by giving advice and counsel, but by placing their laboratories at the disposal of the army authorities. The medical corps is convinced that the generally employed vaccination against typhoid has done much to lessen the number of cases of this disease. During the period of mobilization of the troops, typhoid inoculation could not be done as well as it has been done since. All the troops have now been vaccinated, and the soldiers in training at home are vaccinated before they leave for the front.

CHOLERA IN THE EAST

In the East, particularly east of the Weichsel, cholera has spread rather rapidly among the civil population, and after the Russian evacuation of any city the German military doctors find many cholera patients, but the spread of the disease is very promptly checked by the measures employed elsewhere for the same purpose. Thus far cholera has not become epidemic. Of great value in the prevention of intestinal diseases has been the establishment of tearooms in all cities, towns and villages through which the soldiers pass on their way to the fighting front. Tea is prepared in large quantities in these places so that every soldier can have as much as he can drink. The fact that the troops have all been vaccinated against cholera must be accepted as one of, if not the principal reason, for the failure of the disease to become epidemic. Although the persons who have been vaccinated have not invariably received full protection against cholera, still, when they have contracted the disease, it has been in mild form only, with a rapid and uneventful convalescence.

Typhus fever is no longer a cause for apprehension. Every provision possible is being made at the front to provide opportunities for bathing and disinfection of clothing. If permanent bathing facilities cannot be had, temporary arrangements are made of which the soldiers can avail themselves. More than 100 bathing wagons drawn by horses are used for this purpose. They can be moved easily from place to place. Transportable laundries have also been provided in considerable numbers. Four hundred steam disinfection apparatuses are also in use. Wherever possible, provision is made to disinfect clothing, freeing it from lice and other vermin. In short, the measures employed to prevent the occurrence of typhus epidemics are now so far-reaching that little fear need be entertained with regard to this disease ever becoming epidemic. The control of tuberculosis, genitourinary diseases and nervous and mental diseases is very gratifying.

LONDON LETTER

London, Sept. 17, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The difficulty in obtaining a sufficient number of surgeons in the new armies still continues. As a consequence the age limit has been extended for home service from 50 to 55 years, and for foreign service from 40 to 45. Men who are over 55 and fit for additional work or some form of medical practice differing from what they are doing at present have been told that they can best serve their country by doing the work of younger men and releasing them for foreign service. The War Emergency Committee of the British Medical Association is working in cooperation with the War Office for the purpose of obtaining army surgeons. At its last meeting one of the suggestions made was to import physicians from America. The question of approaching the various government departments to release physicians under 45 now employed in various ways such as health officers, and educational medical officers, was also suggested.

THE INDIAN WOUNDED: PROVISION FOR THE PRESERVATION OF CASTE

The hospital at Brighton for the Indian wounded accommodates over 2,000 patients and differs in many ways from the ordinary military hospital. It is run by officers of the Indian Medical Service, assisted by a staff of assistant surgeons belonging to the Indian Subordinate Medical Department (which consists of natives and Eurasians), Indian nursing orderlies, storekeepers, water-carriers, sweepers, and others, numbering about 400. There is no female assistance, even laundry work being done by Indian washermen, especially brought over for the purpose. Many provisions have to be made so that the various castes can observe their customs which to them are of the highest importance. There are eight different kinds of diet and separate cookhouses for six different classes. The food of the patients is cooked in twenty-one cookhouses in the hospital grounds, and that of the subordinate staff in sixteen cookhouses. The Hindu cooks must in all cases be of the same or of a higher caste than the patients for whom they cook. The chief article of diet of all the fighting races in India is a kind of bread made from partially husked grain ground by hand between two slabs of stone. As regards meat all Mohammedans eat beef, but the practice is very abhorrent to Hindus, who regard the cow as a sacred animal. For this reason no beef is allowed in the hospital. Bacon and similar meat is also strictly prohibited. As Indians must themselves slaughter the sheep which they use for food, and they must do it in the special manner enjoined by their religious sects, they have to provide in the grounds of the county abattoir a new slaughter-house for this purpose. For Hindus the custom is to sweep the head of the animal off the neck with only one stroke of a talwar or sword, while for Mohammedans the mouth of the animal is pointed toward Mecca. As an Indian must bathe the greater part of the body before each time of prayer and a good Mohammedan must pray five times daily the amount of water used in the hospital averages between 60 and 70 gallons per head per day.

A YEAR'S CASUALTIES

The British casualties for the first year of the war are as follows: killed, died of wounds, etc., 70,992; wounded, 241,086; missing, 53,466; total, 365,544.

FOOD PRICES

Some time ago your Berlin correspondent gave some figures from a Swiss journal on the increase of food prices in this country since the war and compared them with the increase in Germany to the disadvantage of this country. They did not seem to be accurate. I am now pleased to be able to give official figures, both British and German, which show, as might be expected in consequence of the almost total cessation of her foreign trade, that the increase in Germany is the greater. According to the *Board of Trade Labour Gazette*, the general level of prices as compared with a year ago is about 23 per cent. higher, while the average increase in food prices, making allowance for their relative importance in working class houses, may be put at about 35 per cent. The latest available data concerning retail food prices in Berlin, published in the official Prussian *Statistische Korrespondenz*, show that, after a sharp rise in the first month of the war, prices declined somewhat last September, but from that month moved steadily upward until July, in which month they reached a figure representing an increase of nearly 70 per cent. on the prices of July, 1914. In Vienna, taking food prices in July, 1914, as equal to 100, the index number in July this year was 178.6. The rise in food prices in the early months of the war was much less marked in Vienna than in Berlin; in the second six months, on the other hand, the upward movement was considerably more pronounced.

PARIS LETTER

Paris, Sept. 16, 1915.

The War

MEASURES AGAINST MALINGERING IN THE ARMY

The attention of the minister of war has again been drawn to the instances of voluntary mutilation which tend to multiply among men in the army. Some soldiers have not hesitated to produce diseases in themselves in order to escape the performance of their duty. Thus there have been observed cases of jaundice caused by ingestion of picric acid, cases of facial dermatitis produced by the use of irritating substances and cases of conjunctivitis produced by the application of certain powders. To put an end to these reprehensible practices, the minister recommends the application of severe penalties. Voluntary mutilation and the production of disease by a soldier in himself for the sake of escaping his duty is to be punished as a case of refusal to obey or abandonment of a post of duty.

CANNED MEAT IN THE DIET OF THE ARMIES IN THE FIELD

M. A. Kling, doctor of science and director of the municipal laboratory of Paris, and M. G. Hinard, an engineer-chemist, who occupy two important positions in the Division des Conserves du camp retranché de Paris, have just published in the Revue scientifique a very interesting study on canned meats and their utilization in the rations of the armies in the field.

In the entrenched quarters of Paris, two procedures have been employed for the manufacture of canned beef. The first is the procedure well known under the name of Appert or Chevallier-Appert and used in times of peace for army rations. It consists essentially in "blanching" the meat, that is, in giving it a preliminary partial cooking before putting it in the cans. The liquor from this cooking is concentrated so that it jellies on being cooled and is put into the cans with the meat. This blanching is less for the purpose of cooking the meat than for its partial evaporation. The meat loses from 40 to 45 per cent. of water during the process, and is therefore a much more concentrated food than raw meat. The cans, which ought to contain 240 gm. of meat and 60 gm. of concentrated broth each, are immediately placed in an autoclave, where they remain for an hour and a half at a temperature of from 115 to 120 C.

This method, although quite rational, has serious practical disadvantages. For one, it requires a special apparatus for the cooking of the meat and the concentration of the broth. Such apparatus is found in few of the canning factories in France, which are devoted chiefly to the canning of vegetables rather than to that of meat. For this and other reasons, the Division des Conserves du camp retranché de Paris has employed, since the beginning of the war, along with the Chevallier-Appert method, a similar method, which requires nothing but autoclaves in the way of special apparatus and which also has the advantage of economizing coal. This war method is known as the "improved Billancourt." Former experiments, made at the military experiment station of Billancourt (a suburb of Paris), showed that meat placed raw in the cans was sufficiently cooked in the autoclave, and that the product kept perfectly. This, which is known as the Billancourt method, was not adopted in commerce (1) because, since the meat was not previously cooked down so as to evaporate the water, the quantity of meat in the cans formed an insufficient ration, and (2) because, since the cooking was accomplished in the closed cans, the juices escaped into the can from the meat, giving the latter an unappetizing appearance and often being lost when the can was opened. The method, however, was reserved for use in time of war. When in August, 1914, the Division des Conserves du Service des Approvisionnements of the entrenched quarters of Paris, spurred by necessity, was obliged to find immediate means for production on a large scale, MM. A. Kling and H. Copaux, of this service, took up the study of the Billancourt method, and modified it as follows: In each can of 850 gm., in which had been placed 800 gm. of raw meat, there were placed 50 gm. of rice and 2 gm. of agar-agar with 10 gm. of salt for seasoning. The addition of rice increases the nutritive value of the product by the addition of carbohydrate; moreover, the rice absorbs from six to seven times its own weight of water or of the meat juice. The agar-agar helps to take up the excess of juice not absorbed by the rice. As in this method the cooking is accomplished at the same time as the sterilization, it is of course necessary to increase the duration of the heating.

While recognizing that canned meats are of great service in furnishing a nutritious ration in small volume and slight weight, MM. Kling and Hinard believe that it would be a good thing to substitute for canned meat a mixed preparation of meat and vegetables. It should be easy of preparation, similar, for instance, to the "improved Billancourt," in which the rice should be replaced by dried vegetables—beans, lentils, or split peas. Potato might be added as in the English ration.

MENTION FOR CONSPICUOUS GALLANTRY

Dr. Balthazard, agrégé professor at the Faculté de médecine de Paris, is at present a captain of artillery, and in that capacity he has been mentioned in the order of the day in the army for his work at the head of a battery of 155 in facilitating the success of the infantry.

LESIONS FROM ASPHYXIATING GAS

In response to various questions, the minister of war has announced that lesions from gas or other chemical products employed by the Germans shall give the injured persons the same rights, all other things being equal, as if they were the consequence of wounds of war properly so-called.

FILTERS ON WAGONS FOR THE ARMIES

The Touring Club of France has equipped about 100 filters mounted on wagons in accordance with studies made on the subject by the water service of main headquarters. Each wagon is drawn by two horses and carries a filter, an aspirating pump, a force pump, a decanting basin and a sterilization basin. Each draws and delivers 3,000 liters of water an hour. They are intended to be sent to rivers, canals and wells selected by the military authorities and thus will serve to supply the regimental water wagons.

A FRENCH HOSPITAL AT MILAN

The administration of the municipal council of Paris has just decided to devote 20,000 francs (about $4,000) to the foundation of a French hospital at Milan for wounded Italians.

Marriages

Frank Chalmers McClanahan, M.D., Viola, Ill., a medical missionary to Egypt, to Miss Helen Smith of Waverly, Ohio, September 15.

Henry Gerald Carroll, M.D., Salem, Mass., to Miss Estelle R. Wilz of Scranton, Pa., in New York City, recently.

Raymond John Cary, M.D., Tacoma, Wash., to Miss Marian Spencer Skeele at Monrovia, Calif., September 1.

Charles Truman Spencer, M.D., Webberville, Mich., to Miss Irene Eva Keyes of Marlette, Mich., September 28.

Clarence Guy Macer, M.D., Evansville, Ind., to Miss Jeanette Johnston of Oakland City, Ind., September 22.

Carlos LeRoy Russell Fuller, M.D., Windsor, Ont., to Miss Olive Marion Glendon of Toronto, September 18.

Winfield Scott Schley, M.D., New York City, to Miss Grace Marie Van Campen of Brooklyn, September 13.

James Thomas Morgan, M.D., St. Louis, to Miss Anna Elizabeth Phelon of Santa Ana, Calif., October 1.

Julian Carr Hardy, M.D., Lecompte, La., to Miss Hazel Beatrice Dodge of Elk Rapids, Mich., August 27.

Harry Pierce Reuss, M.D., Granite City, Ill., to Miss Ruth Hill of East St. Louis, Ill., October 5.

Harry Smith Howard, M.D., Albany, N. Y., to Miss Anna E. Jones of Granville, N. Y., September 15.

Horace Binney, M.D., Boston, to Miss Harriet Cunningham of Brookline, Mass., September 17.

Emery Ernest Magee, M.D., Waterloo, Ia., to Miss Fay Vaughn of Bangor, Wis., September 15.

James Philip Dean, M.D., to Miss Maud Lee, both of Madison, Wis., September 20.

Charles E. Sisson, M.D., to Miss Bertha Vollman, both of Elgin, Ill., September 1.

Deaths

Erasmus D. Skinner, M.D. Berkshire Medical College, Pittsfield, Mass., 1858; aged 77; a member of the Medical Society of the State of New York and the New York and New England Association of Railway Surgeons; once president of the Queens County (N. Y.) Medical Society; coroner of Queens County in 1872, and for twelve years health officer of North Hampstead Township; physician and surgeon to the Mineola Home; died at his home in Mineola, N. Y., September 21, from heart disease.

Archibald Fowler Alexander, M.D. College of Physicians and Surgeons in the City of New York, 1895; aged 41; a Fellow of the American Medical Association and New York Academy of Medicine; a member of the staff of the Paterson (N. J.) General Hospital; for eight years a member of the board of education and for a long time a member and once president of the boards of police and fire commissioners; died at his home in Paterson, September 22, from cerebral hemorrhage.

Sydney B. Barham, M.D. Medical College of Virginia, Richmond, 1861; aged 77; a member of the Medical Society of Virginia; for more than fifty years a practitioner of Surrey County, Va.; for several terms representative from that county in the Virginia Legislature and for more than thirty years chairman of the county board of supervisors; died at his home in Runnymede, Va., about September 20.

George William Sims, M.D. Gross Medical College, Denver, 1897; aged 44; a Fellow of the American Medical Association; assistant surgeon of the Third Texas Infantry, U. S. V., during the Spanish-American War; was found dead in his office in San Antonio, Tex., September 16, from the effects of a gunshot wound of the brain, believed to have been self-inflicted, with suicidal intent.

Henry Smith, M.D. University of Michigan, Ann Arbor, 1859; aged 79; formerly a Fellow of the American Medical Association; a member of the Medical Society of Virginia; for several years surgeon in the United States Public Health and Marine Hospital Service; surgeon of Volunteers during the Civil War; died at his home in Norfolk, Va., September 18, from nephritis.

John Rollen Moore, M.D. American Medical College, Eclectic, St. Louis, 1888; aged 54; for many years a practitioner of Lapel, Ind.; a director of the Greenfield (Ind.) Banking Company and president of the Greenfield Ice and Fuel Company; died at his home in Greenfield, Ind., September 13, from heart disease.

William H. Krickbaum, M.D. University of Pennsylvania, Philadelphia, 1902; aged 37; a Fellow of the American Medical Association and a member of the staff of the Danville (Pa.) State Hospital for the Insane; died in the George F. Geisinger Memorial Hospital, Danville, Pa., September 21, from typhoid fever.

John Myrick Thompson, M.D. Jefferson Medical College, 1872; aged 64; of Ocala, Fla.; formerly a member of the Florida Medical Association; visiting physician and a member of the board of managers of the Marion Hospital, Ocala, Fla.; died in Jacksonville, Fla., about June 22, from heart disease.

Porter I. Mulholland, M.D. Toledo (Ohio) Medical College, 1902; aged 40; a Fellow of the American Medical Association; assistant surgeon Ohio Naval Militia and on duty on the training ship *Essex* during its cruise in August; died at his home in Toledo, Ohio, September 20, from typhoid fever.

Colin McDougall, M.D. Bellevue Medical College, 1878; aged 74; formerly a member of the Medical Society of the State of New York; for many years physician to the Actors' Fund; a member of the staff of the New York Nose, Throat and Lung Hospital; died at his home in New York, September 19.

John Merrick Bemis, M.D. University of Vermont, Burlington, 1893; aged 55; a member of the Massachusetts Medical Society; superintendent and physician in charge of Herbert Hall, Worcester, Mass.; well known as a neurologist; died at his home in Worcester, September 22, from nephritis.

David Hunt, M.D. Harvard Medical School, 1867; aged 70; formerly a practitioner of Boston and Worcester, Mass.; an authority on medical history, and a specialist on diseases of the eye and ear; died at the home of his daughter in Detroit, September 15, from cerebral hemorrhage.

John S. Wolff, M.D. Jefferson Medical College, 1853; aged 88; for more than sixty years a practitioner of the Shiloh section of Laurens County, S. C.; in 1892 and 1894 a member of the South Carolina Legislature; died at the home of his son in Laurens, S. C., September 18.

Elijah Andrew Covington, M.D. Medical College of the State of South Carolina, Charleston, 1868; aged 77; a Confederate veteran; for many years a druggist and hardware merchant of Wadesboro, N. C.; died at his home in Wadesboro, September 12, from acute gastritis.

Edward Alexander, M.D. University of Vienna, Austria, 1854; aged 85; for forty-five years a practitioner of El Paso; at one time contract surgeon in the Army at Fort Bliss and later United States quarantine officer; died at his home in El Paso, September 18.

James Porter Davis, M.D. Medical College of Georgia, Augusta, 1883; aged 65; a Fellow of the American Medical Association; formerly chairman of the Board of Health of Tennille, Ga.; died at his home in Riddleville, Ga., September 7.

John Dickson, M.D. University of Maryland, Baltimore, 1852; aged 84; for many years a practitioner of Baltimore, but for the last quarter of a century a resident of California; died at his home in San Francisco, September 15, from senile debility.

Simeon Dosson Taylor, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 53; a member of the Kentucky State Medical Association; a practitioner and druggist of Beaver Dam, Ky.; died at his home, August 2, from typhoid fever.

Arthur W. Parker, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 61; died at his home in Essex, Iowa, September 6, from carcinoma of the stomach and liver.

Samuel Lafayette Weed, M.D. University of Alabama, Mobile, 1886; aged 56; of Helena, Ala.; died in an infirmary in Birmingham, Ala., September 9.

William A. Settle, M.D. University of Louisville, Ky., 1877; aged 65; died at his home in Greensburg, Ky., September 14.

Correspondence

Sign for Distinguishing Gaseous Distention from Appendicitis

To the Editor:—I have on several occasions noted a sign which appears to be of value in differentiating between acute appendicitis and simple gaseous distention of the cecum associated with acute bowel fermentation. So far as I know the sign has never been described. It is elicited as follows:

Gentle pressure is brought to bear over the cecum, pressing in an upward direction. If the condition is simply gaseous distention, the patient will complain of pain in this region, but also complains of pain in left hypochondrium; pain disappears when the pressure is relieved. The explanation appears to be this: The enormous quantity of gas in the cecum is forced upward by the pressure, passing along the ascending and transverse colon, but is caught at the acute splenic flexure. The sharp impact of the gas here causes pain. This sign has on several occasions been of value to me and prevented operation in doubtful cases.

S. Salzman, M.D., Toledo, Ohio.

Emetin: A Warning

To the Editor:—Those using emetin solutions should be very careful not to get any in the eyes. This accident is followed by a very severe reaction. There is no pain at first, but in about eight hours there is an uncomfortable, "scratchy" feeling, intense photophobia and lacrimation, with conjunctival and some circumcorneal injection. Duration is about two days. To date I have seen two cases. A detailed report of these cases will be published later.

Julian B. Blue, M.D., Memphis, Tenn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LUETIN TEST—DIONIN IN CATARACT

To the Editor:—1. Can you advise me regarding the reliability of the luetin test which is now being marketed commercially? Has any comparison been made between that and the Wassermann and Noguchi tests?

2. Can you express an opinion on the treatment of cataract by the use of dionin (ethyl-morphin hydrochlorid), either in the conjunctival sac or by subconjunctival injection, or by the use of any form of electric current? Is there any recent literature on these subjects?

E. B. J.

Answer.—1. The luetin test is described on page 334 of New and Nonofficial Remedies, 1915. Numerous references occur in the literature to comparisons of results with this test and with the Wassermann and the Noguchi modification of the Wassermann. The article in New and Nonofficial Remedies says:

> "Luetin is employed for the diagnosis of syphilis. It is of use in the examination of tertiary cases but rarely gives a positive reaction in the primary cases or in untreated secondary cases. In patients who are under treatment by mercury or salvarsan, the reaction is frequently positive even in cases which fail to give a positive Wassermann reaction."

2. The nonoperative treatment of cataract has occupied the attention of ophthalmologists from the earliest times, both before and since its pathology was understood. It is true that in some cases of genuine cataract the opacity has disappeared without treatment, and it is not uncommon to see the disappearance of diabetic striae and the occasional absorption of exudates between the fibrillae of the lens which have produced more or less cloudiness. Attempts have been made to cure this condition by the employment of various drugs, massage with various ointments, the use of galvanism, the subconjunctival injection of potassium iodid, dionin, mercury, etc. In cases of incipient senile cataract a number

of ophthalmologists have reported good results in delaying the development of opacities by the subconjunctival injection of potassium iodid combined with the use of dionin powder insufflated into the conjunctival sac. The great majority of cases of cataract, however, are progressive and show no improvement under any form of local treatment; when useful vision is lost a surgical operation is the only treatment. Volumes II and III of "The American Encyclopedia of Ophthalmology" contain a complete summary of this subject, with bibliographic references to the most recent literature.

REFERENCES ON SOCIAL MEDICINE

To the Editor:—I am interested in the subject of social medicine. Please give me some data as to where I can obtain literature on this subject.

W. L. Albin, M.D., University Place, Neb.

Answer.—The following list of references may be consulted on this subject:

A State Medical Service, The Journal, Jan. 31, 1914, p. 391.

Socialization of Medicine in England, The Journal, Jan. 24, 1914, p. 316.

Warbasse, J. P.: Socialization of Medicine, The Journal, July 18, 1914, p. 284.

Bevan, A. D.: Medicine a Function of the State, The Journal, March 14, 1914, p. 821.

The Insurance Conflict, The Journal, Feb. 14, 1914, p. 549.

Benefits of the British Insurance Act, The Journal, July 26, 1913.

A New Form of Insurance in England, The Journal, Jan. 22, 1909.

Medical Men: Their Place and Influence in the State, *Brit. Med. Jour.*, Feb. 14, 1914.

Industrial Insurance in Germany, The Journal, March 28, 1914, p. 1039.

The Place of Medical Men in the Modern State, The Journal, April 4, 1914, p. 1112.

The National Insurance Act and Scarcity of Physicians, The Journal, Jan. 17, 1914, p. 218.

Medical Remuneration Under the Insurance Act, The Journal, March 21, 1914, p. 945.

Mr. Lloyd-George on the Insurance Act, The Journal, March 7, 1914, p. 789.

Carroll, J. B.: Workmen's Compensation Law and the Physician, *Boston Med. and Surg. Jour.*, Jan. 1, 1914.

French, J. R.: Medical Situation of New Workmen's Compensation Act, *California State Jour. of Med.*, April, 1914.

Oliver, T.: Medico-Social Problems from an Insurance Point of View, *Lancet*, London, April 4, 1914.

Rogers, B. M. H.: Experiences of Medical Adviser Under Insurance Act, *Brit. Med. Jour.*, June 28, 1913.

Rowntree, C.: Workmen's Compensation Act and Physician, *Practitioner*, August, 1913.

Merrick, R. M.: Workmen's Compensation Act as It Affects Physicians, *Boston Med. and Surg. Jour.*, Sept. 18, 1913.

The Crisis in Germany, The Journal, Dec. 13, 1913, p. 2163.

Medical Insurance Abroad, The Journal, Dec. 27, 1913, p. 2314.

Benefits of the British Insurance. The Journal, July 26, 1913, p. 296.

Social Insurance (Excerpts from the report of the Judicial Council submitted to the House of Delegates at San Francisco, June 21, 1915), *Am. Med. Assn. Bull.*, May 15, 1915.

BINET-SIMON TEST—HEALY TEST—D'ESPINE SIGN—KORANYI SIGN—EWART SIGN

To the Editor:—Please describe for me: (1) the Binet-Simon test of mentality; (2) the Healy psychologic test; (3) the D'Espine sign; (4) the Korânyi sign, and (5) Ewart's sign.

C. R. Byers, M.D., Bay City, Texas.

Answer.—1. The inquiry regarding the Binet-Simon test was answered in The Journal, Jan. 13, 1912. This series of tests is published in a pamphlet by A. Binet and T. Simon, entitled "A Method of Measuring the Development of the Intelligence of Young Children," published by the Courier Company, Lincoln, Ill.; price, $1. A list of the recent literature on this subject was published in The Journal, Jan. 10, 1914. The series of questions and problems in this test are too extensive for publication in this department.

2. The Healy psychologic test is described in a monograph by William Healy and Grace Fernald, published by the Psychologic Review Publishing Company, Princeton University, Princeton, N. J.

2. In 1907, D'Espine (*Bull. de l'Acad. de méd.*, Paris, 1907, lxii, 167) drew attention to a sign which he considered diagnostic of enlargements of the bronchial glands. He stated that in young children the whispered voice normally ceases at the level of the seventh cervical spine posteriorly. When, however, there is enlargement of the lymph nodes and the patient whispers "three thirty three," or similar numbers, bronchophony is heard over the upper thoracic spine as well. A recent study of this sign has been made by H. F. Stoll ("The Diagnostic Significance of D'Espine's Sign," *Am. Jour. Dis. Child.*, September, 1915, p. 183.

4. Korányi's sign is the same as Grocco's sign. In a medium-sized pleural effusion an S-shaped dulness can be determined as the upper limit of the effusion. The line begins rather low down at the spine, curves upward and obliquely across the chest into the axilla, then descends to the sternum. Movable dulness may be determined with changes in the patient's position. A triangular area of dulness may be found on the opposite side of the effusion. The base is at the level of the lower border of the lung and the apex about the height of the upper level of dulness. This latter finding is known as Grocco's sign. The presence of a normal triangular area of paravertebral dulness diminishes the diagnostic value of this sign. Reference may be made to Musser, "Medical Diagnosis," p. 604, and F. Smithies; (*Arch. Diag.*, April, 1912; Abst., The Journal, June 22, 1912).

5. Ewart's sign is of importance in the diagnosis of pericardial effusion. It is the prominence of the sternal end of the left first rib with elevation of the head of the clavicle.

ULTRAVIOLET RAYS AND INCANDESCENT ELECTRIC LIGHTS IN INFLAMMATORY CONDITIONS

To the Editor:—1. What candle power of incandescent electric lights produces the most ultraviolet rays?

2. What is the value of the ultraviolet rays so produced, for the treatment of acute inflammations like cellulitis, and for deep-seated chronic inflammations?

C. D. E., Oregon.

Answer.—1. The incandescent electric light produces few ultraviolet rays. Its spectrum contains not nearly so many ultraviolet rays as the arc light. The greatest quantity of ultraviolet rays is produced by incandescent mercury vapor in the mercury vapor lamps of the Cooper-Hewitt type. In order to get a large number of these rays for therapeutic purposes these mercury lamps must be made of quartz, which permits the passage of nearly all violet and ultraviolet rays. Glass absorbs a great quantity of these rays.

2. Ultraviolet rays penetrate tissue only slightly—not more than one-half inch—when the tissues are compressed so that they are almost bloodless. They scarcely penetrate blood at all. It is difficult to see how ultraviolet rays can be of any therapeutic value in treating any sort of process not near the surface of the skin. In the so-called ultraviolet lamps in which the source of light is an incandescent electric light, usually backed by a parabolic reflector, all the effects that can be obtained from light are on the surface. Because of the absence of ultraviolet rays in this light, it is probable that its physiologic effect is inappreciable; whatever therapeutic powers such lamps possess are perhaps due to the heat given off by them, which, in the case of incandescent lights, is considerable.

MORTALITY FROM RATTLESNAKE BITES

To the Editor:—Will you kindly inform me regarding the relative mortality from rattlesnake bites?

R. N. Pierson, Stamford, Conn.

Answer.—Prentiss Willson, in a very complete article on the general subject, which includes a summary of the literature (Snake Poisoning in the United States, *Arch. Int. Med.*, June, 1908, p. 516), says:

> "The mortality from the bites of American serpents has never been satisfactorily determined. Mitchell, in 1860, stated that in 57 cases of rattlesnake bite mentioned in the literature, five patients died. This would represent a mortality of 8.7 per cent. Elzey, whose opinion is often quoted, merely estimated that in 15 per cent. of cases of rattlesnake bite in adults, the patients would die, if left untreated. Barringer stated his belief that the mortality from rattlesnake bite would not exceed 10 per cent. and from copperhead bite 1 per cent. The mortality from water moccasin bite, he thought, would fall below even this last figure. There were 78 fatal cases in the total of 740 which I have collected, a mortality of 10.5 per cent. This figure represents the mortality of all species combined, and in my opinion may be accepted as representing with considerable accuracy the actual mortality attending snake bite in the United States, the number of cases on which it is based being considerable, and having been collected from sufficiently varied sources. As tending to prove the accuracy of this rate, it may be stated that the mortality rates for cases collected from the literature and from various private sources were, respectively, 10.2 per cent. and 10.7 per cent., a variation of only 0.5 per cent. The mortality rate for the different species will be given later in considering the effect of species on the prognosis."

In a tabulation of 624 cases of snakebite, in which the species were known more or less definitely, Willson found a mortality rate for all rattlesnake cases of 11.7 per cent. This he considers approximately correct.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

District of Columbia: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

Illinois: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Kansas: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Michigan: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

Oklahoma: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Wyoming: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

North Carolina June Report

Dr. H. A. Royster, secretary of the Board of Medical Examiners of the State of North Carolina, reports the oral and written examination held at Greensboro, June 8-11, 1915. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 134, of whom 104 passed and 30 failed. Thirty-two candidates were licensed through reciprocity. Two nongraduates were granted limited licenses. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
Southern College of Medicine and Surgery	(1912)	1
Chicago College of Medicine and Surgery	(1912) (1913)	2
University of Louisville	(1915)	1
Baltimore Medical College	(1907)	1
College of P. and S., Baltimore	(1914, 2) (1915)	3
Johns Hopkins University	(1907) (1915, 2)	3
University of Maryland	(1912) (1914) (1915, 10)	12
Columbia Univ., College of P. and S.	(1911) (1915, 4)	5
Leonard Medical School	(1913, 4) (1914, 2)	6
North Carolina Medical College	(1913) (1914, 3) (1915, 17)	21
Jefferson Medical College	(1915)	12
Medico-Chirurgical Coll. of Phila	(1915, 2)	2
University of Pennsylvania	(1914) (1915, 4)	5
Woman's Medical College of Pennsylvania	(1914) (1915)	2
Medical College of the State of S. C.	(1915)	1
Chattanooga Medical College	(1908)	1
Meharry Medical College	(1915)	3
Lincoln Memorial University	(1915)	1
University of West Tennessee	(1912) (1915, 2)	3
Medical College of Virginia	(1913, 2) (1914) (1915, 15)	18
University of Virginia	(1915)	1

FAILED

College	Year Grad.	Total No.
Atlanta Medical College	(1914)	1
College of P. and S., Keokuk	(1877)	1
University of Louisville	(1914)	1
College of P. and S., Boston	(1911) (1914)	2
Leonard Medical School	(1911) (1912)	2
N. C. Med. Coll.	(1905) (1912) (1913) (1914, 2) (1915, 2)	7
Medico-Chirurgical College of Philadelphia	(1898)	1
Medical College of the State of S. C.	(1901) (1911)	2
Chattanooga Medical College	(1903)	1
Lincoln Memorial University	(1911)	1
Meharry Medical College	(1915)	1
University of the South	(1905) (1909)	2
University of West Tennessee	(1914) (1915, 3)	4
Medical College of Virginia	(1914) (1915, 3)	4

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Alabama	(1908)	Alabama
University of Colorado	(1906)	Colorado
Howard University	(1909)	S. Carolina
Atlanta Medical College	(1884)	Georgia
University of Georgia	(1911)	Georgia
College of P. and S., Chicago	(1910)	Illinois
Kentucky School of Medicine	(1905)	Kentucky
Tulane University of Louisiana	(1914)	Louisiana
Johns Hopkins University	(1912)	Maryland
University of Maryland (1902, 3) South Carolina, Pennsylvania, Virginia; (1909) South Carolina; (1911, 2) Maryland, South Carolina; (1912) South Carolina; (1913, 2) Maryland.		
University Medical College of Kansas City	(1911)	Kansas
Columbia Univ., Coll of Phys. and Surgs.	(1912)	New York
Cornell University	(1912)	New York
Medico-Chirurgical College of Phila	(1906)	Penna.
Medical Coll. of the State of S. C.	(1886) (1905)	S. Carolina
University of Nashville	(1893)	S. Carolina
University of Tennessee	(1903)	Oklahoma
University of the South	(1899)	Georgia
Vanderbilt University	(1891)	Georgia
Medical College of Virginia	(1910)	Virginia
Univ. Coll of Med., Richmond	(1898) (1912) (1913)	Virginia

Illinois June Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, June 24-26, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 200, of whom 177 passed and 23 failed, including 4 candidates who did not complete the examination. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1913) (1914, 3) (1915, 21)	25
Chicago College of Med. and Surg.	(1914, 2) (1915, 26)	28
Hahnemann Med. Coll. and Hosp., Chicago	(1914, 2) (1915, 9)	11
Jenner Medical College	(1915)	11
Northwestern University	(1914) (1915, 12)	13
Rush Medical College	(1914) (1915, 29)	30
University of Illinois	(1912) (1915, 45)	46
University of Louisville	(1910) (1915)	2
University of Maryland	(1915)	1
Harvard University	(1912) (1915)	2
University of Minnesota	(1893)	1
St. Louis University	(1915)	2
Washington University	(1915)	1
John A. Creighton Medical College	(1911)	1
Meharry Medical College	(1915)	2
Catholic University, Louvain	(1895)	1

FAILED

College	Year Grad.	Per Cent.
Bennett Medical College	(1914, 3) (1915, 3)	6
Chicago College of Med. and Surg.	(1914, 2) (1915, 3)	5
Chicago Hosp. Coll. of Medicine	(1915)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1915)	2
National Med. Univ., Chicago	(1909)	1
University of Illinois	(1913) (1915)	2
National Univ. of Arts and Sciences	(1914)	1
University of Pennsylvania	(1896)	1

Alaska July Report

Dr. H. C. DeVighne, secretary of the Alaska Board of Medical Examiners, reports the written examination held at Juneau, Alaska, July 6, 1915. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of P. and S., San Francisco	(1909)	76.5
University of Georgia	(1912)	80
Rush Medical College	(1889)	75
State Univ. of Iowa, College of Medicine	(1886)	75.8
University of Mich. Medical School	(1900)	77
Marion-Sims College of Medicine	(1898)	80.9

Arizona July Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 6-7, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 9, of whom 5 passed, including 2 osteopaths, and 4 failed, including 2 osteopaths. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Southern California	(1899)	78
Tufts College Medical School	(1906)	75.1
Medico-Chirurgical College of Phila	(1902)	76.8

FAILED

College	Year Grad.	Per Cent.
College of P. and S., San Francisco	(1913)	71.2
Vanderbilt University	(1914)	72.2

Book Notices

A Manual for Health Officers. By J. Scott MacNutt, A.B., S.B. Foreword by William T. Sedgwick, Professor of Biology and Public Health in the Massachusetts Institute of Technology. Cloth. Price, $3 net. Pp. 660, with illustrations. New York: John Wiley & Sons, 1915.

The increasing number of workers in the public health field, both physicians and laymen, has created a distinct demand for a compact, practical, up-to-date reference book for health officers. The fact that Mr. MacNutt's training was secured, not in a medical school, but in the Massachusetts Institute of Technology, has naturally influenced both his point of view and his method of treatment. The publication of such a volume by a nonmedical man is conclusive evidence of the way in which the entire public health field is widening. The book is divided into two main parts, the first dealing with health authorities, their organization and powers and the second with public health administration. Under the first head, local, state and federal health authorities and their functions are discussed; also unofficial organizations. In the section on public health administration, the greater part of the space is naturally devoted to the discussion of communicable diseases and methods for their prevention. Child hygiene, food sanitation, water supply and housing are also discussed. While the book is one of the best practical manuals for health officers that has appeared recently and while its perusal will be of marked benefit and interest to every one interested in public health administration, the lack of medical training on the part of the writer is evident throughout. Equally evident is the lack of familiarity with the large amount of material on public health questions to be found in the leading medical journals, most of the periodical references being to one or two journals. It is also noticeable that most of the material and information utilized in the volume is drawn from a few of the eastern states. Mr. MacNutt's book is worthy of careful study, but it is unfortunately limited in both its material and its point of view.

A Text-Book of Medical Jurisprudence and Toxicology. By John Glaister, M.D., D.P.H., F.R.S.E., Professor of Forensic Medicine in the University of Glasgow. Third Edition. Cloth. Price, $5 net. Pp. 857, with 138 illustrations. New York: William Wood & Co., 1915.

Dr. Glaister's work is now issued in two volumes, one on "Medical Jurisprudence and Toxicology" and the other on "Public Health." Since its last appearance, the book has been thoroughly revised and rearranged and a more complete and detailed index prepared. While it is naturally of greater value to the English reader because it applies to legal procedure in that country, yet the breadth of Dr. Glaister's experience and the large amount of data which he has collected must make this book of interest to all students of medical jurisprudence. Especially interesting are the chapters on "Personal Identity," "Finger Prints," "the Identification of the Dead," "Gunshot Wounds" and "Deaths by Lightning and Electricity." Poisons and poisoning are exhaustively discussed. The chapter on "Wounds and Their Medicolegal Relations" is well illustrated and illuminated by copious extracts from case reports. The microscopic and chemical identification of blood and other body fluids is also authoritatively considered. The third edition of this work is a marked improvement over the preceding editions.

The Early Diagnosis of Heart Failure and Other Essays on the Heart and Circulation. By T. Stacey Wilson, M.D., F.R.C.P., B.Sc., Senior Physician, General Hospital, Birmingham. Cloth. Price, $4.50 net. Pp. 617, with illustrations. New York: William Wood & Co., 1915.

There are in this book several essays dealing with the heart and circulation. Most of them treat of heart failure. Had Wilson selected a few of his newer ideas, such as the "high diaphragm" or "diminution in the area of liver dulness" as signs of myocardial weakness, or the "distensibility of the heart wall," and emphasized these, omitting many of the trite facts as to physical examination of the heart and symptomatology of heart disease, his argument would have gained in effectiveness from concentration. As it is, even with his summaries and wearisome repetition, it is hard at times to make out what he is driving at. There is much that is suggestive in the book and it shows painstaking and conscientious study of an important subject along somewhat new lines. It is not always recognized that the heart that fails may in the one case enlarge, while in the other instance the lack of distensibility of the heart wall causes the organ to remain small. These and other points are well worth consideration by practitioners, for whom the book is primarily intended.

Urgent Symptoms in Medical Practice. By Robert Saundby, M.D., Lieutenant-Colonel, R.A.M.C. Cloth. Price, $2.10 net. Pp. 437. New York: Longmans, Green & Co., 1915.

Saundby has arranged alphabetically an indiscriminate list of subjects, covering not only what the title indicates, but other fields of medicine as well. He includes not only symptoms but many diseases and several pathologic tests. In the selection of the subjects covered there seems to be neither rhyme nor reason. No subject is covered completely. Such subjects as acne, alopecia, genital spots, immunity, keloid or paralysis agitans can hardly be listed as urgent. In the discussion of treatment the author is exceptionally free in his references to proprietaries, some ethical and others not so good. As a reference work to the things in it the book has a certain value.

Miscellany

"The Brides in a Bath" Case

The most sensational murder case in England since the Crippen trial has terminated in the conviction of George Joseph Smith, aged 43. The case is extraordinary in the annals of criminal jurisprudence, and presents several points of medicolegal interest. The prisoner contracted bigamous marriages with three women who soon afterward were found dead in a bath in very similar circumstances. The physicians who were called in, while rightly coming to the conclusion that death was due to drowning, were hoodwinked as to the cause, and thought that the death was accidental. The prisoner, a short time before each death, cunningly took the women to the physicians with the complaint of headache or fits, so as to facilitate the belief that death was due to natural causes. The deaths took place in lodging houses. After them he managed to slip out and return after buying food and pretended that he had just found the woman dead. The theory of the prosecution was that he pulled up the legs in such a position that the head would be submerged and the woman incapable of successfully struggling or screaming. In one case the physician thought that the woman had an epileptic seizure while in the bath and was thus drowned, but there was no proof, merely the prisoner's allegation, that she suffered from epilepsy. In another case the physician thought that the woman fainted from the heat of the bath and was drowned. The evidence of Dr. Spilsbury, medicolegal expert, was important. In the case of two of the baths he thought it was impossible for the head to be accidentally submerged so as to cause drowning. In one, while the woman's height was 5 feet 8 inches, the bath measured only 5 feet at the top, and 3 feet 8 inches at the bottom. In one case a piece of soap was found grasped in the hand after death. Dr. Spilsbury said that if the woman had fainted, the muscles would have been relaxed and the soap would have fallen out. If she had had a fit, it would probably have been retained in the first stage, but in the second or clonic stage would more likely have fallen out, and certainly would have fallen out in the third stage of exhaustion. He concluded, therefore, that consciousness was not lost before death, but that death was due to submersion, and that the contraction of the muscles passed into rigor mortis, causing the soap to be retained. It was never even proved that the prisoner was in the bath room at the time of death, and therefore the evidence was entirely circumstantial. The judge pointed out the following series of coincidences in the circumstances of the three deaths, which were too many to be regarded as accidental: 1. In each case there was a death in a bath, and in each case the prisoner had moved to that bath room or fitted it up within a week before the death. 2. In each case the bath room in which the death took place was unlocked, so that the prisoner could go into it, although in two cases it was in a strange house and other lodgers might enter. 3. In each case the dead woman made her will in favor of the prisoner within a week before her death. 4. In two of the cases, the dead woman insured her life within ten days before her death; in the third case there was no insurance because there was considerable property which would pass on death. 5. In each case, all the debts due to the dead woman and all savings bank accounts had been realized just before death. 6. In each case, two or three days before the death the woman was taken to a strange physician in a strange place complaining of headache, and that physician was called in after death. 7. In each case, a letter was written to the woman's relatives a day before her death. 8. In each case, the prisoner had gone out to buy food when the woman was found drowned. 9. In each case, the prisoner found her, left her in the water until some one had seen her, and did not get rid of the water without permission. 10. In each case, it was a bigamous marriage. 11. In each case, he benefited more by death than by life. 12. In each case, he buried the woman as quickly as possible. It is to be noted that the evidence in any one of the three cases was so slight that the prisoner could scarcely have been put on his trial. Indeed, no suspicions were even aroused until the third case. Then the remarkable series of coincidences given above proved fatal to the prisoner.

The Pennsylvania Department of Health Exhibit at the Panama-Pacific International Exposition

The mammoth exhibit of the commonwealth of Pennsylvania is a credit to that state and to its commissioner of health, Dr. Samuel G. Dixon. The exhibit is surrounded on all sides with white pennants, each bearing an attractive green keystone; from the center beam and at each end are draped the Stars and Stripes, side by side with the blue silk flag of Pennsylvania. Almost the first thing that arrests the eye is the sentiment written by Dr. Dixon: "The varied industries on which we depend for our comfort, the wealth which enables us to enjoy them, and the arts of civilization which adorn and diversify our lives are but the fruitage of the tree whose root is health." The exhibit graphically portrays the activities of the department, roughly divided into three separate sections: school hygiene, typhoid fever and sanitary engineering, and the tuberculosis work of the department.

In the section on school hygiene are pictures showing the inspection of rural schoolchildren, of which Pennsylvania inspects approximately 400,000 a year. Statistics give the percentage of defects found under vision, hearing, teeth, nose and throat, skin diseases, nervous diseases and tuberculosis in all its forms. It is perhaps the only state in the union which has undertaken medical and sanitary inspection of rural schools on such a vast scale, under state supervision. The dangers of the common towel are made clear by life-sized wax models of pupils, the evolution of the sanitary drinking cup and fountain is illustrated, and good and bad seating facilities in schools are shown by life-sized wax models of boys and girls in actual seats placed at adjustable desks. Transparencies depict the progress and evolution of schoolhouses, from the old insanitary, unlighted country school to the modern, pleasant, well-lighted building. A model of an artistic school building and grounds and its screened outhouses suggests the ideal.

The division devoted to typhoid fever and sanitary engineering covers a large area. There are models of a complete sewage-disposal plant, and of towns and cities in which epidemics of typhoid fever occur. The manner and the source of infection are shown by miniature houses and the depiction of streams and leaky flumes, overflowing vaults, carelessness at dairy farms, inadequate care of sewage from trains and boats, and the pollution of streams by dead animals and outhouses.

No part of the exhibit has attracted more attention than that which portrays by models, pictures or transparencies the work of Pennsylvania for the care of consumptives, and the work that is going to educate the people for its prevention. Models are shown of Pennsylvania's three large sanatoriums which can accommodate approximately 2,000 patients afflicted with this disease. Types of cottages used at the "camp" and occupied by the patients in the incipient stages are reproduced with every detail, even to the miniature bed, bedclothes and wash basin in each room. The work of the visiting or dispensary nurse is shown by transparencies. The work of the new Bureau of Housing is also indicated, as well as that by the bacteriologic and pathologic laboratory, where all specimens are sent for examination.

Dr. Dixon and the exhibit were each awarded a gold medal.

The Undiagnosable

"It is one of the commonplaces of worldly wisdom not to try to educate the public. The business man will make his boldest bid to supply an already existent demand, or to create a demand for something that he wants to sell; but he is never supposed to succeed if he spends his time and money in getting the world at large to do what it ought, instead of allowing it to do what it often vainly imagines is to its own advantage. The medical profession can, to a certain extent, contradict this assertion; we are, spasmodically and vicariously, it is true, making the people at large put up with methods that are clearly not so satisfying to them as those that they replace, and not only that, but we are persuading people actually to prefer the more uninviting system. Nothing could have been more comforting to the world of sick in general than the old belief in the infallibility of the physician. To know for an absolute certainity that the whole case lay bare before one's medical adviser, as if he were gifted with a diagnostic combination of the Roentgen ray and clairvoyance which showed him all the iniquities of the pecant organism like an open book, must have been a boon that contributed not a little to the peace of mind, and so indirectly, to the more rapid recovery of the patient. But it was not true.

"It may be argued that that was but a detail. If the application of the false is a suitable therapeutic agent, why should we go out of our way to avoid it when in addition it offers all the additional advantages of being the path of least resistance? We may tell ourselves that if our patients do not suffer by a little undue dogmatism and unjustifiable confidence on our part, we have done them no harm, and have at any rate, sustained our own reputation. We forget the harm we do to ourselves. Slipshod untruth is unscientific. We need not refer to its ethics. It is in the wrong spirit. Its practice makes us only too ready to repeat it out of sheer laziness. And the next thing is that we find ourselves dividing cases into those of M. F. S., Mist. Carm., Mist. Expect. Sed., and so on, which is obviously fatal to anything but a commercial success in the practice of medicine. It is to our credit that we have educated so many of our patients to look on us as fallible, as people like themselves, to whom mistakes are possible and who do not know everything. Such a spirit is the right one if we wish for the real advancement of medicine, and, as a sop for Cerberus, it pays in the long run."—*Medical Press and Circular.*

The Engineer in Public Health Work.—There are certain good reasons for the evolution [the engineer in public health work], for health work no longer stands on the basis of medicine alone. Light, ventilation and humidity come into the problem of health; construction is most important, and in these matters the value of the engineer is obvious. Health administration never can be independent of medical skill and practice—medicine and engineering must go hand in hand.—*American Journal of Public Health.*

Medicolegal

Circumstances Obligating Corporation to Pay Physician

(Roff Oil & Cotton Co. vs. King (Okla.), 148 Pac. R. 90)

The Supreme Court of Oklahoma affirms a judgment for $200 in favor of plaintiff King, who sued the defendant company for $301 for medical services rendered to one of its employees, who was injured in its service. The court recognizes that, as a general rule, a corporation is not required to furnish medical attention to an employee injured while engaged in its service, and, nothing else appearing, an agent cannot bind the employer, unless it appears that such authority is within the scope of his agency. But the court holds that where an agent, in charge of the business of the employer, although of limited authority, does employ a physician for an injured employee, and the employer is notified within a reasonable time by the agent that such physician is in charge of the case, and makes no objection, and it further appears that the agent purchased medicine for the injured man, which was paid for by the employer, this is evidence to go to the jury of the notification of the employment. And such was practically the evidence in this case, where the jury returned a verdict in favor of the plaintiff for $200. The court says that the case was distinguishable from one in which there was no evidence whatever that the company sued had any knowledge that the physician was performing the services prior to the time of their completion. Furthermore, while it is true that the fact of agency cannot be proved by the hearsay declarations of the agent, yet the agent himself, while on the stand, may testify as to his agency and as to the scope of his employment. The payment of the drug bills was some evidence to be considered by the jury as to the liability which the defendant had assumed in regard to the injured man. The fact that the agent who employed the plaintiff also bought the medicine for him was, too, some evidence to go to the jury in establishing the agency.

Unlawful Practice of Medicine Under a Trade Name

(People ex rel. Lederman vs. Warden of City Prison (N. Y.), 152 N. Y. Supp. 977)

The Supreme Court of New York, Appellate Division, First Department, affirms an order dismissing a writ of habeas corpus obtained by the relator, who was held under a charge of practicing medicine unlawfully. This the court does on the opinion rendered below. That says that the relator transacted business under the duly adopted trade name "The Standard Pharmacy Co." The testimony was that a lady called at the office of this "company," inquired whether the doctor was in, and on receiving an affirmative answer, was referred to him. He is a duly licensed physician. He examined her, gave her a prescription, refused to receive any compensation, she had the prescription filled at the desk and paid therefor, and was again told that no charge would be made for the medical service. In addition to this evidence the record contained copies of the inscriptions on signs around the relator's establishment, a booklet of advertisements, and a "card for free examination." The signs were perhaps fairly beyond the purview of the statute. They read as follows: (a) "Standard Pharmacy Co." (b) "Doctor's office. Examination of urine. Electrical treatment, X-ray examination and other modern scientific methods." (c) "Standard Pharmacy Co. Medical Office. Entrance through Drug Store." (d) "Manufacturers of Standard Remedies." (e) "Examination of urine in order to determine the nature of the disease, and also to show a complete and reliable cure by our consulting specialist, free to our patrons who are using our valuable, well-tried, reliable and guaranteed prescriptions. The celebrated Standard Remedies." These signs might be interpreted as indicating merely that the relator was engaged in the manufacture of certain remedies; that he employed a physician, to whom patrons of his establishment might go for free medical advice, although the phrase "Standard Pharmacy Co. Medical Office" was rather suggestive. It might, however, be claimed that a "medical office" imported no more than a place where remedies might be obtained. The same might be said of the contents of the booklet. One page contained, among other things, the statement: "Coupon. Free medical advice to patrons. . . . Consultation, examination, and advice free by the consulting specialist of the Standard Pharmacy Co." This might be regarded as unobjectionable, but the same cannot be said so clearly of the further recital: "The medical office of the Standard Pharmacy Co. is fitted up in the most complete manner with all the latest scientific medical and surgical apparatuses." Without reviewing further extracts from this booklet, it might be said, however, that the doubts entertained as to the legal propriety of the advertisements might properly be resolved in the plaintiff's favor, were it not for the card for free examination above referred to. This read as follows: "Card for free examination. Medical and surgical office of the Standard Pharmacy Co., 321-323 Bowery, corner 2d street, New York,........191.. To the Doctor: Please make examination and give medical advice to bearer, who is now using   , and charge same to Standard Pharmacy Co. Per   Make no charge to holder of card." On the reverse side: "Office hours —Daily, 12:30 to 2; evenings, 5 to 6:30 and 8 to 9; Sundays, 12 to 2." This card is regarded as other than an announcement that the Standard Pharmacy Company maintained a medical and surgical office, in charge of its doctor, who gave its patrons examination and medical advice on its behalf. It is deemed that the relator held himself out under his trade name as being able to diagnose and treat diseases and offered and undertook to do so. Subdivision 7 of section 160 of the Public Health Law defines the practice of medicine and indicates in substance that it consists in holding one's self out as being able to diagnose or treat human diseases, and offering or undertaking such treatment. This factor of holding out apparently underlies all the important cases in which the defendant has been held for violation of the law.

Privileged Communications

(Kansas City Southern Railway Co. vs. Miller (Ark.), 175 S. W. R. 1164)

The Supreme Court of Arkansas, in affirming a judgment in favor of plaintiff Miller for damages for injury to his eyes alleged to have been caused by escaping steam, holds that the testimony of certain physicians was properly excluded. It was urged that the plaintiff by bringing suit for the injury and becoming a witness and detailing the facts, the treatment thereof, and the condition resulting from it, thereby waived the privilege granted to him by the statute. The court answers that, while there is much reason for holding that the privilege is waived under such conditions, and that in the interest of justice the truth of the matter should be discovered by the testimony of the physicians, the patient having disclosed and detailed the facts of the injury minutely and the treatment thereof, this court has taken the other view and held that the privilege is not thereby waived. Neither does the court agree with the contention that a physician's testimony was admissible for the reason that he did not in fact make the examination he made and ascertain the condition of the plaintiff's eyes in the capacity of his physician, not having in fact been employed by nor treated him, when, however, it was undisputed that the plaintiff went to the physician and consulted him about his injury and permitted the examination to be made with a view to engaging his professional services, and that the information was necessary to enable him to prescribe as a physician, and acquired for that purpose. The fact that the plaintiff after the examination discovered that the physician was employed by the defendant company to treat its injured employees, and declined to engage him to treat his injuries, would not permit the physician to disclose the information so acquired over the patient's objection.

The Child-Mind.—Nor does it help much to divide them into the feebleminded and the normal, or the wayward and the normal, for "the normal" . . . does not, strictly speaking, correspond with anything found in nature.—Charles B. Davenport, Educational Hygiene, *Scribner*, 1915.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 13-15.
Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
National Assn. for the Study of Pellagra, Columbia, S. C., Oct. 21-22.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Vermont State Medical Society, Burlington, Oct. 14-15.
Virginia State Medical Society, Richmond, Oct. 26-28.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

The President, Dr. Edward B. Heckel, Pittsburgh, in the Chair

Civic Responsibility of the Physician and the Medical Society

Dr. John B. McAlister, Harrisburg: Some of the most vital problems for thought are: (1) Standardization of the profession throughout the country. May we live to see the day when a licensed doctor in Oklahoma is a licensed doctor in Pennsylvania. (2) Medical legislation in Pennsylvania. Our legislative committee needs our wisest judgment and conscientious cooperation. The establishment of a board of regents similar to the New York Board of Regents would solve the problem of the constant struggle to protect our own standards, protect the public against fraud and incompetency, relieve us of the reproach of bigotry and selfishness and prevent the multiplicity of examining boards. (3) Preventive medicine calls loudly for a National Health Department in the Federal Government. (4) Cancer and tuberculosis which are preventable at some stage. (5) The doctor and the newspaper. The newspaper is more powerful than all the guns of all the armies in the world. The doctor and the press should join forces for the public good. The press is of inestimable service in educating the public in health, hygiene and preventive medicine, and in influencing legislatures.

Report of the Subcommittee on Cancer for 1915

Dr. Jonathan M. Wainwright: This society was the first organization in this country to make any systematic effort to attack this problem. Our first effort was to induce every medical college professor interested in a subject approaching cancer to impress on his students the fundamental points of the cancer campaign. We hope to induce our examining boards to insist on a proper knowledge of cancer. We have tried to induce every nurse's training school in the state to have their nurses properly instructed regarding the disease. Perhaps the most efficient plan by which the society has worked has been through our county societies. In June thirty-eight counties held meetings devoted to this subject. We believe that much the most important and efficient single effort ever made in this country and perhaps abroad in the attack on cancer has been the effort to have our medical journals devote a major part of their July issue to the cancer campaign. Sixty-five journals responded. The American Society for the Control of Cancer is cooperating with our society.

Scopolamin-Morphin Anesthesia in Obstetrics

Dr. James R. Freeland, Pittsburgh: The literature appearing in association with this subject in the last fifteen months is to be classed largely as advertising matter. Scopolamin should be considered simply as a useful sedative in selected cases. This attitude is probably responsible for our good results. Complete amnesia should not be regarded as the main object. The attitude of the physician toward patients demanding "twilight sleep" should be that of reserving the right to choose the anesthetic just as the surgeon does. The demand for painless labor denotes an unhealthy mental attitude.

DISCUSSION

Dr. Barton Cooke Hirst, Philadelphia: In a series of cases I find the disadvantages of this method to be — if there is given enough scopolamin and morphia to produce indifference to pain — prolongation of labor, tendency to atony of the uterus with hemorrhage and an increased proportion of apneic babies that cannot be revived. If one tries to escape these disadvantages by following the latest methods of giving minimum doses of the two drugs, the disadvantages disappear but the relief afforded is scarcely noticeable, in my experience. However, the advantages of this method are not to be ignored, and I have found it useful in primiparas of a neurotic type, apt to have a long painful labor. Here I use it not to relieve pain so much as for psychologic effect, which we cannot afford to ignore. I employ all the accessories, the darkened room and the banishment of everyone but a trained nurse and the doctor. It is not fair to take a negative stand in the criticism of any method unless some alternative is proposed. We should earnestly endeavor to preach a proper solution of this subject. I am at present making some experiments with cannabis indica as a drug which may relieve the pains of childbirth without disadvantage to mother or child.

Dr. Daniel Longaker, Philadelphia: The full benefit of scopolamin is obtained only when we secure complete amnesia. Every woman should be transferred to the specially appointed hospital for her confinement, regardless of the method of delivery. I agree with Dr. Freeland that the apnea is due to the morphia. There are certain cases in which neither scopolamin nor morphin should be used.

Dr. James R. Freeland: I am sorry I cannot join the enthusiasts for the use of scopolamin. My first objection is the name, "twilight sleep." It is a trade name, and has no place in the practice of medicine. The matter of suggestion is harmful to the patients and a certain proportion will come later into the hands of the neurologist.

Some Criteria Underlying Prognosis in Certain Forms of Cardiac Insufficiency

Dr. James E. Talley: The average patient of middle life with symptoms suggesting beginning cardiac insufficiency will probably have either (1) primary chronic endocardial or myocardial disease, usually rheumatic; (2) primary endocardial or myocardial disease with secondary nephritis; (3) primary renal disease with a secondary myocardial and vascular disease; (4) primary arterial or arteriocapillary sclerosis with secondary cardiac and renal disease; (5) syphilitic cardiovascular disease. Omitting Groups 1 and 5 we have three groups of cardiorenal and cardiovascular disease, of special interest because of their frequency, association with pathologic elevation of blood pressure and because their study has tended away from the conception of renal disease being solely responsible for hypertension, and toward the renewal of the old conception of primary arteriolarcapillary fibrosis. Myocardial weakness as expressed by early dyspnea foretells a death by cardiac insufficiency for one half of such patients. Extreme dyspnea may be associated with pulmonary edema which is lethal in one or a few attacks. Anginoid pain forecasts that one third of the patients will succumb in an acute anginal attack; the remainder to cardiac failure. The underlying criteria in prognosis are the information derived from symptoms and objective signs. The symptoms are many and vary as the heart or renal element predominates. Periodic early morning headache means a uremic death for a large number; an apoplectic death for a somewhat less number. Nocturnal polyuria points to a uremic death. Hypertension accompanies all three groups. Although all three groups are doomed, the one with the vastly impaired elimination is doomed to a renal death and probably earlier than the other two. Dr. Paul D. White has shown pulsus alternans to be much more common than we have thought. In cardiac, vascular, and renal patients the mode of death is given and the expectancy of life is furnished by the same statistics. From the onset of the first symptoms one half will succumb during the first five years; one quarter between five and ten years, and one quarter will be living after ten years.

DISCUSSION

Dr. Joseph Sailer, Philadelphia: The importance of the prognosis in cardiovascular disease is due largely to the fact that, although the conditions are incurable, much can be accomplished by therapeutic measures for the comfort of the patient and the prolongation of life. Differential diagnosis here is in degree rather than in the kind of the disease, and in this differential diagnosis of degree Dr. Talley has properly laid stress on blood pressure, colorimetric tests of the functional capacity of the kidneys and graphic methods of recording the heart action. These methods, however, are not absolute. The increase or decrease in the functional capacity of the kidneys, the rise or fall of arterial tension and possibly the modification of the heart tracing are more significant of the probable course of the case than any single observation.

Dr. H. B. Allyn, Philadelphia: The cause of the disease has much to do with the prognosis. Lesions resulting from an acute infection often remain quiescent for many years and the patient is not much worse. I have seen within a few days a patient who was left with aortic insufficiency from scarlet fever when 3 years old and who is now approaching 50. Her heart has needed little attention for fifteen years. On the other hand, when the lesion is a myocardial degeneration, the prognosis is much worse. Dyspnea, its degree and the readiness with which it is induced, is often of more value in prognosis than any physical sign.

Dr. H. A. Hare, Philadelphia: The more experience one has with cases of cardiovascular disease the more cautious is he in prognosis. While pulsus alternans is of grave import it is not unusual to see a patient with this symptom live several years. In reaching a prognosis in cardiac disease we must study the patient as a whole and not be content with examinations of the heart, even if these examinations are made with instruments of precision.

The Heart of the Athlete; Its Prospect and Protection

Dr. Robert N. Willson, Philadelphia: Two vital questions immediately involved in a study of the wisdom or physical unprofitableness of college and schoolboy competitive athletics are: (1) the ultimate (postgraduation) result of public competitive athletics on the physical health and lives of the participants; (2) the possibility of determining the genuine physical integrity of the proposed participant or his lack of the same, especially with respect to his heart. In recent years there have been many deaths among former athletes. I know of not one instance of recovery from a major infectious disease in an athlete, except in the typhoid epidemic at Easton. Here a number of undergraduates, presumably not yet shorn of their resisting forces, made a successful fight and recovered. We must remember that the normal heart will not tolerate repeated insults sustained in the strain of training and final competition without the loss of recuperative power. Latent athletic injuries would seem to explain the tendency of the strong and robust to die, while the less powerful win out against infectious disease. A still more radical evil is the encouragement offered by college and university to the schoolboy to emulate his college brother in competitive athletics. I stop short of advising against active competition as the Germans have. I am simply pointing to sign boards written in bold letters. Trainers should be taught just what the collapse of today means in the future of the athlete. Some day the college authorities must of necessity conclude that no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion.

DISCUSSION

Dr. N. A. Stauffer: I believe in competitive sports for the same reason that I favor competition in other professions. All of the University of Pennsylvania football team are in excellent health, and records of athletes compiled by other observers do not bear out the statement that competitive sports are harmful, except to the unprepared.

Dr. Albert E. Roussel: Physicians should appreciate the value of graduated exercise throughout life, but exercise should be under supervision in selected cases.

Dr. R. N. Willson: I am not opposed to competitive athletics if they can be rendered sane. The point raised is, what will the athlete's heart do in the presence of systemic, especially infectious, disease? I believe it is time to safeguard the hearts and vessels and lives of our boys.

Chronic Arthritis

Dr. Thomas McCrae: The etiologic factor in the great majority of cases of chronic arthritis is infection somewhere, and a knowledge of the cause is an important element in treatment. As the process is often progressive, it is the more essential to recognize this and endeavor to remove the cause before serious damage is done. This involves a thorough search for the possible source of infection and proper treatment if found. The effort to apply this etiologic therapy should be distinguished from measures which are merely symptomatic or those directed to improve the condition of joints already damaged.

DISCUSSION

Dr. A. P. Hirsh: The terms "rheumatoid arthritis" and "chronic rheumatism" should be named only to be discarded. A tentative nosology is now possible for chronic arthritic disease being based on the researches of Dr. McCrae and others in this field. Three factors involved in the definite treatment method of one group of joint infections wrongly classed "deforming arthritis" are: (1) removal of the original source of infection; (2) persistent local applications over each affected joint until all possible removable deposit is gone; (3) a systematic effort to correct the patient's general metabolism. Removal of the causative infection implies an exhaustive differential diagnosis. It is to the local treatment methods that attention is especially directed, the most efficient of which is the high pressure, small volume and low frequency static wave current sent through 22- gage flexible metal plates closely fitting the involved joints. The static indirect sparks are also applied between these joints. Of the several modalities no single one will suffice but their intelligent combination will bring success in the treatment of that opprobrium of our calling, deforming arthritis.

The Tertiary Manifestations of Syphilis as Seen in a General Medical Ward

Dr. John H. Musser, Jr.: The study is based on the results of the Wassermann test on every case of chronic disease coming into the men's medical service at the Presbyterian Hospital in the last four months, excluding the frank pneumonia and typhoid fever cases, and necessarily those dying, or leaving the ward before there was time for the test. It was found that one fifth of patients with chronic disease had syphilis. The following conclusions may be drawn: 1. A large percentage of cases of chronic disease is dependent on a syphilitic infection. 2. It is impossible always to detect such cases of syphilitic infection without a Wassermann reaction. 3. Owing to the importance of diagnosing such cases which show syphilitic infection, a Wassermann test of the blood serum should be made in every case of chronic disease admitted to a general medical ward.

Dr. Joseph Sailer: That many forms of chronic disease are dependent on a syphilitic infection which does not manifest itself in the usual way is the experience of all of us. Of two such patients both physicians, one suffered merely from malnutrition and indefinite digestive disturbance for which there was no adequate explanation. The Wassermann was positive. Two weeks after the first injection of salvarsan he gained ten pounds and has since remained well. The other physician suffered merely from an irritative dry cough of the most persistent character. He was the father of three healthy children. There were none of the ordinary manifestations of syphilis. A positive Wassermann suggested the use of salvarsan and the cough stopped almost immediately after the first intravenous injection. Assuming that only 10 per cent. of the population suffers from syphilis, which, based on our laboratory reports is a modest number, at least 9,000,000 people suffer from it in the United States. It is fair to conclude that in the majority the manifestations are so obscure that there is no suspicion of its existence.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XVIII, No. 2, pp. 145-327

1 Development of Venous Sinuses of Dura Mater in Human Embryo. G. L. Streeter, Washington, D. C.
2 Origin of Renal Artery in Mammals and Its Anomalies. J. L. Bremer, Boston.
3 Some Characteristics of External Ear of American Whites, American Indians, American Negroes, Alaskan Esquimos and Filipinos. R. B. Bean, New Orleans.
4 *Origin of Blood and Vascular Endothelium in Embryos without Circulation of Blood and in Normal Embryo. C. R. Stockard, New York.

4. **Origin of Blood and Endothelium.**—According to Stockard in most embryos the earliest blood cell formation occurs in the yolk-sac blood islands. The cells in these islands continue to divide until they become surrounded by endothelium, then the yolk-sac blood islands lose their hematopoietic function and become a vascular net through which the blood circulates. The liver now takes up the rôle of harboring dividing blood cells within its tissue spaces, when these spaces become vascularized by endothelium; here again the blood cells no longer multiply but merely circulate. Finally, in the mammalian embryo, one organ after another ceases to offer the necessary harbor for dividing blood cells, until the red bone marrow is the only tissue presenting the proper relationship of spaces and vessels, and here alone the erythropoietic function exists to supply the red blood cells for the entire body circulation. The red blood corpuscles are always produced so as to be delivered into the vessels and thus soon occupy an intravascular position, while the white blood cells arise and remain for some time among the mesenchymal tissue cells in an extravascular position. Lymphocytes and leukocytes along with the invertebrate amebocytes are all generalized, more or less primitive, wandering cells and are almost universally distributed throughout the metazoa.

Erythrocytes are highly specialized cells with a peculiar oxygen carrying function due to their hemoglobin content. In contrast to the universal distribution of the leukocytes the erythrocytes are only found in the vertebrate phylum, except for a few cases existing in some of the higher invertebrate groups. Yet even in these particular cases the oxygen-carrying blood cell never presents the typically uniform appearance of the vertebrate erythrocyte. The facts presented seem to indicate that vascular endothelium, erythrocytes and leukocytes, although all arise from mesenchyme, are really polyphyletic in origin; that is, each has a different mesenchymal anlage. To make the meaning absolutely clear, Stockard considers the origin of the liver and pancreas cells as parallel, as both arise from the endoderm but each is formed by a distinctly different endodermal anlage, and if one of these two anlagen is destroyed the other is powerless to replace its product.

American Journal of Medical Sciences, Philadelphia

October, CL, No. 4, pp. 469-624

5 *Gastro-Enterostomy; Study of One Hundred Cases as Compared with Similar Number of Cases of Pyloroplasty. J. M. T. Finney and J. Friedenwald, Baltimore.
6 *Prolonged Fasting in Diabetes. F. M. Allen, New York.
7 *Present-Day (Allen) Treatment and Prognosis in Diabetes. E. P. Joslin, Boston.
8 Relative Pulmonary Insufficiency (Graham Steel Murmur). J. Sailer, Philadelphia.
9 Soy Bean and Condensed Milk in Infant Feeding. J. Ruhräh, Baltimore.
10 *Study of Splenic Enlargement in Early Syphilis. U. J. Wile and J. A. Elliott, Ann Arbor, Mich.
11 Chronic Lead Poisoning in Guinea-Pig; with Special Reference to Nephritis, Cirrhosis and Polyserositis. W. Ophüls, San Francisco.
12 *Appendicitis as Sequela of Tonsillitis; Report of Cases. H. B. Anderson, Toronto.
13 Case of Ligation of Portal Vein in Suppurative Portal Phlebitis. E. Beer, New York.
14 Report of Three Cases Resembling Pseudosclerosis and Progressive Lenticular Degeneration. W. B. Cadwalader, Philadelphia.
15 Value of Rectal Feeding. H. Adler, Baltimore.
16 Intracranial Telangiectasis; Symptomatology and Treatment; Report of Two Cases. E. Sachs, Washington, D. C.
17 *Respiratory Signs and Symptoms in Trichinosis. G. R. Minot and F. M. Rackemann, New York.
18 *Test of Myocardial Efficiency, with Review of One Hundred and Twenty-Seven Cases. H. Schoonmaker, Clifton Springs, N. Y.

5. **Gastro-Enterostomy.**—The largest proportion of cases in the series studied by Finney and Friedenwald in which gastro-enterostomy was performed occurred between the thirtieth and sixtieth years, while the largest proportion of cases in which pyloroplasty was performed occurred between the thirty-fifth and fiftieth years. The duration of the symptoms in the gastro-enterostomy cases varied from one month to nineteen years, while the duration of symptoms in the pyloroplasty cases varied between one and one-half months to twenty-five years. In the gastro-enterostomy cases the symptoms appeared in the following proportions; pain in 90 per cent.; vomiting in 65 per cent.; hematemesis in 23 per cent.; melena in 44 per cent.; retention in 36 per cent.; while in the pyloroplasty cases pain was present in 92 per cent. of cases; vomiting in 64 per cent.; hematemesis in 21 per cent.; melena in 46 per cent.; retention in 42 per cent. In the gastro-enterostomy series the ulcer cases are arranged as follows: There are 46 cases of gastric ulcer, 38 duodenal ulcers. In the pyloroplasty cases there were 55 cases of gastric ulcer and 32 duodenal ulcers. In 67 of the gastro-enterostomy patients operated on for obstruction 44 were due to gastric ulcer, 14 to duodenal ulcer, and 9 to adhesions, while pyloroplasty was performed for obstruction in 64 instances: for gastric ulcer in 51, for duodenal ulcer in 7, and in 6 for adhesions.

In the gastro-enterostomy cases secondary operations were performed in four instances to correct immediate difficulties, while in the pyloroplasty cases secondary operations were required in the same number of instances for a similar purpose. After gastro-enterostomy satisfactory results were secured in 82 per cent. of cases, and unsatisfactory in 18 per cent., while pyloroplasty was immediately successful in 90 per cent. of cases and unsatisfactory in 10 per cent. There were seven deaths, following immediately on the operation of gastro-enterostomy, while but five deaths followed pyloroplasty. Of the seventy-seven cases of gastro-enterostomy followed during the first year of the operation the results were satisfactory in 84.4 per cent. and unsatisfactory in 15.6 per cent., while of the eighty-two cases of pyloroplasty the results were entirely satisfactory in 93.9 per cent., and unsatisfactory in 6.1 per cent. Of the gastro-enterostomy cases, numbering seventy-four, followed after the first year of operation, the results were satisfactory in 84.2 per cent., and unsatisfactory in 15.8 per cent., while of the pyloroplasty cases, numbering seventy-eight, the results were satisfactory in 93.6 per cent., and unsatisfactory in 6.4 per cent. The end results in the gastro-enterostomy cases showed a percentage of 77.2 per cent. of satisfactory recoveries, while the pyloroplasty cases showed a percentage of 88.6 per cent. It is quite evident from this study that the immediate as well as the final results are clearly in favor of pyloroplasty. The only indications in favor of gastro-enterostomy are, in those instances in which there is an inability to mobilize the duodenum when adhesions are too dense, and in those cases in which there is a thickening and infiltration about the pylorus due to hypertrophic ulceration, conditions, however, which in their experience occur but rarely.

6. Abstracted in The Journal, July 3, 1915, p. 150.

7. **Treatment of Diabetes.**—The method which has been employed by Joslin in the treatment of these cases has been similar to that recommended and described by Allen. The more closely his directions have been followed the better the patients have done. No patient has required more that five days to become sugar-free. Many patients became sugar-free after the omission of three or four meals. Patients are put to bed and the plan of treatment is carefully explained to them. They are furnished with notebooks in which answers to their questions are recorded, taught the use of a diet card and how to examine the urine for sugar with Benedict's solution. So far, no patient whom Joslin has taught to test his own urine during the last year has died. He is coming to feel that coma no longer represents the culmination of the disease, but that it is an avoidable accident.

10. **Splenic Enlargement in Syphilis.**—One hundred cases of early syphilis were studied by Wile and Elliott. Of these nine cases were primary syphilis alone, the remaining ninety-one were cases in the first months of the infection, for the most part with cutaneous or mucous membrane involvement. Of the 100 cases examined, definite splenic enlargement was found in thirty-six. The spleen was noted as being hard and firm in seventeen cases, in six it was noted as tender, and in three as soft. Of the thirty-six positive cases the general health was definitely affected in twenty-seven and the remaining nine showed no impairment of the general functions. Severe involvement of the general health was found in four cases. This entailed in one case a loss of 50 pounds in weight. Expressed in terms of percentage, 78 per cent. of those cases in which the spleen was enlarged were cases in which the general health suffered considerable deterioration. On the other hand, it must be noted that the general health was affected in 22 per cent. of the cases in which enlargement of the spleen was not present. Definite involvement of bone, including under this heading ostalgia, arthralgia, periostitis, and arthritis, was found in fifteen of the thirty-six cases, or in 41 per cent.

Of the twenty-five cases in which both the neurologic examination and the spinal fluid was studied, nineteen showed definite involvement of the nervous system. Nineteen occurred coincident with a papular efflorescence; sixteen cases of the thirty-six had associated mucous membrane findings, four had alopecia. In two out of the nine primary cases the spleen was definitely palpable; in both of these there was, as yet, no general adenitis, nor was there any sign of hematogenous infection. In twenty-seven cases in which counts were made fourteen showed a leukocytosis of over 10,000, and of forty cases in which blood examinations were made and in which no splenic tumors are demonstrable, sixteen had a leukocytosis of over 10,000. With regard to the type of the splenic enlargement, by far the largest number were firm and readily palpable. The average enlargement extended about two finger breadths below the costal margin. The softer spleens, of which there were nineteen in the series, presented fully rounded margins, and were distinctly of the type that one encounters in typhoid and other acute infections. The incidence of pain and tenderness on pressure were noted in six cases, in one, at least, pain was noted as exquisite. In this case, however, although the enlargement persisted for a considerable time, the pain was promptly relieved by the antisyphilitic treatment.

12. **Appendicitis as Sequela of Tonsillitis.**—The following points are emphasized by Anderson. The importance of bearing in mind the liability of appendicitis to follow acute tonsillitis. That the appendicular involvement may be only part of generalized infection, hence the gravity of such cases is out of proportion to the local symptoms. The tendency for such cases to be atypical in their clinical course, and after smouldering, to suddenly develop fulminating symptoms. Chronic tonsillar infections should be kept in view as the possible cause of similar infections of the appendix. That whereas at least some degree of local tenderness and rigidity are almost always to be elicited on careful examination of the abdomen in the right iliac region in acute appendicitis, in rare cases these signs may be absent.

17. **Respiratory Signs in Trichinosis.**—One hundred and two cases of trichinosis are reviewed by Minot and Rackemann. The diagnosis in 70 per cent. of these cases was made by finding the embryo in excised pieces of muscle or in the blood; in 5 per cent. no parasite was found, but the muscle showed a histologic picture of a myositis such as is found when trichinae are present; in 25 per cent. by the history, symptoms, and physical signs, and the eosinophilia which varied from 13 to 63 per cent. of the total leukocyte count. All of the 102 patients recovered except one and it should be noted that although this patient had moderate dyspnea, no abnormal physical signs in the lungs were detected. In 50 per cent. of the 102 cases studied there is no mention of cough or abnormal lung signs at any time during the course of the disease, but in the remaining 50 per cent., sixteen patients (15.6 per cent.) had cough without abnormal physical signs in the lungs, while seventeen (16.6 per cent.) had cough with abnormal lung signs, making thirty-three patients (32.3 per cent.) that had cough beginning from one to twelve days (usually two to six) after the onset of the disease and lasting three to twenty-five days or thoughout the course of the illness; eighteen patients (17.6 per cent.) had abnormal signs in the lungs without cough, making thirty-five patients (34.5 per cent.) that had abnormal physical signs in the lungs. These physical signs were present within forty-eight hours after the patient entered the hospital in thirty-two cases (31.5 per cent.), and in three cases (2.9 per cent.) within six days. The duration of these signs seemed to depend on the length of time the temperature remained elevated, the signs disappearing as the temperature fell. If the signs were slight they existed as a rule, but for a few days, and only at the height of the fever. Nine cases (8.8 per cent.) showed respiratory signs or symptoms, or both, severe enough to lead to a serious consideration or actual diagnosis of a purely pulmonary condition during the first few days the patients were in the hospital.

18. **Myocardial Efficiency.**—In the estimation of myocardial efficiency, Schoonmaker says, systolic blood pressure and pulse pressure variations together with changes in pulse rate in relation to postures and light exercise have positive value. Under the test described, an increase in systolic pressure together with a stationary or increased pulse pressure is suggestive of fairly good myocardial efficiency. A decrease in systolic pressure together with a decrease in pulse pressure is suggestive of poor to bad myocardial efficiency. In these determinations Schoonmaker takes the pulse, systolic blood pressure and diastolic blood pressure with the patient reclining and fully relaxed; then he has him walk at his ordinary speed about 75 feet and repeat the test in the standing position. This exertion is not sufficient to cause such subjective symptoms as dyspnea, palpitation, or chest pain unless the heart muscle be much impaired. It should not do this. It is a postural test plus only sufficient exertion to mildly stimulate the cardiovascular system.

American Journal of Roentgenology, Detroit

May, II, No. 7, pp. 749-792

19 Roentgen Signs of Gastrojejunal Ulcer — Some Suggestion as to Technic of Examination; Report of Two Cases. R. D. Carman, Rochester, Minn.
20 Monoosteitic Form of Paget's Disease of Bone. S. H. Hurwitz and G. L. Carr, Boston.
21 Massive Versus Fractional Dose in Roentgentherapy. A. M. Cole, Indianapolis.
22 Pulmonary Roentgenology. A. W. Crane, Kalamazoo.
23 Simple Contrivance for Reducing Pott's Fractures or Any Lateral Dislocation of Ankle Joint. A. McLean, Detroit.
24 Improvement in Technic of Gallbladder Diagnosis. G. E. Pfahler, Philadelphia.
25 Demonstration of Salivary Calculi. P. M. Hickey, Detroit.

Arkansas Medical Society Journal, Little Rock

September, XII, No. 4, pp. 91-113

26 Adiposis Dolorosa. C. H. Cargile, Bentonville.
27 Endotoxin Reaction. E. H. Martin, Hot Springs.
28 Old Man and His Prostate. J. P. Runyan, Little Rock.
29 Successful Removal of Nail from Right Bronchus of Sixteen-Month-Old Baby. R. H. T. Mann, Texarkana.
30 Measles and Its Complications; Report of Cases. E. H. Hunt, Clarksville.

Boston Medical and Surgical Journal

September 23, CLXXIII, No. 13, pp. 451-488

31 Localizing Needle Fragments in Tissues of Body by Means of Magnetism. G. H. Monks, Boston.
32 *Acute Perforation of Ulcers of Stomach and Duodenum. I. J. Walker, Boston.
33 Traumatic Rupture of Duodenum and Duodenal Fistula; Report of Case. D. Checver, Boston.
34 Cholelithiasis. Argument for Early Operation. J. C. Hubbard, Boston.
35 Acute Pancreatitis; Case Reports. C. E. Durant, Haverhill.
36 Proper Classification of Borderline Mental Cases among Offenders. V. V. Anderson, Boston.
37 *Relation between Genetic Factors and Age of Onset in One Hundred and Fifty-Seven Cases of Hereditary Epilepsy. D. A. Thom, Palmer.
38 Case of Epidemic Typhus Imported into Central New York. I. H. Levy and J. L. Kantor, Syracuse.
39 Blood Pressure. C. Phipps, Boston.

32. **Perforation of Ulcers of Stomach and Duodenum.**—The cases on which Walker's paper is based were gathered

from the surgical records of the Boston City Hospital for the years 1905 to 1914, inclusive. The series covers seventy-eight cases, operated on by seventeen surgeons. The technic was, in general similar, and the operative results practically the same. Males were found to have been affected more frequently than females, in the proportion of 12 to 1. A definite alcoholic history was given in 66.6 per cent. Of those who succumbed 78 per cent. used alcohol in more than moderation. The site of the perforation was found to have been in the stomach in forty-two cases, and in the duodenum in thirty-six cases. The perforations of the stomach were invariably located within 1½ inches of the pylorus. In all except two, the site was on the anterior wall, and generally nearer the lesser curvature. The perforations of the duodenum were all found on the anterior wall except one.

In this series the peritoneal cavity was generally irrigated in twenty cases, with nine deaths and eleven recoveries. All the cases irrigated showed a peritonitis more or less marked. Of those cases showing peritonitis, which were not irrigated, there were nine, with five deaths. In twenty-nine cases in this series, cultures were taken from the fluid in the peritoneal cavity. Of these, fourteen showed bacterial growth, and fifteen were negative. Peritonitis was the cause of death in fourteen of the twenty-one cases. Occasionally it resulted in a localized abscess in the pelvis, right lower quadrant, or subphrenic region. Postoperative hemorrhage and shock were the cause of death in three instances. Pneumonia occurred six times, with four deaths. The other complications recorded were pleurisy with effusion, and abscess of the lung with recovery in each case. In this series of cases, there were fifty-seven recoveries and twenty-one deaths, a mortality of 26.9 per cent. Of those who recovered the average duration of the perforation was fourteen and one-half hours, and of those who died thirty-seven and one-third hours. Seventeen were operated on during the first four hours and all recovered. Of those operated on from five to twelve hours after perforation, the mortality was 17.9 per cent.; of those operated on from thirteen to twenty-four hours, 47.6 per cent.; and of those from twenty-five to forty-eight hours, 66.2 per cent. Ten were operated on after forty-eight hours, with five deaths and five recoveries. Of those who recovered each had a walled-off abscess, and not a generalized peritonitis, thus accounting for the recoveries.

37. **Hereditary Epilepsy.**—One hundred and fifty-seven cases were studied by Thom to determine the relation between the hereditary factor in the forebears and the age of onset of the epilepsy in the offspring. One hundred and twenty-six cases had direct heredity (that derived from parents or grandparents), and thirty-one cases had collateral heredity (that shown in members of the family other than parents or grandparents). There were 293 heredity defects in the 157 cases, occasionally one member of the family having more than one defect, and in other instances two or more relatives being defective. Ninety-six (61 per cent.) of the cases gave a family history of but one defect; forty-seven (30 per cent.) had two defects and the remaining fourteen cases (9 per cent.) had three or four defects. Epilepsy was met either alone or in combination eighty-eight times (57 per cent.), alcohol fifty-nine times (38 per cent.), insanity forty-three times (27 per cent.), migraine thirty-seven times (24 per cent.), and feeblemindedness sixteen times or 10 per cent. of the total number of cases. In 95 per cent. of the cases in which alcohol, migraine or feeblemindedness was the defective factor the heredity was direct, while only 56 per cent. of epilepsy and insanity came from the forebears. In seventy of the ninety-six cases, or 73 per cent., the heredity was direct, in the remaining twenty-six cases, collateral; in twenty-five of this latter group the mental defect was either epilepsy or alcohol.

Colorado Medicine, Denver

September, XII, No. 9, pp. 247-281

40 Tuberculin Treatment. J. F. McConnell, Colorado Springs.
41 Dietary Studies in Institutions for Tuberculous Patients in State of Colorado. C. D. Spivak, Denver
42 Typical and Atypical Cases of Addison's Disease. G. H. Cattermole, Boulder.
43 Death from Hemorrhage Following Peritonsillar Abscess. T. E. Carmody and W. C. Finnoff, Denver.
44 Subperiosteal Abscess of Maxillary Sinus. A. R. Solenberger, Colorado Springs.
45 Pellagra Curable Disease. M. O. Shivers, Colorado Springs.
46 Refraction and Convergent Strabismus. W. H. Crisp, Denver.
47 Case of Rocky Mountain Spotted Fever. C. H. Farthing, Meeker.

Georgia Medical Association Journal, Augusta

September, V, No. 5, pp. 105-126

48 Syphilitic Disease of Nervous System. L. M. Gaines, Atlanta.
49 Intravenous Injection of Bichlorid of Mercury in Treatment of Syphilis. J. T. Stukes, Americus.
50 Diagnosis of Syphilis and Parasyphilis from Standpoint of Laboratory. A. H. Bunce, Atlanta.
51 Syphilis of Stomach and Intestines; Report of Cases. L. C. Fischer, Atlanta.
52 Venarsen. E. P. Merritt, Atlanta.

Journal of Biological Chemistry, Baltimore

September, XXII, No. 2, pp. 241-432

53 Protein Minima for Maintenance. T. B. Osborne and L. B. Mendel, New Haven, Conn.
54 Some Products of Hydrolysis of Gliadin, Lactalbumin and Protein of Rice Kernel. T. B. Osborne, D. D. Van Slyke, C. S. Leavenworth and M. Vinograd, New York.
55 Improvements in Method for Analysis of Proteins by Determination of Chemical Groups Characteristic of Different Amino-Acids. D. D. Van Slyke, New York.
56 Oxalic Acid Producing Penicillium (P. Oxalicum). J. N. Currie and C. Thom, Washington, D. C.
57 *Hexone Bases of Malignant Tumors. R. A. Kocher, San Francisco.
58 Colorimetric Method for Determination of Phenols (and Phenol Derivatives) in Urine. O. Folin and W. Denis, Boston.
59 Excretion of Free and Conjugated Phenols and Phenol Derivatives. O. Folin and W. Denis, Boston.
60 Selective Activity of Human Kidney. O. Folin and W. Denis, Boston.
61 Qualitative (Reduction) Test for Sugar in Normal Human Urine. O. Folin, Boston.
62 On *d*-Lyxohexosaminic Acid and On *a* a_1-Anhydromucic Acid. P. A. Levene and F. B. La Forge, New York.
63 Action of Aseptic Tissue on Glucosone. P. A. Levene and G. M. Meyer, New York.
64 Acidity of Undiluted Normal Gastric Juice from Case of Human Gastric Fistula. M. L. Menten, Chicago.
65 Spectroscopic Examination of Color Reactions of Certain Indol Derivatives and of Urine of Dogs after Their Administration. A. Homer, Toronto.
66 Method for Estimation of Tryptophan Content of Proteins, Involving Use of Baryta as Hydrolyzing Agent. A. Homer, Toronto.
67 Relation between Administration of Tryptophan to Dogs and Elimination of Kynurenic Acid in Their Urine. A. Homer, Toronto.
68 *Dextrose and Diastase Content of Blood as Affected by Ether Anesthesia of Animals Fed on Different Diets. E. L. Ross and H. McGuigan, Chicago.
69 Peptone Hypoglycemia. H. McGuigan and E. L. Ross, Chicago.
70 Kyrine Fraction Obtained on Partial Hydrolysis of Proteins. P. A. Levene and J. van der Scheer, New York.

57. **Hexone Bases of Malignant Tumors.**—In five cases of malignant tumor examined by Kocher the quantity of hexone bases was approximately double that found in normal tissue. He says that these results suggest a new approach to the study of the cancer problem, especially as it relates to metabolism. Whether such high percentages of the hexone bases is a peculiarity of malignant tumors, or whether such an increase will be found in normal rapidly growing tissue is a problem now under investigation by Kocher.

68. **Dextrose and Diastase Content of Blood.**—Ten dogs were fed on a mixed diet for a period of about a week. At the end of that time they were anesthetized for two hours. The dextrose and diastase contents of the blood were determined at intervals before and during the anesthesia. The animals were then fed on a meat diet for a similar period, and the sugar and dextrose determinations made as before, during and after ether anesthesia, in such a way that the concentration of each could be directly compared. The results indicate the following: Ether anesthesia causes a hyperglycemia, which is greater in dogs fed on a pure meat diet than on a diet including carbohydrate. Ether itself, and not asphyxia or excitement, is responsible for the greater part of the blood sugar change. Ether anesthesia does not increase the diastatic power of the blood serum. The diastase concentration of the blood is on the average higher in animals which have been fed on a meat diet than on a mixed diet.

Journal of Medical Research, Boston

September, XXXIII, No. 1, pp. 1-145

71 *Study of Experimental Diabetes in Canine and Its Relation to Human Diabetes. J. Homans, Boston.
72 *Study of Scharlach R Reaction and of Allied Forms of Epithelial Proliferation. F. D. Bullock and G. L. Rohdenburg, New York.
73 *Primary Melanosarcoma of Suprarenals. W. W. G. Maclachlan, Pittsburgh.
74 *Filterability of Trypanosomes. S. B. Wolbach, W. H. Chapman and H. W. Stevens, Boston.
75 Cholesterol Content of Cerebrospinal Fluid. P. G. Weston, Warren, Pa.
76 *Action of Benzol. Significance of Myeloid Metaplasia by Spleen. H. G. Weiskotten, S. C. Schwartz and H. S. Steensland, Syracuse, N. Y.
77 Blood Picture of Healthy Rhesus Monkeys. J. F. Anderson, and M. H. Neill, Washington, D. C.

71. **Experimental Diabetes in Canine.**—The progress of experimental diabetes in the canine, though extremely rapid in comparison with the chronic course of diabetes in man, Homans says, resembles it in many respects. The administration of carbohydrate food intensifies the waste of dextrose and hastens the progress of both diseases. In both, the body becomes emaciated by burning as many of its own tissues as are available. In both, there is a tendency to a fatal outcome. The life of a human diabetic, however, is lengthened if the individual is kept free, by dietary measures, from carbohydrate waste (glucosuria). A similar observation is suggested by the experimental observations of Homans, and has been actually demonstrated by Allen and applied by him with encouraging evidence of success in man. Homans believes, therefore, that experimental and human diabetes are, therefore, strikingly alike. The experimental disease is due to a functional deficiency on the part of the islands of Langerhans. Diabetes of man, in the author's opinion, has in all probability a similar immediate etiology.

72. **Study of Scharlach R Reaction.**—The experimental data obtained by Bullock and Rohdenburg lead them to draw the following conclusions: The Scharlach R reaction is a reparative process, acting under conditions of prolonged disturbance of mechanical equilibrium between epithelium and connective tissue, and dependent for its inception and continuation on irritation and cell death. The contact with epithelial cells of a chemical irritant of slow absorbability and relative mild toxicity is indispensable for the production of the reaction. The chemical owes its power of inducing epithelial proliferation, not to its solubility in lipoids, but to its ability to cause continuously a certain amount of tissue death. Cessation of epithelial proliferation occurs before the absorption of the foreign substance and indicates the return of equilibrium after the performance of the new task imposed on the tissues. The character and extent of the reaction are independent of the amount of blood circulating in the tissues. The degree of reaction depends on the surface area of epithelium exposed to the irritant. Scharlach R exerts no specific stimulating action on epithelial cells. The attraxine hypothesis of Fischer is untenable. Metaplasia is a frequent occurrence in the tissue of the ear, breast, prostate, and lung, after the injection of a chronic irritant of the type used in their experiments.

73. **Primary Melanosarcoma of Suprarenals.**—A case of primary melanosarcoma, arising in the suprarenal glands is reported by Maclachlan. The tumor was bilateral and almost symmetrical. A complete necropsy was performed and a most exhaustive search failed to demonstrate any primary neoplasm in the skin, choroid, or meninges. Scattered in the deep subcutaneous tissues of the trunk and upper extremity were many movable nodules. No mole could be found on the skin, nor did any of the tumor masses present at the surface. A pigmented tumor was found in each parietal bone, and innumerable nodules were present in the brain substance and pons and medulla. A single small nodule appeared in the falx cerebri but none were found in the leptomeninges. The eyes and optic nerves were carefully examined and found to be free from tumor. The accessory structures of the brain were normal. In the thorax a pigmented tumor was found in a mediastinal gland and a single small mass the size of a marble was present in the right lung. The heart showed the presence of multiple small pigmented tumors in the musculature of the right auricle and ventricle and in the left auricle.

Examination of the abdomen showed scattered nodules beneath the peritoneum of the abdominal wall, tissues of the mesentery, liver, bowel and other viscera. Three large masses of tumor were also found, one on each side directly above the kidney in the region of the suprarenals. Each of these masses was the size of an orange. The third mass was lying posteriorly in the midline near the cardia of the stomach and attached to the left lobe of the liver. This mass was as large as a grape fruit, and its anterior surface was adherent to the stomach along the lesser curvature. On its posterior surface the mass showed a tear in its capsule and the tumor tissue was also torn. From these parts the peritoneal bleeding had its origin. Elsewhere, the tumor, which was intensely black, was covered by a thin capsule. The great omentum contained a number of nodules the size of cherries. Many of the glands in the mesentery were invaded by black growths. Tumor masses were seen through the capsule of the liver. The gallbladder showed six small, pedunculated black tumor masses at the fundus. The bile ducts were clear. Several small encapsulated black masses about 1 cm. in diameter, were seen in the pancreas, and also in the loose connective tissue and lymph glands about the organ. A single nodule was present in the spleen.

Each kidney was of about the usual size and was surrounded by a thick layer of fat, in which were studded many small black tumors. There were no tumor masses in the kidney substance proper and both organs were normal in appearance. Over the upper pole of the left kidney and in the region of the suprarenal was a large and intensely black tumor mass, 10 by 8 by 4 cm. On section the tumor was more or less lobulated and its tissues were soft and friable. It was surrounded by a thin capsule and sharply separated from the kidney substance. No remains of suprarenal substance could be found. From the renal vein, a vessel passed over the face of the tumor and entered it at the apex. Over the right kidney, in the region of the right suprarenal, was another tumor 10 by 9 by 4 cm. This tumor mass was similar in every way to the other on the left side. The right suprarenal gland could not be recognized in the tumor mass. A black tumor mass the size of a walnut was seen projecting into the cavity from the wall of the bladder at the fundus. The genital organs, rectum, and anus were without change. Microscopically the tumor differed in no way from the usual melanosarcoma which arises in the skin or in the choroid.

74. **Filterability of Trypanosomes.**—The authors found that trypanosomes from cultures and from animal tissues are not filterable through bacteria-proof filters.

76. **Action of Benzol.**—Following the subcutaneous administration of equal parts of olive oil and benzol in rabbits, the authors found that there occurs a rapid decrease in the number of leukocytes in the peripheral circulation. Following this primary fall in the leukocyte curve there occurs a primary rise, which is, in each instance, followed by a secondary fall before a permanent rise to a normal level. The primary and secondary falls in the leukocyte curves are accompanied by a marked decrease in the percentage of polynuclear leukocytes, indicating that the polynuclear leukocytes are especially affected after the injections. Coincidentally with the primary fall in the leukocyte curve, there occurred, in two thirds of the cases, a moderate but definite fall in the erythrocyte curve. The erythrocyte curve appears to progress independently of the leukocyte curve after the primary fall, and in the majority of instances remains unaffected during the secondary fall in the leukocyte curve. This fall in the erythrocyte curve was usually followed by a rise. In rabbits in which the injections are begun two days and six months respectively after splenectomy, the leukocyte and erythrocyte curves are essentially the same as in the nonsplenectomized rabbits which receive like injections, and the duration of the periods of regeneration is essentially the same. The differential counts on the nonsplenectomized animals and those animals splenectomized two days and six

months previously, show no essential differences, and the blood-cell picture is otherwise the same.

The authors are of the opinion that these observations on the leukocyte and erythrocyte curves indicate that in the rabbit the spleen serves no essential function in the destruction of leukocytes and erythrocytes, following subcutaneous injections of the olive oil-benzol mixture, or in their subsequent regeneration. Any destructive or regenerative function that it has is quickly assumed by some other part of the body when the spleen is removed. "Myeloid metaplasia" of the spleen is of no great importance as a compensatory phenomenon, and regeneration, as represented by the blood count, takes place at least as quickly in the absence of the spleen.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

September, XLII, No. 9, pp. 593-656

78 *Feebly Inhibited. Violent Temper and Its Inheritance. C. B. Davenport, Washington, D. C.

78. **Feebly Inhibited.**—A study was made by Davenport of 165 family histories of wayward girls in state institutions. The study of the data obtained lead the author to the following conclusions: The tendency to outbursts of temper—"tantrums" in adults—whether more or less periodic or irregular, and whether or not associated with epilepsy, hysteria, or mania, is inherited as a positive (dominant) trait, typically does not skip a generation and tends, ordinarily, to reappear, on the average, in half of the children of an affected parent. It would seem to follow from the data presented that epilepsy, hysteria, and mania are not the causes of the violent tempers, frequently accompanying them; the violent outbursts are in no clear sense the "equivalent" of these various psychoses. Rather, the violent outbursts of temper are due in all these associations to a factor that causes periodic disturbance (possibly, paralysis of the inhibitory mechanism?). This factor has the greatest effect when acting on a nervous system that is especially liable to show the other psychoses. In other words, "tantrums" are apt to be associated with these various neurotic conditions, while they have no necessary connection with them.

Kansas Medical Society Journal, Topeka

September, XV, No. 9, pp. 267-298

79 Diagnosis of Gastric Ulcer by Roentgen-Ray. R. D. Carman, Rochester, Minn.
80 Surgical Treatment of Chronic Ulcers of Stomach. E. H. Beckman, Rochester, Minn.
81 Treatment of Syphilogenous Diseases of Nervous System with Salvarsanized Serum. P. B. Matz, Leavenworth.
82 Acute Intestinal Obstruction. H. L. Charles, Atchison.
83 Progress in Infant Feeding. C. Stein, Glasco.

Lancet-Clinic, Cincinnati

September 4, CXIV, No. 10, pp. 201-220

84 Medical Inspection of Immigrants. J. H. Oakley, Washington, D. C.
85 Can Skin Diseases Be Driven into System by Local Treatment? M. Scholtz, Cincinnati.

Medical Record, New York

September 25, LXXXVIII, No. 13, pp. 509-550

86 An Adult with Status Thymicolymphaticus of Heterosexual Chromaffin Type. H. A. Houghton, Bayside, Long Island.
87 Idiopathic Hemorrhagic Multiple Sarcoma of the Skin (Kaposi). F. Wise, New York.
88 Amputation of Great Toe; Muscular Physiology of Lower Extremity. J. C. Schapps; Butte, Mont.
89 Single Stitch Appendectomy. W. F. Fowler, Rochester.
90 Neuritis, Modern American Disease. T. M. Anderson, England.
91 Treatment of Gallstone Disease. O. Lerch, New Orleans.
92 House Infection, Potent Source of Tuberculosis. I. W. Brewer, Geneva.
93 Hardening of Consumptives. H. B. Masten, Cimarron, N. M.

New York Medical Journal

September 25, CII, No. 13, pp. 641-688

94 Micro-Organismal Cardiovascular Toxins. R. N. Willson, Philadelphia.
95 Prostatic Calculus. F. Huber, New York.
96 High Blood Pressure; Treatment by Means of Muscular Relaxation. M. Grossman, New York.
97 *Improved Method for Repair of Lacerated Perineum. H. A. Bernstein, New York.
98 Two Way Stopcock for Intravenous and Intraspinal Injections and as Aspirating Syringe. J. Roby, Rochester.
99 Recent Progress in Ether Administration. W. O. Weiskotten, Utica.
100 Gallbladder Disease. M. G. Wohl, Omaha.
101 Erythremia; Report of Case. R. R. Mellon, Ann Arbor, Mich.
102 Blood Urea in Renal Conditions. A. J. Underhill, Baltimore.
103 Case of Cancrum Oris Treated with Neosalvarsan. A. G. De Sanctis, New York.
104 Harrison and Boylan Laws. M. Zagat, New York.

97. **Improved Method for Repair of Lacerated Perineum.**—Bernstein believes it to be a mistake in technic, to raise these flaps of mucous membrane and fascia from the center of the wound; as by so doing, the tear is deepened, the vagina is shortened, and the trauma is increased. The circulation already established is interfered with, the amount of blood and serum naturally thrown into the wound is multiplied, edema and sloughing are encouraged, infection is invited, and healing is retarded. He catches up the tissues at the entrance of the vagina, just below the lowest caruncle on either side, and separates the labia, making an incision along the crescentic border created between these points. Next, he says, separate slightly the edge of the mucous membrane from its underlying fascia. Then make an incision into the fascia, following the same line as the first one, and raise the fascia slightly from its bed. With artery clamp or suture, draw down the central point of the lower cut edge of the wound, which makes a central ridge, corresponding to the deepest part of the original tear. With blunt scissors or finger, make an opening on either side into the exposed connective tissue, leaving the center intact, and the strands of the levator muscle can easily be brought into view. Catch up the strands of the levator muscle on either side, bringing them out of the wound and together in front of the central ridge, with three or four chromic catgut sutures. Close triangles like a book, by bringing the original guiding sutures together. Suture first the vaginal side of the wound, comprising mucous membrane and fascia, from within outward, with a continuous suture. Having tightened the vaginal stitches and buried sutures, there now remains merely a straight line of fascia and skin, extending downward from the lowermost point of the vagina to the bottom of the tear, to be sutured in separate layers, with such material as the operator may select.

Ophthalmic Record, Chicago

September, XXIV, No. 9, pp. 439-490

105 Preventive and Curative Treatment of Pneumococcal Ulcer of Cornea. A. M. Ramsay, Glasgow.
106 Case with Foreign Body Located in Lens. F. W. Alter, Toledo.
107 Progress in Treatment of Cataract in India. H. Smith, Amritsar, India.
108 Report of Case of Mirror-Writing. F. P. Calhoun, Atlanta, Ga.
109 Errors of Refraction and Their Average Frequency. A. C. Durand, Ithaca, N. Y.
110 Unusually Happy Result Following Removal of Intra-Ocular Foreign Body which had been in Eye Nearly Four Months. C. R. Elwood, Menominee, Mich.

Providence Medical Journal

September, XVI, No. 5, pp. 237-292

111 Chronic Acid Gastritis, Gastric Erosions and Ulcerations. A. M. Burgess, Providence.
112 Prostate. J. E. Kerney, Providence.
113 Importance of Early Diagnosis in Gynecologic Surgery. W. L. Chapman, Providence.
114 Carelessness in Physical Examinations for Life Insurance. W. H. Peters, Providence.

Washington Medical Annals

September, XIV, No. 5, pp. 281-296

115 Case of Thrombosis of Coronary Artery. B. M. Randolph, Washington, D. C.

West Virginia Medical Journal, Wheeling

September, X, No. 3, pp. 73-108

116 Clinical Study of Uterine Hemorrhage. T. A. Ashby, Baltimore.
117 Glaucoma. J. L. Dickey, Wheeling.
118 Diagnostic and Therapeutic Value of Roentgen Ray. R. H. Pepper, Huntington.
119 Pulmonary Tuberculosis; Diagnosis and Treatment. E. F. Peters, Maybeury.
120 Evolution of Surgery. G. A. MacQueen, Charleston.
121 Plea for Justice to Patient. W. R. Hudson, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

September, XII, No. 141, pp. 257-288

1 Education of Children with Defective Vision. To be continued. N. B. Harman.
2 Lymphocytomatosis or Lymphoblastomatosis, Especially of Kidneys. F. P. Weber.
3 *Congenital Heart Disease and Ulcerative Sore Throat. J. D. Rolleston.

3. **Heart Disease and Ulcerative Sore Throat.**—In the heart of a male infant, aged 11 months, who died from bronchopneumonia, the following anomalies were present: (1) Transposition of the great arterial stems, the aorta arising from the infundibulum of the right ventricle and the pulmonary artery from the left ventricle. The walls of the right ventricle were considerably hypertrophied, being almost as thick as those of the left. Both ventricles entered into the formation of the apex. (2) Marked deficiency of the interauricular septum, which was represented by a narrow band 1.5 cm. long by 0.5 cm. broad. The foramen primum lay anterior to it, and posteriorly there was a widely patent foramen ovale. (3) An interventricular foramen, 1.2 cm. in diameter in the "undefended space." (4) Stenosis and hypoplasia of the pulmonary artery, which had only two cusps. No gross changes were found in the other organs.

British Medical Journal, London

September 4, II, No. 2853, pp. 353-388

4 Educational Number.

Dublin Journal of Medical Science

September, III, No. 525, pp. 161-240

5 Acidity and Alkalinity as Applied to Physiology; Theory of Colored Indicators. W. G. Smith.
6 Creatin and Creatinin. B. A. McSwiney.

Glasgow Medical Journal

September, LXXXIV, No. 3, pp. 161-239

7 Medical Conditions in Glasgow One Hundred Years Ago. A. J. Ballantyne.
8 Hematuria; Its Causes and Diagnosis. D. Newman.
9 Use of Pituitary Extract in Obstetric Cases. W. D. Macfarlane.

Indian Medical Gazette, Calcutta

August, L, No. 8, pp. 281-320

10 Results of Treatment of Sixty-Nine Cases of Cholera by Rogers' Method. J. A. Sinton.
11 Morphin Injector's Septicemia (Whitmore's Disease). H. H. G. Knapp.
12 Outbreak of Anthrax. McCombie.
13 Year's Surgery at Secunderabad Civil Hospital. C. H. Brodribb.
14 Surgical Notes from Madras Hospital. W. J. Niblock.
15 Florence's Reaction—Neglected Test for Seminal Stains. S. N. Goré.
16 Case of Raynaud's Symmetrical Gangrene. K. T. Vora.
17 Progressive Muscular Dystrophy. N. L. Mookerjee.
18 Pocket Electroscope. F. D. Bana.

Journal of Laryngology, Rhinology and Otology, London

September, XXX, No. 9, pp. 329-384

19 External Operation on Frontal Sinus. R. H. Skillern.
20 *Shoulder-Arm-Hand Syndrome of Paranasal Sinus Disease. J. C. G. Macnab.
21 Herpes Zoster Oticus Combined with Recurrent Laryngeal Paralysis. D. McKenzie.
22 *Acute Ulcerative Tonsillitis Associated with Virulent Pyorrhea Alveolaris. A. Ryland.

20. **Shoulder-Arm-Hand Syndrome of Paranasal Sinus Disease.**—Macnab reports three cases presenting the shoulder-arm-hand syndrome described by Bliss. They occurred in males between the ages of 20 and 40, and all complained of the shoulder-arm-hand pain. One was sent on account of tonsillar pain of two years' duration, the upper limb pain having lasted over three years. Two of the patients had also occipital pain. The nasal cavity showed in one case septal deviation to the affected side with a crowded middle turbinate, and a faint trace of mucopus in the olfactory cleft. In the other two cases there was enlargement with polypoid degeneration of the mucous lining of the middle turbinate, but in these cases little pus was detected anteriorly even after shrinkage with epinephrin. However, all had sufficient evidence for an exploration of the posterior ethmoids and sphenoids which showed that the main pathologic condition was enlarged cystic cells easily broken down and lined with unhealthy and diseased mucous membrane. Exenteration of the posterior cells as completely as possible was carried out, while the whole anterior wall of the sphenoid was removed. Within a comparatively short time all acknowledged that their symptoms were decidedly better. It is difficult to account for this referred pain, at least anatomically, but that it does occur is evident from the reported cases.

22. **Ulcerative Tonsillitis Associated with Pyorrhea Alveolaris.**—Ryland's patient complained of sore throat, of sudden onset and of five days' duration. There was excavation of tissue in three or four separate and distinct areas on the buccal surface of each tonsil. The ulcerated edges were clear cut, but irregular, and surrounded a greyish sloughing base. The neighboring inflammatory areola was only slightly marked. There was no edema, little pain, and the fauces, palate and uvula were free from inflammatory change. The tonsillar lymphatic glands on each side were slightly enlarged. The nose revealed an extreme anterior deviation of the cartilaginous septum to the right side, probably of traumatic origin. The patient was a mouth breather. Syphilis was denied. The Wassermann test was not carried out. Solution of silver nitrate, 20 per cent., was applied daily to the ulcerated areas, which under this treatment began to improve, and healed almost completely by the seventh day. On the sixth or seventh day of treatment, there suddenly appeared an acute, virulent and rapidly progressing septic invasion of the gums of both upper and lower jaws. The gums rapidly became soft, spongy, and tender. Pus was seen to be freely exuding from between them and the teeth. The temperature rose.

There was headache, malaise, the patient was toxemic, and the decision was almost made to remove freely the infected teeth. Pure phenol and other remedies were used locally without effect. Eventually under the influence of hydrogen peroxid the infection left the mouth almost as suddenly as it had appeared. The pyorrhea lasted for eight days. No mercury or other antisyphilitic remedies had been given. A bacteriologic examination of the alveolar exudate during the height of the infection revealed a pure growth of a long-chained Gram-positive streptococcus, of unusually large size as regards the cell bodies. With methylene blue, there was definite bipolar staining. No cultural examination was made from the original lesion, but it would appear highly probable that the same organism was responsible for both the tonsillar and alveolar infections. A point of interest is the extreme rapidity with which the organism surrendered to hydrogen peroxid.

Lancet, London

September 4, II, No. 4801, pp. 529-586

23 Leprosy. C. M. O'Brien.
24 Phantom Aneurysms. S. West.
25 Treatment of Gunshot Wounds of Femur by Modified Thomas' Splint. C. Wallace and B. C. Maybury.
26 *Case of Undulant Fever Treated by Autogenous Vaccine. S. A. Owen and H. B. Newham.
27 *Use of Quinin in Treatment of Experimental Gaseous Gangrene. K. Taylor.
28 *Agglutination Reactions of Blood of Soldiers Inoculated Against Typhoid. D. I. Dakeyne.
29 Brain Lipoid as Hemostatic. A. D. Hirschfelder.
30 Economy in Food During War. A. K. Chalmers.

26. **Autogenous Vaccine in Undulant Fever.**—In the case cited by Owen and Newham an autogenous vaccine was prepared and an initial dose of approximately 200,000,000 organisms was administered on December 4. No ill effects followed the administration of this dose, and on the sixth it was seen that the temperature had fallen to normal, and with the exception of a slight rise to 99 F. on the evening of that day and two subsequent rises to 99, it remained practically at the normal point until December 12. It then commenced to mount again in the typical manner of undulant fever until the fifteenth, when a second dose of the vaccine was given (200,000,000), and up to Jan. 4, 1915, the temperature, beyond a few slight rises to about 99.2 remained fairly normal, and the patient showed marked improvement in his general condition. A third dose of vaccine was administered on December 24, as the temperature was a little irregular.

The patient expressed himself as feeling well as a result of the injections. Sweating was absent; he increased in weight and had a general feeling that he was improving markedly. On January 4 a fourth dose of vaccine was given, but on the fifth the temperature suddenly rose, accompanied by rigor, to 105, and a typical attack of lobar pneumonia developed. (At this time there were three acute cases of pneumonia near him in the ward.) The temperature fell by lysis and remained somewhat irregular till January 26 when it finally came down to normal and remained so until the patient's discharge on April 7. In all only four doses of the vaccine were administered. In view of the known inefficacy of ordinary medicinal preparations to in any way alleviate the symptoms or control the progress of this disease it is satisfactory to record that in this case improvement was obtained by the use of an autogenous vaccine. Previous reports of treatment with stock vaccines have not been encouraging.

27. **Quinin in Experimental Gaseous Gangrene.**—The results of Taylor's observations may be briefly summarized as follows: *A.* Quinin has shown a marked bactericidal activity against the gas bacillus. 1. It has inhibited its growth in vitro, in which it was ten times as effective as phenol. 2. It has reduced the mortality from gaseous gangrene in animals from 100 to 41 per cent. *B.* Quinin has shown strong laboratory evidence of value as a general antiseptic. 1. Its general bactericidal power was higher than that of phenol. It was especially effective in a menstruum of pus. 2. It did not damage healthy tissue in local injections of effective concentrations. It is known to produce local anesthesia, frequently a desirable result. 3. It produced no symptoms of intoxication in the animals treated. It was used in hypertonic solution. 4. It showed a strong antitryptic action in vitro. On the evidence of these experiments a 1 per cent. solution of quinin hydrochlorid is now being tried by Taylor for the treatment of gaseous gangrene and other infections. A report on the result of its use will be published later.

28. **Agglutination Reactions of Blood of Soldiers.**—The preliminary inquiry made by Dakeyne of which this paper gives a summary, deals chiefly with the power which the blood of persons inoculated with dead typhoid bacilli has to agglutinate the *Bacillus typhosus* and some allied bacilli and is based on the examination of 280 soldiers who had received one or more injections of antityphoid "vaccines" within the previous twelve months. The tests were made according to the Delépine method, with dilutions of approximately 1:20 in current work, controlled, when thought desirable, by further tests with exactly measured 1:30 dilutions. The time limit was in all cases two hours. The serums were tested against a typical *Bacillus typhosus,* also against *Bacillus paratyphosus* B, and a *Bacillus enteritidis* (7,160) obtained recently from a typical case of food poisoning. The men examined were under treatment in the Manchester military hospitals for either wounds or illness.

Over 80 per cent. of cases gave a definite reaction, while 16.4 per cent. gave no reaction. Further, a man inoculated twice has a much greater chance of developing and retaining a reaction than one inoculated only once. There is a gradual diminution in the reaction as the result of the lapse of time. This is especially marked at the end of the eighth month. Only one case out of nineteen examined within a month of inoculation was found negative. This man had been inoculated once only and his serum, though giving no reaction with the *B. typhosus* used, gave a marked reaction with a strain of the *B. paratyphosus* B. There was no history of paratyphoid infection. If this case be excluded, all those examined within a month of inoculation gave a reaction. It appears that after the end of the first month the reaction is liable to disappear rapidly. Seven men were examined who had not been inoculated within a year. Three, who had been inoculated from twelve to eighteen months previously, were negative; three others, inoculated once each, fourteen, twenty-four and forty-five months previously, respectively, gave strong reactions. One man inoculated five years before, gave a slight reaction. This suggests to Dakeyne that individual peculiarity may have an effect deserving consideration.

Archives de Médecine des Enfants, Paris

August, XVIII, No. 8, pp. 405-460

31 *Spastic Rigidity in Infants. J. Comby.
32 *Effectual Action of Fuchsin in Treatment of Impetigo and Suppurative Skin Disease in General. C. Ferreira.
33 Lymphogranulomatosis in Boy of Five. (Maladie de Sternberg.) Blanc.
34 Tuberculosis of the Liver in Infant Under Four Months. H. Barbier.
35 Congenital Deformity in Lower Segment of Spinal Cord. (La myelodysplasie de Fuchs.) J. Comby.

31. **Spastic Rigidity in Children.**—Comby is convinced that Little's disease can be traced to syphilis in some cases, to birth trauma in others, or to acute encephalitis, primary or secondary to infectious disease. In other cases its origin is unknown. He compares here the clinical pictures in thirteen cases of the typical form of Little's disease, seven of spastic rigidity entailed by acute encephalitis, and eighteen of obstetric origin.

32. **Fuchsin in Treatment of Pyodermitis.**—Ferreira has been much impressed with the benefit from local application of fuchsin in a number of cases of impetigo, intertrigo and other rebellious skin affections in infants. The details of twelve cases are given.

He uses the ordinary bacteriologic fuchsin stain, Ziehl's carbol-fuchsin solution, which he prepares by dissolving 1 part fuchsin in 10 parts alcohol, with 5 parts phenol and 100 parts distilled water. He has used this in hundreds of cases and never noted any signs of absorption of phenol, the urine never showing any disturbance in color or composition. With this technic there is no need for a dressing. The fuchsin mixture is applied on cotton to the crusts, pressing it into each after all loose and friable parts of the crusts have been removed with sponges dipped in a 1:1,200 solution of zinc sulphate or its equivalent. The crusts absorb the fuchsin mixture and harden, forming an impermeable red varnish. It is applied anew each day and the crusts gradually grow smaller and smaller. The only drawback is the possible staining of the linen.

Presse Médicale, Paris

August 30, XXIII, No. 40, pp. 321-332

36 *Lesions of Trunk Nerves in War. V. (Les lésions des gros troncs nerveux des membres par projectiles de guerre. Les différents syndromes cliniques et les indications opératoires.) Dejerine and J. Mouzon.

36. **Wounds of Trunk Nerves.**—Professor Dejerine, Mme. Dejerine and J. Mouzon here present the fifth instalment of their extensive study of gunshot and shell wounds of trunk nerves in arms and legs, the syndromes resulting and the indications for operative treatment at the time or later. They are in charge of a hospital specializing in treatment of such cases. The wounded do not reach this hospital until about six weeks after the injury, and the writers say that until at least this interval has elapsed, the neurologic findings are not conclusive for or against operative measures. They discuss in this instalment what they call the dissociated syndromes, comparing the clinical with the operative findings in cases from their service and deducing the indications for operation. The general diagnosis is also discussed, the sources of error, the objective symptoms, modification of the reflexes and the changes in the tissues and in the response to electric stimuli, concluding with a discussion of the technic, showing the procedures to be commended and those to be shunned, with concrete instances. The article is illustrated. In certain cases the symptoms of compression soon after the injury subsided spontaneously in a few weeks, to a complete cure by the end of a few months. The trauma must have caused the compression and, when this ceased to act, repair started at once. This is very different from permanent compression or secondary compression, for both of which operative relief is indispensable. The Society Proceedings also contain a detailed summary, by the same writers, of their experiences with forty-two cases of wounds of the spinal cord. With an injury of this kind, they say, the best time for operative treatment is between the fifteenth and the thirtieth days if operative intervention is required. Before this, the shock and the lesions in the

vicinity blur the differential picture, and later than this bladder infection becomes troublesome and cicatricial changes impede restoration of function.

Berliner klinische Wochenschrift

August 16, LII, No. 33, pp. 865-884

37 Tetanus. (Klinische und therapeutische Erfahrungen über den Tetanus.) B. O. Pribram. To be continued.
38 Intravenous Treatment of Typhoid with Sensitized Bacilli Emulsion. F. Meyer.
39 *Appendicitis and Typhoid. G. Wolfsohn.
40 Operations on Soldiers from Standpoint of Regaining Military Efficiency. (Zur Frage des operativen Eingriffes bei Heeresangehörigen.) P. Weimann.

39. **Typhoid Localizing in the Appendix.**—Wolfsohn has had a number of men sent to the base hospital in his charge with the diagnosis of appendicitis. The men had not been taken sick suddenly, but for some days or weeks had felt depressed and ailing, sometimes with headache and pains in the limbs, and always with diarrhea and abdominal pains. The men had been taking castor oil or opium for the diarrhea but it returned after the medication, and blood had been noticed in the stools in some cases. The aspect is more that of health than usual with appendicitis, but the region of the cecum is tender although the abdominal wall over it is not rigid but quite soft. Bacteriologic examination of stool, urine and blood for typhoid bacilli is constantly negative. He removed the appendix in ten of twelve such cases and all the symptoms subsided at once, and in ten or twelve days the men were entirely well. The lesions in the appendix were never very pronounced, but in a number of the cases typhoid or paratyphoid bacilli were cultivated from the inner wall of the appendix although none could be found in the blood, urine or stools. In two cases the diagnosis was acute appendicitis and the appendix presented the usual lesions of this and contained typhoid and colon bacilli, streptococci and staphylococci. All the men had been systematically inoculated against typhoid, and Wolfsohn is convinced that this had rendered the tissues so resistant to typhoid infection that the typhoid bacilli could find no lodgment except in the appendix. It is possible that typhoid bacilli may lurk in the appendix, as we know they do sometimes in the gallbladder, without causing appreciable symptoms.

Deutsche medizinische Wochenschrift, Berlin

August 26, XLI, No. 35, pp. 1025-1056

41 *Deposits of Coal Dust in the Intestines. (Kohlenstaubablagerungen im Darm.) O. Lubarsch.
42 *Improved Technic for Bacteriologic Diagnosis of Cholera. H. Aronson.
43 *Diagnosis of Heart Disease by Usual Methods of Examination. (Die Diagnostik der Herzerkrankungen mittels der in der Praxis üblichen Methoden.) H. Rosin. Commenced in No. 34.
44 *Typhoid Paralysis. (Lähmungen nach Typhus.) J. Zadek.
45 Roentgen Diagnosis of Perforation of Intestines. H. Popper.
46 *Ovariotomy During Pregnancy. F. Unterberger, Jr.
47 *Iodin-Guaiacol-Glycerin Treatment of Erysipelas. E. Szecsy.
48 Tuberculosis at Shanghai. H. Dold.
49 Splint for Fracture of Humerus. (Innenschiene bei Obcrarmbruch.) L. Engelhardt.
50 Treatment of Abdominal Wounds. (Zur Behandlung der Bauchschussverletzungen im Felde.) W. von Brunn.

41. **Deposits of Coal Dust in the Intestine.**—Lubarsch found macroscopic deposits of coal dust in the Peyer's patches of a man of 60. This pseudomelanosis might very readily have been mistaken for relics of blood accumulations, and it is in this way that such cases have been interpreted in the past. But Lubarsch presents evidence as to the true coal-dust nature of the deposits, especially their localization exclusively in the lower Peyer's patches of the ileum to 1.10 m. above the valve; their color, shape and chemical behavior, and the frequency of this finding when systematically sought for, regardless of inflammation, hemorrhages or other morbid processes. Since he has been examining for it systematically he has found it in 31.2 per cent. of 280 cadavers: in 6 from 2½ to 6 years of age; 6 from 10 to 20; 8 from 20 to 30; 14 from 30 to 40, and the others above this age. He also found similar deposits in the bowels of a guinea-pig. In a number of the cadavers there was but little tendency to anthracosis in the chest. For these and other reasons enumerated he thinks that there can be no doubt that the coal dust gets into the villi by being swallowed. The findings sustain the assumption that infection with tuberculosis occurs both by way of inhalation and the food.

42. **Improved Technic for Cultivating Cholera Germs.**—Aronson's method is based on the specific splitting of cane sugar added to an Endo plate, and the ability of cholera germs to proliferate in mediums too alkaline for colon bacilli. The technic is described in detail and the method styled the easiest and the most certain means at our command for detecting cholera germs, especially in carriers and in comparatively symptomless cholera.

43. **Diagnosis of Heart Disease.**—In concluding this long review of the diagnosis of heart disease by the general practitioner, Rosin says that the old and tried methods of examining for heart disease have lost none of their importance in comparison with the newer methods. But a thorough examination now should include certain of the newer methods, especially measurement of the blood pressure, palpatory percussion, Roentgen examination and the Wassermann test. Electrocardiography is also useful, affording information not obtainable in any other way. But the findings have not been interpreted to date with sufficient accuracy to justify recommending to the general practitioner the purchase of the extremely expensive apparatus required for it.

44. **Post-Typhoid Paralysis.**—Zadek reports the case of a boy of 9 convalescing from typhoid who developed right hemiplegia with loss of reflexes. It was evidently of cerebral origin, the work of the typhoid, and it rapidly improved under electric treatment, massage and baths and by the end of the month had retrogressed almost entirely.

46. **Ovariotomy During Pregnancy.**—Unterberger reports the details of eight cases in which ovariotomy was done on pregnant women. In one of the women it was bilateral, and abortion followed in this case, but the pregnancy was not interfered with in the other cases. He advises to postpone the ovariotomy until the third or fourth month if possible, as there is less danger of interrupting the pregnancy after this.

47. **Treatment of Erysipelas.**—Szecsy has been much pleased with the efficient action of a mixture of 10 parts each of guaiacol and tincture of iodin in 80 parts glycerin, applied as a lininent to the erysipelatous region. It has merely a symptomatic action, but in this it far surpasses all other measures of which he knows.

Medizinische Klinik, Berlin

August 15, XI, No. 33, pp. 905-932

51 *Urology and War. (Urologische Erkrankungen im Kriegc.) R. Oppenheimer.
52 Hernias from Industrial and Other Accidents. E. Schepelmann.
53 *Autoserotherapy of Gangrenous Venereal Ulcer, etc. (Behandlung des Ulcus molle gangraenosum und anderer Ansteckungskrankheiten mit Eigenstoff, Eigenserum oder Eigenblut.) W. Treupel.
54 Mixed Infection with Typhoid. H. Koenigsfeld.
55 *Diabetes Insipidus After Injury of Skull. F. Kleeblatt.
56 The Blood Picture in Smallpox. (Zum Blutbilde der Pocken.) J. Falk.
57 Side Suture of Subclavian Artery. (Seitliche Naht des Durchschusses der Arteria subclavia.) H. Hans.
58 First Aid for Fractured Bones. (Erste Versorgung bei Knochenbrüchen.) H. Spitzy and A. Hartwich.

51. **Urology on the Firing Line.**—Oppenheimer remarks that there has been no great war since the modern methods of urologic investigations have been introduced, and he has utilized the present war to collect data in this line. The summaries of sixteen cases are given to illustrate the various types encountered, both of wounds and of urologic affections such as are observed at any time but for which the stress of the campaign induces a predisposition and creates exciting causes. He says in conclusion that in calculating the indemnity, he estimates that the loss of one kidney reduces the earning capacity on an average about 45 per cent.; a traumatic detrusor paralysis, from 50 to 80 per cent.—on account of the danger of secondary pyelonephritis—and permanent incontinence, from 70 to 80 per cent.

53. **Autoserotherapy for Gangrenous Venereal Ulcer.**—Treupel relates that in two progressive cases of this kind, long uninfluenced by vigorous local measures, injection of the patient's own serum seemed to arrest the gangrenous

process, and start the patient on the road to recovery. In the first case the gangrenous ulcer scabbed over and the scab was thrown off the fifth day. Three injections of the patient's own active serum were given, in the course of four days, the amounts ranging from 10 to 24 c.c. In the second case four times these doses of serum or 100 c.c. of the blood were given and prompt benefit was apparent, the gangrene promptly healing. Febrile skin affections were likewise favorably influenced. In one case of petroleum eczema, with temperature of 40.4 C. (nearly 105 F.), the fever rapidly dropped and the skin affection retrogressed after a venesection of 50 c.c. of blood and intravenous injection of 200 c.c. of the patient's own blood. The cure was completed by two further injections in four days. The work issues from the university clinic for skin diseases at Jena, in charge of Spiethoff. He has found this "own blood" or "own serum" beneficial also in treatment of catarrhal febrile sore throat and prostatitis, typhoid and tetanus.

55. **Diabetes Insipidus After Trauma of the Skull.**—Kleeblatt relates that a robust young mechanic was rendered unconscious for ten minutes when a wheel from a pulley fell on his head from a height of over 9 feet. The base of the skull was fractured, and the third day afterward symptoms of central severe diabetes insipidus appeared and have persisted since. Roentgenoscopy reveals nothing abnormal; the hypophysis region in particular seems intact. The specific gravity of the urine showed no rise even under long abstention from water and ingestion of salt. Hypophysis preparations induced a transient increase in the total concentration power, but the general health did not benefit by this. The blood findings are within normal range. During periods of abstention from drinking water, the output of urine materially surpassed the intake. The blood became much more concentrated also.

Münchener medizinische Wochenschrift, Munich

August 24, LXII, No. 34, pp. 1141-1172

59 *Disturbances in the Circulation from Effect of Shock Toxins. (Durch "Schockgifte" erzeugte Zirkulationsstörungen.) H. Mautner and E. P. Pick.
60 *Technic for Rendering Agar Fit to Use More than Once in Bacteriologic Research. (Regenerierung des verbrauchten Endoagars.) H. Mohorcic.
61 *Acute Yellow Atrophy of the Liver in Syphilis. Bendig.
62 Technic for Cooling Roentgen Tubes. (Die Kühlung der Röntgentherapieröhren mit siedendem Wasser.) Bucky.
63 Blood from Slaughter-House as Food Product. (Verwendung von Schlachtblut zur menschlichen Ernährung.) F. Hofmeister. Commenced in No. 33.
64 Emergency Sterilization of Drinking Water. (Zur Entkeimung von Trinkwasser im Felde.) W. Kruse. (Einfaches, kolloidchemisches Verfahren zur Entkeimung von Oberflächenwasser mit Beziehung auf die Trinkwasserversorgung im Felde.) M. Strell.
65 Blood Charcoal in Treatment of Typhoid and Paratyphoid. (Ueber Tierblutkohle.) P. Como.
66 Recurring and "Resting" Infection After Gunshot and Shell Wounds. (Zur Frage der rezidivierenden und "ruhenden" Infektion bei Kriegsverletzungen.) Most.
67 Abdominal Wounds. (Behandlung der Bauchschussverletzungen im Felde.) A. W. Meyer.
68 Psychiatry on the Firing Line. (Kriegspsychiatrische Erfahrungen aus der Front.) E. Wittermann.
69 Artificial Limbs and Aids. (Zur Frage der Armprothesen.) H. Spitzy. (Vorschlag zur Herstellung eines künstlichen Armes.) P. Bade. (Stützverbände im Felde.) F. Hübler.
70 Microphotography. (Praktische Winke für Mikrophotographie.) Stange.

59. **Cardiovascular Disturbances from Shock Toxins.**—Mautner and Pick report research on dogs, cats and rabbits, studying the drop in blood pressure after intravenous administration of some albumin cleavage product. The shock action seems to be in the nature of a spasm of the nonstriated muscle in general and particularly of the musculature of the vessels of the intestines, liver and lungs. Drugs which dilate the vessels, such as amyl nitrite, arrest the spasmodic contraction and thus check the shock action. This explains the favorable influence of caffein in conditions resembling shock, as after antityphoid inoculation in exceptional cases. Its vasodilating action counteracts the spasm from the shock toxins.

60. **Regeneration of Agar.**—Mohorcic says that in the course of the eleven months of war the supply of agar-agar has been mostly used up, and hence he has been evolving a technic to render it possible to use agar-agar over and over again in bacteriologic research.

61. **Acute Yellow Atrophy of the Liver in Syphilis.**—Bendig's patient was a robust young woman nine months pregnant. She was given mixed mercury and salvarsan treatment on account of a primary syphilitic lesion. The first two injections of salvarsan caused no disturbance but she vomited after the third, and two days later symptoms of acute yellow atrophy developed, fatal within two days. He reported in 1908 an almost identical fatal case in a young woman but this was long before salvarsan was invented so that the salvarsan need not be incriminated in the present case.

Therapeutische Monatshefte, Berlin

August, XXIX, No. 8, pp. 421-476

71 *Recent Progress in Treatment of Liver, Gallbladder and Pancreas Disease. (Fortschritte in der Behandlung der Leber-, Gallen- und Pankreaskrankheiten.) Hochhaus.
72 *Treatment of Gynecologic Hemorrhage. G. A. Wagner.
73 *Cholera Infantum and Other Severe Diarrheas in Infants. (Behandlung des Brechdurchfalls und der ruhrartigen Erkrankungen im Säuglingsalter.) L. Langstein.
74 *Roentgen Rays in Treatment of Acne. Dössekker.
75 Aims and Methods of Psychotherapy. J. H. Schultz.
76 Operative Treatment of Wounds of the Skull in War. (Operierte Schädelschüsse.) Kalkhof.
77 *Trademark Names and Substitutes. ("Ersatz"-Waren und Warenzeichengesetz.) W. Heubner.

71. **Present Status of Disease of the Bile Apparatus and Pancreas.**—Hochhaus regards cirrhosis of the liver as the result of a number of interacting causes which explains why it is so refractory to treatment. Referring to the bile secretion, he calls attention to recent study of the secretion of bile in a man with a fistula into the liver (Ignatowsky). Animal albumin stimulated the production of bile much more than vegetable albumin, and fat even still more. Mineral waters, on the other hand, checked the secretion of bile. These findings confirm empiric experiences. Reach reported last year that morphin, epinephrin, pilocarpin and atropin increased the tonus of the sphincter at the papilla of Vater and thus retarded the outflow of bile, while papaverin relaxed this sphincter. Hence the latter might relieve in jaundice in which spasm of this sphincter is a factor. In the diagnosis of pancreas disease, an excess of creatin or fat in the stools is easier to determine and more decisive than the ferment content. Hustin's recent research has confirmed the statements as to the stimulating action of pilocarpin on the pancreas. He found (experimentally) that this action was not direct but occurs only when part of the intestine is functionally capable. When this is the case, pilocarpin intravenously stimulates pancreatic secretion. Sodium bicarbonate seems to have the opposite effect, depressing pancreas secretion. Wilbrand concludes from his study of this subject that sodium bicarbonate can be relied on to check the external secretion of the pancreas while the internal is probably stimulated by it.

72. **Gynecologic Hemorrhage.**—Wagner remarks that the introduction of organotherapy and of radiotherapy have contributed to do away with hysterectomy for genital hemorrhage. We have learned that what used to be called hypertrophic and hyperplastic endometritis is in reality not endometritis at all, but a physiologic change in the uterus lining which occurs periodically under the influence of the functioning of the ovaries. We have learned further that true endometritis does not induce hemorrhage.

The physiologic menstrual hemorrhage is influenced by the behavior of the blood vessels, their innervation and the composition of their walls; by the composition and condition of the uterine musculature, and also by the condition of the blood with respect to its coagulating power. Any one of these three factors may become deranged, so that even with normal ovarian functioning there may be pathologic hemorrhage. The hemorrhage may thus be of mechanical origin or of ovarian origin, and classification of the cases points the way to effectual treatment. The mechanical group includes the cases of hemorrhage from polyps, erosions and myomas located beneath the mucosa which stretch and tear the vessels above them. Another group includes the cases of abnormal hyperemia of the uterus, from psychic, thermic or sexual causes, or from high blood pressure, tight lacing or constipation. Other groups of mechanical hemorrhage include the cases of defective contraction of the uterus from muscular insufficiency; arteriosclerosis or syphilitic changes in the vessel walls; deficient coagulating power; constitutional disease; and, finally, the peculiarly persisting tendency of hemorrhage with extra-uterine pregnancy.

In contrast to all these so-called mechanical groups, are the hemorrhages for which ovarian functioning can be incriminated. The typical forms of this occur in puberty and at the menopause. When the ovaries are dying off, they are like a lamp that is going out but flickers up now and then. The Abderhalden test confirms the dysfunctioning of the ovaries in these cases, as also in hemorrhage with chlorosis and obesity, but above all with myomas and affections of the adnexa. In certain cases the hemorrhage may be traced to abnormal functioning of some other of the glands with an internal secretion, closely connected with the ovaries. Sehrt has differentiated a group in which the hemorrhage is the result of thyroid insufficiency; the blood in these cases coagulates abnormally fast. The list of these groups closes with those in which there is actual hyperplasia of the uterine mucosa for which the ovaries are directly responsible, and the cases of necrotic processes from incomplete menstruation.

Classifying the case as mechanical or of ovarian origin, and in one of the above subgroups, points the way to causal and effectual treatment. The mechanical require local measures, and the first step is to exclude cancer. Unless this can be done with certainty, no attempts at conservative measures are justified. Here the curet is almost indispensable. The old idea that curetting would put an end to the tendency to hemorrhage, as a new mucosa grows out, has been proved erroneous—the new mucosa is under the influence of the ovaries as much as the old. Permanent benefit was realized in less than 10 per cent. of 600 curetted cases on record. Cauterization is equally futile, as a rule, but tamponing the uterus is still, as ever, a reliable symptomatic measure to arrest bleeding. Removal of the cause may require cold sitz baths, digitalis if there is cardiovascular derangement, or calcium lactate by the mouth to tranquillize the overexcitable nervous system which is keeping up the active hyperemia in the genital organs. When the uterus is unduly flabby, ergot may help. Something of the kind given a few days before the period may ward off the tendency to excessive hemorrhage; electricity may also prove useful.

Organotherapy or radiotherapy or both are now at our disposal for the cases of ovarian origin, and give most gratifying results. They have aided in classifying cases, as when a case proves refractory to radiotherapy, for instance, this proves that some other factor is at work, unsuspected syphilitic changes or a submucosa site of a myoma, permitting, then, proper treatment. The effect of radiotherapy is prompter and more certain the nearer to the extinguishing of ovarian function. The great drawback is the danger of overlooking cancer. A number of such mishaps have been reported. Wagner applies radiotherapy by the close, filtered, crossfire technic. Loose has reported excellent results in juvenile menorrhagia from small doses (2 or 3 X per ovary) with medium hard tubes, applied during the hemorrhage. After three or four exposures the hemorrhages are kept within normal range. The pathologic elements in the ovary seem to be corrected by this mild radiation while the normal elements do not feel its influence.

73. **Cholera Infantum.**—Langstein insists that with albumin milk correctly given complete recovery may almost be guaranteed. The infant with diarrhea and vomiting is given nothing but tea for from twelve to twenty-four hours, no longer, and then the albumin milk is commenced, not over 5 gm. ten times a day, with 3 per cent. of a maltose-dextrin mixture. The amount of albumin milk is increased by 50 gm. each day until the daily ration totals 300 gm. After the weight has become stationary, carbohydrates can be added up to 5 per cent. of the maltose-dextrin mixture. With a child over 3 months old, 1 or 2 per cent. flour or oatmeal can be added. He warns against giving too small a daily ration; especially serious is an undue restriction of carbohydrates. This is particularly dangerous for infants who have reached the stage of "decomposition." The nature of the albumin milk enhances the tolerance for carbohydrates. The lack of adequate carbohydrate in the food soon becomes manifest in the decline in the weight; it drops abruptly and the child collapses. The lack of carbohydrates is the more dangerous the more atrophic the child, the less reserves of carbohydrates it has to draw on. Even if the diarrhea keeps up, the ration must be increased as above described or there is grave danger of inanition.

One must be firmly convinced of the wisdom of keeping on with the albumin milk in this way, realizing that even frequent passages on albumin milk do not aggravate the condition, and that the bowel functioning will return to normal sooner or later. When the diarrhea and loss in weight have ceased, then we are less liable to disagreeable surprises and mishaps than with any other form of artificial feeding. Even if the diarrhea returns, hold steadfast to the albumin milk and the 3 per cent. carbohydrate. Any repetition of the starvation diet or withdrawal of carbohydrates may bring severe disturbances and collapse to the sick infant. A return to the starvation diet within a week may prove promptly fatal. Langstein discusses further the mishaps liable from infection or from return of the alimentary disturbance.

Albumin milk is not so uniformly effectual in dysenteriform diarrhea as in cholera infantum. Whey seems to act better, diluted half and half with oatmeal gruel. After the starvation period he gives 50 gm. of the whey and increases by 50 gm. daily with equal amounts of oatmeal gruel. As improvement sets in, 3 per cent. of a dextrin-maltose preparation can be added. He advises to make the whey artificially from the milk. Kaolin and charcoal have been given to infants as well as to adults, but no decisive judgment as to benefit from them can be drawn as yet. Their depressing action on the digestive ferments must be taken into account. The whey permits the diseased large intestine to recuperate while it supplies the salts needed by the organism. The prognosis on whey is not unfavorable, provided there is no complicating digestive nutritional disturbance. When the child has both cholera infantum and enteritis, he advises combating the former first and foremost by keeping the child on albumin milk.

74. **Roentgen Treatment of Acne.**—Dösseker says that experience is demonstrating that repeated small doses of the rays, not strong enough to induce appreciable reaction in the skin, or a single large dose with a reaction, seem to be able to modify the epidermis, that is, the sebaceous glands to such an extent that the tendency to acne dies out. His communication is based on large numbers of cases but he does not cite statistics nor bibliographic references, his aim being merely to recall attention to Roentgen treatment of acne, with his personal endorsement of it. Fortunately he adds, its efficacy is greater in acne spread over a larger surface, with numerous pustules, than in the less disfiguring, torpid type.

77. **Trademarks and Protected Names.**—Heubner reiterates that "protected" names of drugs sooner or later become the generally accepted term for the drug in question, the general term in common commercial and medical use. Legal authorities differ as to when this transformation takes place, but the fact that it does occur sooner or later is now generally accepted. Another instance of it, he relates, is seen in the labels of the drugs now supplied to the German army hospitals. Instead of the official name, hexamethylenamin, for example, the drug is labeled "Substitute for urotropin," *Ersatz für Urotropin, Ersatz für Aspirin,* etc. Tablets are supplied stamped in the same way, "Ersatz für Antipyrin, 0.5." The wrapper bears the full title, "Hexamethylentetramin, 0.5—Ersatz für Urotropin," with the place, "Garnison-Lazarett Magdeburg."

A medical officer at the front, without books, without a pharmacist, obliged to decide in a hurry, knows what action he can expect from "urotropin" for instance, while the official name, indicating its chemical composition, has no concrete association in his mind with the clinical condition for which he wants the special action of the drug. Heubner adds that this has all been said a hundred times and just as often vehemently denied by the interested parties, but the fact remains that trade-marked names become in time the common name of the articles.

Wiener klinische Wochenschrift, Vienna

July 8, XXVIII, No. 27, pp. 725-752

78 *Occupational Changes in the Teeth. (Berufsmerkmale an den Zähnen.) M. Kraus.
79 Nonsensitized Vaccine in Treatment of Typhoid. E. Csernel and A. Marton.
80 Cholera Germ Carriers. (Cholerabazillenträger und ihre epidemiologische Bedeutung.) Stein.

July 15, No. 28, pp. 753-780

81 Cosmetic Considerations in Surgical Work. J. Sternberg.
82 Vaccine Therapy of Typhoid. R. Löwy, F. Lucksch, E. Wilhelm and E. Paulicek.
83 Pathology of the Nervous System in War. (Kriegsverletzungen und -erkrankungen des Nervensystems.) J. Donath. Commenced in No. 22.

July 22, No. 29, pp. 781-804

84 An Expert in the Use of Artificial Hands and Feet after Loss of Both Hands and Both Feet. R. Hofstätter.
85 Treatment of Erysipelas. O. Kren.
86 Congenital Hernia of the Diaphragm. (Zwerchfellbrüche.) R. Monti.
87 Garlic in Treatment of Catarrhal Enteritis. (Allium sativum als Therapeutikum bei infectiösem Darmkatarrh.) E. Marcovici.

July 29, No. 30, pp. 805-828

88 Modern Electromedicine in War Hospitals. J. Zanietowski. Concluded in No. 31.
89 Functional Heart Disturbances. T. Szasz.
90 Charcoal in Sterilization of Drinking Water. R. Kraus and B. Barbara.
91 Vaccine Therapy of Typhoid. F. Deutsch.
92 Pathology and Treatment of War Hematothorax. J. Tornai.
93 Erythromelalgia with Spontaneous Gangrene in Young Man. G. Bikeles and K. Radonicic.

78. **Occupational Deformity of the Teeth.**—Kraus gives illustrations of a number of typical changes in the teeth induced by factors connected with the occupation. Candy-maker's caries is one. The sugar dust in the air settles on the teeth and the acids generated from the sugar eat away the enamel below. There is thus a shallow pocket hollowed out in the upper part of the front of each front tooth. Workers with hydrochloric acid display a characteristic irregular necrosis of the teeth, after a stage of brownish spots on the teeth. It is a molecular necrosis, beginning at the cutting edge and working downward. The teeth thus are soon gnawed away by the process. Workers on metal may develop a dirty green coating on their teeth which long persists if the teeth are not well cared for. Shoemakers may wear away a groove in the edge of the front teeth where they hold the peg or nail. The pronounced arch in the upper front teeth of glassblowers is readily explained by the tube they use, and the small groove in the front teeth of tailors and seamstresses by their habit of biting off the thread. The illustrations given confirm Kraus' statement that the changes in the teeth described are typical enough to indicate the occupation.

Zeitschrift für Tuberkulose, Leipzig

August, XXIV, No. 4, pp. 241-320. Last indexed Sept. 11, p. 986

94 *Factors which Cooperate in Inducing Tuberculous Apical Lesions. IV. (Betrachtungen über die Entstehung der tuberculösen Lungenspitzenphthise.) C. Hart.
95 Improved Technic for Isolating and Cultivating the Tubercle Bacillus. S. A. Petroff (Saranac Lake).
96 The Newer Medicinal Preparations and Foods Advocated in 1914 in Treatment of Tuberculosis. G. Schröder.
97 Tuberculosis in India. E. Wilkinson.

94. **How Apical Processes Originate.**—Hart presents an array of arguments to sustain his views regarding the mechanical predisposition to apical disease from stenosis of the superior aperture, to which Freund called attention long ago. Hart has encountered a number of young cadavers with marked anthracosis in the apex but no signs of tuberculosis. There was always something abnormal in the aperture, however, preventing free ventilation of the apex beneath; dust accumulates here although the tubercle bacillus has not happened to find a lodgment here. He has also encountered in a few cadavers an actual groove in the lung below the apex, a subapical pressure groove, but this is rare. He restricts the term phthisical thorax to the form with stenosis and deformity of the aperture. This is distinct from the thorax of general asthenia and also from the acquired paralytic thorax in the emaciated and cachectic.

The primary defective development of the aperture may be merely one localization of a more or less general physical inferiority. The manifestation at the aperture of this physical inferiority is liable to invite tuberculous disease of the apex; when manifested elsewhere it is liable to induce a predisposition to other affections, gastric ulcer, for example. Hence he thinks it is too sweeping to call this type of chest the phthisical thorax, as the individual with this form of chest does not inevitably develop tuberculosis. It would be more correct to call it the asthenic thorax or some similar term which would express that it is a primary manifestation of a constitutional tendency.

Zentralblatt für Gynäkologie, Leipzig

August 28, XXXIX, No. 35, pp. 611-626

98 *Exclusive Radiotherapy of Uterine Cancer. (Dürfen wir operable Uteruskarzinome ausschliesslich bestrahlen?) S. Flatau.
99 *Treatment of Inveterate Prolapse of the Uterus. O. Walbaum.

98. **Exclusive Radiotherapy of Uterine Cancer.**—Flatau has not operated on cancer of the uterine cervix since 1913. The proportionate number of women still living and cured under radiotherapy alone is larger than he could ever report before with abdominal operations for cancer of the cervix. It is now beyond question that an incipient cancer focus can be destroyed by radium without leaving a trace. But certain experiences have suggested the possibility that although the primary focus may thus vanish without leaving a trace, there is a possibility that metastases may develop at remote points, far beyond the scope of the rays. Time alone can tell whether radiotherapy will oust surgery from the arena of treatment. The surgeon and the radiotherapeutist can go on working, each in his sphere; in time comparison of the results will show which is superior.

99. **Treatment of Inveterate Prolapse of the Uterus.**—Walbaum makes a septum in the vagina as a support leaving two narrow channels each side which permit natural drainage of the uterus. The septum is made by joining the exposed bladder to the exposed rectum, the exposed area in each drawn up with circular stitches to provide a better hold. The perineum is also reenforced and sutured close up to the mouth of the urethra. He has applied this technic with most gratifying results in cases of extreme prolapse, primary or recurring.

Policlinico, Rome

August 29, XXII, No. 35, pp. 1161-1196

100 Abstention from Drainage of Septic Wounds in War. (Cura delle ferite di guerra settiche senza drenaggio.) L. Isnardi.
101 Inguinal Adenitis from Physical Overexertion. (Adenite inguinale da sforzo.) R. Sacco.

Riforma Medica, Naples

August 28, XXX, No. 35, pp. 953-980

102 Study of the Virulence of Pneumococci in the Sputum of Pneumonia Patients, and Its Bearing on Isolation. C. Ninni.
103 Pathogenesis of Nephritis in Infectious Disease; Toxic Influences Main Factor. P. Montuschi.

Russkiy Vrach, Petrograd

XIV, No. 23, pp. 529-552

104 Chloroform of Russian Manufacture. P. I. Tikhoff and L. M. Sicheva.
105 Pathogenesis of Werlhof's Disease. M. M. Schugurova.
106 *Functional Relations between Organs; Changes in the Thyroid after Removal of the Suprarenals. E. E. Malovichko.
107 *Abdominal Fremitus. D. S. Schchetkin.

No. 24, pp. 553-576

108 *Cultivation of Leukocytes Outside the Body. P. P. Avroroff and A. D. Timofejevsky.
109 The Physician in Relation to the School. B. I. Vorotinsky.
110 Cranioscopy for Locating Foreign Bodies (Bullets) in the Head. A. T. Berdiaeff. Commenced in No. 21.
111 Non-Surgical Treatment in Military Surgery. G. I. Higier.

No. 25, pp. 577-600

112 Observations During Aviation. I. S. Tsitovich.
113 *Treatment of Russian Trypanosomiasis. V. L. Yakimoff and V. I. Vassilevskaya.
114 *Cases of Loss of Vision from Eau de Cologne, Denatured Alcohol and Similar Substitutes for Whisky. A. A. Yakovleva.
115 *Periodical Vomiting. A. I. Nikulin.
116 *Grafts of Umbilical Cord to Cover Defects in Buccal Mucosa. V. A. Perimoff.

106. **Functional Relations Between Thyroid and Suprarenals.**—Malovichko studied the changes in the suprarenals after removal of the thyroid, and vice versa. Of fifty dogs operated on for these studies eight succumbed; the rest were killed and the examination was done immediately afterward. It was found that after removal of the suprarenals, destructive lesions could be demonstrated in the thyroid in the form of degenerated epithelium, and changes in the colloidal substance and interstitial tissue. Removal of the thyroid together with the parathyroids does not seem to affect materially the suprarenals, but some fine structural changes in the cells could be demonstrated in them.

107. **Abdominal Fremitus.**—Schchetkin found abdominal fremitus in the right iliac region in patients suffering from chronic peritonitis with adhesions. This may be diagnosed clinically from the presence of this fremitus. The patient is asked to answer some questions and, while he is talking, the examiner's hand applied to the right iliac region experiences a manifest thrill or fremitus. He did not find this fremitus in acute peritonitis, or in any other abdominal affection, such as dropsy, but only in chronic peritonitis accompanied by solid connective tissue adhesions which transmit the fremitus of the diaphragm to the right iliac region.

108. **Cultivation of Leukocytes Outside of the Body.**—Avroroff and Timofejevsky succeeded in cultivating white blood corpuscles outside the body according to Carrel's method. The mononuclears of normal blood they found are able in the mediums to proliferate through karyokinesis, and to become transformed into different shapes, such as hypertrophied, giant and protoplasmic cells. This ability of the mononuclears to undergo such changes confirms the theory of their active rôle in the healing and regeneration of tissues with transformation into different forms such as polyblasts and giant cells. Cultivation experiments may thus shed further light on the question of the origin of the eosinophil granules. This article is illustrated.

113. **Treatment of Trypanosomiasis.**—Of various remedies used by Yakimoff for treatment of mice injected with trypanosomes from camels and donkeys in the Turkestan region, he found salvarsan and antimony trioxid most effective.

114. **Poisoning from Substitutes for Liquor.**—Yakovleva had the opportunity of examining eighty patients poisoned with cologne water, denatured alcohol, furniture polish, varnish or similar substitutes the patients had been using in the place of ordinary liquor. The general symptoms of denatured alcohol poisoning are depression instead of excitation of the nervous system, pain in stomach and chest, and vomiting. In addition there was amblyopia which usually set in rapidly in a few days or weeks, with great impairment of visual acuity, frequent appearance of absolute central scotoma and concentric narrowing of the field of vision. Poisoning from wood alcohol and eau de Cologne gave the same symptoms as described in the literature from methyl alcohol poisoning. Here frequently occurs a secondary aggravation of the impairment of vision, following a temporary improvement. Another peculiarity of methyl alcohol poisoning is its cumulative action—the symptoms of poisoning developed only after repeating the dose, usually the next day. The details of the eighty cases are tabulated in full, filling three large pages.

115. **Periodical Vomiting.**—Nikulin calls vomiting periodical when it occurs at the end of the so-called periodical activity of the gastro-intestinal tract. This activity, in the form of contractions of the stomach and intestines, secretion of pancreatic juice, bile, etc., is periodically followed by stages of rest during which no secretion and no peristalsis take place. Nikulin studied the occurrence of periodical vomiting in a dog, the vomiting recurring nine times. He reports that the vomiting usually started at the end of the "period of activity or work of the stomach, and it never occurred during the period of rest." During the vomiting the quantity of intestinal secretions—which contain intestinal and pancreatic juices and bile—is increased, twice or three fold, proportional to the motor power. It is evident that the motor and secretory properties are intimately connected, the increase of one causing the increase of the other. The total amount of ferments in the gastro-intestinal contents is increased during vomiting, proportional to the amount of the intestinal mixture. Periodical vomiting has been observed in pregnancy. It displays here some of the features he found in his experiments on the dog. The Abderhalden reaction was found positive with the serum during the period of work, and negative during that of rest, indicating an increased flow of ferments into the blood. When this increase is too great, the body tries to get rid of the superfluous amount of ferments through vomiting, which is thus periodical in character.

116. **Umbilical Cord as Patching Material.**—Perimoff describes two cases in which umbilical cord was used to cover the defects in mucous membranes (scar between upper and lower jaws, and fistula under the lingual bone). The results were excellent. His previous experiments along the same line were summarized in these columns, August 14, p. 658.

Hospitalstidende, Copenhagen

August 25, LVIII, No. 34, pp. 849-876

117 Antiseptic Action of Gastric Juice Dependent on Hydrochloric Acid Content. (Mavesaftens antiseptiske Virkning.) J. P. Gregersen.

Ugeskrift for Læger, Copenhagen

August 26, LXXVII, No. 34, pp. 1369-1394

118 *Roentgen Treatment of Cancer. (Om Røntgenbehandling af ondartede Svulster.) S. and J. Nordentoft.

118. **Roentgen Treatment of Malignant Tumors.**—Nordentoft reports the further course in twenty-four cases of cancer in which courses of Roentgen treatment were applied one or more years ago. He emphasizes that a person who has had a cancer removed, or cured by other means, must keep in touch with his physician afterward, realizing that he must be kept under sharp observation for all the rest of his life. Nordentoft makes a point of continued supervision, and publishes from year to year the present status of the more interesting cases, omitting superficial cancers and recurring mammary cancers. In this communication he presents evidence that cancer of the mouth and tongue may yield surprisingly quickly to Roentgen treatment, also that metastases of malignant disease are liable to retrogress under the Roentgen rays. The series reported here include only the cases in which Roentgen treatment has conquered new fields, namely cancer starting in the mucosa of the mouth or vulva, or deep-seated cancer, as in the pelvis, abdomen, chest or brain, or cancer of the esophagus or rectum. Even in the absolutely hopeless cases, marked benefit was apparent for a time. This was particularly striking in a case with metastasis in the lungs from cancer elsewhere. Among the patients still in good clinical health are one man of 45 with a sarcoma in the mediastinum (the last course of Roentgen treatment was given in 1911); one woman of 64 with recurring cancer of the vulva (last treatment 1913), and several with cancer of the mouth. He also gives the details of cases which proved absolutely refractory to the rays, including one of cancer of the lung. The necropsy findings are also given in the cases that have terminated fatally after the Roentgen treatment or the patients have succumbed to intercurrent disease. The cases are listed serially for this report. The following yearly communications will carry on the history of each surviving patient under the same serial number. In time the data thus accumulated for each individual case, as the years go on, will supply a basis, by comparison, for general conclusions as to the efficacy and technic of roentgenotherapy in malignant disease. He urges others to carry on similar series, reiterating that a patient cured of cancer should never be allowed to forget the need for perpetual medical supervision to detect recurrence or metastasis in its incipiency.

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SOME ASPECTS OF OPHTHALMIA NEONATORUM *

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This paper is based principally on a series of 149 cases of ophthalmia neonatorum under my charge in the contagion wards of the Massachusetts Charitable Eye and Ear Infirmary, between Aug. 1, 1913, and Oct. 1, 1914. It is not presented primarily, however, as a statistical study, or as a consideration of the whole subject of ophthalmia neonatorum, but rather of those aspects of the disease which have appealed especially to me and about some of which there is yet considerable difference of opinion. In addition, attempt has been made to bring the sociological aspect of the disease into close relationship with the clinical side.

HOSPITAL OR HOME TREATMENT

In the first place, is a baby with a severe ophthalmia neonatorum best treated in the home or in the hospital? The obvious answer is, at the hospital, if we exclude those cases occurring in well-to-do families in which it is possible to employ a capable ophthalmologist and at least one skilful nurse. Sydney Stephenson,[1] however, states that he never takes a baby into the hospital unless loss of sight is imminent, as it is not wise to wean a baby with this disease if it can possibly be avoided. Stephenson is by no means alone in this opinion. The importance of this statement must be readily appreciated when we realize the impossibility of obtaining proper ophthalmic nursing in the average family in which this disease occurs, and the great and apparent danger to every other member of the household.

Such a statement is extremely significant and can mean only one thing, that the usual hospital treatment provided for this disease is unsatisfactory, that the advantages of skilful treatment of the eyes, which, it goes without saying, all ophthalmic institutions can offer, are offset by the lack of that specialized care which is so necessary in the early days of life, and more particularly in those instances in which it is absolutely necessary to wean the infant.

The reason for Stephenson's statement lies in the fact that the mortality in cases of ophthalmia neonatorum treated in the hospital is usually extremely high. Furthermore, in many cities suitable accommodations are not provided. For instance, Holloway,[2] in a recent paper on ophthalmia neonatorum, states: "The Philadelphia hospitals have largely avoided the admission and treatment of these cases. . . . No accommodation is provided for them in the only hospital in Philadelphia devoted exclusively to diseases of the eye."

Harman,[3] in his study of the statistics of cases of ophthalmia neonatorum occurring in London in 1911, states that the general and ophthalmic hospitals had difficulty in providing for these cases. "Of the cases occurring in the practice of midwives during the year, in twelve instances mother and child were admitted to hospitals or infirmaries, and in twenty the child alone was admitted; 101 other cases were treated by the ophthalmic and general hospitals as outpatients." This series comprised at least 278 cases; the exact number is not given.

This does not mean, however, that ophthalmia neonatorum is best treated in the home, but rather that in general the hospital treatment is unsatisfactory and often difficult to obtain.

To my mind there is but one answer to the question originally propounded. In the vast majority of severe cases, ophthalmia neonatorum should be treated in the hospital, for it represents an extremely contagious disease, dangerous to the eyesight, and produces a very large amount of visual loss. It is also my contention that these cases can be handled in the hospitals with comparative safety; that is, the mortality among them will be little greater than the normal mortality among infants in the first year of life, always taking into consideration the fact that infants affected with this disease average below normal in their general vitality and that they are subjected to unusual conditions, in that the eyes must be cleansed very frequently, thus necessitating frequent handling, which would be deleterious to any normal infant. This handling, however, would be less likely to do the child harm if carried out by a nurse skilled in the care of babies than by the less skilful attendant in the home.

MORTALITY

Our figures, such as they are, tend to substantiate the views expressed. In 149 cases occurring during fourteen months, 6 babies died in the hospital. Two of these were premature, 1 died of meningitis, 1 of pneumonia and 2 of hemorrhagic disease of the new-born.

To arrive at the true mortality, however, cases should be kept under observation for a year. Of 124 cases of our series admitted between October, 1913, and October, 1914, it was possible to follow the course in 81. Of these, 3 patients died in the hospital and 4 died after their discharge. Assuming the same mortality for the 43 who could not be followed up as for the 78 (81 — 3) that could, we should expect, at the most, 3 more deaths among these, which would give a total number of 10 deaths in 124 cases (80 deaths per 1,000), an extremely good showing, and comparing favorably with the infant mortality of the city of Boston for 1914, about 103 per 1,000, which in itself was a low figure.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Stephenson, Sydney: Ophthalmia Neonatorum, London, George Pulman & Sons, Limited, 1907.

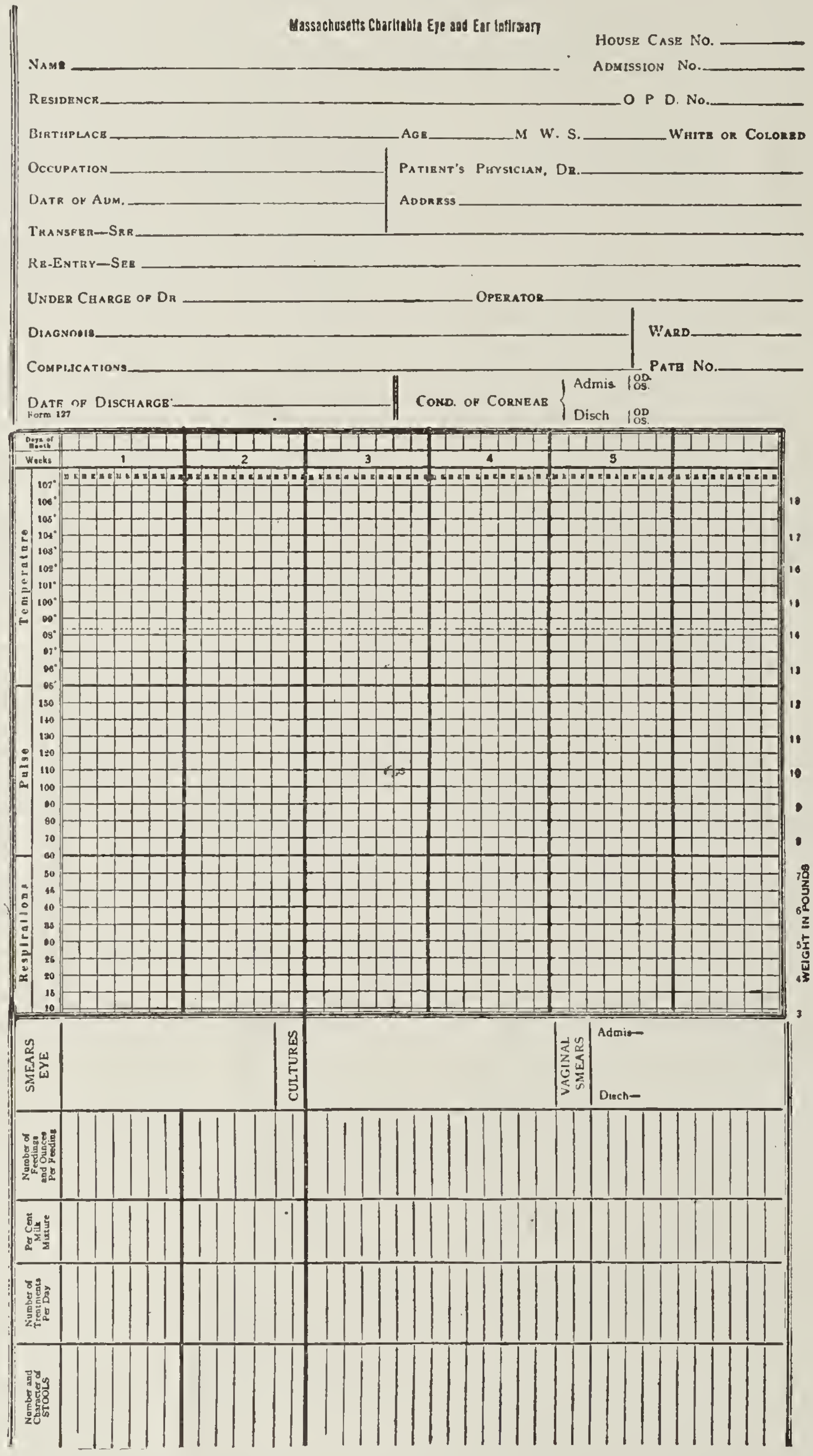
[2] Holloway: Ophthalmia Neonatorum, Ophth. Rec., December, 1913.

[3] Harman, N. Bishop: Incidence of Ophthalmia Neonatorum in London, Brit. Med. Jour., 1913, p. 1099.

Figures showing mortality in this disease are hard to obtain and are often misleading. One of our patients is of interest in this connection, a premature twin with gonorrheal ophthalmia. The eyes of the second twin were normal. The child was admitted to the hospital, the disease treated, and it was discharged from the hospital on the fiftieth day after birth. It died at home one day later, although it seemed in good condition when it was discharged. The other twin had died eleven days earlier. In spite of the handicap of the eye disease, it seems as though this child's life may have been prolonged rather than shortened by its stay in the hospital.

Among the well-to-do, with whom skilled nursing and medical attendance are a matter of course, mortality among babies having ophthalmia neonatorum must necessarily be higher than the normal mortality among babies in the same social condition. In infants of the poorer classes, however, if they be admitted to a suitably equipped hospital, the more scientific care which they receive should be enough to offset the handicap of the ocular disease, and the mortality should not be higher than the normal, and perhaps even less. It goes without saying that the most important single factor is the feeding, and to this I shall return.

An adequate system of charts and records is of great importance, so that the visiting physician may see at a glance the essential features which can be recorded about each case. A copy of our chart is appended, the general features of which we owe to Dr. F. B. Talbot of the Massachusetts General Hospital and formerly our consulting pediatrician. The credit of introducing modern and systematic methods of caring for these babies in the infirmary is largely due to him. The part of the chart relating to eyes was worked out by Dr. C. T. Porter, recently an intern in charge of these cases. This chart shows at a glance the temperature, pulse, respiration, gain or loss in weight, character of the stools, number, amount and character of feedings, number and character of eye treatments, the bacteriologic record, and the condition of the corneas at entrance and discharge.



Massachusetts Charitable Eye and Ear Infirmary

House Case No.
Name — Admission No.
Residence — O P D. No.
Birthplace — Age — M W. S. — White or Colored
Occupation — Patient's Physician, Dr.
Date of Adm. — Address
Transfer—See
Re-Entry—See
Under Charge of Dr — Operator
Diagnosis — Ward
Complications — Path No.
Date of Discharge — Cond. of Corneae { Admis. {OD. OS. Disch {OD. OS.
Form 127

Days of Month
Weeks
1
2
3
4
5
Temperature
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
Pulse
150
140
130
120
110
100
90
80
70
60
Respirations
50
45
40
35
30
25
20
15
10
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
Weight in Pounds
Smears Eye
Cultures
Vaginal Smears
Admis—
Disch—
Number of Feedings and Ounces per Feeding
Per Cent Milk Mixture
Number of Treatments Per Day
Number and Character of STOOLS

Chart of Massachusetts eye and ear infirmary.

In regard to feeding, it was only in March, 1914, that permission could be obtained from the hospital authorities to admit the mothers of these babies whenever possible. This is now being done. In frequent instances, when the mother is unable to come permanently into the hospital, she can often come twice a day to nurse her baby. At present about two thirds of our babies receive at least part of their nourishment from maternal sources. When the mother is sick and cannot come, it is frequently possible to obtain breast-milk from her, and finally, in those cases in which the maternal milk is not available and breast-milk is a necessity, it is obtained from other institutions. For bottle-fed babies the best certified milk is provided, and the mixture is prescribed by the consulting pediatrician, who makes a regular visit twice a week and is on call at all times.

No one can deny that these babies are subjected to unfavorable conditions, for in some of our most severe cases it is necessary to cleanse the eyes every half hour during the twenty-four, and it is impossible to expect a baby to thrive under these circumstances. Here is where a question of the nicest judgment comes in; on the one hand, the eyes need the most frequent and careful cleansing, on the other hand, the premature or sickly infant needs warmth, quiet and as little handling as possible. No general rule can be laid down, except that it is probably best to err in favor of the general condition. Treat the eyes as infrequently as is consistent with safety. Watch the baby's weight. If the baby is losing ground, reduce the eye treatment even to once every three or four hours (when possible). If the baby is in good condition and stands the frequent handlings well, we may cleanse the eyes as often as is required by the severity of the disease, as shown by the amount of discharge and by the corneal conditions. Treatments of the eye, when this is possible, should never be carried out directly after a feeding, for in many instances the feeding will be regurgitated. Treat the eyes directly before the feeding, and then wait as long as possible. In the same way, the visits of the attending ophthalmologist should have regard to the time of feeding.

Finally, it should be repeated that in the zeal for frequent treatment the resisting ability of the baby must be remembered. Constant handling reduces this. The conjunctival discharge, as has been shown in a number of our cases, will persist for weeks in babies of low vitality in whom every known device of local treatment has been tried. Under careful observation as to the condition of the cornea, reduce the local treatment to once every three or four hours, and not infrequently an improvement will be noticed. The patient will begin to gain weight and the conjunctivitis will gradually subside.

PREMATURITY

Turning from the more general features of the disease, it may be of interest to take up some of the special points on which our series throws some light. Stephenson and other writers give prematurity as the chief general predisposing cause of the disease for three reasons: (1) less resistance, (2) thinness and delicacy of conjunctiva, and (3) lack of the vernix caseosa.

Just how important prematurity is in the etiology of our cases is somewhat difficult to determine. According to the information obtained from the parents and attendants in our cases, 17 were premature. In 9 of these the gonococcus was found in the ocular discharge. The weight was recorded in 110 cases; 16 patients were under 5 pounds and 11 more between 5 and 6 pounds.

MONOCULAR INFECTION AND PROTECTION OF THE SOUND EYE

Various writers say that ophthalmia neonatorum, as a rule, eventually become bilateral, though at the same time unilateral cases cannot be regarded as exactly rare. Statistics show monocular infections varying in percentage between 5 per cent. of 100 cases reported by McKenzie and Marshall, and 25 per cent. of 868 cases reported by Cohn.

In our series of 149 cases, 77 were definitely due to the gonococcus. Of these, 18 were monocular and remained so, a percentage of 23.4.

Forty-four infants out of 75 cases in which we have records on this point developed the disease in both eyes on the same day. Of the remaining cases, 18 infants developed the disease in one eye only, and of these, 8 showed evidence of conjunctivitis within three days after birth, while 10 developed it on the fourth day or later, 2 on the fifth day, 3 on the sixth, 1 on the ninth, 2 on the tenth and 2 later than ten days. It seems probable, therefore, that over one half of the monocular infections in this series were secondary and not acquired at birth. Of the remaining 13 cases the interval between the appearance of conjunctivitis in the two eyes was as follows: 11 within four days of the appearance in the other eye, 1 on the tenth day and 1 later. In no one of our cases did the infection of the second eye occur after admission to the hospital, a tribute to the efficiency of the nursing force.

The precautions taken to avoid infection are simple. The child should lie on the infected side; its hands and arms should be confined, as is the usual hospital practice with young babies; and a drop or two of protargol or argyrol may be put into the healthy eye two or three times a day. I am inclined not to attach so much importance to this last measure as to general cleanliness. The main precautions are those to be taken by the nurse. That infection does not take place is entirely due to her ever-watchful care.

BACTERIOLOGY

Occasionally an infant or adult comes to the hospital presenting the signs of a conjunctivitis, and under the microscope we find extracellular and intracellular gram-negative organisms corresponding in their morphology to the gonococcus. The patient is admitted to the wards and energetic treatment instituted, with the result that at the end of a week the eyes are nearly normal and the patient nearly ready to be discharged. Under the system of smears alone, the case would be regarded as a gonorrheal conjunctivitis.

To obtain accurate results, steps should be taken in every hospital to separate the gonococcus from the other gram-negative, biscuit-shaped diplococci, the most important of which group, from our standpoint, is the *Micrococcus catarrhalis*. This cannot be done by smears alone, and thus cultures should be taken, as the *Micrococcus catarrhalis* grows on ordinary mediums and the gonococcus does not.

In each of our cases, before admission to the hospital, two smears are now taken and several cultures made on blood serum and on hydrocele agar. The statistics shown by our cultures and smears are not of particular interest except for a few facts. From the present series, cultures were taken in 125 cases, and the *Micrococcus catarrhalis* (or some other gram-negative diplococcus, not the gonococcus) was grown three times. This shows a source of error, small but worthy of note, as Axenfeld first pointed out.

The gonococcus was found in seventy-seven of our 149 cases of ophthalmia neonatorum, and the clinical picture was characteristic. This gives a percentage of only 51.3, considerably lower than the usually quoted two thirds of all cases.

Of 1,829 cases collected by Stephenson, 65 per cent. showed the gonococcus. In but few of these, however, were careful bacteriologic examinations made and other gram-negative diplococci excluded. This figure is probably too high.

Bartels,[4] in a series of 70 cases, in which the bacteriology was carefully worked out, found gonococci in thirty-eight, or 54 per cent. He believes the gonococcus is the etiologic factor in about 50 per cent. of cases.

The striking fact, however, in my series is the presence of 56 cases in which no organisms whatever were found in the smear, although two smears were always examined, and in the case of a negative result, often several more. In several of these negative cases

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[4] Bartels: Klin. Monatsbl. f. Augenh., 1911, Part 1, p. 557.

McKee's suggestion was carried out, examining scrapings of the conjunctiva, but without result. This large series of negative smears, nearly 38 per cent., is undoubtedly due to the fact that our patients enter the hospital at a comparatively late date, the average age on admission being slightly over 12 days, and in almost all of them some sort of treatment has been carried on and the organisms have largely disappeared. Probably in a certain number of these negative cases the disease was caused by the gonococcus, and allowance must be made for this.[5]

A feature in our cases has been the difficulty in cultivating the gonococcus, and in only rare instances has a growth been obtained. Thinking that our hydrocele agar was at fault, other samples were obtained and tried, samples of proved efficiency, on which little difficulty had been experienced in cultivating gonococci from the urethra and joints. Even with these, however, no better success was obtained. Probably the late admission of our patients has also something to do with this difficulty of cultivation. In four of our gonorrheal cases staphylococci were obtained in pure culture. Bartels and Stephenson have noted similar findings. In one gonorrheal case in our series staphylococci and streptococci were grown together.

THE MILD TYPE OF INFECTION

To those who have the opportunity of seeing large numbers of cases of gonorrheal conjunctivitis, both adult and infantile, the great difference in the course of the disease is at once apparent. The infantile type under proper treatment, not too long delayed, is almost invariably benign in that it seldom leads to corneal damage when properly treated. The adult type in our hands is of much greater severity both in the intensity of the symptoms and in the amount of corneal involvement and subsequent damage.

To what is due the mildness of gonorrheal conjunctivitis in infants as compared with that seen at all other periods of life? That it is not due to a gonococcus of diminished virulence seems probable, for it is well known that when the organism is transferred from the baby's eye to that of another member of the family, or to an attendant, the conjunctivitis that ensues is of the regular, severe, adult type. The latent or chronic gonorrhea of the female or male will produce acute infection in another individual. It is often stated that an infection in the adult eye in a person who has harbored the gonococcus for some time in the urethra will take a milder course than if implanted on an individual who has never harbored a previous gonorrheal infection.

If this be true, we might assume that babies born of gonorrheal mothers come into the world possessed of a certain amount of immunity, and we might expect to be able to obtain from them blood which would show a positive complement-fixation reaction. We should also expect, if this were present, that it would be more marked in those babies who show a mild type of gonorrheal conjunctivitis.

In the hope of throwing some light on this problem, blood was obtained from twenty-three of our gonorrheal patients and the test performed. It is no easy procedure to obtain blood from an infant, on account of the diminutive size of the veins. The most favorable location was found to be the external jugular vein, but even there it was impossible in a number of cases to secure blood, and in many weakly babies it was not considered justifiable to make the attempt. The tests were all performed in the laboratory of the Massachusetts General Hospital. Of the twenty-three, only two were strongly positive: one an ordinary case; the second, one of the worst cases in our whole series, showing a very acute process with corneal involvement on admission, and scars of both corneas on discharge, with a duration of hospital treatment of fifty-four days. In three cases the reaction was weakly positive.

In spite of the absence of a positive fixation reaction in most of these cases, I am of the opinion that the mildness of the ocular disease is best explained by the assumption that a certain degree of immunity, greater in some cases, less in others, is transferred by the gonorrheal mother to her offspring. This immunity, like the passive immunity obtained by the individual from an injection of diphtheria antitoxin, disappears in a comparatively short time, but while it lasts it is of a sufficient degree to influence favorably the course of the disease. It is not impossible that in certain instances it is sufficient actually to prevent infection, though this is hardly probable. In most cases the degree of immunity obtained is not sufficient to produce a complement-fixation reaction in the blood. Just how long this immunity lasts is uncertain, probably only a few months.

In babies infected by the gonococcus, one would expect to find a coexisting syphilitic infection more often than in the apparently normal infant. With this in mind, in those cases in which blood was taken for the complement-fixation test for gonorrhea, an attempt was made to secure enough blood to permit the Wassermann test to be made. It was possible to do this in twenty-two instances. Twenty-one of these were negative, none of which showed any active sign of syphilis. One case was triple positive and showed the lesions of an active syphilis. This coincides with Müller's experience and that of others.

Müller[6] shows that nearly all infants with active symptoms give a positive reaction. Children who are apparently healthy, but whose mothers have active signs or a positive reaction, react in only about 40 per cent. of cases, but many more often develop a positive reaction later, often with positive clinical signs. Bertha Sabin concludes that when the mother has syphilis at the time of conception or is infected during the first five months, the child is almost invariably syphilitic. For the detection of hereditary syphilis in the infant, it is probably more practical to test the mother's blood, on account of the difficulty in getting blood from the infant, and a positive reaction is more likely to be obtained.

COMPLICATIONS DUE TO THE GONOCOCCUS

Vaginal discharge, although it does not frequently occur in infants with ophthalmia neonatorum, has been occasionally noted. Stephenson notes one case in his series; Aichel reports a case and expresses the opinion that if it were looked for systematically it would be found more often. A number of other cases are to be found in the literature. As would be expected, it is most often found associated with a breech presentation.

In some one hundred of our cases, we have looked for a vaginal discharge (the exact number cannot be given, as there is no exact record of the date on which the search was instituted—it was previous to December, 1913), and it has been noted in 17; in 15 it was slight, in 1 moderate and in 1 excessive. In 4 cases a gram-negative diplococcus (presumably the gonococcus) was found; in 3 instances associated with gonorrheal conjunctivitis, while in the fourth the ocular smear was negative, but clinically the case was gonorrheal. Unfortunately, there is no record of the presentation at birth in these cases. It seems, therefore, that congenital gonorrheal vaginitis is not a very rare condition.

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[5] It is to be regretted that in the cases of the series here reported no search was made for inclusion bodies.

[6] Müller: Quoted by Boardman, Jour. Cutan. Dis., August, 1914.

No other complications due to the gonococcus appeared in this series. More recently, however, a patient with arthritis was admitted, the knee and wrist being involved. The knee joint was aspirated and the gonococcus grown in pure culture. A vaginal discharge was also present in this case.

THE PARENTS OF BABIES WITH GONORRHEAL CONJUNCTIVITIS

These people are dangerous to the community. They have infected at least one individual, their offspring, and they may infect others in the household. Also, the safety of their future children should be considered. Our duty does not end with the care of the infant. A determined attempt should be made to induce the fathers and mothers to seek treatment when necessary.

Through the praiseworthy efforts of our social-service department, in which the initiative to this end started, a few months ago a definite policy was instituted, and an attempt is now being made in every case to accomplish this result. The obstacles have been many, and the success thus far has been small in proportion to the results which may be accomplished in the future. Of 29 fathers from whom information could be obtained, 18 gave a history of previous urethritis, 2 gave a doubtful history, 2 fathers were under treatment at the Massachusetts General Hospital, 1 showed a gonorrheal urethritis and the other a chronic prostatitis with a weakly positive gonococcus-fixation test; 9 denied venereal disease.

Thirty-one mothers gave a history of vaginal discharge, 2 admitted syphilis and gonorrhea and 2 admitted syphilis alone. In 1 case gonorrhea was doubtful. Eighteen denied venereal disease.

Thirteen mothers were examined in the genito-urinary clinic of the Massachusetts General Hospital. One of these had both syphilis and gonorrhea, 1 had syphilis and a urethritis (gonorrhea doubtful), 4 had gonorrhea, 4 were negative and 3 more had a urethritis, but gonococci could not be found. Treatment was prescribed for those needing it.

CORNEAL DAMAGE: PLACING THE RESPONSIBILITY

This phase of the work in relation to conservation of vision largely represents prevention of future damage through education of the parents by the most valuable of all educators, experience, and by endeavoring to eradicate disease from them for their own personal good and for the safety of future children. These ends can only be accomplished by personal influence. There is no legal power to prevent the mother from infecting her own offspring at birth. As soon, however, as the child has come into the world and has developed a purulent discharge, the law provides for the conservation of its eyesight.

All cases coming into our hands with a damaged eye from this disease are reported to the Massachusetts Commission for the Blind, a careful investigation is made, and if sufficient grounds are found, the guilty person is prosecuted by the proper authorities. A number of successful prosecutions have been carried out in Massachusetts in the last three years, largely through the energy and persistence of our very active Commission for the Blind, and in the opinion of competent observers, these prosecutions have been a very potent factor in reducing the number of cases of blindness and damage to sight, all too frequent as a result of this disease.

Corneal involvement was present in 24 cases of our series (16 per cent.); in 8 but one eye was affected, in 16 both. In 16 of the 24, the gonococcus was found, and it was undoubtedly the cause of the disease in some of the cases in which the smear and culture failed to disclose it. Of these 24 cases, 8 were brought to the hospital within the first five days of the disease, 6 in from six to ten days, 3 ten days to three weeks, 6 at a later period, and on 1 there was no data.[7]

Of the twenty-four, eight were discharged with one or both corneas damaged. Five of these showed the gonococcus, 1 showed a negative smear and culture, but a gram-negative diplococcus was found in the vaginal discharge. Two were negative, and the presumption is that one of them was gonorrheal. In the other, the baby of a mother with vaginitis and father with urethral discharge, this baby being born in a lying-in hospital, a prophylactic was used. On the seventh day a discharge was noticed, and by mistake a drop of 25 per cent. nitrate of silver was instilled. The infant was brought to the infirmary with a large central corneal ulcer in the right eye, but with the left cornea clear.

Five patients were discharged with a single eye damaged. In three both were damaged, but a moderate degree of sight may be hoped for.

In one case the left cornea was perforated and staphylomatous, the right perforated also, but probably a little sight remained. This case, the worst of our series, was due to the negligence of the chairman of the board of health of the town in which it occurred. Unfortunately, it was deemed inexpedient to prosecute him, as the family of the child were impossible witnesses.

In no case in this series did corneal involvement take place after the child was received in the hospital. Our record of corneal damage compares very favorably with that of others. Bartels saw, in 38 cases of gonorrheal ophthalmia neonatorum, 10 eyes totally lost and 4 partially; in 2 cases the child lost both eyes.

Morax[8] reports 110 cases seen in the Hospital Lariboisière between 1906 and 1913. Among these there were 9 cases of perforation of the cornea, 6 of which already existed at entrance. In 9 more cases there was ulceration of the cornea without perforation, and of these 3 existed at entrance. This gives 9 cases of corneal damage after entrance in the hospital out of 110 cases, as compared with 77 cases in my series, with no corneal damage developing after the patient had been admitted. Taking Morax's summary, 18 patients out of 110 were discharged with corneal opacity more or less severe, a percentage of 16. Other figures of corneal damage are those of Groenow, 25 per cent. of

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[7] More recently we have had an ophthalmia neonatorum with a monocular corneal opacity in which the pneumococcus was found in large numbers. The opacity cleared in a week without damage.

[8] Morax: A propos de traitement de l'ophtalmie gonococcique du nouveau-né, Ann. de gynéc. et d'obst., 1914, p. 129.

41 cases; Haupt, 28 per cent. of 45 cases; Kroener, 25 per cent. of 62 cases; Druais, 25 per cent. of 24 cases.

Harman[3] found in a series of 231 cases of ophthalmia neonatorum of all degrees of severity, and nongonorrheal and gonorrheal cases combined, 13 cases of corneal damage, 5.6 per cent. Of the 13, 3 were blind in both eyes and 5 more blind in one eye.

In my series of 77 cases in which the gonococcus was found in the secretion, 5 patients were discharged with damaged cornea, a percentage of only 6.5.

All our patients with corneal damage have been carefully investigated, and when possible, steps have been taken to bring the guilty party to book. One physician has been prosecuted and found guilty, but appealed, and the case is not yet settled. One midwife was forced out of practice, but no further penalty was inflicted in view of her advanced age (84). One midwife was educated in her duties. In the others, either no ground for prosecution was found, or the difficulties were so great as to make conviction seem impossible. The results of this endeavor to place the responsibility are not brilliant in this series, but this method undoubtedly forms one of the most potent weapons in preventing loss of sight from this disease. It should be remembered also that in Massachusetts we are working under very favorable conditions as compared with all but a very few of the other states, as we have a good birth-reporting law and an effective law for the reporting of ophthalmia neonatorum. Moreover, we have an active Commission for the Blind, which has made it its business to see that these laws are enforced. What is needed next is greater control by the State Board of Health over the local boards, since these local boards vary greatly in efficiency.

LOCAL TREATMENT

The local treatment of ophthalmia neonatorum has occupied a large share of the attention of writers on this subject. There is nothing to be added to what has been said many times over, and indeed, no advance in this direction is to be expected until some specific drug or serum is discovered.

Various antigonococcus serums and vaccines have been used in the past, but on the whole the results have been indifferent. The latest of these, the vaccine of Nicolle and Blaizot, although heralded as a great advance, has hardly borne out the claims of its adherents. Among others, it has been used by Morax, who reports a favorable influence on the disease in a few cases and no influence in others. He would only advise employing it as an adjunct to the regular treatment with the silver salts.

In our cases the eye is cleaned as often as necessary to keep it reasonably free of pus, be it every twenty minutes or every three hours. The lids are wiped clean and then separated with the fingers; the conjunctival sac is washed out with boric acid squeezed from a pledget of cotton, several drops of one of the milder silver salts are instilled, the excess wiped away, and the lids are liberally smeared with some bland salve, such as White's ointment or boracic ointment. Injury to the corneal epithelium is most carefully guarded against. In the later stage of the disease, if the conjunctiva becomes boggy and little improvement is taking place, silver nitrate and zinc sulphate are called into use.

Regarding the silver preparation to be used in the acute stages of the disease, I believe that a nonirritating drug is indicated; that the stronger silver preparations, such as nitrate, do good in inflammations by their ability to set up a reaction and draw in protective substances from the neighboring tissues; and that their place is therefore in those inflammations in which a sufficient reaction does not already exist. This is not the case in gonorrheal ophthalmia, since the reaction is often too great (especially in the adult form) for the conjunctival circulation to take care of. Bactericidal power is of little importance, as the gonococci lie too deep to be reached by any remedy which we have yet at our disposal, and since, as I among others have shown, the germ-killing power of even the stronger silver preparations is markedly impaired as soon as they come in contact with the tissue proteins. Argyrol is, at the most, a very weak bactericide to start with.

In the present series argyrol 25 per cent. has been used almost exclusively. Probably protargol in weak solution, 2 per cent. or 4 per cent., would be equally efficacious, although its specific gravity is not so high. The controversy over the merits of the various silver salts has waged long and has not arrived at a final settlement.

For the reasons stated above, I believe that in the acute stages of the disease a mild remedy is indicated. The high specific gravity of argyrol, 25 per cent. (in the neighborhood of 1.070), may be of value in its cleansing action; it is surmised that it tends to float the pus out of the hollows of the conjunctival sac. A manifest advantage of such a solution, and one to which I have not seen reference, is the early warning given of a break in the corneal epithelium by the immediate staining of the area involved.

It is not improbable that in the past harm has been done in this disease by the use of too strong applications. It would seem that the virtue of the milder ones lies partly in their negative qualities.

It should be expressly stated, however, that the foregoing remarks apply solely to the treatment of ophthalmia neonatorum, and not to its prophylaxis, in which the nitrate is supreme.

Before discharge of gonorrheal patients from the hospital, two negative smears at an interval of twenty-four hours or over are required.

ABSTRACT OF DISCUSSION

Dr. Joseph L. McCool, Portland, Ore.: It seems to me that the best way to handle ophthalmia neonatorum depends largely on the locality in which one practices. Those of us who live on the Pacific coast do not see as many cases as do our colleagues in the East, for we do not see so much poverty and wretchedness. Furthermore, the demand being insignificant, our facilities are inadequate for the proper handling of these cases. In view of these facts it seems to me that so far as we are concerned these cases can be treated best at home with, of course, as careful instructions as we can give to those in whose care they are placed.

In considering the subject of prophylaxis, I was surprised to learn from several of our most prominent physicians whose obstetric experience is large that there is a lack of uniformity in the application of the Credé method; some of them use it only occasionally. This is to be deplored, as there can be no compromise on this question. It should be used in every case. In educating the public to report this disease, it is well to remember that we can get better results if we assure them that a large percentage of these cases are not gonorrheal in origin and should not be concealed from any sense of shame. This, I believe, was pointed out by the late Mark D. Stevenson several years ago. Dr. Derby's application of the complement-fixation test to these cases is very interesting and original, and again emphasizes the fact that it is a mistake to regard gonorrhea as a purely local disease. I am inclined to agree with the essayist in the use of mild cleansing solutions used at frequent intervals and, despite the poor bactericidal value of argyrol, to follow with the liberal use of this silver salt.

Dr. W. H. Roberts, Pasadena, Calif.: I would like to ask Dr. Derby if he has any figures showing in what proportion of cases in which ophthalmia neonatorum develops, the Credé method has been employed?

Dr. H. H. Stark, El Paso, Tex.: Dr. Derby has called to my attention a point that I have overlooked in the treatment of clinical cases. I have probably the worst class of clinical cases of any man here, all Mexicans of the lower class, people without any means, very little education and hard to control. I have probably had in the last five years between eight and ten thousand cases in the clinic; of these, a hundred to a hundred and twenty-five were cases of ophthalmia neonatorum. These cases no doubt represented only a small per cent. of the cases in our community. Those of you who are acquainted with Mexico know of the prevalence of blindness which occurs in childhood. This blindness in the majority of cases is due to this disease. It is impossible to put these patients in the hospital as the mother will not go, neither will she permit her child to go. Consequently one must rely on the treatment given at home. We therefore have adopted a routine treatment consisting of 2 per cent. nitrate of silver solution every other day, in the clinic, argyrol at home several times a day, and a wash of 1:5,000 permanganate of potash. With the use of this medicine I doubt if the child's eyes are ever opened and washed out with the permanganate solution, for it is a common thing for patients with eye trouble to come in several weeks after beginning treatment and ask for permission to wash their faces. It is an exception to have a patient admitted to the clinic in whom the cornea is not clouded. But with this inefficient treatment it is seldom that we lose an eye. Consequently I think there may exist an immunity, as suggested by Dr. Derby Recently we have proved in our clinic that there exists an immunity against syphilis, by having the Wassermann test done on fifty patients, thirty men and twenty women, complaining of no especial ailment other than minor ills, in which we found a uniformity of 65 per cent. positive. I therefore believe there may exist a partial immunity in the children against the eye infection.

Dr. Charles L. Williams, Topeka, Kan.: I have gained some valuable information from Dr. Derby's paper. I would like to say, however, that I believe in treating these patients only in a hospital. My only bad results have been when I left the patient in the home with or without the nurse. There is too much responsibility resting on the ophthalmologist to allow these patients to be anywhere except in the hospital. They are too important. I insist on the mother going there with the child. I do not use anything except the nitrate of silver, 1 grain to the ounce. It will do the work if properly used. It is to be used twice a day, and the main part of the treatment is flushing the lids. Keep the secretions thoroughly washed away by irrigations every half hour if necessary. After that applications of ice, to reduce local temperature, are comforting to the patient and retard the infection.

Dr. Edward Jackson, Denver: After seeing Dr. Derby's work in his hospital, as I did a few months ago, I was impressed with the idea that he had there worked out nearly an ideal method of treating ophthalmia neonatorum, with the hospital facilities he had and his ability to bring in the mothers at least two or three times a day to nurse the infant if not kept there all the time. But for that line of treatment you must have the hospital, together with those facilities, and so organized. A great many of these patients will have to be treated without those facilities. There should be a distinction made between the treatment under the circumstances Dr. Derby has set forth, and under other circumstances that a great many men will have to contend with.

With the child in the hospital and with efficient, experienced nurses in charge, there is no reason, certainly not in the great majority of cases, for resorting to silver nitrate or other strong applications. Regular and thorough cleansing is all that is necessary. But if the patient must be left with the parent or nurse in the home for several hours, and sometimes without the care of a nurse, then I believe the use of the silver nitrate cannot be given up. The bad results I have seen have all been due to repeating the applications too frequently. I do not refer to the weak solutions, say 1/10 grain to the ounce, but to 2 or 4 per cent., which is perhaps strong enough to use in any case. If such a solution is to be used it should be applied not more often than once in two days, or perhaps once in twenty-four hours. This, with careful cleansing, is the best thing that can be depended on in home treatment. Strong solutions I have seen used as often as once in six hours, and such treatment is certain to be followed by serious results.

Dr. Robert W. Miller, Los Angeles: Unquestionably one of the most important things is prophylaxis, and I trust that the ophthalmologists will continue to insist on prophylactic measures and work through the proper channels persistently and systematically to secure that end. I would not refer to the use of concentrated silver nitrate solutions but for the fact that I have met within the last few months a number of very capable ophthalmologists who still defend their use and employ them. The one thing we wish to avoid is corneal involvement. To my mind the use of concentrated nitrate of silver solution tends to invite corneal infection by damaging or destroying the epithelial layer. Previous statistics have indicated pretty clearly that we cannot rely on any known drug or chemical agent for the destruction of the gonococci in the deeper portions of the connective tissue. The better plan is to wait and let nature conduct, as well as she can, her campaign against these invading bodies. The keynote consists in constant, gentle cleanliness. We have had many conflicting reports in regard to the action of argyrol. Its manufacturers have told us that it is bactericidal. Others have told us it has no bactericidal effect whatever. Bruns, of New Orleans, reported a few years ago having employed argyrol in a series of cases with very gratifying results. The point of vital importance is the continuous "flooding" of the cornea and conjunctival sacs, with the 25 per cent. argyrol solution. I have had an opportunity of using it in a number of cases and have been well pleased with it. I do not speak against the use of nitrate of silver entirely. I admit its value in certain cases. I speak only against the concentrated solution, that may prove harmful to the eye.

Dr. E. C. Ellett, Memphis, Tenn.: In regard to the method of prophylaxis, I do not think we should countenance any modification of the Credé method. This should not be taken to mean that there are not other methods which are quite satisfactory, but if we present a solid front on this point it would avoid any confusion in the minds of those who are guided in these matters by the experience and advice of others, and would result in placing the responsibility for the occurrence of these cases where the responsibility belongs.

Dr. George S. Derby, Boston: I must take issue with Dr. McCool, in that I do not think it is safe to handle these cases in the home unless one has a nurse. This disease needs skilled nursing more than any other feature. More injury to the cornea is done by scratching the epithelium with the nail than in any other way. I believe it would be difficult to work out the statistics of disease after treating by Credé's method. That question is best determined by statistics obtained from the lying-in hospital.

In regard to what Dr. Williams said, I would simply like to repeat what I said concerning the value of argyrol. In addition, it is nonirritating, which is a great advantage, and secondly, it will bring to your attention a break in the epithelium when it first occurs. In reply to the question why we do not use nitrate of silver in the sound eye, I can say that under our present method of treatment the sound eyes do not become infected. Argyrol is much less irritating and we do not see the necessity of putting in a drop of silver when the argyrol does just as well. In Massachusetts the law requires physicians to report all cases of ophthalmia neonatorum immediately. One hesitates to disagree with Dr. Jackson, but after what I have seen of the treatment of ophthalmia neonatorum, I cannot help but feel that nitrate of silver is contraindicated. I do not believe nitrate of silver works as a bactericide. It does good by setting up a reaction. In diseases of this kind you have a marked reaction and you do not ned any more. Treat it mildly and you will get on better than if you put in stronger drugs. I believe thoroughly in 1 per cent. of nitrate of silver as a prophylactic.

A DISCUSSION OF THE CANCER MORTALITY

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In discussing the cancer mortality there are a number of questions which should be considered with it. While the figures which I have used are, within the limits of slight error, correct, such questions as the relation of improved methods of diagnosis to the cancer mortality, or the relation of changes in the composition of the population to the cancer mortality, must be given proper consideration in the final analysis of any cancer statistics. Whether or not these questions are factors of importance in the mortality rates of cancer is, at present, more or less a matter of personal opinion, and will remain so until through some laborious investigation their exact status will be determined.

The population figures used here were compiled from the reports of the census bureau, and the mortality figures were all taken from the report of the Division of Vital Statistics of the Census Bureau. That the mortality reports were drawn from a large portion of the population of the United States is evidenced by the fact that the registration area for deaths represented 40.50 per cent. of the population of the United States in 1900, and 58.30 per cent. in the year 1910.

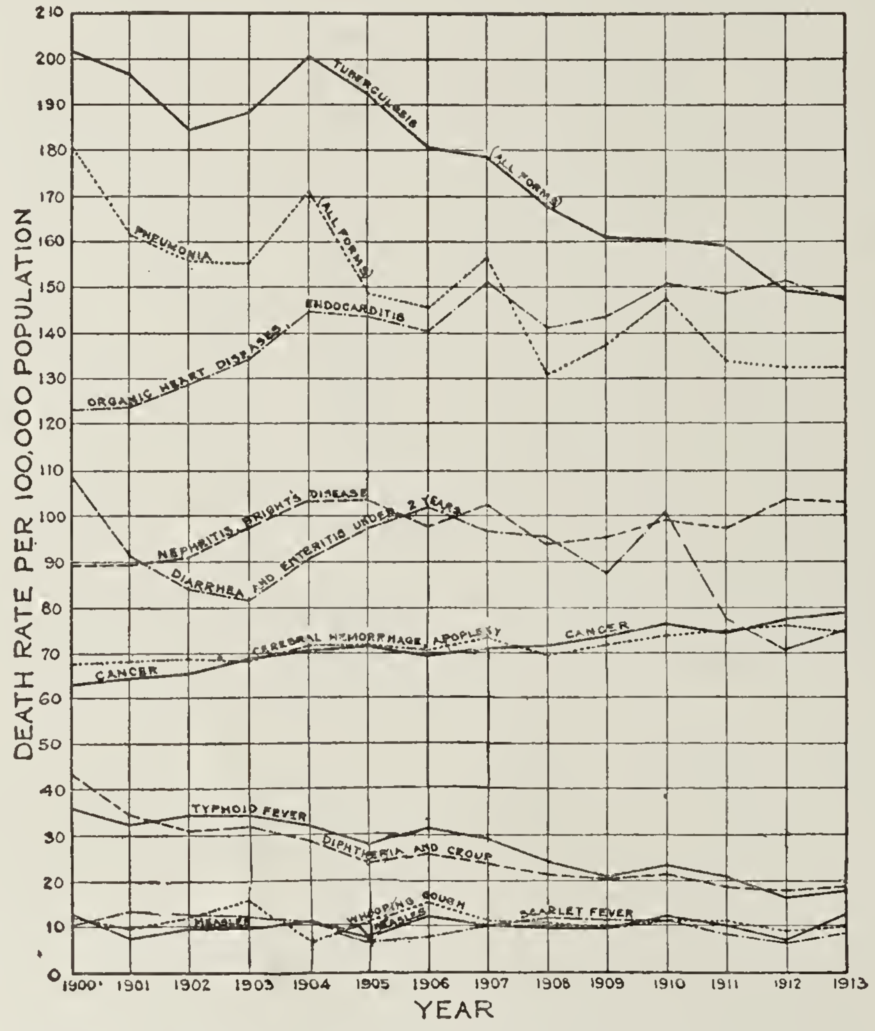

Chart 1.—Deaths per one hundred thousand from cancer and other causes, 1900 to 1913 (mortality report, census bureau).

In order to obtain sufficient material for several of the tables, I was compelled to confine the figures to those for the registration states, which does not include quite the population of the registration area. In the year 1900 they include 40.48 per cent. of the population of the United States; in the year 1910, 51.37 per cent. of that population. The figures and rates have been carefully compiled, and in no single year give divergences which would be considered unusual. Without further discussion at this time I will give the result of a survey of the cancer mortality for ten years in the registration area. In the registration area for the year 1913, there were 49,928 deaths from cancer. Assuming that cancer is as prevalent in that portion of the population not included in the registration area, the total deaths in the year 1913 would be 76,694.

TABLE 1.—REGISTRATION AREA OF CANCER FOR PERIOD 1904-1913

Year	Deaths	Per Cent. of Total Deaths	Mortality Per 100,000	Estimated Population
1904	23,395	4.24	70.15	33,349,137
1905	24,330	4.46	71.36	34,094,605
1906	29,020	4.41	69.12	41,983,419
1907	30,514	4.44	70.93	43,016,990
1908	33,464	4.84	71.52	46,789,913
1909	37,562	5.13	73.84	50,870,518
1910	41,039	5.10	76.22	53,843,896
1911	44,024	5.25	74.27	59,275,977
1912	46,531	5.55	77.01	60,427,247
1913	49,928	5.60	78.88	63,298,718

In reviewing the cancer mortality over a ten-year period, from 1904 to 1913, inclusive (Table 1), a steady increase is noted in all years except the year 1906. In the year 1904 there was a mortality of 70.15 per one hundred thousand; in the year 1913 it had increased to 78.88 per one hundred thousand, a gain of 8.73 per one hundred thousand in a ten-year period. This represents an increase of 12.47 per cent. in the cancer mortality per one hundred thousand for a ten-year period. The relation of the cancer mortality to the general mortality during the same period shows a corresponding increase. In the year 1904 the deaths from cancer represented 4.24 per cent. of the total deaths, while in the year 1913, 5.60 per cent. of all deaths, an increase in its relation to the general mortality of 32.07 per cent. The cancer mortality in this ten-year period, both in its relation to the general mortality and in its relation to the population, shows, except in the year 1906, a steady increase. This increase is graphically illustrated in Chart 1 (taken from the mortality statistics of the census bureau), and for a fourteen-year period shows a gradual rise in cancer deaths. The decline of the death rate in several of the major infectious diseases, namely, tuberculosis, pneumonia, typhoid fever, diphtheria and croup, stands in contrast to the cancer mortality.

SEX DISTRIBUTION

If our figures show an increase in cancer deaths, it would be pertinent to inquire into the distribution of this increase in the male and female portions of the population (Table 2).

A glance at Table 2 shows that cancer is more frequent in females than males. In the year 1904 cancer deaths in males constituted 1.61 per cent. of the total mortality; in the year 1913, 2.25 per cent., an increase of 39.75 per cent. in its relation to total deaths in ten years. In the female population for the year 1904 the cancer mortality constituted 2.63 per cent. of the total mortality, and in the year 1913, 3.35 per cent., an increase of 27.38 per cent. in the decennium. Comparing the percentage of increase in males and females in relation to the general mortality, we have in the male population an increase of 39.75 per cent., and in the female, 27.38 per cent.; an 11 per cent. excess increase in the male population.

This change in the distribution of the cancer mortality is strikingly shown by comparing in Table 2 the percentage of cancer deaths that occurs in the male and female population. In the year 1903, 37.96 per cent. of all cancer deaths occurred in the male population, while 62.04 per cent. of the cancer mortality occurred in the female population, and ten years later, 1913, 40.15 per cent. of the cancer mortality occurred in the males and 59.85 per cent. in the females. It appears here that the pendulum of cancer mortality is slowly swinging out of the female and into the male population. This is graphically shown in Chart 2. The lower line over the double cross-hatching represents the percentage that the cancer mortality in male and female population bears to the total mortality, and the upper line over the single cross-hatching indicates the percentage of cancer deaths in males and females by years.

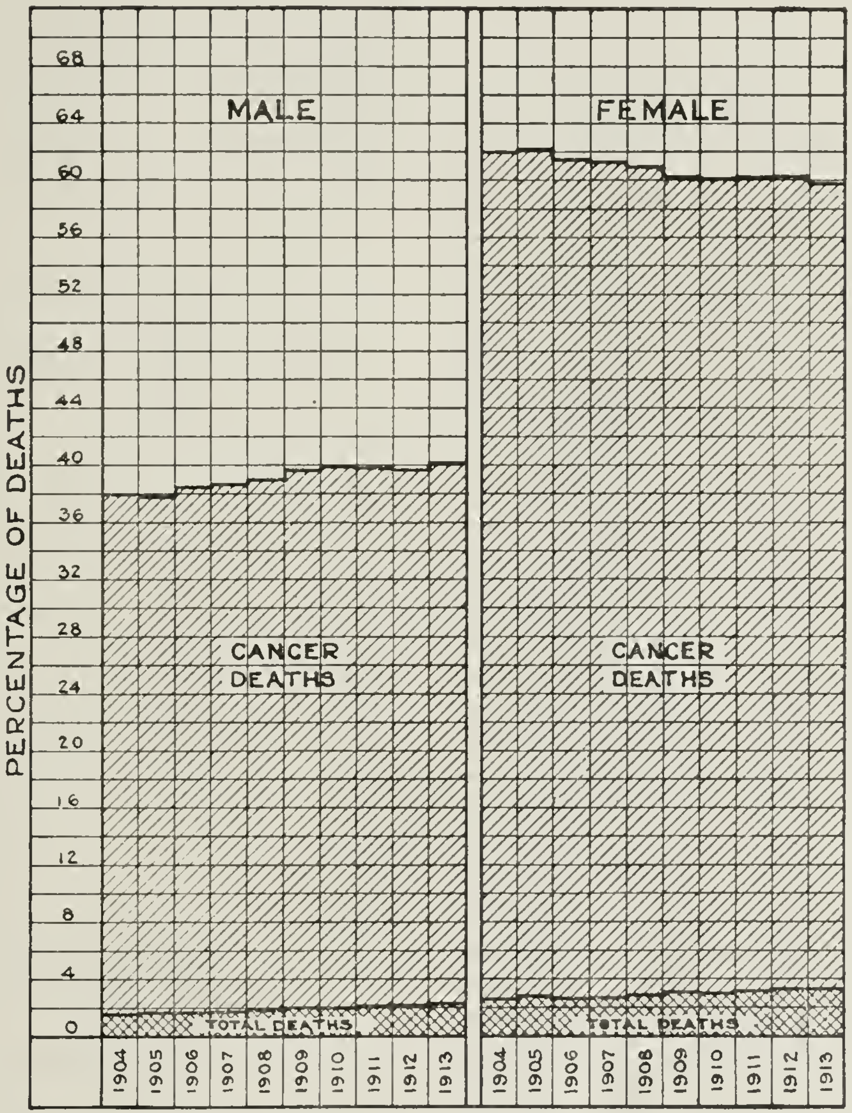

Chart 2.—Relation by sex and year of cancer deaths to total deaths, and the distribution of the percentages of cancer deaths in the male and female population.

There can be little argument regarding the correctness of this particular phase of cancer mortality. This is a discussion of the distribution of cancer deaths in two divisions of the population, and no matter what the relation of other conditions be to the general cancer mortality, it could not affect, to a great extent, figures whose basis of comparison is entirely within the cancer deaths tabulated.

AGE DISTRIBUTION

It was necessary, in order to obtain accurate population figures in the table showing age distribution of cancer, to confine the data to that obtained from the registration states. I also purposely constructed these tables from the data for the years 1900 and 1910, which, being census years, would add to the accuracy of the tables in their respect to the population figures.

The age distribution of cancer is now and has been one of the most interesting phases of cancer mortality. Whether or not cancer is more frequent at earlier or later ages has been a matter of conjecture for some years. The changes in the age distribution of cancer and its bearing on the mortality can only be discerned by proper statistical investigation.

In Tables 3 and 4, we have the age distribution and mortality for the years 1900 and 1910. By referring to these tables it will be noticed in the year 1900 that 10 per cent. of the total cancer mortality occurs prior to the fortieth year, and that in the year 1910 about 9 per cent. of the cancer mortality occurs prior to that age.

The number of cancer deaths at various age periods, however, does not indicate properly the age distribution of cancer. It has been a common error for persons inter-

TABLE 2.—DEATHS FROM CANCER, REGISTRATION AREA, 1904-1913; PER CENT. OF TOTAL DEATHS IN MALES, PER CENT. OF TOTAL DEATHS IN FEMALES, AND PER CENT. OF TOTAL DEATHS *

Year	Male Deaths from Cancer	Per Cent. of Cancer Deaths	Per Cent. of Total Deaths	Female Deaths from Cancer	Per Cent. of Cancer Deaths	Per Cent. of Total Deaths	Total Cancer Deaths	Per Cent. of Total Deaths
1904	8,881	37.96	1.61	14,514	62.04	2.63	23,395	4.24
1905	9,189	37.77	1.68	15,141	62.23	2.78	24,330	4.46
1906	11,166	38.48	1.70	17,854	61.52	2.71	29,020	4.41
1907	11,800	38.67	1.72	18,714	61.33	2.72	30,514	4.44
1908	13,045	38.98	1.89	20,419	61.02	2.95	33,464	4.84
1909	14,918	39.72	2.04	22,644	60.28	3.09	37,562	5.13
1910	16,373	39.90	2.03	24,666	60.10	3.06	41,039	5.09
1911	17,525	39.81	2.09	26,499	60.19	3.16	44,024	5.25
1912	18,464	39.68	2.20	28,067	60.32	3.35	46,531	5.55
1913†	20,045	40.15	2.25	29,883	59.85	3.35	49,928	5.60
	141,406	39.30	1.95	218,401	60.70	3.02	359,807	4.97

* Assuming the population of the United States to be constant for the next ten years, and the general death rate to average that of the registration area for the period 1904-1913 (15.06), at the present rate of increase of cancer deaths, would give in the year 1923, a surplus of 19,819 deaths from this cause, making a total of 101,427 deaths for the year.

† Estimated population of the United States in 1913, 96,765,573.

preting statistical tables to pay too much attention to percentages in analyzing the age distribution of deaths, for the real measure of the true mortality at any age period is found in the specific rates for that age period. In examining the specific rates for cancer for the two years, 1900 and 1910, it will be found that up to the fortieth year there are no marked increases in the mortality rates. After the fortieth year, however, the deaths per hundred thousand show an increase in the year 1910 over all rates in the year 1900; furthermore, this increase is a progressive one, that is, the greater the age period the greater the relative and absolute increase. In the year 1900, between the ages of 40 and 50, there were 90.88 deaths per hundred thousand persons at that age, while in 1910 there were 101.36 deaths at the same period. In the period from 50 to 60 years, in 1900, there were 198.43 deaths per hundred thousand, and in 1910, 229.42 for the same period; while in the age period from 70 to 80, in 1900, there were 495.84 deaths per hundred thousand, and in 1910, 661.54. The greatest increase in mortality rates is seen in the age period from 80 to 90 years, which was 587.44 per hundred thousand of the population in 1900, and 811.87 per hundred thousand in 1910.

This is graphically illustrated in Charts 3 and 4. Chart 3 gives the percentages of deaths which occur in the various age periods. It will be noted (Chart 3) that the greatest percentage of cancer deaths in 1900 and 1910 occurred in the age period from 60 to 70 years and that the percentage of deaths declined rapidly to 90 years and over, but a true graphic picture of cancer mortality at various age periods is shown in Chart 4. Here it is seen that the deaths per hundred thousand of the population between 60 and 70 years is lower than in any of the age periods thereafter, even though that age period contributes the greatest number of cancer deaths. The most interesting point on this chart is the increase in the mortality in ten years as evidenced by the height of the column at various age periods in 1910 as compared with those of 1900.

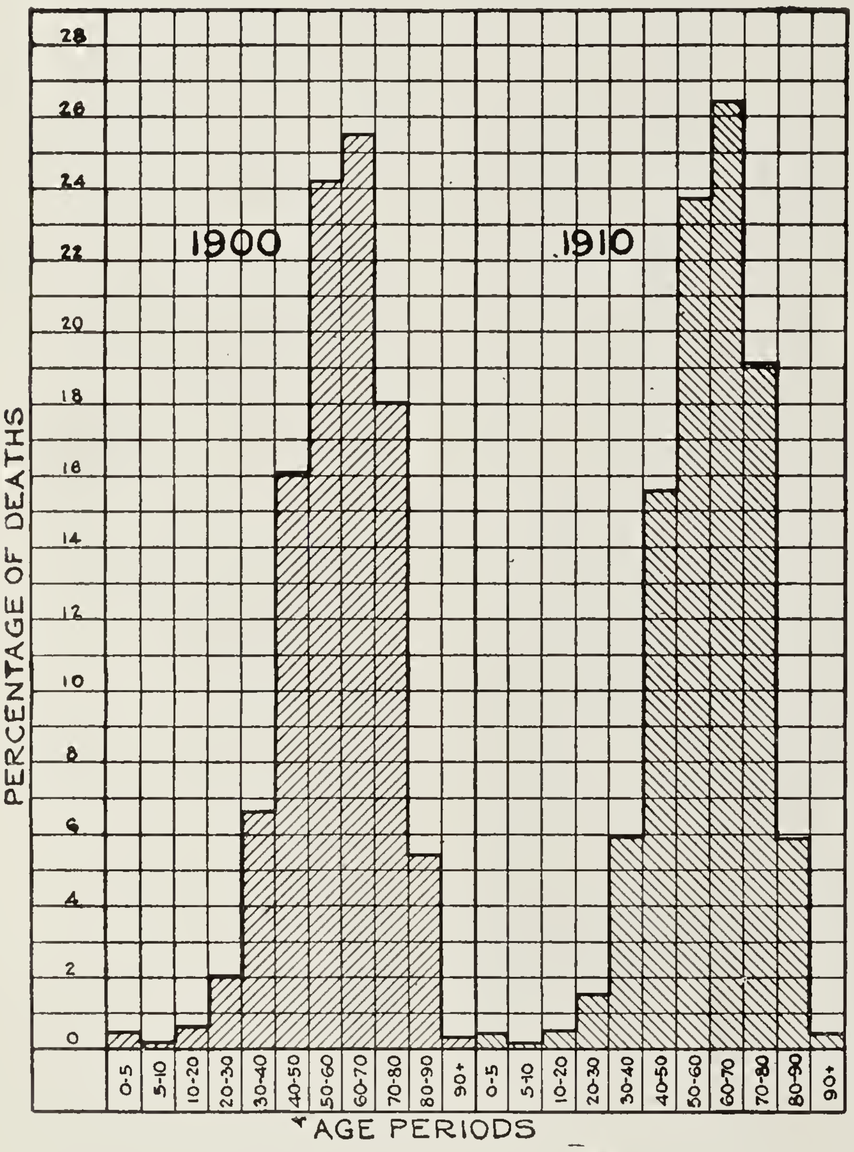

Chart 3.—Percentage of cancer deaths by age periods, 1900.

SITE OF CANCER

Unfortunately the statistics concerning this most interesting phase of cancer mortality cannot be analyzed as they should be on account of the manner in which these causes of death are classified, but there are some points of general interest which are worth reviewing.

Table 5 gives the deaths per hundred thousand of the population from cancer according to the organs affected by year periods for ten years. The most frequent site of cancer, as evidenced by the mortality, is cancer of the stomach and liver, from which 31.2 persons out of every hundred thousand in the registration area died in the year 1913. The next in order of frequency is that of the female genital organs, the mortality for which was 12.2 per hundred thousand of the population. Cancer of the intestines, with a mortality of 10.5 is followed closely by cancer of the breast with a mortality of 7.3. In the decennial period 1904-1913, all forms of cancer show an increase. The most marked increase is seen in cancer of the intestines, 45.83 per cent., and cancer of the mouth is next in order with an increase of 40.90 per cent. Cancer of the breast with cancer of the stomach and liver increased 19.67 and 19.08 per cent., respectively. Cancer of the female genital organs increased 18.44 per cent., while cancer of the skin has shown little if any increase in the period. It is interesting to note here the percentage of increase of cancer which should be easy to diagnose, and that which is more difficult. From the standpoint of diagnosis, these cancers could be divided roughly into those which can be easily observed, and those of internal organs. The greatest percentage increase of cancer is that of cancer of the intestines, 45.83 per cent., which is nearly balanced by the increase of cancer of the mouth, 40.90 per cent., and, likewise, cancer

TABLE 3.—CANCER IN REGISTRATION STATES, 1900

Age Period	Deaths From Cancer Reg. States	Deaths per 100,000	Per Cent. of Total Cancer Deaths	Estimated Population, Registration States
0- 5	62	2.99	0.49	2,072,797
5-10	26	1.31	0.20	1,984,846
10-15 15-20	83	2.29	0.65	3,624,065
20-25 25-30	260	6.94	2.04	3,745,605
30-35 35-40	853	27.47	6.68	3,104,747
40-45 45-50	2,055	90.88	16.09	2,261,283
50-55 55-60	3,092	198.43	24.21	1,558,210
60-65 65-70	3,259	333.49	25.52	977,227
70-75 75-80	2,302	495.84	18.03	464,260
80-85 85-90	697	587.44	5.46	118,651
90-95 95 and over	46	464.27	0.36	9,908
Unknown	34	86.86	0.27	39,143
Total	12,769	63.97	100.00	19,960,742

of the stomach and liver has increased 19.08 per cent. and is balanced by an increase of 19.67 per cent. in cancer of the breast.

From the information obtained from the foregoing statistical tables we can come to but one conclusion, that is, that the cancer mortality is increasing. To be sure that the increase is real we must exclude the possibility of an increase in the number of reported deaths by better diagnosis, and changes in the population which would tend to add additional numbers to that portion in the cancer ages.

Undoubtedly new methods of diagnosis have greatly facilitated the detection of cancer, and if proper morbidity reports could be obtained the result of these methods would be reflected in the rates for incipient cancer, which would always include a fair percentage of obscure and borderline cases.

The matter of diagnosis of advanced cancer is, in most cases, a much simpler matter. The classical symptoms of advanced cancer are and have been the same for a number of years, and most physicians are conversant with them. In mortality statistics of cancer we are dealing with reports of cancer cases the symptoms of which are so evident as to be considered the primary cause of death, and the question of refined diagnostic methods and the inclusion of borderline cases cannot be a large factor in determining the rates. I submit that it is hardly probable that physicians of a decade ago were so deficient as not to be able to recognize advanced cancer.

TABLE 4.—CANCER IN REGISTRATION STATES, 1910

Age Period	Deaths From Cancer, Reg. States	Deaths per 100,000	Per Cent. of Total Cancer Deaths	Estimated Population
0- 5.........	159	3.27	0.44	4,867,909
5-10.........	64	1.44	0.18	4,438,038
10-15....... 15-20.......	197	2.28	0.54	8,652,398
20-25....... 25-30.......	562	6.25	1.55	8,992,169
30-35....... 35-40.......	2,152	29.29	5.95	7,347,865
40-45....... 45-50.......	5,642	101.36	15.59	5,566,408
50-55....... 55-60.......	8,589	229.42	23.73	3,743,780
60-65....... 65-70.......	9,576	429.01	26.46	2,232,102
70-75....... 75-80.......	6,926	661.54	19.14	1,046,950
80-85....... 85-90.......	2,139	811.87	5.91	263,467
90-95....... 95 and over	159	716.51	0.44	22,191
Unknown ...	28	36.17	0.08	77,416
Total	36,193	76.60	100.01	47,250,693

If the increase in mortality rates shown in the tables were dependent on changes in the composition of the population, we should have to consider sex and age distribution, the two possible changes which could bring about an increase in general cancer rates without an increase in the specific rates.

On reviewing the population figures for sex distribution in the registration states, I find comparatively little change in its composition. In 1900, 50.03 per cent. of the population was male and 49.97 female, and in the year 1910, 51.4 was male and 48.6 female. Since the incidence of cancer is considerably less in males than females, changes of this character in the population would, per se, tend to decrease rates. So far as the changes in sex distribution of the population are concerned we must eliminate them as factors in this rise in the cancer mortality shown in the preceding tables.

Knowing as we do that the bulk of cancer deaths occur after the fortieth year, any change which would add to the population after that year without a corresponding increase in that portion prior to the fortieth year would cause an increase in the general cancer mortality. A study of the population in the registra-

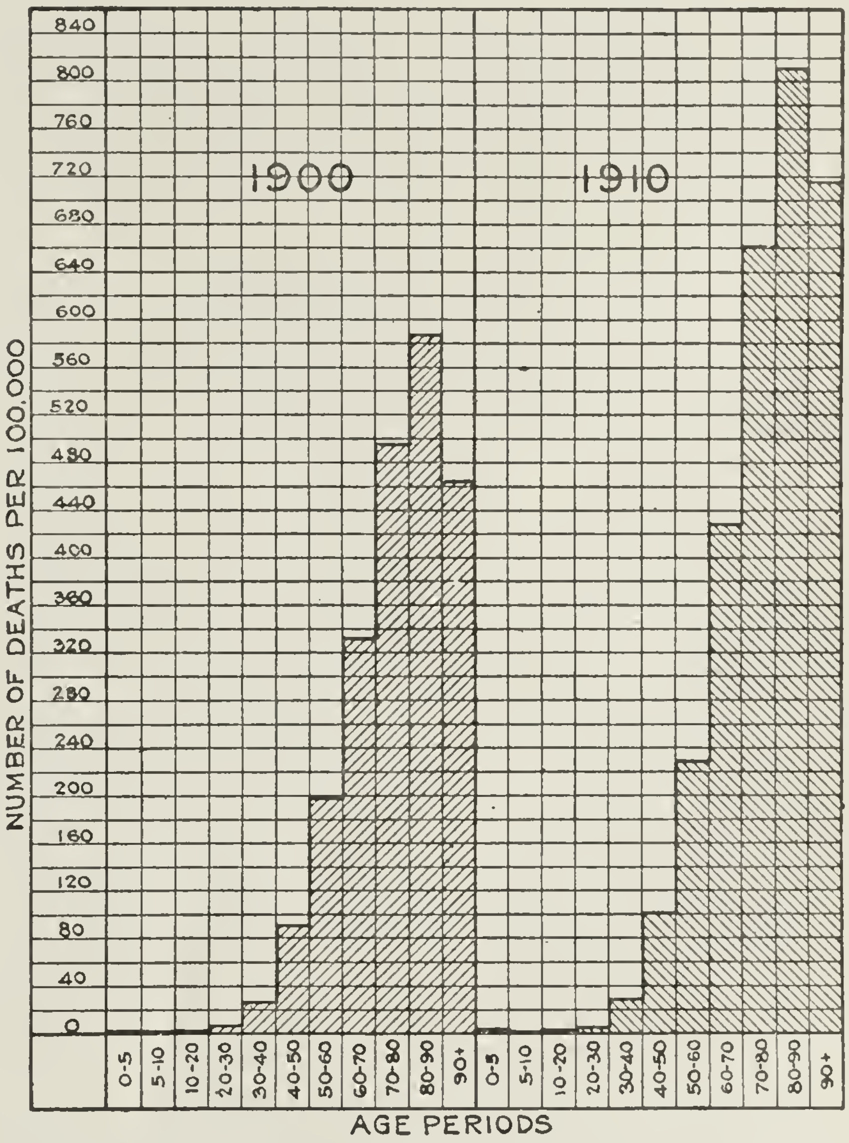

Chart 4.—Deaths per one hundred thousand of the population by age periods, 1900 to 1910.

TABLE 5.—CANCER IN REGISTRATION AREA; DEATHS PER ONE HUNDRED THOUSAND OF POPULATION FROM VARIOUS FORMS OF CANCER, 1904-1913

Location of Cancer	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Mouth	2.2	2.3	2.2	2.3	2.5	2.8	2.9	2.9	3.0	3.1
Stomach and liver...........	26.2	26.3	26.1	27.0	27.9	29.3	30.6	29.3	30.6	31.2
Intestines	7.2	8.0	7.8	8.3	8.5	9.2	9.8	9.8	9.8	10.5
Female genital organs........	10.3	10.7	9.7	10.2	11.2	11.2	11.4	11.3	11.7	12.2
Breast	6.1	5.9	5.8	6.0	6.5	7.0	6.9	7.2	7.3	7.3
Skin	2.3	2.4	2.3	2.6	2.7	2.9	2.7	2.7	2.9	2.7
Other or unspecified organs..	15.9	15.9	15.2	14.6	12.3	11.3	11.9	11.0	11.6	11.9
All forms	70.2	71.4	69.1	70.9	71.5	73.8	76.2	74.3	77.0	78.9

tion states by age groups in the years 1900 and 1910 shows that the percentage of persons living in each age period did not vary by 1 per cent. in the ten years. The percentage of population included in the ages 0 to 40 years in 1900 was 72.80 and in 1910, 72.58, while the percentage of population included in the ages after 40 years in 1900 was 27.20, and in 1910, 27.42, differences so slight that they are negligible. More convincing is a comparison of the specific mortality rates. These rates are computed on the cancer deaths in certain groups of population, and no matter what changes are taking place in the composition of a population the only factor which could change the mortality rates within these groups would be an actual increase or decrease in the number of deaths per one hundred thousand in any particular group. We have seen in Tables 3 and 4 there was a marked increase which is specific for each age period, and which must be in itself genuine.

If we cannot account for the increase in the cancer mortality by better diagnosis or by changes in the composition of the population I submit that for the past decade the cancer rates in the registration area show a true increase.

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HOSPITAL INTERNSHIPS IN OPHTHALMOLOGY *

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There are certain matters of interest to which your attention should be called. The first is in regard to the comparative shortness of the program. We were limited this year to fifteen papers, on account of the fact that the second day of the meeting is to be given up to exercises to commemorate the completion of the Panama Canal. In view of the important part that our profession has played in making possible the achievement of this great work, it is fitting that we turn aside for a moment from the main object of our coming together, and pay tribute to those workers whose discoveries and attainments have erected to their memories a "monument more lasting than brass."

We have further cause for a season of congratulation in that we are devoting ourselves to the celebration of a great commercial and engineering accomplishment, a work of peace, at a time when the older nations of the earth are wrapped in a terrible, destructive and desolating struggle; and in the enjoyment of the blessings of conditions that permit the unruffled pursuit of our usual work, we should not fail to both feel and express our sympathy for those, bound to us by the ties of a common task, whose lot is less fortunate, whose ways are less tranquil and whose labors are so rudely interrupted.

It has been the custom for many years for the section to invite a distinguished visitor from some other country to be a guest at the meeting; but after due consideration it was decided not to extend such an invitation this year. Disturbed conditions in Europe made it very doubtful if any of those whom we specially desired would have found it possible to come, and the shortness of the program already referred to made it seem advisable to give the time to our own members as a matter of choice and in justice to those who have brought the section to its present efficiency. Before the weight of these two conditions was fully realized, a sentiment was gaining ground to the effect that occasional, instead of regular, invitations to foreigners to participate in our meetings would be a more dignified attitude for us to adopt, and would at the same time make the recipient feel that he was the more complimented. In view of these facts, the officers of the section feel that they do not need to offer any apology for the omission of this feature.

The policy of the program has been, as in previous years, to encourage as much as possible those men who have not heretofore contributed to our proceedings; but you will find on the list some of those well-known names, without which a meeting of this section could hardly be successfully conducted, men to whom it is our pleasure to listen again and again. "Age cannot wither" them, "nor custom stale" their "infinite variety"; and may the day be far distant when our deliberations will lose the leaven of their presence.

Let me remind you, as my immediate predecessors have done, that the admirable features of the program are due to the energetic and well-directed efforts of our secretary, whose labors are the keystone of the arch, and without which our structure would fall to the ground. Nothing that I could say would be more than should be said in acknowledgment and appreciation of his more than efficient work, and those particulars wherein the program falls short of your expectations mark the occasions when an officious chairman or executive committee has interfered with his plans.

From appropriate committees a number of interesting subjects will be presented for your consideration, and among the most important is that of the Committee on Education in Ophthalmology. Their report is printed and will be distributed in time for it to be read by each of you before it is brought up for discussion and action. This committee, as you will see, met similar committees from the American Ophthalmological Society and the American Academy of Ophthalmology and Oto-Laryngology in Boston in October, and will present for your approval a plan whereby a board of nine would be appointed from these three organizations to pass on the qualifications of those desiring to appear as specialists in ophthalmology. While such a board will have no legal standing, its seal of approval can easily become the hall mark of genuine merit, and properly managed and supported by the organizations which create it, such a board could accomplish a great deal. Expressions from many quarters justify the expectation that this suggestion will be favorably received, and since this section has never been remiss in identifying itself with those things which stand for the advancement of ophthalmology, it can be expected to consider carefully their proposal, and approve it if it seems to promise what its sponsors believe it will do.

Another communication of much interest is that from the Committee on the Conservation of Vision. Although a child of this section, this committee was a youngster of such promise that it was weaned away from its real parent and adopted by the Council on Health and Public Instruction. We still retain an interest in its purposes and welfare, and are glad to know, from Dr. Allport's report, of the very excellent work which is being done. The need of some central

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* Chairman's address, read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

organization with sufficient funds and adequate machinery for carrying on this work is being felt by all who have concerned themselves in it. Dr. Allport has given much time and labor to this matter, as any member of his committee can testify; but it is not good that the welfare of so great a cause should depend on the self-sacrificing efforts of any one man. It is hoped that all the interests looking to the conservation of vision will be federated and the work carried on from an adequate center.

Thanks to the activity and energy of the members of the committee, the Knapp fund continues to serve the usual purposes for which it was founded.

The fund furnishes the Knapp Medal for meritorious work presented to this section. The committee on award is of the opinion that no contribution made to the last meeting was sufficiently noteworthy to justify conferring the medal this year. Certainly the fund deserves the cordial support of all those interested in the progress of ophthalmology, and I especially request you all to support it. Subscriptions in sums of less than $10 will be gladly received, but they do not entitle the subscriber to the two volumes mentioned.

It is the custom for the chairman of this section to make some reference in his address to such point or points of interest to the Section on Ophthalmology as he thinks should have special attention or investigation. In accordance with that custom, it is my desire to invite your further consideration of certain aspects of the question which have been so to the fore in recent years, the preparation of the ophthalmologist for his his work. A phase of this subject which has not yet been touched on very fully is that of the available facilities for hospital work. Closely related to this are the plans which have been put into force in two of our leading state universities. One which was explained to you at length by my predecessor has had further trial during the past year at the University of Minnesota, and has given great satisfaction. Briefly, it consists in the employment of a number of men for a period of three years, at an increasing salary, who assist in the clinical work and in the instruction of the undergraduate and graduate students. These men are designated as "fellows," and the scheme contemplates the ultimate employment of six. The development of this plan was brought out in a paper before the Conference on Medical Education in Chicago in February. A somewhat similar plan is in vogue at the University of Michigan, where a man serves the department for three years as intern, assistant and instructor, respectively, one year each, at a salary which increases each year. The duties of the intern require no special elucidation. The second year is spent as assistant to the head of the department, with full charge of the operating room and morning treatments of all outpatients. In the third year he gives instruction in refraction, does refraction, and has charge of the laboratory in the mornings.

This scheme has suggested the idea that the very interesting work on the classification of hospitals by the Council on Medical Education, and the parallel work about to be undertaken by the American College of Surgeons, might be advantageously supplemented at this time by collecting information relative to the work offered by various special hospitals in this country in the shape of internships. A questionnaire was therefore formulated and sent to all the special hospitals listed in the American Medical Directory, and I wish to present to you the data gathered from a perusal of the replies. That this information is incomplete is true, but every one who has attempted a collective investigation will sympathize with the fruitless efforts that were made to secure responses from all the hospitals. Some institutions were inadvertently omitted, but the result is nevertheless of some worth.

The value of an internship is particularly great in postoperative work, but almost equally great in certain severe inflammatory and traumatic conditions. The whole question is summarized, and much more is suggested, by considering the case of those men who have had good "courses" in ophthalmology, with cadaver and clinical work, and who can perform a creditable operation for cataract, for instance, but who cannot tell the next day whether or not the eye is pursuing a normal and satisfactory postoperative course.

Answers were obtained by some means from twenty-five institutions. Many of these are eye, ear, nose and throat hospitals; but as far as possible to ascertain them, the facts set forth apply to the eye service alone. It was impossible to arrive, by any reasonable effort, at the facts concerning the special departments of general hospitals, but it must not be forgotten that in many of these an excellent service in ophthalmology can be obtained, and this is especially valuable where an outpatient department is also accessible to the interns. In such a case, the tour of duty for the intern should be simultaneous in the wards and outpatient department, since many of the patients are never house patients, and a service limited to the house would be inadequate. It would afford no opportunities for refraction, perimetry, muscle work, etc., and very limited ones for ophthalmoscopy.

Comments on the subject can be best made in a general way, because the information was not always exact. Previous general hospital experience is always desirable, but seldom required of an applicant. Since the supply of positions does not equal the demand, hospitals can fix rather high requirements, and certainly previous hospital experience, or a satisfactory equivalent in general practice, would be very desirable not only to the institution, but also to the future ophthalmologist, and should be a necessary condition for the applicant.

An outpatient department is maintained by all the hospitals answering this inquiry, but indefinite information was given in regard to interns' duties in that department. Unless the arrangement is to appoint the intern from the clinical assistants, or from externs, the interns should serve a definite tour of duty in the outpatient department, because the work in the house alone does not give sufficient experience with the various forms of functional examination and with the use of the ophthalmometer, ophthalmoscope, perimeter, and tropometer, with which one must be familiar. Refraction, which constitutes such a large and important part of the daily work of the ophthalmologist, can be learned only by practice, and the opportunity for this is found only among the outpatients. The same can be said of many of the minor ailments and milder inflammatory diseases, which constitute a much larger part of one's work, especially in the beginning, than serious maladies and capital operations.

In reading over the replies to the circular letter, one is impressed with the fact that a hospital intern is no longer at school. Little is demanded of him beyond a certain amount of routine work. He does some

history taking, which varies greatly in quantity and quality in different places, and renders a certain assistance in the care of patients, operating room duties, etc. He has abundant opportunities, but there is no one whose duty it is to see that he profits by them. In the larger institutions with a graded house staff this is not the case, and the junior is not only given a certain amount of instruction by the senior, but is required to perform certain duties. This is very desirable, and in proportion as this system does not exist, the present plan seems to fall short of accomplishing the best results. As was pointed out in the report of the Committee on Hospital Efficiency of the Philadelphia County Medical Society, one of the functions of a hospital is the education of doctors and nurses, and some plan could be profitably adopted whereby the intern could receive more or less systematic instruction, and be actively supervised in his work, which would greatly increase that particular hospital's efficiency as an educator. When we consider that the average intern enters on his duties in a special hospital in the most profound ignorance of the rudiments of his work, the advisability of such a plan would seem to be apparent. Various ways suggest themselves for solving this need. In institutions in which systematic instruction is given, he should be required to attend such instruction, that is, lectures, in the first part of his term. Otherwise the matter could be placed in the hands of a senior intern or house surgeon; or, if only one intern is employed, in the hands of an executive officer or committee or some one specially charged with the work. A little systematic instruction at the beginning will clarify many otherwise confusing subjects, and this instruction can take the form of quizzes, lectures or merely the outlining of a course of study, with such conversations or other interrogations from time to time as will enable the intern to demonstrate that he is preparing himself to take advantage of his opportuni-
preparing to take advantage of his opportunities.
cases and surgical work will be presented to him sufficiently forcibly; but some special means should be taken to see that he avails himself of the opportunities that are offered to study refraction, ophthalmoscopy and ocular pathology. An intern, like a student, is rarely able to proportion his work wisely, and a little guidance from some one more experienced would enable him to use his time and opportunities to the best advantage. In brief, our present plan gives a man abundant opportunities, but fails in that it does not insure his taking advantage of them.

Incidentally, this inquiry has revealed some interesting facts in regard to the special hospitals in other particulars. You are all aware that the American Medical Association is now conducting an investigation and classification of hospitals, and out of this work will come much good along the line of which I have especially spoken, as well as in other matters pertaining to hospital efficiency. With such plans as those in use at the universities of Minnesota and Michigan, and the systematic course in ophthalmology given by the University of Colorado, and the graduate courses now being formulated by Harvard University, and the close relation which obtains and which is being further developed between the department of ophthalmology and the department of research medicine at the University of Pennsylvania, both precept and example are at the disposal of those who are charged with these problems of medical education.

CHRONIC NEPHRITIS

ANALYSIS OF 250 CASES IN PRIVATE PRACTICE*

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LOS ANGELES

These 250 cases have been tabulated from patients in our private practice occurring over a period of eighteen years. They are considered entirely from the clinical standpoint, and as they represent, in the main, office cases or ambulant patients, they must be regarded as representing Bright's disease of the milder or earlier type. There is no intention here to enter on the intricate mass of renal pathology, nor have we investigated or tried the several functional kidney tests, which lie beyond the province of this paper; but it is intended to call attention to several groups of nephritic cases observed and treated in Southern California. In making the diagnosis, other factors than the examination of the urine have been considered. It is certain that many patients who show traces of albumin and a few casts do not suffer from nephritis, while true renal disease may occur without albuminuria; but we do recognize that certain persistent findings in the urine, accompanied by changes elsewhere with definite symptoms, are manifestations of a primary or secondary disturbance of the renal function which, when early recognized and given proper treatment, is easily controlled and may become quiescent or arrested.

For the better study of these cases for clinical purposes, an arbitrary classification into four groups has been made (Table 1).

TABLE 1.—CLINICAL GROUPS OF NEPHRITIS CASES

	No.
1. Primary	75
2. Cardiovascular	82
3. Miscellaneous association	24
4. Secondary to tuberculosis	69
Total	250

With few exceptions, our cases of true nephritis fall clinically into what is called the chronic interstitial type, in which class they will be discussed. The exceptions include a few that belong to the chronic parenchymatous type and are numbered among those in Group 2, who died; one patient in Group 1 died—acute hemorrhagic. A few others, at first acute or parenchymatous, improved, and naturally fell into the interstitial variety which, we believe, includes most of the degenerative changes that take place in the kidney, whether primary or secondary, as well as the contracted or sclerotic kidney.

EXPLANATION OF CLINICAL GROUPS

The cases are placed into these groups with reference to their apparent etiology.

Group 1 embraces those which, from their history, followed acute infectious diseases and alcohol, as shown in Table 2.

Group 2 embraces those which accompanied, preceded or followed chronic endocarditis or arteriosclerosis, with or without a history of definite earlier infection.

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* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Group 3 embraces those which occurred in the course of chronic diseases, infectious or otherwise, and which could not naturally fall into the other groups.

Group 4 embraces those which occurred in the course of pulmonary tuberculosis.

In Table 3 are given the age at onset of disease, sex, and previous duration of disease for each of these groups. In Chart 1 the early symptoms are shown. The occupation is given in Table 4.

Only the fourth or tuberculous group is not carried out in detail, as the course, treatment and results were dependent on the pulmonary trouble, and did not seem pertinent to the paper. Where there was a true nephritis, the pulmonary symptoms were aggravated; therefore, on the whole, the discussion limits itself to the first three groups.

TABLE 2.—ETIOLOGY

Cause	Groups			
	1. Primary No.	2. Cardiovascular No.	3. Miscellaneous No.	Total No.
Alcohol	3	3	0	6
Arteriosclerosis	0	25	0	25
Acute rheumatic fever	1	10	1	12
Arthritis, chronic, streptococcus viridans infection	0	1	3	4
Cholecystitis	2	2	0	4
Diphtheria	1	0	0	1
Endocarditis, chronic	0	3	0	3
Hyperthyroidism	0	0	2	2
Malarial fever	1	1	0	2
Measles	1	1	0	2
Myocarditis	0	7	0	7
Peritonitis	2	0	0	2
Pernicious anemia	0	0	4	4
Pneumonia	18	11	4	33
Pregnancy	2	0	0	2
Pyonephrosis	0	1	0	1
Renal calculus	0	1	0	1
"Rheumatism"	4	2	0	6
Scarlet fever	9	3	0	12
Septicemia	0	0	2	2
Syphilis	0	2	3	5
Tonsillitis	5	3	0	8
Typhoid fever	5	4	0	9
Unknown	21	2	5	28

TABLE 3.—AGE AT ONSET, AND PREVIOUS DURATION

	Groups				
	1. Primary No.	2. Cardiovascular No.	3. Miscellaneous No.	4. Tuberculous No.	Total No.
Males	40	48	12	44	144
Females	35	34	12	25	106
Age at Onset (Decade):					
First	4	0	2	0	6
Second	7	1	1	3	12
Third	11	5	1	32	49
Fourth	17	9	4	23	53
Fifth	14	15	4	8	41
Sixth	15	26	8	1	50
Seventh	6	16	4	2	28
Eighth	1	10	0	0	11
Total	75	82	24	69	250
Previous Duration of Disease:					
Less than 1 month	5	1	3	5	14
From 1 to 3 months	2	4	2	9	17
From 3 to 6 months	8	8	1	6	23
From 6 to 12 months	11	10	2	6	29
From 1 to 2 years	16	19	3	6	44
From 2 to 5 years	17	21	10	18	66
From 5 to 10 years	4	10	0	12	26
From 10 to 15 years	9	5	2	5	21
From 15 to 20 years	1	2	0	0	3
From 20 to 25 years	1	0	1	1	3
More than 25 years	1	2	0	1	4

It would seem that the true nephritis, or destruction of renal tissue, belongs to those cases of Group 2—cardiovascular. Whether or not those in the other three groups can rightly be classed as true nephritis, until real vascular changes elsewhere have taken place, is an open question. Certainly, in following several patients in the first, third and fourth groups, we have found that their trouble has disappeared and the urinary findings have become normal after periods ranging from several months to two years, and we do not believe that nephritis is so cured. It has been said that there is an early, curable stage of nephritis, with slight renal changes, in which the kidney again assumes its normal function; but it seems, from a clinical point of view, more probable that these cases are merely a result of toxemia and do not produce any real permanent change in the kidney tissue. Examples of this type are eighteen cases (thirteen in Group 1 and five in Group 3) in which the urinary findings became normal. The largest number began after chronic constipation and gastro-intestinal disturbances, three after severe tonsillitis, two after acute alcoholism, one after pleurisy with effusion, and one patient has had albumin with granular casts in his urine for thirty-five years, discovered through life insurance examination, and, at present, clinically well, aged 51. In none of these did the heart appear enlarged or the second aortic accentuated. Other cases of similar nature, but of shorter duration, not here included, have occurred in our practice, but with sufficient frequency to emphasize their clinical occurrence. In Group 4, the tuberculous group, it has been a frequent observation that, as the pulmonary trouble improves, the albumin and casts have disappeared, along with increased elimination of urea. The continued taking of abundant or of excessive protein many result in similar findings, a fact which has been noted often in tuberculous patients. One of this type, aged 37, in Group 4, has been under observation six years, and during this period he suffered for two years, off and on, from repeated attacks of headache; at the same time albumin and casts appeared in his urine. It was found that each time these attacks occurred he had returned to an increased or forced protein diet. For the past two years the excessive proteins have been cut off, with the result that symptoms have disappeared and the urine remains normal, so that, excepting the infectious type, included in all four groups (because even the fourth or tuberculous group shows severe infection in the last stages), the disease tabulated can well be caused by toxemia, which may soon disappear, or continue to manifest itself

TABLE 4.—OCCUPATION AT ONSET

Occupation	Groups				
	1. Primary No.	2. Cardiovascular No.	3. Miscellaneous No.	4. Tuberculous No.	Total No.
Actor	0	0	0	1	1
Artist	0	2	1	0	3
Aviator	0	0	1	0	1
Banker	4	4	1	5	14
Barber	1	0	0	0	1
Carpenter	0	0	0	2	2
Chauffeur	0	0	1	1	2
Chemist	0	2	0	1	3
Child	4	0	1	0	5
Civil engineer	1	1	0	1	3
Clergyman	0	3	0	0	3
Clerk	6	3	0	8	17
Commercial traveler	0	1	0	0	1
Domestic	3	0	0	2	5
Farmer	0	2	0	3	5
Housewife	23	28	9	15	75
Laborer	2	4	0	2	8
Lawyer	4	0	0	4	8
Manufacturer	2	1	1	1	5
Merchant	0	8	1	1	10
None	4	3	2	4	13
Nurse	2	2	0	0	4
Office work	3	2	1	2	8
Physician	3	3	1	4	11
Plumber	0	0	0	2	2
Publisher	2	0	0	0	2
Real estate	2	3	0	1	6
Retired	2	8	2	0	12
Student	5	1	2	3	11
Tailor	1	0	0	5	6
Teacher	1	1	0	1	3

until other organs as well as the kidneys become involved, vascular changes take place and true nephritis results. When true nephritis is present, the best outcome possible is an arrest of the disease, and that the patient be clinically well for years.

AGE AND RESIDENCE AT ONSET

The analysis of the several groups shows such results as one would expect. Primary has the largest number in the fourth and fifth decades; cardiovascular in the fifth, sixth and seventh decades; tuberculosis in the third and fourth. In all four groups, the previous duration of the illness shows that the largest number suffered from two to five years. The occupations give little information except that they are among indoor workers, and the larger number had previous mental or physical overstrain.

The residences of these patients and the location at the onset of the disease have been carefully studied in each case. Neither had any special bearing, one way or the other. A total of ninety-eight patients resided in the Pacific Coast States at the onset of the disease; seventy-two in the Central States, seventy in the Atlantic States, and ten developed their trouble in foreign countries.

EARLIEST SYMPTOMS

Among the earliest symptoms in the primary group, the most frequent, in their order, were weakness, cough and asthmatic symptoms, digestive disturbances, headache, muscular pain, and nervousness and restlessness. Each of these is easily accounted for, and it would seem that the chest symptoms are due to the development of chronic bronchitis and emphysema, so often found secondary to nephritis. Contrasting this with the same cases during the course of treatment, we find the digestive disturbance comes first in frequency, nervousness and restlessness second, and there is a marked diminution in complaint of weakness, as well as headache and asthmatic symptoms.

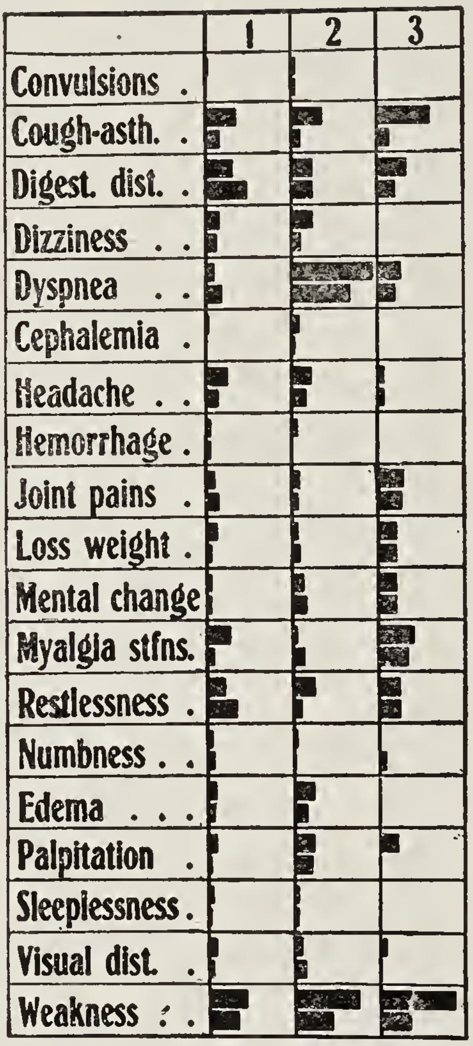

Chart 1.—Early persistent symptoms.

In Group 2, the chief early symptoms, in order of their frequency, are dyspnea, weakness, cough, vertigo, digestive disturbance and edema. During the course of the treatment of patients of this group, dyspnea, which was the most frequent early symptom, disappeared in eleven of the cases, while the weakness, cough and edema disappeared in about 50 per cent.

In Group 3, the earliest symptoms in frequency were weakness, cough, digestive disturbance, dyspnea and joint pains. During the time of treatment, the cough and dyspnea lessened, while the joint pains remained in evidence. The joint pains in this group are explained by the four cases of chronic infectious arthritis, and marked pyorrhea alveolaris, in which the *Streptococcus viridans* was grown from the roots of removed teeth and vaccine given. It is interesting to note that the cough or asthmatic symptoms in each group diminish to a minimum under treatment, and a marked improvement occurs in the weakness and digestive disturbance.

The marked symptoms of dyspnea in Group 2 can be explained by the cardiovascular complications. Here are found the cases with the high blood pressure and arteriosclerosis. Arteriosclerosis, other than that due to syphilis, seems not well understood, but it appears to be the result of longstanding hypertension, which, with cardiac hypertrophy, is generally recognized as a compensatory factor to nephritis, aiding the kidney in maintaining its function.

Of course, arteriosclerosis may cause nephritis, and it appears that each may be the cause of the other. In the second group, the cardiac hypertrophy alone occurred in forty-four and the second aortic sound was accentuated in forty-seven cases out of the sixty-five. The Wassermann test was made and found negative in nine cases. Syphilis occurred in five cases, with a positive Wassermann reaction.

The percentage of retinal changes found was less than is usually reported. It was surprising in looking over the cases to find how little complaint of disturbed vision was made, and often no retinal change was found in the early or less severe cases. Marked retinal changes were shown in eight cases by neuroretinitis (arteriosclerotica) and in seven by hemorrhage into the retina; they occurred among the fatal cases. These always indicate a bad prognosis, of from six months to one year as the average duration of life. In Group 2, hemiplegia occurred in five cases, varying in severity from partial paralysis to complete loss of power.

OBJECTIVE FINDINGS

While the greater number of these cases came under observation before the present functional tests for the renal activity were available, it may still be of interest to note briefly the facts represented by those commoner methods of examination which have been longer in use. The higher readings of specific gravity were found in Groups 1 and 3. The average of all readings in Group 3 was lower than in any of the other groups, and depended (of course) chiefly on the total amount of urine, which was usually large. Readings of less than 1.005 have been frequent, and have occurred in each group, the lowest being 1.002, in Group 1.

Albumin was present at one time or another in all of the urines examined, only a few specimens, however, showing more than a slight cloud, and many showing but extremely faint traces. Many cases had intervals of freedom from albuminuria, but in all cases the albumin reappeared with exacerbation of symptoms.

Cylindruria, too, has been constant, the granular casts being by far the most frequently found, with hyaline coming next; a fair number had waxy casts at times, while only three had epithelial casts. We have not seen any special significance in the type of casts observed.

The urea has been followed as closely as possible, and the results of our examinations tabulated. Nothing of special note is shown. Roughly, the amount of urea excreted in the urine has varied with the diet. In some instances, the low output of urea was associated with exacerbations of the disease, the severe symptoms and the lower urea being both signs of deficient renal activity. In these cases we have seldom seen a high urea except when the patient was doing well clinically. In several instances we have seen a decreased urea output precede a clinical retrogression, and we have often seen an increased urea output followed by clinical improvement. We therefore do believe that it is a help to determine the urea of the urine when the diet is known and conditions can be controlled. We acknowledge, however, that we have found these observations to be of help only when supported by clinical evidence.

Our systolic blood pressure readings cover most of our cases, and for a great many of them a large number of readings were taken. As we would have expected, our highest readings were found in cases of the cardiovascular group, the highest being 270 mm. Hg, average 169 mm. Hg. Here, too, was the highest average blood pressure. Next comes the primary group with an average of 141 mm. Hg, then the miscellaneous group with an average of 127. In the tuberculous group we found lower readings than elsewhere, as a rule. The lowest reading of all recorded was 80 mm. Hg, in a case of Group 3, *Streptococcus viridans* infection with arthritis, which had also the clinical picture of toxic nephritis. This is hardly in accord with the statement of Struempell that all renal disturbances are associated with elevated blood pressure. Certainly, in these cases, the blood pressure was more markedly elevated in those nephritics who had also well-developed arteriosclerosis, especially with atheroma, than in those which we have looked on as primarily renal disturbance.

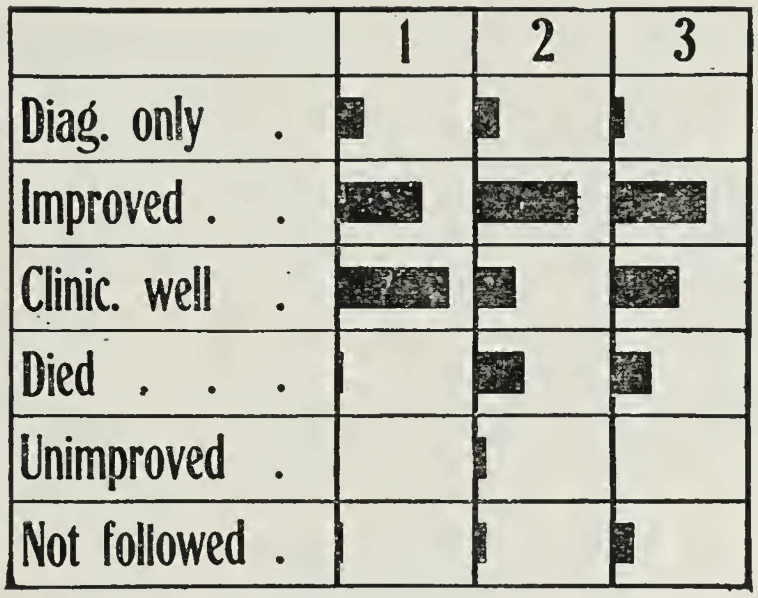

Chart 2.—Results.

TABLE 5.—URINARY FINDINGS

	Groups			
	1. Primary	2. Cardiovascular	3. Miscellaneous	4. Tuberculous
Specific Gravity:				
High:				
Maximum	1.035	1.030	1.035	1.030
Average	1.017	1.018	1.014	1.016
Low:				
Minimum	1.002	1.004	1.004	1.004
Average	1.012	1.012	1.011	1.014
Albumin:				
Slight	68	66	23	65
Heavy	5	10	2	5
Casts:				
Hyaline	31	35	7	13
Granular	69	73	23	68
Waxy	11	14	3	4
Epithelial	1	2	0	0
Urea:				
High:				
Maximum	51	41	42	31
Average	24	22	19	20
Low:				
Minimum	3	4	7	7
Average	18	15	14	13
Systolic Blood Pressure:				
High:				
Maximum	243	270	190	154
Average	148	180	133	126
Low:				
Minimum	96	108	80	95
Average	134	154	120	120
Average	141	169	127	123

TREATMENT

Treatment will be considered under the following topics: (1) climate; (2) diet; (3) rest and exercise; (4) hydrotherapy, and (5) medicinal.

Climate.—Next to pulmonary tuberculosis, chronic nephritis and convalescence from acute kidney trouble are most benefited by climatic treatment. With that possible exception, no other disease is so favorably influenced by climatic conditions. Surely we are convinced that the conditions in Southern California which our patients have enjoyed have added most to their comfort, relieved their symptoms, and helped to produce good elimination and given longer periods of apparent help. The results, to come later, will speak for themselves. These patients do well near the coast in Southern California, quite as well as in the interior part, because humidity is not so much a factor here as in some other chronic diseases. The warm, equable climate, with little wind and low elevation, is a most important factor. It might be stated, however, that though humidity seems of less importance, these nephritics are in better health during our dry season—from July to January—than during the moist season of the other six months, especially those who have joint, muscular or gouty symptoms.

One of us (W. J. B.)[1] has stated in a former article that it is important that residence in such a climate should extend over a period of one or two years, under medical supervision; but in studying cases for longer periods of time, the conviction is forced upon us that many may remain clinically well in a suitable climate, over an indefinite period of years. There are no apologies to make for the outdoor life given this class of patients in Southern California, anywhere from the coast to 50 miles inland, along the foothill region and outlying valleys which offer low altitude and equable atmospheric conditions.

Diet.—Diet has been an important factor in all cases; but in any of the forms of treatment, individualization has been studied and not alone the disease. The objective findings, such as urine, blood pressure, etc., are considered less than the individual requirements. Some have contended that there is no real difference between the red and white meats for nephritic patients, but experience has shown us that it is best to cut out the red meats from the diet, but not to cut off too much of the protein. Two or three eggs are allowed daily, with plenty of cream, butter, cereals, buttermilk, etc. Fortunately, our patients can have fresh vegetables the year round. Highly spiced and all fried foods, strong cheese and alcohol are to be avoided. It is best to have patients take their water between meals, giving them from six to eight glasses in the twenty-four hours, one-third of which should be some alkaline water. One should guard against the excessive use of water.

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[1] 1. Barlow, W. J.: Hare's Modern Treatment, 1910, i, 158.

Rest and Exercise.—This is ordered according to the patient, each one getting two hours of rest on his back in the afternoon. The blood pressure is certainly lowered by rest and light diet. Exercise, of course, is prescribed according to the case.

Hydrotherapy.—This is one of the most important divisions of treatment. Hot baths two or three times a week, in the form of vapor, electric or Turkish baths, followed by massage and rest, give free elimination by the skin and establish a right habit for future elimination, and seem to have a beneficial effect on the bowels. Several patients have had electric cabinets installed in their homes, so that treatment can be carried out regularly for years; where such is not possible, hot baths followed by wrapping in blankets have sufficed. Bowels have been kept active by cooked fruit, fresh vegetables, the coarser cereals and liquid petrolatum.

Medicinal.—Drugs have been used infrequently except where the heart muscle has needed help, or when the amount of urine passed was low. Digitalis for failing compensation, whether the blood pressure is high or low, acts well, and certainly, in these cases, high blood pressure is no counter-indication for its use. Caffein, spartein and strychnin have seemed also very helpful.

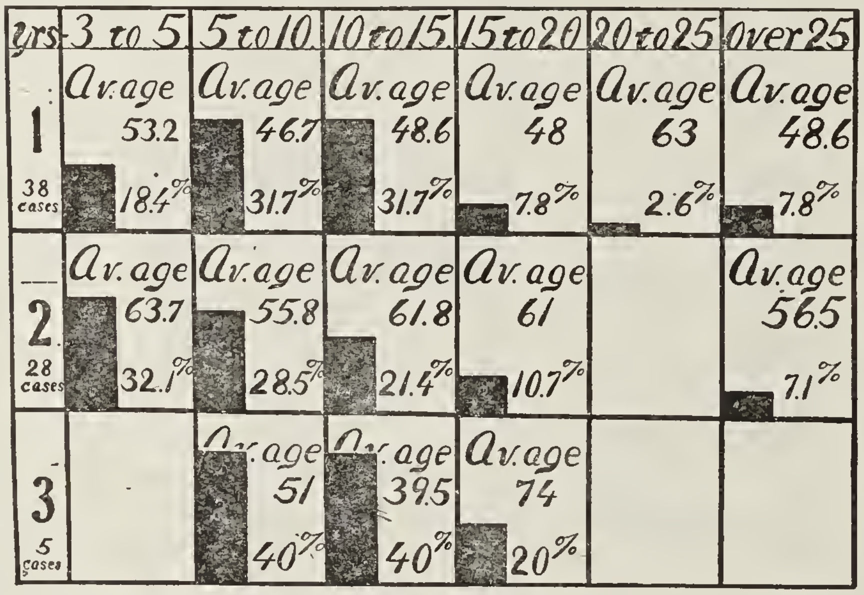

Chart 3.—Duration of disease and average age of seventy-one patients now under observation.

RESULTS

The results are studied and tabulated (Chart 2) in the three groups only. The fourth group, occurring secondary to pulmonary tuberculosis, has been omitted, as really belonging to a separate paper, and because the symptoms of nephritis were chiefly dependent on the primary disease. It was found that already too much time had to be given to segregating, classifying and studying results of the three more important groups. Therefore, omitting the sixty-nine cases in Group 4, there remain 181 to be reported on (Tables 6 and 7).

TABLE 6.—DURATION OF OBSERVATION IN ONE HUNDRED AND EIGHTY-ONE CASES

Duration of Observation	No.
Seen once only for diagnosis	17
Not followed after two months	20
From two to six months	28
One year	20
From one to two years	28
From two to five years	41
From five to ten years	14
From ten to fifteen years	11
Sixteen years	1
Eighteen years	1
Groups 1, 2 and 3	181
Group 4	69
Total	250

It is to be remembered that these results are given up to the time the patient was last treated, and many have not been followed up to the present time.

The statement that so many of these patients have been called clinically well may be attacked, and the answer is that from the clinical standpoint, the patients when last seen had been free from all suggestive symptoms and felt well.

Of the 181 cases tabulated, there are forty-seven, or 26 per cent., still under observation, after three or more years of treatment, grouped as in Table 8.

TABLE 7.—STATUS IN ONE HUNDRED AND EIGHTY-ONE CASES

Condition	Groups 1	2	3	No.
Not followed	1	3	2	6
Unimproved	..	3	..	3
Improved	28	37	10	75
Clinically well	37	14	7	58
Dead	1	17	4	22
Diagnosis only	8	8	1	17
				181
Group 4				69
Total				250

Table 9 shows the duration of time of the whole illness, or the time during the observation of the case plus the history of kidney trouble, in sixty-one cases. Only such cases are taken from our total number as have had trouble over three years.

CONCLUSIONS

1. The prognosis of chronic interstitial nephritis is favorable when patients can be placed under proper conditions.

2. Many cases of so-called interstitial nephritis are not true disease of the kidneys, and often these patients have no return of the abnormal urinary secretion.

3. Patients with chronic interstitial nephritis, with good vascular and cardiac compensation, may live comfortably, and indeed, enjoy good health, for twenty-five or thirty years, and probably longer.

4. Such patients may reach an arrest of the disease, they may be clinically well, and can be classified as apparently cured, quite as surely as in other chronic diseases.[2]

TABLE 8.—GROUPING OF FORTY-SEVEN PATIENTS STILL UNDER OBSERVATION

Observation	Groups 1	2	3	No.
From 3 to 5 years	11	9	4	24
From 5 to 10 years	5	5	1	11
From 10 to 15 years	6	3	1	10
Sixteen years	..	1	..	1
Eighteen years	1	..	..	1

TABLE 9.—DURATION IN SIXTY-ONE CASES

Duration	No.
Under 10 years	25
From 10 to 15 years	25
From 15 to 25 years	7
From 25 to 30 years	3
Thirty-five years	1
Total	61

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[2] Since the completion of this paper, report has come of the death of one more patient in Group 2.

ABSTRACT OF DISCUSSION

Dr. Alexander Lambert, New York: There are many conditions grouped under nephritis which do not rightly belong there. Dr. Barlow has shown how markedly different are the conditions and course of the affections due to acute infections or injuries of the kidney and those due to chronic conditions which show arteriosclerosis. The charts show in asthma, for instance, that the dyspnea of acute nephritis is a very different condition from the same symptom in the cardiovascular affections of the kidney. You can secure more improvement in the acute than in the chronic cases. It is curious that if a man lives for from five to fifteen years sick, after standing that strain he will stand a better chance of living for twenty-five years. In the acute affections, if the patient survives he is in a much better condition for recovery than if the blood vessels are injured. The charts are beautiful in a pictorial way. The kidneys are virtually a pair of filters. If they are handed something that injures them, metabolic cobblestones when they are fit to handle only metabolic sand, they cannot handle them and the kidney is injured. One must remember the more specialized the cells the less do they possess general defenses; they are more liable to be injured because of their special character. The great number of the mixed class or the class of vascular sclerotics are the ones that have so much to do with the metabolic changes occurring from the action of the thyroids and the liver. We do not know the cause of the uremic poison and we do not know where the metabolic injury lies, but it is there even when the kidneys are doing their work. There is something back of it all. You may see it in the dry skin, the chippy nails; you may call it gout if you please; it is the same as any hypothyroidism, which may improve when the patient is fed on thyroid. It is a question as to what you can do for these patients. Dr. Barlow has brought out very clearly the fact that their environment influences these patients more than it does the normal individual. No patient is more rapidly injured by little things than nephritics. They do well at equable temperatures where extremes do not occur. They do well if they are willing to exercise self-control both in food and drink, and they do ill if they do the reverse. The ones that have the cardiac troubles and the vascular troubles are the ones doubly struggling against the two injuries, as these charts show. A study of these charts is well worth the time, because they show very clearly the clinical symptoms and the clinical conditions brought before us. We have not solved the problem as to what is behind nephritis. These charts show the prognosis, when it is good and when it is bad.

Dr. Philip King Brown, San Francisco: At the Southern Pacific Hospital in San Francisco a large number of young males enter the hospital for all sorts of diseases and injuries. In a study of the records of the hospital for the last two years, covering six thousand admissions, Dr. Cummins and I have tabulated the cases of albuminuria with casts, separating out as cases of chronic interstitial nephritis those with blood pressure much above normal. We have tried to find out from the comparative study of the etiology and functional kidney tests of the patients who had high blood pressure and could be classed as chronic interstitial nephritis, and those with low blood pressure, what the relation was between these classes among workingmen and the prognosis in each class. Our results differ from Dr. Barlow's, which only emphasizes the point he has made, that if you can surround these patients with the proper environment, mild climate and proper food, with light or no work, life can be much prolonged. In our cases, we find that no working man has lived longer than five years after the diagnosis has been made. This striking difference seems to me to be entirely due to the fact that we have to deal with a lower intelligence, limited means, and it requires greater effort for these individuals to live properly. It has been the routine of the hospital of late to study the Wassermann reaction in every case, and we find the cases of chronic interstitial nephritis in which syphilis is an etiologic factor are very much less amenable to any kind of treatment. Contrary to the accepted law, we administer to such patients considerable quantities of salvarsan, together with other antisyphilitic remedies, without influencing for the better the course of the disease. In established cases of arteriosclerosis, in which the pressure is low, the appearance of an acute infection has impressed us as influencing decidedly the development in the kidney of further interstitial changes. Some of our patients that have entered the hospital with infected wounds, for example, have undergone striking interstitial changes, the blood pressure increasing from normal or less to away over 200. We do not believe that a man with interstitial nephritis can continue his work safely. We have studied our cases with reference to type of labor. Only with clerks and others whose occupation is sedentary can the length of life be prolonged to any extent. Most of us have to do with individuals whose incomes are limited and dependent on their work, and while I believe strongly that bad prognoses are not necessarily to be made, I do feel that for the working man the best therapy is a change of occupation to something quite mild, sedentary if possible.

Dr. Joseph S. Cipes, Albuquerque, N. M.: Strong as this paper is, I notice that the cases in the fourth series receive little attention. This, I believe, is due to the fact that when we have a patient suffering with pulmonary tuberculosis and we notice a slight edema or a few symptoms of nephritis, we think there is no use trying to do anything for him. A good many cases that are prognosticated in that way, turn out just contrary to the prognosis given by the physician. The bad prognosis given is due largely to negligence or carelessness in making the diagnosis. When nephritis complicates tuberculosis, it is our duty to find out the exact type of the condition. Chronic parenchymatous nephritis, when found complicating pulmonary tuberculosis, usually results fatally. Chronic interstitial nephritis, however, when it follows tuberculosis, is often not fatal. The patient may live a number of years after he has developed an interstitial nephritis. It is a very easy matter to differentiate the two. The differentiation can easily be made by the administration of methylene blue. When administered to a patient in a case of chronic parenchymatous nephritis, the secretion of the methylene blue is usually retarded, whereas in interstitial nephritis it is excreted just as if the patient had no disease of the kidney.

Dr. W. Jarvis Barlow, Los Angeles: I was very glad Dr. Lambert brought out the point of the duration of the disease. If the patients stand the trouble from two to five years or more, they may go on indefinitely under the right supervision and the right care of themselves. I think this is brought out also in what Dr. Philip King Brown said of his statistics of working men. He tells us how very different are their results from those presented here, and to be frank with you I thought our results would be somewhat the same. We were very much surprised to find that our results tabulated as they have. It may be explained by the fact that the cases belong largely to the leisure class, with the opportunity to rest and take care of themselves. They were not among the working class. Perhaps 75 to 80 per cent. were able to settle down and take proper care of themselves. And why should not the results in such cases be better than in the case of the working man?

Progress.—We are gradually acquiring through the natural development of the processes of medical growth a system for the scientific management of disease. The past is full of stimulating traditions; the present, filled with the grains of precious wisdom that have been extracted from the mountains of theory and conjecture; and we accept the truth that in the future what we now worship will be swept away in the melting-pot of scientific ardor. But in admitting our limitations, we affirm with greater confidence our optimisms. It is only when harassed and perplexed that men learn; "strength grows out of weakness."—Everett A. Bates, M.D., *Boston Med. and Surg. Jour.*

PRENATAL CARE

DEDUCTIONS FROM THE STUDY OF THREE THOUSAND FOUR HUNDRED AND SIXTEEN CASES *

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The infant mortality statistics in the New York Infirmary for Women and Children seem worth publishing at this time when prenatal care is receiving so much attention, partly because we have had a regular prenatal clinic for over twenty years, and also because the results show a gradual general improvement, following increased care and improved facilities in the clinic.

The accompanying table shows statistics of the stillbirths and the deaths, within two weeks, for the last eight years since the rebuilding of the hospital.

MORTALITY STATISTICS FOR THE PAST EIGHT YEARS

Year	Infants Born	Still Births	Per Cent. of Births	Deaths First 14 Days	Per Cent. of Those Born Alive
1907	146	5	3.4	9	6.38
1908	280	12	4.2	10	3.7
1909	357	19	5.3	9	2.6
1910	374	15	4	9	2.5
1911	523	26	4.9	10	2
1912	552	14	2.5	13	2.4
1913	587	20	3.4	11	1.9
1914	597	15	2.5	18	3
	3,416	126	3.6	89	2.7

Total mortality, 215, or 6.3 per cent.

Our total percentage of stillbirths is 3.6 as compared with 4.29 per cent. in Sloane Hospital and 5.22 per cent. in the Universitäts Frauenklinik in Munich (quoted by Holt and Babbitt[1]). The percentage of deaths in the first fourteen days is 2.7 as compared with the 3.1 per cent. in Sloane Hospital. The total mortality of 6.3 per cent. is perhaps not so much of an improvement over Williams' 7 per cent.[2] as our approach to his description of an ideal clinic should warrant. It is, however, a step in the right direction, and the fact that our mortality tends to decrease is encouraging.

The 215 cases were divided as follows:

Abortions (under 37.5 cm. or 1,500 gm.)	32
Premature (37.5 to 46 cm. or 1,500 to 2,500 gm.)	44
Full term (46 cm. or 2,500 gm. or over)	125
Development unrecorded	14

Exclusive of the thirty-two abortions, in thirty-four cases no heart was heard on admission and, of these, twenty-one fetuses were macerated. Thirty-nine of those born alive, or 1.1 per cent., died the first day; 2.1 per cent. (seventy-three) during the first seven days, and 2.7 per cent. during the first two weeks. The causes of early mortality, with the exception of one case in which the necropsy report gave meningitis, did not differ from the cause of stillbirth.

The causes of total mortality are:

Labor (forceps 27; cranitomy 3; rigid cervix 2; breech 13, with 2 impacted; long labor 7; shoulder 1; early induction 2; fibroid of cervix 1; polyp of cervix 1; flat pelvis with version 1; placenta praevia 14; prolapsed cord 12, with 2 pulseless; cord about neck 6; concealed or accidental hemorrhage 3)	93, or	43 per cent.
Syphilis	14, or	6.5 per cent.
Undetermined	28, or	13 per cent.
Deformity	19, or	8.8 per cent.
Prematurity and inanition	20, or	9.3 per cent.
Toxemia	7	
Asphyxia	6	
Nephritis	5	
Atalectasis	3	
Cerebral hemorrhage	4	
Endocarditis in mother	3	
From other causes	13	

The other causes were ten in number and were acute hydramnios, with labor induced, 2 twins) pertussis in mother 2, typhoid in mother 1, general infection 1, intra-uterine infection 2, intraventricular hemorrhage 1, meningitis 1, perisplenitis 1, hemorrhages into brain, lungs, liver, etc., 1, edema of the brain 1.

LABOR AS FACTOR

The largest of these groups deserves special mention. The percentage caused by labor, while not unusually large, shows possibilities of reduction. Unfortunately, most of these possibilities occur at the actual time of delivery and not in prenatal care. Here the question of personnel is a large factor, for we have a teaching hospital with a changing house staff. In ten of the cases of prolapsed cord, for instance, judgment and dexterity might have done much to save the fetus. In eleven of the cases of breech extraction, a slight delay or a false movement may have been to blame. Placenta praevia causes a comparatively large infant mortality, as, through fear of infection, we do not undertake cesarean section. The deaths incident to forceps deliveries might possibly have been lowered in private practice, but the figures here given include cases of dystocia from the cervix as well as from the bony pelvis. In some of these, delay may have been a factor through nonobservance of the earliest change in tone or rate of the fetal heart; in others, permission for cesarean section or induction was withheld; but the large majority were borderline cases—either flat pelves with a true conjugate of 8.5 cm. or justominor pelves in which the disproportion did not seem to warrant cesarean section. The question is often one for close consideration.

SYPHILIS

Our percentage from syphilis is comparatively small, 6.5 as compared to Williams' 26.4 per cent. The latter percentage is, however, due to the fact that of the patients composing the Baltimore clinic almost half are colored. Moreover, some patients in our undetermined class of 13 per cent. were probably syphilitic. In any case, making all allowances, it seems positive that treatment has lowered the mortality.

Cases of deformity, monsters, etc., except for the treatment of a possible underlying syphilis, offer no hope of reduction with our present knowledge. Unfortunately, even when syphilis is treated, the time is often too late to correct any embryonic defect.

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* Seen in the obstetric service of the New York Infirmary for Women and Children.

[1] Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the New-Born, A Report on Ten Thousand Consecutive Births at the Sloane Hospital for Women, New York, The Journal A. M. A., Jan. 23, 1915, p. 287.

[2] Williams, J. Whitridge: The Limitations and Possibilities of Prenatal Care Based on the Study of 705 Fetal Deaths Occurring in 10,000 Consecutive Admissions to the Obstetrical Department of the Johns Hopkins Hospital, The Journal A. M. A., Jan. 9 1915, p. 95.

The cases of prematurity and inanition undoubtedly depend on poor home surroundings of the mother. Five of the twenty cases were twin births and naturally the infants had a poorer chance to survive, but the large factor is probably sociologic and through the clinic the social service is able to help in these cases.

CLINICAL MANAGEMENT

The prenatal clinic, as at present managed, is under the direct supervision of the attending obstetrician. The assistant in the department and the intern follow the cases. Complications, such as tuberculosis, endocarditis, hyperthyroidism, abscess, etc., are looked after in conjunction with the doctors of the other departments of the dispensary, as deemed advisable. We have no prenatal visiting nurses, but the social service cares for patients who seem in need. Medical instructions are given by the doctors.

Patients register at seven months, sometimes at six months; they make bimonthly visits till the end of the eighth month and weekly visits during the last month. Patients not reporting for a period of a month are debarred. The patient's history is taken at the first visit, especially as to history of past diseases, former labors or abortions, and health during present pregnancy. The physical examination, unless otherwise indicated, is obstetric only, consisting of external and internal pelvic measurements and abdominal palpation, mensuration and auscultation. In making the internal examination, the condition of the cervix and perineum is noted and any erosion of the former is treated.

Syphilis is conceded to be the largest single factor in prenatal death, and while we are not able to treat patients in the early months, every registered patient presenting any symptoms or giving any history suspicious of syphilis has a Wassermann examination and if complement fixation be positive, has a course of salvarsan. The history we most commonly get in positive cases is one of abortion, stillbirths, or children dying in early life—often of "infant's consumption."

Furthermore, accurate or at least careful pelvic measurements help to reduce the cases of dystocia, due to the bony pelvis, to a minimum, for while no one's judgment is infallible, early observation allows more intelligent treatment.

Routine urinalyses have enabled us to eliminate toxemia almost entirely, some of the seven cases being early inductions in patients not responding to treatment, others being emergencies. In albuminuria cases, the blood pressure is our main guide and where it remains increasingly high, in spite of eliminative treatment, labor is induced.

Finally, instructions as to personal hygiene and care, we believe, prevent many cases of septicemia and mastitis in mothers, with consequent good effect on the infants.

CONCLUSION

I believe we are repaid for continuing our prenatal clinic and striving to improve it; that it is one of the most important features of the obstetric department; that prenatal care, though it seem thankless, has very definite results, and that it is often by such painstaking attention that we accomplish most.

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OBSERVATIONS ON INCIPIENT HYPERTROPHY OF THE PROSTATE

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The diagnosis of beginning prostatic hypertrophy is not always a simple matter, particularly in the hands of the general practitioner, and occasionally in the hands of the urologist. Especially is one apt to find these diagnostic errors in cases involving the nervous system, in which functional disturbances of the bladder are the prevailing symptoms. Such errors are liable to occur when one fails to remember that spinal cord disease often gives the first evidence of its existence by the development of disturbances in the urinary and sexual functions. In such cases, it is not to be wondered at that errors occur, but there can be no doubt that they can be reduced to a minimum, even to zero, if due precautions are taken.

CASE REPORT

A case of this kind, which occurred in my experience, illustrates this point rather strikingly:

The patient was a man, aged 49, married twelve years, the father of five healthy children. He had been perfectly well up to a year previously, when he noticed a weakening of the urinary stream, an increased frequency in the desire to urinate, and a delay in starting the stream. His family physician made the diagnosis of prostatic hypertrophy, and took him to a urologist for confirmation. The urologist performed a cystoscopy, found a prostatic enlargement, with bladder trabeculations, confirmed the diagnosis, and recommended prostatectomy. The patient, thoroughly alarmed at the prospect of a surgical operation for an ailment which was not giving him much annoyance, determined to seek another opinion, and thus came under my observation.

The patient was still a young man, physically and mentally, and when he stated that he came for the purpose of confirming the diagnosis and approving of the operative suggestion, the first thought was that this was a young man, indeed, to have his prostate removed, hypertrophy notwithstanding. Cystoscopy was not undertaken; I believe that cystoscopy is not necessary in the diagnosis of prostatic hypertrophy, when other diagnostic elements are available. In this particular case, hypertrophy did not appear probable after the following data were obtained: urine clear, residuum three-fourths ounce, urethral length 7½ inches, no nocturnal call to urinate. The prostate was slightly enlarged by rectum; there was no stricture in the urethra.

Physical examination added something useful to these unsatisfactory data. The knee-jerk was totally absent, pupils dilated unequally, slight Romberg present. Further questioning elicited the information that twenty years previously the patient had a penile ulcer, which soon passed away. He received internal treatment of some kind for about a year, but had not taken any since then. Wassermann, four plus.

With this information at hand, I made a diagnosis of incipient tabes dorsalis, and referred the patient to Dr. Joseph Fraenkel, who confirmed the diagnosis, and under whose care the patient has been doing very nicely for the past two years. At the present writing, the patient does not show any evidence of prostatic hypertrophy, except as stated above.

USE OF THE CYSTOSCOPE

This case teaches us several lessons. First, mere enlargement of the prostate as seen with the cystoscope does not necessarily demand immediate prostatectomy. This will be discussed later on. Secondly, the cystoscope, with all its great usefulness, still has its limitations, and one of these, in my opinion, is in the diagnosis of prostatic hypertrophy. I am conservative enough to rely on the clinical manifestations for the diagnosis of the senile prostate. Given a residuum in the bladder, an increased urethral length, increased desire and frequency, particularly at night, in a man of 50 or over, and the diagnosis is just as certain as any cystoscope can make it. What is objected to is not the use of this invaluable instrument, but its employment as a routine measure in making the diagnosis, when clinical evidence is available.

The literature need not be invoked to confirm the statement that the harm done by the use of the cystoscope in these cases has far more than counterbalanced the good derived by the information which it has furnished. False passages, infections and acute retention are among the sequelae of this practice of employing the cystoscope as a routine measure, in suspected cases of prostatic hypertrophy. Undoubtedly, when the diagnosis is not clear and further enlightenment is desired, the use of the cystoscope is not only permissible, but actually imperative; but the skilful urologist is distinguished by his ability to determine when the use of the cystoscope is merely permissible, and when it is imperative.

The third lesson which this case might teach, if we would learn, is that the physical examination and the serologic test are of the greatest importance in these cases. One might well ask, in this connection, Of what good is the knowledge that the prostate is enlarged intravesically and the bladder trabeculated, when one omits the examination for the knee-jerk, the Romberg, the pupillary reaction and the Wassermann? I think that it is of far greater importance to determine the presence of a spinal lesion and bring it under control, as far as possible, and thereby increase the power behind the urinary stream, than to ignore this possible condition and attempt to relieve the situation by immediate extirpation of the prostate, declared guilty on the sole evidence furnished by the cystoscope.

This brings us to the third point of interest, namely, Should the prostate be removed immediately just because of an enlargement of one or more of its lobes? A search through contemporaneous literature offers very little enlightenment on this question. Writers on prostatic hypertrophy, as a rule, pay more attention to the subject of how to operate than when to operate. Occasionally one finds a vague suggestion that has more or less bearing on this moot point.

From the purely academic and theoretical point of view, it would appear that every prostate showing an enlargement into the urethra or bladder ought to be removed without delay, for surely it will have to be accounted for at some later date, when the patient's general condition may not be so good as when the enlargement is first discovered. On the other hand, when one considers the risk to life attached to the operation, and the frequent unhappy sequelae after operative recovery, one feels that there ought to be something more than mere enlargement to justify so formidable an operation as prostatectomy. In the ultimate analysis, this question is decided, each case on its own merits, by the surgeon and the family physician, for the question of operation must be determined in every case on the existing conditions that call for relief.

So much has been said and written optimistically on the subject of prostatectomy that the general practitioner is apt to consider the operation rather lightly, and urge its performance as soon as the patient makes complaint of his urinary disturbances.

I feel rather keenly in this matter, because of my observations on the results attained after removal of the prostate. I have under treatment, at present, a man, aged 51, who had his prostate removed by an excellent surgeon three years ago, at the age of 48, by the perineal route. At that time, for six months previously he had been complaining of increased frequency of urination and slowness of the stream. He had 1 ounce of residuum, and voided once during the night. Operation was advised and accepted, with the result that the man has become totally impotent and has absolute incontinence of urine, being incapacitated for business because of the persistent odor of urine about his person, and his life has been made miserable generally. In all other respects he is still a fairly young, healthy man, with not a gray hair on his head.

It would appear to have been wiser to give this man an opportunity to rid himself of his symptoms in some manner other than by radical operation so early in life. Prostatectomy is inherently a procedure that should be adopted when other measures fail to afford relief. It is not the first remedy to think of, but the last. When it is clear that palliative measures will not offer relief, prostatectomy is the only remedy that can be advised.

It must not be assumed for a moment that I am advocating the adoption of a catheter life as a prelude to prostatectomy. To the contrary, the permanent use of the catheter for the emptying of the bladder is an anomaly in these days of progressive surgery. Indeed, I am firm in the conviction that the time for prostatectomy has arrived as soon as the catheter has become necessary for emptying the bladder. But that does not mean that prostatectomy is demanded the moment an enlarged prostatic lobe has been discovered. It simply means that prostatectomy is demanded and made necessary when it is seen that the bladder is incapable of emptying itself of its contents. In other words, the indication for operation is not found in the enlarged prostate per se, but in the disturbance of function which such enlargement produces. Surely a man with a prostate as large as a fist is no worse off than his neighbor with a normal prostate, so long as he empties the bladder of its contents and thereby prevents the accumulation of residual urine. Why not give the incipient hypertrophied prostate a chance? We have all seen instances innumerable in elderly men, in which the prostate is large without any or only a slight disturbance in the urinary function. In these cases, the bladder wall is hypertrophied and has become so in response to the increased obstruction at the vesical neck. But if such a bladder empties itself with reasonable satisfaction, it would seem only proper to conserve the prostate and encourage the bladder to continue its work.

This is a very important matter, and deserves greater consideration than it usually receives. It is a problem worthy of our best thought. For several years I have been working along these lines, and I am convinced that prostatectomy might be avoided in many instances, if proper attention is paid to improving the condition of the bladder and the prostate.

At Beth Israel Hospital and in private practice, we have had a large number of incipient prostatics, as they might be termed, who have been treated with the view of increasing the bladder function and thereby counteracting the obstructive tendency of the enlarged prostate. It has been found that in many cases the prostate reaches a certain stage in the hypertrophic process, and then comes to a standstill. In these cases, there may be an ounce or two of residual urine, the urethral length may be one-half inch longer than normal, and the cystoscope may reveal a decided prostatic enlargement, and possibly some trabeculation of the bladder mucosa. But the patient is in a fairly comfortable condition, arising at night once or probably twice to void urine. Patients have gone on this way for five or six years, and sometimes longer, without any increase in the obstructive symptoms, and consequently without any urgent necessity of removing the prostate.

If at any time the obstructive symptoms become more persistent and urgent, prostatectomy is advised as the only means at our command which will restore the urinary function as nearly as possible to its previous condition. But so long as the patient can be kept in reasonable comfort without resorting to the catheter life, operation is not recommended.

TREATMENT

Our treatment includes the administration of a urinary antiseptic, keeping the bowels open, abstinence from alcoholic and sexual excesses, emptying, and irrigating and stretching the bladder once or twice weekly. We find that stretching the bladder gently by filling it to its maximum capacity is of great value, as it stimulates the bladder walls, very much in the nature of massage, thereby maintaining its ability to meet for a long time the increasing demands made on it by the obstructing prostate. Alcoholic and sexual temperance are of great importance in this connection, for we have found that an unusual indulgence will often bring about a sudden increase in the obstructive symptoms. Moderation in all things is the watchword for the incipient prostatic.

CONCLUSIONS

The urinary symptoms associated with incipient prostatic hypertrophy are liable to be confused with functional disturbances of the bladder due to central nerve lesions, such as tabes dorsalis. Every patient with suspected prostatic hypertrophy should be carefully examined for evidence of spinal cord disease. The Wassermann test and the physical examination will often indicate that the urinary disturbances are due to central nerve disease, rather than to prostatic obstruction. The cystoscope is not to be used in the diagnosis of prostatic hypertrophy, unless the clinical data are insufficient. While the cystoscope is usually a perfectly safe instrument in the hands of the expert, it is potentially capable of doing much damage. The diagnosis of hypertrophy should be made on the clinical findings. Prostatectomy should be undertaken as a last resort, and not as a routine procedure. The bladder should be given an opportunity to compensate for the obstruction of the enlarged prostate. This can be encouraged by the application of hygienic measures tending to prevent congestion of the prostate and bladder. Massage of the bladder walls, by gently filling the bladder to its capacity, is extremely useful in stimulating compensatory hypertrophy. Prostatectomy is demanded as soon as a catheter is required to keep the patient in comfort.

113 East Nineteenth Street.

EXPERIENCES WITH THE SODIUM CITRATE METHOD OF INDIRECT TRANSFUSION OF BLOOD (LEWISOHN)

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During the last few years, attempts have been made by numerous workers to discard the direct method of transfusion by suture or cannula (Crile, Elsberg, Bernheim, Carrel) and to replace it by the indirect method on account of: (1) the technical difficulties in the former methods; (2) the time consumed in transfusing, which of course weighed heavily on surgeons, donor and recipient; (3) the impossibility of accurately estimating the amount of blood received by the recipient, and (4) the difficulty, at times encountered, in maintaining the flow of blood for a sufficient length of time, because of the occurrence of thrombosis in the donor's artery, notwithstanding excellent technic.

These attempts at improvement resulted in the indirect transfusion, performed by two groups of methods:

1. Those in which the blood was removed from the donor and transfused hastily into the recipient in small amounts repeatedly until sufficient blood had been transfused. This was done either intermittently (Lindemann) or continuously (Unger) by the syringe method, or by the use of larger paraffined vessels (Curtis, Kimpton). Haste was required in order to prevent coagulation.

2. Those in which substances such as herudin (Hooker, Satterlee), or more recently sodium citrate (Lewisohn), were mixed with the blood to prevent coagulation.

The last-named method would seem to be ideal, because it allows the use of a cheap, easily sterilizable fluid (2 per cent. sodium citrate); the blood remains fluid indefinitely, and can be transported; the amount obtained and transfused can be measured, and the transfusion becomes simplified to an infusion given with a glass infusion bottle and salvarsan needle or infusion cannula. Theoretically, however, there are objections to the method, because it adds something to the blood which is not normally present, it allows the blood to stand in the air outside the body for a certain length of time, and it allows the blood, a tissue which is normally in contact only with endothelium, to come in contact with foreign bodies (glass, rubber and metal). These objections do not pertain in direct transfusion (for example, the Crile method). Whether or not these objections are really valid remains for the future to show. The mortality statistics will decide this.

At any rate, Richard Lewisohn[1] reported twenty-two citrate transfusions on eighteen patients. These patients were transfused with amounts of blood varying between 150 c.c. in children and from 500 to 1,000 c.c. in adults. In no case was any fatality recorded, although they were most desperate cases.

It is the chief purpose of this communication to record the results obtained in three transfusions performed by the Lewisohn citrate method. It is interesting that in this small group we can compare in two of the cases the results of the citrate indirect method and the Crile direct method, as one of them had a citrate followed by a Crile transfusion and the other a Crile followed by a citrate transfusion.

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[1] Lewisohn, Richard: Surg., Gynec. and Obst., 1915, xxi, 37.

Case 1.—G. D., laborer, seen in consultation with Dr. Francisco, March 12, 1915, had been having painless passages of black blood from the bowel for four or five days. The hemoglobin was 25 per cent. Examination revealed general neurofibromatosis of the skin (von Recklinghausen's disease), no fever and epigastric tenderness. A clinical diagnosis of duodenal ulcer was made. Two days previously, the patient had been transfused with 375 c.c. of citrated blood by Dr. Francisco. After receiving 200 c.c. of blood, the patient became nauseated, retched, his face assumed a drawn expression, cold sweat appeared, and the pulse became thready. He rapidly recovered, and the transfusion was completed. One hour later he went into profound shock, from which he recovered in two hours, and voided claret-colored urine with relief. He was removed to Trinity Hospital, a donor was procured, and I performed a Crile direct transfusion, raising the hemoglobin from 25 to 55 per cent. The duration of the operation was four hours. The patient, previously almost moribund, became quite conscious, and talked logically.

Exploratory laparotomy by Dr. Sharber, one hour later, through an upper median abdominal incision, revealed the stomach and duodenum negative for ulcer. On the anterior aspect of the second part of the duodenum was a firm subperitoneal mass the size of a small olive. It was easily enucleated and the peritoneal rent closed. In the lower part of the ileum, about 1 foot from the ileocecal valve, was another slightly larger subperitoneal mass, situated on the peripheral aspect of the intestines. It was treated in a manner similar to the former tumor. The rest of the abdomen was explored but found negative. In the removal of neither tumor was it necessary to enter the lumen of the intestine.

The patient seemed in good condition the next morning, and had 43 per cent. of hemoglobin, but died at 11 a. m. No claret-colored urine had been voided. According to the pathologic report, the tumor of the ileum was a fibromyoma; and that of the duodenum a fibromyosarcoma. No nerve fibers were shown in Weigert preparations.

Apparently the direct transfusion was successful in this case, while the indirect was not only unsuccessful, but also accompanied by almost fatal shock.

Case 2.—Mrs. J. C. P., seen at Trinity Hospital in consultation with Drs. Sharber and Rieger, was anemic, owing to the bleeding of a fibroid uterus. The hemoglobin was 38 per cent. On this patient, July 13, 1915, I performed a transfusion by the citrate method with 500 c.c. of citrated blood obtained from her husband, whose hemoglobin was 100 per cent. The duration of the operation was fifty-five minutes. The hemoglobin of the recipient rose at once to 58 per cent. One hour later moderate shock followed, but was easily combated, and the temperature rose to 102.6. The next day after purgation and preparation for operation, the hemoglobin was 75 per cent. None had appeared in the urine (by the guaiac test). A supravaginal hysterectomy and bilateral salpingo-oophorectomy was performed. The hemoglobin twelve hours after operation was 60 per cent.

Aside from the combatable shock, the citrate transfusion was unusually successful.

Case 3.—W. W., woman, was admitted to the hospital July 1, with symptoms of sudden intra-abdominal hemorrhage. When seen there in consultation with Dr. C. R. Sharp, the symptoms had somewhat abated. July 3 the hemoglobin was 60 per cent. An indefinite mass was felt in Douglas' culdesac. Menstruation had been irregular. A clinical diagnosis of ectopic gestation with intra-abdominal hemorrhage was made.

The patient was comfortable until the morning of July 5, when she again had signs of hemorrhage. Dr. Sharp performed a laparotomy for ectopic gestation; the right tube and ovary were removed; the patient received two intravenous saline infusions on the operating table, and was removed to the ward in a critical condition. The hemoglobin was 43 per cent. Within two hours I performed a Crile direct transfusion, using the patient's son as donor, and raising the hemoglobin to 51 per cent. The duration of the transfusion was two and one-half hours. No claret-colored urine was voided. The patient apparently did well for one week, but for the next few days had been looking ill. July 16 the hemoglobin was 52 per cent. A citrate transfusion was done with the same donor as before and the same flasks of citrate and saline that had been used in Case 2. Three hundred and fifty c.c. of blood were drawn. As soon as 100 c.c. had run in, the patient became restless and cyanotic, and the pupils dilated widely. She recovered from this, and 100 c.c. more were allowed to run in when she collapsed completely; her mouth twitched, the pupils dilated, the pulse and heart sounds became imperceptible, and cyanosis ensued. The transfusion was stopped. The hemoglobin had risen to 62 per cent. She was given extreme stimulation, but ceased at the end of six hours.

Both the 2 per cent. sodium citrate and the 0.9 per cent. sodium chlorid solutions were made of freshly distilled water and autoclaved at once at 20 pounds' pressure for thirty minutes.

These case reports show that we are not yet in a position to discard the direct for the indirect transfusion. In spite of the difficulties in technic attending the former, I believe it would be better to obtain the services of one skilled in arterial surgery and eliminate such a percentage of reactions (shock) as 100 per cent., and of mortality as 33⅓ per cent. There is no reason to believe that hemoglobinuria may not occur with either type of transfusion with equal frequency; in Case 1 it was responsible for the failure of the citrate method, although neither hemolysis nor agglutination occurred in vitro (Dr. Francisco). Having had an experience of a large number of direct transfusions, I can say that shock is a negligible factor, that infarction occasionally occurs (lung, kidney), and that hemoglobinuria is quite common and can occur even when the tests in vitro are negative.

I have seen tremendous reactions occur after transfusion of cases of bacteremia, possibly due to bacteriolysis. But a fatality in a case of secondary anemia, following direct transfusion by any method whatsoever, I have never yet witnessed.

Therefore, I would heartily condemn any indirect method that depends on the addition of some substance, such as sodium citrate, which will prevent the coagulation of the blood to be transfused.

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American Hospital at Chefoo.—The hospital of the American Presbyterian Mission at Chefoo, China, was completed in the summer of 1914 and is said to rank with the best hospitals in the larger cities of China. It is described by A. Krisel, a student at the mission, in U. S. Commerce Reports. It is situated on a hill overlooking the harbor of Chefoo and has grounds which cover 4 acres enclosed by a high stone wall. The buildings consist of the hospital, a dispensary, isolation wards for men and women, a morgue and a water pumping plant. The total cost of the hospital, including the equipment, was about $50,000 gold. It is built of brick and stone and is three stories high. It measures 160 by 128 feet and there are 8 ward rooms and 8 private rooms with a total of 35 beds; the capacity can be increased to 50 beds, accommodating about 400 patients in the year. The hospital building is heated by a low pressure steam plant and has electric lights. A Roentgen-ray apparatus has been purchased in the United States. Water is secured from a bored well 200 feet deep; wastes are disposed of by the septic tank system. The hospital had, at the time of the report, two foreign and one Chinese physicians, one foreign and one Chinese female nurses and eight Chinese male nurses. It was then running at about one third its capacity.

STUDIES ON THE LOCALIZATION OF CEREBELLAR TUMORS

III. POSTERIOR NEW GROWTHS WITHOUT NYSTAGMUS *

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INTRODUCTION

The purpose of this study has been to determine the proportion of patients with certified subtentorial new growths who have shown no nystagmus previous to operative treatment.

Practically all authorities agree that nystagmus is a valuable localizing sign in diseases of the posterior cranial fossa. To this category belong especially lesions of the cerebellum, the cerebellar peduncles, the vestibular nerves, the neighboring nuclei and the labyrinths. When general pressure symptoms suggest the presence of a tumor, nystagmus assumes more importance still, for it is recognized that the occurrence of this sign in a patient with symptoms of subtentorial new growth argues in favor of an extracerebellar or intracerebellar neoplasm. Stewart and Holmes[1] hold that this sign is almost invariably present in every case of cerebellar tumor at one or another time.

Occasionally, however, in patients of this type no discernible rhythmic movements of the eyes are found on repeated investigation. Though frequently other features of the examination suffice for purposes of diagnosis,[2, 3] there are instances in which the localization of an intracranial tumor in the posterior fossa is a very difficult problem.

A case in point recently came to my attention (table, 2320). The patient was examined repeatedly and by different observers, but no suggestion of nystagmus ever was noted. The picture as a whole was quite obscure. A tentative diagnosis of subtentorial tumor finally was made from the rapid onset of pressure signs (advanced choked disks, areas of absorption and enlarged venous channels in the roentgenograms, etc.) and the history of some disturbances in gait. There were no further significant localizing signs. Operation disclosed a solitary, median tubercle of the cerebellum measuring approximately 3 cm. in diameter.

When confronted with problems of this sort it is a matter of some importance to know the relative proportion of patients with certified cerebellar tumors who show no nystagmus previous to operative treatment. With information of this nature conclusions may more easily be drawn regarding the advisability of suboccipital exploration.

The records used in this analysis are from patients with tumors in the posterior fossa who have appeared in the neurologic services of Dr. Cushing at the Johns Hopkins Hospital previous to September, 1912, and at the Peter Bent Brigham Hospital since that date. Most of the cases in the latter group were personally studied by me. Of several hundred such cases only those—fifty-one in number—in which the new growths were localized at operation or at necropsy have been used for this report. In addition, for purposes of comparison, the records of forty-one patients from the latter clinic with verified supratentorial tumors have been analyzed for the presence or absence of nystagmus.

Practically all of the patients were studied by more than one observer. This method of checking up the routine examinations is significant, particularly for the patients reported as showing no nystagmus.

As Wilson and Pike[4] have pointed out, the word "nystagmus," in its present usage, is an indefinite term covering various types of ocular movements arising from lesions in diverse parts of the nervous system. Though these have been frequently differentiated into several distinct types, English writers have generally applied the term to oscillations of the eyes without distinction in regard to the variety of the movements. In this analysis no patient has been classified in the group without nystagmus if jerks were discovered at any time exceeding physiologic limits.

CASES OF CEREBELLAR TUMORS WITHOUT NYSTAGMUS

Of fifty-one cases of verified subtentorial new growths, there were eleven in which no nystagmus was discernible previous to operation. Nystagmus was absent in one additional case on repeated examination up to the day of exploration (table, 357). For purposes of comparison these are presented in the accompanying table.

The lesion concerned in eight of the cases was a glioma or a gliomatous cyst. In three there were tuberculomas, two being solitary. As regards the site of the new growths, it is seen from the table that they involved practically all portions of the cerebellum. Either the right or left hemisphere was affected as a whole or in part in six cases. The tenth and eleventh patients showed an involvement of both the vermis and an entire hemisphere. In the twelfth the lesion affected the deeper, anterior portion of the vermis and the right lobe. It is noteworthy that in no instance was the cerebellopontine angle primarily involved.

The degree of intracranial pressure varied widely among these patients. From a case with no measurable swelling of the optic nerve head and only moderate tension at operation, the pressure ranged to one with advanced choked disk and extreme herniation of the cerebellum into the spinal canal.

Accessory measures for eliciting nystagmus were tried in three of the patients—moving the head as first suggested by Oppenheim,[5] and using opaque spectacles as recommended by Bárány.[6] No success attended any of these tests.

The importance of making repeated observations is well shown by Case 357, in which a fine nystagmus finally appeared just previous to the operation.

The records of two patients illustrate how nystagmus which has been absent during one period of study may appear in later examinations subsequent to a suboccipital operation. Patient 30,000 on the second admission and Patient 357 on the second and third admissions had characteristic rhythmic movements of the eyes.

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* From the Surgical Clinic of the Peter Bent Brigham Hospital, Boston.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Stewart and Holmes: Symptomatology of Cerebellar Tumors, Brain, 1904, xxvii, 522.

[2] Grey: Studies on the Localization of Cerebellar Tumors: 1. Staggering Gait, Limb Ataxia, The Romberg Test and Adiadococinesia, Jour. Nerv. and Ment. Dis., to be published.

[3] Grey: On Localization of Function in the Canine Cerebellum, Jour. Nerv. and Ment. Dis., to be published.

[4] Wilson and Pike: The Mechanism of Labyrinthine Nystagmus and Its Modification by Lesions in the Cerebellum and Cerebrum, Arch. Int. Med., January, 1915, p. 31.

[5] Oppenheim: The Influence of the Position of the Head on Cerebral Symptoms, Neurol. Centralbl., 1910, xxix, 114.

[6] Bárány: Functional Examination of the Vestibular Apparatus, Verhandl. deutsch. otol. Gesellsch., 1911, xx, 37.

CASES OF CEREBELLAR TUMORS AND NO NYSTAGMUS

Patient	Lesion	Intracranial Pressure	Tinnitus and Hearing	Dizziness	Eye Muscles	Caloric Test	Nystagmus
2320 ♂ 22	Tuberculoma involving vermis principally; rt. hemisphere slightly. (Operation.) Tumor about 3 cm. in diameter.	Choked disks 4-5 D. Marked tension at operation. Extreme herniation of cerebellum into spinal canal. Int. hydrocephalus.	No tinnitus. Hearing good. Slightly less acute rt. ear.	Some. No rotation of objects or self.	No strabismus. Conjugate deviations good. Very slight restriction toward pt's. left.	Definite nystagmus from irrigation either ear. More marked from left. Normal pointing reactions. Reaction movements from both sides.	None with eyes directed forward, to either side, up and down, on changing position of and shaking head, or on breaking fixation.
1406 ♂ 45	Tuberculoma of left hemisphere. (Necropsy.) Tumor about 3 by 2.5 by 2 cm.	Choked disks 6-7 D. Marked tension at operation. Herniation into spinal canal.	No tinnitus. Hearing less acute in left ear.	None	No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
320 ♀ 6½	Glioma involving vermis and medial portion of each hemisphere. (Operation and necropsy.) Tumor 4.5 by 3.2 cm.	Advanced choked disks. Marked cerebellar herniation into spinal canal. Int. hydrocephalus. Pons and medulla distorted.	No tinnitus. Hearing normal.	None	No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
27788 ♂ 41	Cyst involving left hemisphere principally. (Operation.) Cavity about 5 by 4 by 4 cm.	Choked disks. Moderate tension of dura and cerebellum at operation.	No tinnitus. Hearing normal.	(?)	Slight weakness left internal rectus.	Definite nystagmus from irrigation either ear. Normal vestibular response, both sides.	None with eyes directed forward, up and down, or to the right. A few atypical jerks on looking to the left.
1444 ♂ 43	Multiple small tuberculomas involving vermis and left hemisphere. (Necropsy.) Largest 1 cm. in diameter.	Early choked disks 1 D. Moderate tension at operation. Probably slight int. hydrocephalus.	No tinnitus. Hearing about normal.	Marked dizziness. No rotation of objects or self.	No diplopia or strabismus. Some weakness left ext. rectus (?).	Marked nystagmus within very short time from irrigation either ear. Normal pointing reactions and reaction movements.	In two examinations atypical jerks of brief duration appeared only when looking to either side. Subsequently no jerks or nystagmus on directing eyes ahead, to the sides, and up and down. None on moving head and on breaking fixation.
1642 ♀ 64	Cyst (gliomatous ?) involving rt. hemisphere principally. (Operation.)	Very early changes in eye-grounds. Hyperemic. No elevation. Moderate tension at operation.	No tinnitus. Hearing normal.	Marked. No rotation of objects or self.	No diplopia or strabismus. Conjugate deviations good.	Marked nystagmus within very short time from irrigation either ear. Normal pointing reactions and reaction movements.	None with eyes directed forward, to either side, up and down, on moving head, or on breaking fixation.
51 ♂ 8	Cyst (gliomatous ?) involving rt. hemisphere principally. (Operation.) 42 c.c. fluid from cyst.	Choked disks with secondary atrophy. Int. hydrocephalus marked. Separation sutures. Marked tension at operation. Great herniation into spinal canal.	No tinnitus. Hearing normal.	None (?)............	Some diplopia. No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
107 ♀ 3½	Cyst (gliomatous) involving rt. hemisphere principally, also vermis. Includes nearly whole rt. hemisphere. (Operation.)	Early choked disks. Marked int. hydrocephalus. Great herniation into spinal canal.	Tinnitus (?). Hearing about normal.	(?)	No diplopia or strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
30000 ♀ 6	Large cyst (gliomatous) occupying left hemisphere principally. (Operation.)	Choked disks 5-6 D. Int. hydrocephalus. Marked herniation into spinal canal.	No tinnitus. Hearing less acute in rt. ear.	None (?)............	Paralysis left abducens. Very slight weakness rt. abducens (?).		None with eyes directed forward, to either side, or up and down.
357 ♂ 36	Glioma involving anterior portions, rt. hemisphere and vermis. (Operation.)	Choked disks 5 D. Marked tension at operation. Herniation into spinal canal.	Some tinnitus each ear. Hearing normal.	Fairly marked. No rotation of objects or self.	History of diplopia. No strabismus. Conjugate deviations good.	Slight nystag. from rt. ear; marked from left. Reaction movements only from left ear. Pointing errors to right both arms.	None with eyes turned in all directions on numerous examinations. Just previous to operation a fine, indefinite nystagmus appeared on looking to either side.
151 ♀ 9	Large cystic glioma involving rt. hemisphere principally, also vermis. (Operation.)	Advanced secondary optic atrophy. No elevation. Hydrocephalic configuration of skull. Marked pressure at operation. Int. hydrocephalus.	No tinnitus. Hearing normal.	None	No diplopia. No strabismus. Conjugate deviations good.		None with eyes directed forward, upward, or to her right. Some atypical coarse jerks on looking toward her left.
26387 ♀ 37	Cystic glioma involving left hemisphere principally. (Operation.)	Choked disk. Moderate tension at operation. Int. hydrocephalus.	Considerable tinnitus rt. ear. Later left ear. Hearing normal.	Some	No diplopia. No strabismus. Conjugate deviations good.	No nystagmus provoked on irrigating either ear. No subjective distress.	None with eyes turned in all directions.

Two of the patients complained of tinnitus and three showed a slight homolateral reduction of air conduction. These complications had appeared during the present illness in each case. Functional tests, however, disclosed no serious impairment of the eighth nerve in any instance.

CASES OF CEREBELLAR AND EXTRACEREBELLAR TUMORS WITH NYSTAGMUS

While tumors may arise in every possible position in the posterior fossa, it is convenient for purposes of localization and surgical treatment to consider them as occupying four principal regions, two within and two external to the cerebellum. In regard to the former we may speak, first, of the tumors which occupy a central position, that is, those which involve the vermis and more or less of the median portion of each lateral lobe; and, second, of those which lie wholly within one or the other hemisphere. In reference to the latter we may look on the new growths either as occupying the cerebellopontine angle, or as lying more or less between the posterior portions of the lateral lobes, dorsalward from the medulla and vermis.

There were thirty-nine verified cases of tumors occupying one or the other of these regions in which nystagmus was present previous to operative treatment. In twenty-two the new growths were intracerebellar; ten occupied a median position, while eleven lay in one lateral lobe. In one there were gliomatous cysts in both hemispheres. The size of the new growths varied greatly, from lesions with a diameter of a few centimeters to growths which replaced most of the cerebellum. An extracerebellar tumor was found in each of seventeen patients. Of these tumors thirteen occupied a unilateral cerebellopontine site and three a posterior, median position. In one additional case an infiltrating glioma of the vermis lay partially exposed in the posterior, median sulcus.

The degree of intracranial pressure in this group was found to vary within wide limits. In several instances the eye-grounds appeared to be practically normal. Operation disclosed only a moderate tension of the suboccipital structures. In the balance of the cases, on the other hand, the changes in the optic nerve-head varied from a few diopters swelling to an advanced choking of the disk. A number of the patients showed marked secondary atrophy. At operation corresponding differences were noted in the degree of internal hydrocephalus.

The experiences with the caloric test and the pointing reaction (Bárány) in these patients have been discussed in another place.[7]

THE PRESENCE AND ABSENCE OF NYSTAGMUS IN CASES OF TUMORS LYING ANTERIOR TO THE CEREBELLUM

Nystagmus is sometimes found in patients with new growths lying anterior to the cerebellum. As its presence here is always confusing, this has somewhat limited its usefulness as a sign of disease in the posterior fossa. The types of nystagmus in the two classes (that is, patients with tumors lying anterior to the cerebellum and those with cerebellar or extracerebellar growths) are occasionally identical. In each the movements may be fine and inconspicuous or they may appear as coarse, well-marked jerks. It is frequently impossible, even, to recognize the variety arising from direct irritation in the labyrinth; for, as Friesner and Braun[8] have pointed out, despite much that has been said to the contrary, the nystagmus due to cerebellar disease often cannot be differentiated clinically from that due to labyrinthine disease. Our experience has been that on the average the movements are coarser and more marked in individuals with lesions situated below the tentorium.

The fact that no nystagmus was noted in fully one third of the cases of intracerebellar new growths suggested a similar analysis of the cases with verified lesions lying anterior to the cerebellum in order to determine the relative frequency of this sign in the latter group.

Of forty patients with tumors situated anterior to the cerebellum, eight showed characteristic rhythmic oscillations of the eyes previous to any surgical interference. The new growths and their locations were as follows: one glioma, right occipital lobe; one glioma, right thalamus principally; one gumma, left temporal lobe; two cases of gliomatous cyst, one right and one left, parietal lobes; one solitary tubercle and one glioma, pons; and one hypophysial cyst.

The caloric test was used on three of the patients—occipital lobe glioma, thalamic glioma, and pontine tubercle. In each a typical nystagmus appeared following the irrigation of either ear.

There were thirty-two individuals in whom no nystagmus was detected; one gumma and one glioma, left frontal lobe; one gliomatous cyst, right frontal lobe; one endothelioma, pons; one glioma, left thalamus; two cases with a glioma each, and two with an endothelioma each, right parietal lobe; one glioma, left parietal lobe; two patients with a glioma each, and one with a gumma, left temporal lobe; one gliomatous cyst, one glioma, and one endothelioma, right temporal lobe; one glioma involving both thalami, right principally; one endothelioma, right temporoparietal region; one endothelioma at the foramen magnum; one metastatic melanotic sarcoma—multiple in cerebrum and cerebellum; and eleven patients with hypophysial strumas or cysts.

Seven of the patients were examined with the caloric test. Typical nystagmus appeared following the irrigation of each ear in six of these: unilateral thalamic glioma, frontal gumma, bilateral thalamic glioma, temporal endothelioma, endothelioma at foramen magnum, and parietal endothelioma. In the seventh—a pontine endothelioma—there was no response from either labyrinth. An involvement of the third, fourth and sixth nerve nuclei probably was largely responsible for this, as voluntary conjugate deviation of the eyes was practically impossible in all directions.

A study of the eye-grounds showed no uniformity in the ophthalmoscopic pictures. The changes in the nerve-head varied in both classes of cases (patients with and patients without nystagmus) from fundi with no measurable elevation to advanced choked disk. A similar variation was pointed out in discussing the cases of intracerebellar new growths (table, column 4).

DISCUSSION

In seeking an explanation for the presence or absence of nystagmus in patients of this class it is necessary to consider briefly the present conceptions regarding the mechanism of nystagmus. These, unfortunately are somewhat discordant. Bauer and Leidler[9] believe from their experiments on animals that nystagmus appears as a result of lesions in the region of Deiters' nucleus—the horizontal jerks more from the ventrocaudal part, and the vertical jerks from the oral part. In a similar way Bárány[10] assumes a nystagmus center here and explains the presence of this and certain other so-called cerebellar signs as the result of increased tension in the posterior fossa. Tumors in any location, as soon as they exert pressure on the posterior fossa, may give rise to an intracranial type of nystagmus, which may be transitory and of varying intensity or permanent and of constant intensity. Hesse,[11] however, questions whether we are justified at present in attributing such signs to the distant effects (*Fernwirkung*) of space-consuming new growths in the large and small brain.

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[7] Grey: Studies on the Localization of Cerebellar Tumors: II. The Pointing Reaction and the Caloric Test, Am. Jour. Med. Sc., 1915, to be published.

[8] Friesner and Braun: The Functional Tests of the Static Labyrinth in Neurological Diagnosis, New York Med. Jour., 1914, c, 369.

Wilson and Pike,[4] on the other hand, do not subscribe to this or to the various other hypotheses which recognize a nystagmus center. They conclude that an agency somewhere produces a deviation of the eyes from the primary position of equilibrium. In labyrinthine nystagmus this agency lies in the labyrinth. The internal rectus muscle on the side of the slow deviation and the external rectus on the side opposite are subjected to a greater strain than usual. This strain, resulting in the stimulation of the sensory or afferent endings of the eye muscles, sets up afferent impulses which are conveyed to the cerebrum over the afferent fibers in the third, fourth, and sixth cranial nerves.[12] These afferent impulses, in their turn, set up efferent impulses in the oculomotor cells of the cerebrum, which result in a quick, jerky contraction of the internal rectus on the side of the slow deviation and of the external rectus of the opposite side, with relaxation of the antagonistic muscles. The effect is a restoration of the eyes to the primary position. The complex motor mechanism of the eyes, these authors conclude, cannot be described in terms of circumscribed isolated centers, but must be defined in terms of an integrative system.

Mills and Weisenburg[13] regard the nystagmus seen with cerebellar lesions as due to an involvement of the vestibulocerebellar apparatus, probably of the parts connecting the vestibular nuclei with the deep nuclei of the cerebellum.

We are acquainted with the agency connected with the labyrinthine type of nystagmus of which Wilson and Pike speak, but as yet are more or less unfamiliar with that responsible for the development of nystagmus from other portions of the brain. Just what relation the cerebellum bears to the development of rhythmic movements of the eyes is at present rather uncertain. The cerebellum, it appears, has no pathways or centers indispensable for the appearance of either the slow or the quick component. From the investigations of Bauer and Leidler[9] it is clear that while destruction of parts of the cerebellar hemisphere and vermis never causes spontaneous nystagmus, lesions of the latter, nevertheless, result in an excessive excitability of the vestibular nuclei. This has led these workers, with Bárány, Neuman and others, to the belief that in cerebellar disease the nystagmus is due to an alteration in function of the vestibular nuclei or their connections with the nuclei of the eye muscles through pressure.

Oppenheim,[14] with Bruce, Wallenberg, Adler, Probst, Babinski, Horsley and others, assumes a nystagmus of cerebellar origin. Horsley,[15] for example, has shown that a careful electrical stimulation of the white matter in the neighborhood of the dentate nucleus, or of the body of the dentate nucleus itself, provokes a horizontal nystagmus toward the side excited. According to this view, as Babinski[16] has pointed out, nystagmus can be caused by either a labyrinthine or a cerebellar irritation. Rothmann,[17] on the other hand, from excitation experiments of his own, is led to dispute such an influence of the cerebellum on the eye muscles.

In considering the various hypotheses which have been advanced to account for the appearance of nystagmus in patients with intracranial tumors, it is evident that there is nothing in these views which will satisfactorily explain the absence of nystagmus in the series reported here. It has already been pointed out that of thirty-four patients with verified intracerebellar new growths, at least one third showed no nystagmus. Now in both of these groups—that without rhythmic movements of the eyeballs as well as that with them—the same differences were found in the degree of intracranial tension. In both there were patients with very little changes in the eye-grounds and with only moderate tension of the cerebral structures at operation; there were also patients with advanced choked disks and marked herniation of the cerebellum into the spinal canal. A similar variation was noted in the situation of the new growths.

On consulting the table it is clear that the absence of this sign cannot be accounted for by a paralysis of the eye muscles. In eight of the twelve patients practically normal conjugate movements were possible in all directions. Three showed a slight weakness of one external rectus muscle, but this degree of paresis is very frequently noted in patients who show characteristic oscillations of the eyeballs. In only one instance was a complete paralysis of the abducens found. Parallel movements of the eyes were possible here in each of the other directions.

Probably the most important evidence that the absence of nystagmus was not due—in a number of these cases at least—to an impairment of the fundamental mechanism of nystagmus is afforded by the results from the caloric tests. Caloric examinations made in six of the twelve patients showed well-marked nystagmus following the irrigation of each labyrinth in five.

On contrasting the group of subtentorial tumor cases having nystagmus with the group showing no nystagmus, it is evident that rhythmic oscillations of the eyes were found in every patient with an extracerebellar new growth. It should be mentioned, however, that the nystagmus was rather inconspicuous in the cases of posterior, median growths. In one instance the fine, rapid jerking of the eyeballs was noticed only when the patient looked toward his right side. The nystagmus in all of the cerebellopontine cases was well marked. Though the number of cases used in this study is comparatively small, one feature is sufficiently prominent to suggest a generalization. The results from the analysis would seem to indicate that when a patient exhibits a cerebellar tumor syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an intracerebellar localization of the lesion.

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[9] Bauer and Leidler: The Effect on the Vestibular Eye Reflex of Excising Different Portions of the Brain, Arb. a. d. neurol. Inst. a. d. Wiener Univ., 1912, xix, 155.

[10] Bárány: Further Investigations on the Relations of the Vestibular Apparatus to the Central Nervous System, Wien. med. Wchnschr., 1912, lxii, 3210.

[11] Hesse: The Rotation and Caloric Nystagmus, Ztschr. f. Neurol. u. Psych., 1913, xv, 377.

[12] Tozer and Sherrington: Receptors and Afferents of the Third, Fourth and Sixth Cranial Nerves, Folia Neuro-Biol., 1910, iv, 626.

[13] Mills and Weisenburg: Cerebellar Symptoms and Cerebellar Localization, The Journal A. M. A., Nov. 21, 1914, p. 1813.

[14] Oppenheim: Lehrbuch der Nervenkrankheiten, 1913, p. 1383.

[15] Horsley, quoted by Babinski and Tournay (Note 16).

[16] Babinski and Tournay: The Symptoms of Diseases of the Cerebellum and Their Significance, Tr. Internat. Med. Cong., London, 1913, Sec. XI, Part 1.

[17] Rothmann, quoted by Oppenheim (Note 14).

There are several explanations which assist in accounting for the presence and absence of nystagmus in patients with supratentorial new growths. Bárány[10] believes that in such cases it is due to pressure exerted on the nystagmus centers—in the region of Deiters' nuclei—by the tumors from a distance (*Fernwirkung*). When the growths are not space-consuming, however, and lead to no increased intracranial tension, rhythmic oscillations of the eyes do not appear. Another suggestion is offered by Bauer and Leidler.[9] They have shown experimentally that after cerebral hemisphere extirpations there is an increased excitability of the corresponding eye muscle nuclei. It is conceivable that certain cerebral tumors may lead to such a result.

Certain experiments of Wilson and Pike[4] are interesting in this connection. They removed various areas of the cortex, frontal, parietal, occipital, and temporal and also destroyed the subcortical ganglionic masses in cats, dogs and monkeys in an attempt to find some region in a hemisphere where a lesion will modify or abolish labyrinthine nystagmus. The only place where they obtained consistent alteration of the labyrinthine stimulus, and that only so far as the quick component was concerned, was in the region of, or adjacent to, the temporal lobe.

A review of the clinical findings in the patients with supratentorial tumors shows that both the quick and the slow phases of nystagmus may exist in patients with new growths occupying very diverse regions in the cerebrum. In six of the seven patients examined with the caloric test (no spontaneous nystagmus) characteristic rhythmic movements of the eyes appeared following the irrigation of either meatus. In the seventh patient there was almost a complete ophthalmoplegia. Similar results were obtained from patients who showed spontaneous nystagmus. The caloric test was used in three of this group and in each case typical nystagmus followed the stimulation of either labyrinth.

SUMMARY

Of the thirty-four verified cases of cerebellar tumor and seventeen verified cases of extracerebellar tumor, eleven showed no nystagmus previous to operation on repeated examination. All of the cases in which it was absent contained intracerebellar new growths—32 per cent. of the intracerebellar series. This suggests that when a patient exhibits a cerebellar tumor syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an intracerebellar localization of the lesion.

Among the members of both groups (that is, the group with and the one without nystagmus) there were marked differences in the degree of intracranial tension. In each group there were new growths which involved the vermis and others which replaced a part or the whole of one or both hemispheres.

Caloric examinations made in six of the cases in which there were no rhythmic movements of the eyes resulted in characteristic nystagmus from either labyrinth in five.

Of forty verified cases of tumors lying anterior to the cerebellum, eight showed nystagmus previous to operation. Caloric examinations made in seven of the cases without nystagmus provoked characteristic rhythmic oscillations of the eyes from either labyrinth in six.

These results indicate that in many cases of intracranial tumor the absence of nystagmus cannot be accounted for by an impairment of the fundamental mechanism of nystagmus.

THE DIAGNOSIS OF TUMORS IN THE POSTERIOR CRANIAL FOSSA *

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Our knowledge of cerebellar symptoms and of cerebellar localization has advanced considerably during the last few years, chiefly owing to the work of Babinski and Rothmann, but in comparison with *cerebral* symptomatology and localization this progress has not been great. This is mainly because clinicians have not studied their cases with sufficient care, and when diagnosing tumors in the posterior cranial fossa have been satisfied with gross diagnoses.

Recently one of us, with Dr. Mills,[1] in a paper on cerebellar symptomatology and localization, reviewed most of the literature on this subject, both foreign and American. In only a few cases was any attempt made to differentiate cerebellar symptomatology to any of the limbs or parts of the trunk, while a study of the pathologic reports was equally disappointing; most writers were satisfied with the assertion that either one or both lateral lobes or the vermis was implicated, there being few definite statements of the particular part of the cerebellum diseased.

It is advisable, therefore, briefly to state our views on cerebellar localization and cerebellar symptomatology. We have adopted the tentative localization advanced by Mills and Weisenburg. It is probable that many of their views are wrong; but it is necessary to make a start, and the localization advanced by them is perhaps as comprehensive as can be made at the present time. To arrive at a definite conclusion it is necessary for all clinical and pathologic reports to be accurate and complete, so as to leave no doubt as to what part of the cerebellum is implicated.

We believe that the chief function of the cerebellum is to synergize all movements of the body. Whatever symptoms are present, such as hypermetry, adiadokocinesis or tremor, result from loss of synergy. This asynergy can be detected in any part, or parts, of the body. It may be present in one limb, the limbs of one side, in the upper limbs and shoulder girdle, in the lower limbs and the pelvic girdle, or in all parts of the body. Not only that, but in the development of these symptoms it is possible to tell whether the lack of synergic movement in the upper limb, for example, is in abduction or adduction, or in upward or downward movement. The methods of elicitation have been carefully described in the paper previously referred to. We wish to emphasize here that it is possible to differentiate cerebellar asynergy in parts of the body.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Mills, Charles K., and Weisenburg, Theodore, H.: Cerebellar Symptoms and Cerebellar Localization, Including Kinematographic Observations on Cerebellar Phenomena, The Journal A. M. A., Nov. 21, 1914, p. 1813.

We have found the Bárány method of investigation of great value in the differentiation and elicitation of symptoms. By means of the caloric tests and the turning tests, it is possible to demonstrate by direct stimulation of the vestibular apparatus the presence or absence of certain phenomena. This subject was presented by one of us in association with Dr. I. H. Jones, before the recent meeting of the American Neurological Association in New York.

In presenting this subject, we first discuss lesions confined strictly to the cerebellum; second, lesions implicating the superior cerebellar peduncle; third, lesions involving the middle cerebellar peduncle; fourth, lesions implicating the inferior cerebellar peduncle; fifth, lesions of the cerebellopontile angle; and last, lesions invading the cerebellopontile angle secondarily.

We desire to emphasize that, to make an accurate diagnosis of a cerebellar lesion, it is necessary to take into consideration not only the cerebellar symptoms, but all other symptoms. We have been repeatedly impressed with this fact since our attention has been more especially directed to this subject. Often we have made a diagnosis of a lesion of the labyrinth, only to find the cerebellum implicated, and vice versa; again we have diagnosed cerebellopontile-angle tumors only to find that the angle was secondarily invaded by a lesion growing from the cerebellum. It has not been infrequent to diagnose lesions of the cerebellum when the tumor has been in the third ventricle and has involved the superior cerebellar peduncles secondarily.

DIAGNOSIS OF LESIONS STRICTLY CONFINED TO THE CEREBELLUM

In accordance with our views of cerebellar function, lesions of the cerebellum itself cause more strictly limited symptoms than those which invade any of the peduncles. Most tumors of the cerebellum are gliomatous and are of slow growth. The majority tend to invade the middle rather than the outer portions of the cerebellum, and as a consequence, the vermis is nearly always involved wholly or in part, in addition to one of the lateral lobes. We believe that in the superior vermis are centered the synergic movements of the upper trunk or shoulder girdle and in the inferior vermis the movements of the lower trunk or of the pelvic girdle. As a consequence there will always be in such lesions, in addition to disturbances in the movement of one or both limbs, alterations in the station and gait.

There is a great difference in the station and gait in those cases in which the shoulder or the pelvic girdle is implicated. In the shoulder girdle cases, both in standing and in walking the feet are not held widely apart nor is there a swaying of the pelvis. The chief difficulty is that the moment the patient attempts to stand or to walk, his trunk leans or falls forward, backward or to one side very markedly, and *much more so* than in the pelvic girdle cases, for in the latter, because of the inability to synergize the movements of the lower trunk with the legs, the difficulty in walking is much greater, the legs are held farther apart, and instead of the patient lurching to one side, forward or backward, the gait is more irregular, the body is held more erectly, and in walking the legs are projected in front of the patient, showing clearly the lack of synergic action between the trunk and limbs. When the shoulder and the pelvic girdle are both involved, it is sometimes almost impossible for the patient to stand or to walk without aid.

A very good way of differentiating shoulder and pelvic involvement is to place the patient on the floor on the hands and knees. While in such a position, if the pelvis be implicated, there will be very marked to and fro swaying of this part, the shoulders remaining practically still, whereas in the other type the pelvis is held steadily, but the head and shoulders sway and deviate to the side of the lesion.

In cases in which the vermis is implicated, the staggering is mainly forward or backward, rather than to one side, and of such cases, it is more marked in the shoulder girdle type. In our experience, if in addition to the involvement of the vermis, the lateral lobes are implicated, the sway of the trunk is to the side of the lesion, although it must not be forgotten that in a progressive cerebellar disease, the patient may learn, for example, to go voluntarily to the left to offset his staggering to the right.

In those instances in which the lateral lobes alone are implicated, the asynergic movements are present only in the limbs of the involved side: if in the superior lobe, in the upper limb, and if in the inferior lobe, in the lower limb. By direct stimulation of the vestibular apparatus it is possible to obtain, for example, a total lack of outward pointing or inward pointing, whereas this is not so readily demonstrated by the ordinary tests.

Nystagmus.—The question whether nystagmus should or should not be present in cerebellar lesions has by no means been settled. According to our views of cerebellar localization we place the synergic center for eye movements in the extreme upper portion of the superior vermis. It is a well-known fact that in chronic lesions strictly confined to the cerebellum, involuntary nystagmus may be present. One very marked case of this type has been carefully studied by means of moving pictures, and was referred to in the paper with Dr. Mills. In this case the nystagmic movements were constant and in all directions—upward, downward, laterally and in a rotatory direction. We regarded these ocular movements as an example of direct cerebellar ocular asynergy. Other examples of nystagmus are found in diseases of the Friedreich's ataxia type. Rarely involuntary nystagmus occurs in progressively developing tumors, but this is not the rule.

If, however, nystagmus be developed by voluntary movement, the lesion is probably extracerebellar. It is especially in these cases that direct stimulation of the vestibular tract demonstrates the true source of such nystagmus. If, for example, the right ear is stimulated by cold water, there will be obtained quick jerking movements of the eyeballs to the opposite side with a slow return to the same side. The slow recoil to the side of the stimulation is the cerebellar movement, while the quick jerk to the opposite side is the cerebral component. The same results will be obtained if the vestibular apparatus be stimulated by means of the turning chair.

In such tests the impulses go from the labyrinth by the vestibular nerve to the three paracerebellar nuclei — Deiters', von Bechterew's, and triangular nuclei—and thence to the nuclei of the third, fourth, and sixth cranial nerves by the posterior longitudinal bundle, and then to the cerebral cortex. If there be any interruption of this arc, normal nystagmus is not obtained. The location of the lesion will depend on the associated symptoms. If in the eighth nerve there will also be loss of hearing; if in the paracerebellar nuclei, no deafness, but there may be some implication of either the fifth, ninth or tenth cranial nerves, inasmuch as these nuclei are in the outer upper portion of the medulla. If the lesion is in the pons or crus, there may be in addition to the sensory and motor symptoms, involvement of either the seventh, sixth, fifth, fourth or third cranial nerves, with paralysis of associated ocular movement.

Apparently then, the conclusions to be drawn regarding ocular movements are as follows: Involuntary nystagmus is nearly always cerebellar, but voluntary nystagmus is the result of implication of those fibers which are in relation to the vestibular apparatus outside of the cerebellum.

General Symptoms.—The presence of cranial nerve symptoms, as of the seventh, sixth, fifth, ninth, tenth or twelfth, indicates that the lesion is extracerebellar. Dizziness with disturbance of hearing is the result of implication of the vestibular apparatus somewhere in its course and is not a cerebellar symptom. Involvement of the motor fibers, with paresis of the limbs, increased reflexes and Babinski, indicates that there is pressure on the motor apparatus and should not be expected in lesions strictly confined to the cerebellum, except in those cases in which the lesion is very large. As a rule, motor involvement indicates a pontile lesion or a lesion in the angle pressing on the pons. Headache, nausea, vomiting, and choked disk, are, of course, early manifestations, but only in those instances in which there is interruption in the flow of the cerebrospinal fluid, and generally indicate a lesion either in the crus or pons pressing on the aqueduct of Sylvius.

LESIONS OF THE CEREBELLAR PEDUNCLES

We possess little definite knowledge of the functions of the fibers in the cerebellar peduncles. It is supposed that the inferior and middle peduncles transmit impulses to the cerebellum, and that the superior peduncle transmits impulses from this organ. It is probable, however, that all the peduncles transmit impulses in both directions. It is also probable that the inferior peduncles are concerned chiefly with synergic movement of the lower limbs, and to a lesser extent of the upper limbs, the middle peduncle with the synergic movement of the trunk and head, and that the superior peduncles are mainly concerned with the association of cerebral with cerebellar functions. All this, however is theory, based somewhat on anatomic and physiologic facts, but not as yet supported by pathologic and clinical data.

In the literature there are a few instances of lesions confined more or less to one of the peduncles, but it cannot be said that our clinical experience is such that we can differentiate the asynergy resulting from lesions of the superior from those of the middle or inferior peduncles. From our present knowledge all we can say is that lesions strictly confined to any of the peduncles cause asynergic symptoms in all parts of the body and as a consequence we are compelled to make the diagnosis not on the cerebellar symptoms but on those associated with them.

There are instances in the literature in which so-called turning or rolling movements have been recorded in tumors of the middle and of the inferior peduncles, either toward or away from the side of the lesion. These cases, however, are not definite and cannot be relied on. There is, however, this difference in the cerebellar symptomatology of the different peduncles: Because of the anatomic relation of the superior peduncles, lesions of this part invade mostly both sides, the cerebellar symptoms being present all over the body, although rarely, as in the case reported by Mills[2] in which there was thrombosis of the superior cerebellar artery, the asynergy is limited only to the limbs on one side.

The middle cerebellar peduncles being more widely separated, such lesions are often unilateral, whereas tumors implicating the inferior cerebellar peduncle are almost always one-sided.

Tumors of the Superior Cerebellar Peduncles.—In most instances tumors invading these peduncles grow from the third ventricle through the aqueduct of Sylvius, often bisecting the cerebral peduncle and pressing on or destroying one or both red nuclei. In such cases the symptoms consist of a gradually developing paralysis of associated ocular movement upward, and if the lesion extend laterally, central disturbance of hearing on one or both sides, because of the involvement of the posterior corpora quadrigemina. There may be also partial weakness of both upper and lower limbs with the presence of increased reflexes and the Babinski phenomenon. The symptoms resulting from extension of tumors from the third ventricle into the aqueduct of Sylvius were discussed by one of us.[3] Since then we have seen a number of such cases both clinically and pathologically. Because of the preponderant cerebellar symptoms they are nearly always diagnosed as cerebellar, but with the gradual onset of paralysis of associated ocular movement upward the diagnosis is no longer in doubt.

Rarely, as in the case previously referred to,[2] there is thrombosis of the superior cerebellar artery. In such instances there will be loss of unilateral emotional expression in the face on the same side and disturbance of sensation for pain, heat and cold over the other side of the body.

Sometimes large tumors of the thalamus extend downward and implicate the peduncle on one or both sides. In such instances the diagnosis is difficult until the third nucleus becomes involved and with the presence of the paralysis of upward associated ocular movement the diagnosis can be made.

Lesions of the Middle Cerebellar Peduncles.—Tumors in this area are rare. Such lesions usually either extend from the pons into the cerebellum by means of this peduncle or grow from the cerebellum into the pons. Hemorrhages or a thrombosis often give limited symptoms. One such case is now under our observation. This patient, a physician of 45 years, suddenly developed numbness on the entire left side of the body with a complete motor right fifth nerve palsy and a partial weakness of the right sixth nerve. He had besides limited cerebellar disturbances in the limbs of the involved side which were best brought out by the Bárány tests. In this instance the diagnosis was made by the presence of the fifth and sixth nerve palsy on the side of the lesion, the sensory symptoms on the opposite side due to the irritation of the median lemniscus and the slight cerebellar asynergy on the side of the lesion.

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[2] Mills, Charles K.: Preliminary Note on a New Symptom Complex Due to Lesion of the Cerebellum and Cerebello-Rubro-Thalamic System, the Main Symptoms Being Ataxia of the Upper and Lower Extremities of One Side, and on the Other Side Deafness, Paralysis of Emotional Expression in the Face, and Loss of the Senses of Pain, Heat and Cold Over the Entire Half of the Body, Jour. Nerv. and Ment. Dis., February, 1912.

[3] Weisenburg, T. H.: Tumors of the Third Ventricle with the Establishment of a Symptom-Complex, Brain, 1910, xxxiii, 236.

The conclusion can be drawn that in lesions of the middle cerebellar peduncles the associated phenomena consist of the fifth or sixth nerve symptoms on the side of the lesion, with sensory and motor phenomena on the opposite side.

Lesions of the Inferior Cerebellar Peduncles.—Such tumors are very rare and we have never seen one *limited* to one or both of the inferior peduncles. We have, however, seen a number of tumors of the cerebellum in which there has been an extension of the growth into one or both peduncles. In such growths the associating phenomena, if the lesion extends into the medulla, should consist in implication of the vestibular tract, and disease of the ninth, tenth and twelfth cranial nerves.

Lesions of the Cerebellopontile Angle.—The diagnosis of tumors in this area as a rule is not difficult. We have encountered cases, however, in which such diagnosis had been made, only to find that this angle was invaded secondarily by tumors growing from the cerebellum and more rarely from the pons. The differential diagnosis is important from the surgical standpoint, for it is readily seen that tumors growing *from* the pons or cerebellum offer little hope for surgical removal.

Tumors growing in this angle are usually fibromatous and more rarely fibrosarcoma. We have encountered a number of cysts, but these are generally parts of gliomatous tumors growing from the cerebellum. Most tumors grow from the eighth, and more rarely from the seventh, fifth, or sixth cranial nerves, respectively. The first symptoms are usually referred to the cranial nerve from which the tumor grows and in the course of time the seventh, sixth and fifth nerves become implicated. Of course, the symptoms depend on the size of the growth. In small tumors no pressure is exerted on either the pons or cerebellum. In a well-developed case, besides the cranial nerve symptoms, because of the pressure on the pons, there are motor symptoms on the opposite side and more rarely sensory phenomena.

Because of the pressure on the anterior part of the cerebellum, both the superior and inferior surfaces are involved, this causing cerebellar asynergy of the limbs on the same side. In cases in which the angle is invaded secondarily from the cerebellum or from the pons, the cerebellar symptoms are always much more marked, and it is because we have not been sufficiently careful in the differentiation of the cerebellar phenomena that errors in diagnosis have arisen.

We wish to emphasize here that in the usual tumor growing from the cerebellopontile angle the cerebellar symptoms *are not very marked* and that unless the tumor is very great the asynergy will be limited only to the arm and leg on the side of the growth, and that if there is in addition to the cranial nerve symptoms cerebellar asynergy in the trunk and limbs on both sides, it is probable that the tumor grows either from the cerebellum or more rarely from the pons.

Of course, if the progress of the symptoms is carefully noted, in the latter type of case the cerebellar phenomena should occur first and the cranial nerve symptoms last. But unfortunately we are not always permitted a clear-cut history, and it is because of this that we desire to emphasize this important point in differential diagnoses.

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GALVANOMETRIC STUDIES OF THE CEREBELLAR FUNCTION *

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The object of this study has been to ascertain, if possible, the mechanism of the cerebellar function, as deduced from the phenomena consequent to its lesions. It will be necessary, therefore to formulate at the outset a clear conception as to which of such phenomena are essentially cerebellar in origin. The cerebellum is adjacent to so many important structures and forms such intimate connections with the vestibular system and its oculomotor tracts that many of its lesions, experimental, as well as clinical, but especially the latter, very frequently implicate these other structures, producing their corresponding symptoms. On reviewing the literature we find, therefore, that a number of symptoms have from time to time been ascribed to this organ which have not had their genesis in it at all.

THE CEREBELLUM AND SENSORIUM

Lesions of the cerebellum do not produce disturbances of sensibility, and if these are present, they are invariably due to the involvement of the sensory tracts or nerves found in its vicinity. This is attested by such a great number of observations that it may well be considered an indisputable fact.

What was said with regard to general sensibility applies with equal force to that type of sensation which is implied by the general term of the "muscular sense." As is well known, this type of sensation comprises all those sensory reactions which, originating in the motor organs and their accessories (tendons, joints, etc.), provide us with information as to their state of tension, their direction in active and passive movements, and incidentally aid us in the appreciation of our posture in space. The cerebellum has been thought to be the center of the muscle sense by such noted observers as Lussana,[11] Hitzig, Munk[12] and of late Lewandowsky, and the spinocerebellar tracts have been identified by them as the carriers of the so-called proprioceptive stimuli. It is an undeniable fact, however, that pure cerebellar lesions do not give rise to loss or impairment of the muscle sense and, if this is present, there is invariably found an associated lesion of the posterior columns or their nuclei.[13] Patients with cerebellar disease have complete orientation toward the surrounding world, are fully conscious of all changes in posture during active and passive movements and present no Romberg sign (swaying on being deprived of the aid of vision). As pointed out by Luciani, the dog deprived of a lateral lobe of the cerebellum even anticipates the disturbances that will ensue on walking or prehension of food, and to obviate a fall seeks out some support for the side of the lesion.

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* From the Hull Physiological Laboratories, University of Chicago.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section, and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

[11] Lussana, F.: Jour. de la physiologie de l'Homme, 1862, v, 418; vi, 1863, 169, etc.

[12] Munk, Quoted by André-Thomas: Cerebellar Functions, English Trans. by W. C. Herring, New York, 1912.

THE CEREBELLUM AND MOTILITY

The phenomena consequent to cerebellar lesions belongs to the motor sphere and not to the sensory. This is almost universally conceded now by both physiologists and clinicians. The disturbances manifest themselves, however, in such a large variety of phenomena, owing chiefly to concomitant lesions of other structures, that their interpretation has for a long time been exceedingly difficult. Of late, however, thanks to our increasing knowledge of the anatomy and physiology of the cerebellum as well as of its adjacent structures, this difficulty has been largely removed, and we are able to dissociate the true cerebellar phenomena from the others.

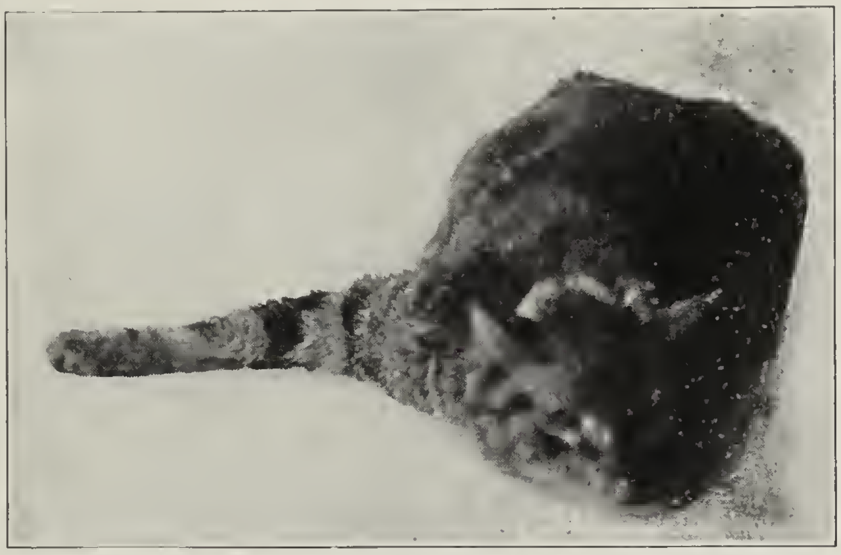

Fig. 1.—Cat after removal of left motor area of the cerebrum and right lateral lobe of the cerebellum. From photograph taken fifteen days after the first operation and fifteen days after the second. Note marked extension of right forelimb on prolonged standing. The extension is not due to a spasmodic condition of the forelimb, as it takes place gradually and is brought about by the weight of the body forcing the paretic limb out.

FORCED MOVEMENTS, NYSTAGMUS, ETC.

It is pretty definitely established that such phenomena as forced movements, the circus movements and rolling movements in animals and the so-called imperative movements in man, are not cerebellar in origin. And the same is true of the nystagmus, the conjugate deviation of the eyes and the characteristic attitude of the head so frequently observed after unilateral ablation of the cerebellum in animals and occasionally in cerebellar disease of man.

These phenomena are essentially vestibular in origin, being due to a lesion of the vestibular complex itself or its oculomotor tracts. Muskens,[14] who made an extensive study of these phenomena in their relation to the pathologic findings at necropsy, found that they are associated with lesions in the paracerebellar nuclei, the vestibulomesencephalic tracts in the posterior longitudinal bundle and the descending vestibulospinal tracts. They are, at any rate, not cerebellar symptoms. The whole lateral lobe of the cerebellum may be removed without producing the slightest indication of these phenomena. I have personally performed such operations in about twenty-five animals (dogs and cats) and can say without hesitation that forced movements as well as nystagmus are not cerebellar in origin. I have seen no instance of rolling movements or a tendency to it in pure cerebellar lesions. They were, however, extremely vehement and almost uncontrollable whenever there was an associated lesion of the vestibular system. These movements in my cases were invariably toward the side of the lesion in accordance with the results of Schiff,[15] Ferrier and Turner,[16] André-Thomas, and Muskens[14] in lesions of the cerebellum, and those of Bechterew[17] and Breuer[18] after section of the eighth nerve.

THE PHENOMENA OF CEREBELLAR LESIONS

The phenomena that are purely cerebellar in genesis are two, the ataxia and the tremor. I am using the term "ataxia" in its general sense to denote irregularity or perversion of muscular action without reference to its nature, and in contradistinction to loss of movement such as is found in paralysis. Personally I have never been convinced as to the existence of hypotonia in cerebellar lesions, a symptom on which Luciani laid so much stress. In my experience, which is in accord with that of Ferrier, it is very inconstant. I have noted it only in very extensive lesions, in lesions which have involved also the vermis and its nuclei. The nucleus tecti, as established by the morphologic studies of Weidenreich[19] and others, may be looked on as a part of the paracerebellar nuclei, which, from their rôle in the production of decerebrate rigidity (Thiele[20]) are known to dominate the tonicity of the body musculature. The presence of hypotonia in such severe lesions of the cerebellum is thus easily explained without attributing it to a disturbance of the chief function of the organ. The ataxia and tremor, on the other hand, are constant and marked, and found in lesions limited to the lateral lobes and in the absence of any involvements of the vestibular complex. And it is to interpret these phenomena that our efforts should be directed in attempting to decipher the complex and mysterious problem of the mechanism of the cerebellar function.

THE INTERPRETATION OF THESE PHENOMENA

There have been numerous theories advanced in explanation of these phenomena. Flourens, Vulpian,[23] Renzi and Dickinson interpreted them as disturbances of coordination, attributing to the cerebellum that function which, according to Foerster's definition of coordination, enables the organism by means of its muscles to produce external effects which fulfil a definite purpose or a set task, accomplishing these effects with the smallest possible waste of energy. Bouillaud,[24] Ferrier and Thomas thought the cerebellum to be an organ for the maintenance of body equilibrium and endeavored to explain the phenomena of the lesions on that hypothesis. Babinski,[25] basing his opinion on clinical studies, proposed the theory of asynergia of movements, according to which it is essentially lost in cerebellar lesions in the harmonious association of simple movements necessary for the execution of a complicated movement and he endeavored to prove it by certain clinical tests. Babinski admitted, however, that in addition to asynergia there is also a dysmetria which is the cause of the excessive and ill-proportioned movements in cerebellar lesions. As to the asynergy, it is of course clear that it is merely a broad, general term for incoordination, and this conception of the nature of the disturbances aids us but little in understanding the mechanism of their production.

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[13] André-Thomas: Cerebellar Functions, p. 144.

[14] Muskens, L. J. J.: Jour. Physiol., 1904, xxxi, 212; Brain, 1914, xxxvi, 352.

[15] Schiff, M.: Lehrbuch der Physiologie, 1858, I, 354.

[16] Ferrier and Turner: Phil. Tr. Roy. Soc., London, 1894, clxxxv, B, p. 730.

[17] Bechterew: Arch. f. d. ges. Physiol., 1882, xxx, 318.

[18] Breuer: Arch. f. d. ges. Physiol., 1891, xlviii, 250.

[19] Weidenreich: Zeitschr. f. Morphol. u. Anthropol., 1899, i, 259.

[20] Thiele, F. D.: Jour. Physiol., London, 1905, xxxii, 355.

[23] Vulpian: Leçons sur la physiologie générale et comparée du Système Nerveux, Paris, 1866.

According to Holmes and Stewart the cerebellar phenomena are the result of defective cooperation of muscles and their antagonists. The cerebellum, according to this view, effects relaxation of the extensors while the flexors are in a state of contraction, and relaxation of the flexors while extension is in progress, the same being applied to the abductors and adductors.

OBJECTIONS TO THE FOREGOING VIEWS

There are two points in common to all these theories: First, they all ascribe to the cerebellum a function which is totally distinct from that possessed by any other part of the nervous system, a function that is closely allied with motor activity but still different from it in a vague, indefinite way. Secondly, the function of the cerebellum, according to any of these theories, cannot be expressed in the terms of a single neuron effect. It is of course evident that coordination of movement, synergy of movement, etc., an effect which manifests itself simultaneously in a large group of muscles, widely isolated from each other and differing in their mode of action, cannot be the expression of an individual neuron. It must be the resultant effect of a large number of neurons all functioning at the same time. This conception of function is, however, entirely unnecessary for our understanding of the activity of any other nerve structure, in which case each unit, whether motor or sensory, may exhibit its individual function independently of the other neurons and produce a corresponding effect.

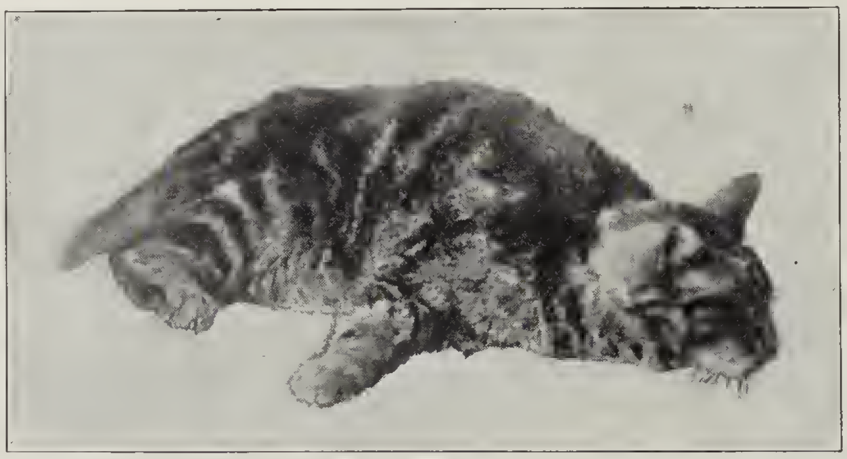

Fig. 2.—Same cat as shown in Figure 1. In standing posture for two or three minutes. Considerable abduction of both limbs on right, paretic side.

Notable among these was Risien Russell, who maintained that unilateral ablation of the cerebellum was in his experiments followed by genuine paralysis on the side of the lesion, entirely identical with that following ablation of the motor area of the cortex. This is, however, denied by the majority of observers. There was no paralysis in the animals operated on by Bouillaud,[24] Dalton,[26] Longet,[27] Munk and Ferrier and Turner.[16] Personally, I am convinced that pure cerebellar lesions do not give rise to paralysis. One has only to compare the gait of an animal after destruction of the motor area of the cerebrum with that which follows unilateral ablation of the cerebellum to be impressed by the marked dissimilarity between these two conditions. In the former instance, the limbs on the side opposite to the lesion are distinctly paretic; they are unable to support the animal on that side; they bend under it and are frequently placed with the dorsal surface to the ground. In the latter condition, on the other hand, the limbs on the side of the lesion are generally in full extension; they are never placed with the dorsal surface to the ground, but are usually thrown violently forward or outward, and the frequent falls are therefore to be attributed to the ill-proportioned activity of the muscles rather than to loss of their activity.

GOWERS' HYPOTHESIS

Gowers,[33] as far as I can ascertain, was the only one to maintain, on purely theoretical grounds, that the cerebellum has no downward effect whatever, that it exhibits its influence on the cerebrum exclusively, this influence being inhibitory in character, and that cerebellar coordination is nothing else than coordination of the activity of the rolandic cortex. His arguments in support of this theory were as follows: The cerebellum is connected with the periphery by means of afferent or upbearing tracts exclusively. The only efferent or outgoing tracts known to come from it pass by way of the superior cerebellar peduncle to the opposite hemisphere of the cerebrum, and it is inconceivable that an organ having no outgoing tracts to the periphery could exert a direct motor effect on it. Continuing he said:

> The will may alter any muscular contractions by which the upright posture is maintained, and yet without thus being deranged for an instance, and it is difficult to understand how this is possible if the two motor effects, the cerebral and cerebellar, take place apart, and equally difficult if we assume that they only come together in the subordinate centers in the spinal cord.

He therefore concluded that the cerebellum exhibits its function on the motor cortex of the opposite hemisphere of the cerebrum by way of its efferent tracts passing along the superior cerebellar peduncles, and that this function is inhibitory in character, in view of the fact that evidence at hand tends to show that when one set of cells exerts an influence on another set, this is in the nature of control, as witness the influence of the cortical motor cells on the spinal cells in the anterior horns. We must distinguish, said Gowers, between the continuous action of nerve cells, which by its nature needs control and restraint, and occasional action, which requires stimulation, and conceived as excitation.

According to this conception, the phenomena consequent on cerebellar lesions are only indirectly cerebellar; they are primarily cerebral effects, and, like the increased reflexes and spasticity after lesions of the upper motor nervous system, are due to removal of inhibition on the nerve cells directly concerned in their production.

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[24] Bouillaud: Arch. gén. de méd. 1827, xv, 64.

[25] Babinski, J.: Rev. neurol., Nov. 9, 1899, p. 784; Feb. 2, 1901, p. 260; April 18, p. 422; May 15, 1902, p. 470; Nov. 15, 1902, p. 1013.

[26] Dalton, J. C.: Am. Jour. Med. Sc., 1861, p. 84.

[27] Longet: Traité de physiologie, Ed. 3, iii, 466.

[33] Gowers, W. R., Lancet, London, 1890, i, 955.

It is evident from the foregoing that, according to Luciani, Hughlings Jackson and others, the disturbances of motility in cerebellar lesions are the expression of diminished or lost functional activity on the side of the lesion; according to Gowers, on the other hand, they are the result of exaltation of such activity.

It occurred to me that the problem could be taken out from the realm of pure speculation and solved by means of the galvanometer.

SOLVING THE PROBLEM GALVANOMETRICALLY

It is well known that living tissue in a state of activity exhibits four kinds of phenomena, mechanical, chemical, thermal and electric. Of all these the electric phenomena are the most faithful; they are to be observed, especially so in the case of nerve tissue, when none of the others can be elicited.[34] Among the electric phenomena is the state of negativity which excited tissue assumes with relation to the quiescent part thereof. On connecting two such parts with a galvanometer, with the circuit closed, a current is seen to pass through it, as evidenced by the deflection of the needle, from the quiescent to the active part. The former is therefore in its external or galvanometric relations positive to the latter. In completing the circuit and passing through the tissue the current of course passes in the opposite direction, from the active to the resting part. Active tissue, in other words, behaves electrically toward quiescent tissue as the zinc element of a voltaic couple behaves toward the copper element — it is with regard to the outer or galvanometric circuit, negative to the latter. While this electric phenomenon, the so-called action current, is generally studied by means of the negative variation, or the diminution of the preexisting current of injury which accompanies the excitation of the tissue, the latter, says Hermann,[35] is only a special case of a more general phenomenon, which is, that active tissue is, properly speaking, invariably negative (or "zincative," according to Waller) to resting tissue quite independently of previous preexisting currents. The action current is also entirely independent of the agency which provoked the activity in the tissue. The stimulus may be chemical, mechanical, thermal or electric; it may be direct or indirect. Gotch and Horsley[36] have thus demonstrated that the action current manifests itself in a peripheral nerve, not only on direct excitation of the nerve, but also on stimulation of the contralateral and functionally related motor area of the cerebrum.

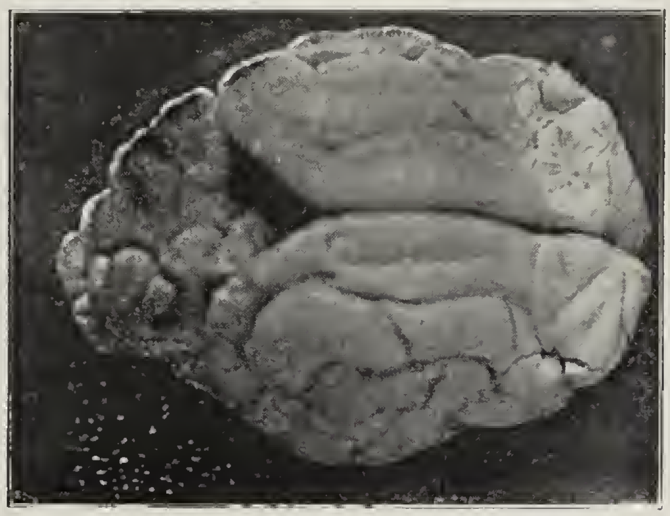

Fig. 3.—Brain of cat shown in Figures 1 and 2.

That natural nervous activity is, like that resulting from artificial stimulation, accompanied by the development of a negative state, has been demonstrated by A. Beck,[37] Alcock and Seemann,[38] Einthoven[39] and others. Beck removed the brain, spinal cord and sciatic nerves of a frog *en bloc* and placed the preparation on a glass plate. He then applied nonpolarizable electrodes to various parts of the nervous system and connected them with a galvanometer. He found that there was uniformly an electrical difference of such a nature that the proximal, more active parts of the nervous system were negative to the distal parts. Alcock and Seemann and Einthoven studied the impulses which traverse the vagus during natural respiration and found that a state of negativity invariably passes along the nerve with each inspiratory excursion. The latter also observed minor effects which accompanied the large waves of the inspiratory acts and corresponded with rhythmic contractions of the heart. A natural corollary to this should be that, if active tissue on one side of the body were connected by means of a galvanometer with the corresponding quiescent tissue on the other side, the former would be negative to the latter. That this is so for direct stimulation has been demonstrated by Hermann and Luchsinger, Waller and others in their study of skin currents. On connecting the pads of the hind paws of a cat with the galvanometer and stimulating the sciatic nerve for one of these, the corresponding pad has been found to be negative to the other. In this case the current in its internal circuit has to traverse, of course, from one side of the body to the other. That this holds true for indirect stimulation of tissue I have proved to my satisfaction by the following experiment:

With the cat under ether anesthesia, by means of a tracheal cannula I carefully exposed and isolated both sciatics. After drying all hemorrhage, I freed the nerves from contact with any of the surrounding tissue — which of course had been injured during the operation — and placed them on the boots of nonpolarizable boot electrodes, which had been soaked in Ringer's solution for the preceding twenty-four hours. I connected these with a galvanometer with a contact key in the circuit. The galvanometer employed during this and the other experiments to be described was of the Thomson type and manufactured by Elliot Brothers, London. It had a resistance of 20.74 ohms and its sensitiveness was such that at 37.5 cm. of scale distance 1 cm. deflection, registered 0.0000154 ampere of current, so that its constant (K) was 0.00155 ampere $(K = \frac{2 I \times D}{d})$.

While an experiment was in progress the nerves were kept moist with cotton sponges soaked in normal salt solution at a temperature of 38 C., which were removed during each observation so as to prevent any possible short-circuiting. The sponges were always applied to both nerves at the same time in order to avoid any possible differences of surface temperature.

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[34] Waller, A. D.: Eight Lectures on the Signs of Life, New York, 1903, E. P. Dutton & Co., p. 10; On Skin Currents. Observations on Cats, Proc. Roy. Soc., 1901, lxix, 171

[35] Hermann, L.: Handbuch der Physiologie, ii, part 1, p. 194; Borrutau, D.: Arch. f. d. ges. Physiol., 1901, lxxxiv, 95.

[36] Gotch, F., and Horsley, V.: On the Mammalian Nervous System, Its Functions and Their Localization Determined by an Electrical Method, Phil. Tr. Roy Soc. London, 1891, clxxxii, B, p. 332.

[37] Beck, A.: Centralbl. f. Physiol., Nov. 8, 1890.

[38] Alcock, N. D., and Seemann, J.: Arch. f. d. ges. Physiol. (Pflüger's), 1905, cviii.

[39] Einthoven, W.: Ueber Vagusströme, Arch. f. d. ges. Physiol. (Pflüger's), 1908, cxxiv, 246.

With the two sciatic nerves of the animal in the circuit as described, I made a number of observations on making and breaking the circuit, and was satisfied that they were equipotential, that is, that there was no current passing through the galvanometer. I then trephined the skull over the right motor area, both carotids having been ligated early in the operation, and exposed the cortex. The left sciatic promptly became negative to the right, the galvanometer registering each time the circuit was closed, a deflection of 1 or 2 cm., evidently as a result of irritation of the cortex by the exposure and the application of normal salt solution to its surface. The deflections then gradually diminished in range and were finally reduced to only 1 or 2 mm. I then stimulated the motor cortex by the faradic current and determined the area for flexion of the hind limb. Having fastened that limb securely to the board so as to prevent all movement of its muscles, I made observations of the galvanometer while the cortical motor area was being faradized. The left sciatic continued to be negative to the right, the deflection increasing to about 0.5 to 1 cm. I kept up these observations for about an hour and not once did the deflection take place in the opposite direction. I then trephined the skull over the left motor cortex and, as before, stimulated the hind-limb area there while the right hemisphere was at rest. The direction of the deflection was promptly changed, indicating that the right sciatic nerve became negative to the left. While these results were merely what was to be expected, their demonstration is of value in that it suggests to us the means whereby we are able to determine with more or less precision the comparative state of activity on the two sides of the body when one side is hyperfunctionating.

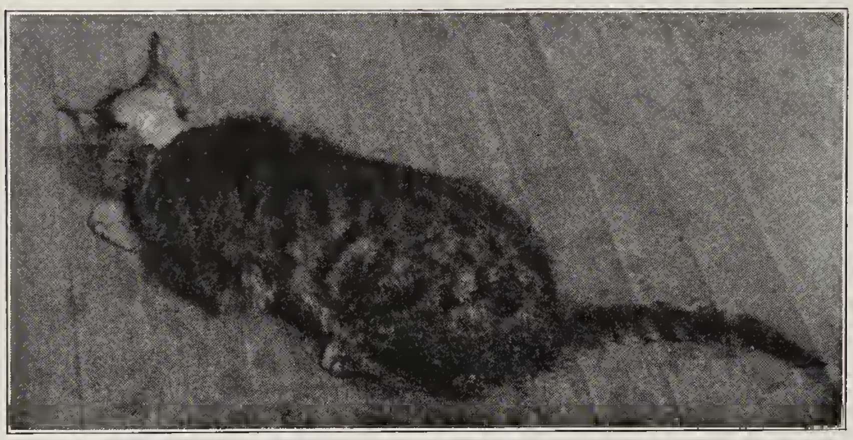
Fig. 4.—Cat two weeks after the removal of right lateral lobe of the cerebellum. Note its ability to support the body by its nonparetic limbs.

Applying this method toward the solution of our problem with reference to the mechanism of the cerebellar function, I carried out the following series of experiments: I removed in one group of cats the right lobe of the cerebellum; in another group the left lobe and kept them under observation for one, two and three weeks. I did not study them galvanometrically during the first week for two reasons. First, the animals were too much depressed and frequently in a state of collapse, and it was not thought wise to submit them to a second operation requiring prolonged anesthesia. Secondly, as my object was to determine the electric potential on the two sides, a state of negativity on the side of the lesion soon after the cerebellar operation would not indicate anything, as it might be due to irritation of the adjacent structures in the cerebellum. I therefore postponed such studies until all the irritative phenomena of Luciani had passed off. Out of all the animals operated on I selected for these studies only seven, three with the right lateral lobe removed and four with the left, as I discarded all those which did not show marked unilateral ataxia and whose wounds did not heal by first intention. Subsequent necropsies have shown that in each case almost an entire lateral lobe had been removed, leaving the vermis intact. The galvanometric studies were carried out in these animals in the same manner as in the experiment recorded above, only that in these animals no artificial stimulation was employed. The two ulnar or the two sciatic nerves were placed on the nonpolarizable electrodes which were in a circuit with the galvanometer, and observations made as to the presence or absence of a current and its direction. While the animals so studied were comparatively few, the results were so constant and so uniform for each kind of lesion that I feel justified in making certain deductions. The nerves on the side of the lesion, whether ulnar or sciatic, were invariably and persistently negative or "zincative" to those of the healthy side. The observations were kept up for two and three hours, and not once was there a deviation from this rule. Closing the circuit promptly brought about a deflection in the galvanometer, the direction of which indicated that a current was passing through it from the healthy side to the injured side. On changing, by means of a reverser, the poles of the circuit, the deflection, of course, took place in the opposite direction, always, however, indicating the same difference of potential between the two sides.

While the direction of the deflection was uniform, its extent was extremely variable, ranging from 2 cm. to 2 mm. within a very short space of time. This apparently depends on the condition of the animal and the state of narcosis, which, it should be remembered, virtually abolishes all nervous activity. That the anesthesia was a factor in determining the extent of the deflection was noted repeatedly when a deflection of only 2 or 3 mm. during deep narcosis became gradually increased on the withdrawal of anesthesia.

Could this difference in potential be due to differences in surface temperature of the two nerves, to differences in the concentration of the salt solution, or to other accidental causes? To determine this point I cut the nerves, leaving only the peripheral portions in contact with the electrodes. The deflections of the galvanometer ceased in each case, showing that the current previously observed was not due to such causes and also that it was not peripheral in origin. In carrying out this experiment care of course should be taken that the cross-sectional surface of the nerves is not in contact with the electrodes.

The question of course arises, what is the origin of this state of negativity or functional hyperactivity on the side of the lesion? It could not have been due to irritation of the cerebellar structures adjacent to the lesion as the same condition obtained three weeks after the cerebellar operation, when all possible irritative phenomena had passed off. It could not have been due to hyperactivity of the spinal cells on the side of the lesion, as, aside from the fact that these cells do not seem to possess any automatic activity, the spinal animal responding only to external stimuli, there was no evidence in my experiments of any hyperactivity of these cells. The reflexes were equal on both sides and there was no evidence of spasticity on the side of the lesion.

It may be assumed, however, that the hyperactivity originates in the paracerebellar nuclei, especially Deiters' nucleus. These nuclei, like the vagal cells in the medulla are known to possess automatic activity, as proved by the decerebrate rigidity following transection of the mesencephalon. Thiele[20] in an extensive study of this rigidity has shown that it originates in these nuclei and that the cerebellum exerts an inhibitory effect on them. Stimulation of the cerebellum produces immediate relaxation of such rigidity, as demonstrated by Sherrington[40] as well as Lowenthal and Horsley.[41]

It may also be assumed that the hyperactivity has its origin in the midbrain or the basal ganglia and that the inhibitory effect of the cerebellum is exerted on these structures. While later investigations tend to deny these structures a motor function, there is evidence that they participate in the production of movement to some extent.

And, finally, it may be supposed, as Gowers theoretically assumed, that there is hyperactivity on the side of the cerebellar lesion which originates in the contralateral motor area of the cerebellum.

To determine this point, I carried out the following experiments: In one cat I removed a very large portion of the right hemisphere of the cerebrum but left the motor area intact. In three others I removed only the motor area. The first cat showed no paralysis on the opposite side; the three others showed it to a very marked degree. Ten to fifteen days after the cerebral operation I removed in these cats the lateral lobe of the cerebellum, contralaterally to the previous lesions (of the three last, two had the right motor area of the cerebrum and the left lateral lobe of the cerebellum removed, and one the left motor area of the cerebrum and the right lateral lobe of the cerebellum) and kept them under observation for fifteen days more. The first cat showed ataxia on the side of the cerebellar lesion, but, as before, no paralysis. The three last, on the other hand, were markedly paralyzed on that side. They showed no ataxia, but did show considerable tremor, involving head, trunk and paretic limbs. The presence of the tremor in these cases, after destruction of motor area, would indicate that this symptom is not entirely cerebral in origin, a supposition advanced, on theoretical grounds, by Gordon Holmes[42] and Kinnier Wilson.[43]

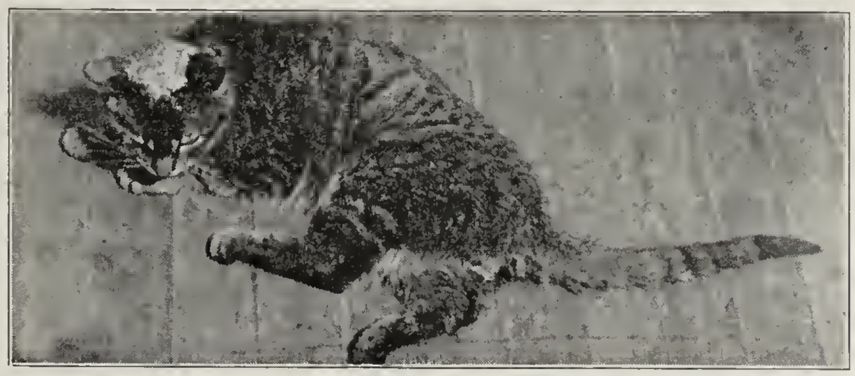

Fig. 5.—Cat shown in Figure 4, after remaining in that posture for two to three minutes. Animal falls over to the right, owing to hyperactivity of the muscles supporting the body on that side (see text).

Galvanometrically these cats gave the following results: The first one, with the motor area intact, although with a large portion of the cerebrum removed, showed a persistent and invariable negativity on the side of the cerebellar lesion, identically the same as in those animals in which a cerebellar lesion only had been produced. The three others, on the other hand, with a lateral lobe of the cerebellum removed and the additional extirpation of the contralateral motor area of the cerebrum, gave no galvanometric deflection whatever. I kept up my observations in these animals for nearly three hours and not once was there a deviation from this rule. Fearing that there was no deflection obtained in the last animals because of a possible fault in the circuit, I cut the sciatic nerve and applied the nonpolarizable electrodes to it in such a manner that one was in contact with the longitudinal surface and the other with the cross section. A current of injury was promptly obtained, showing that there was no such fault there.

The results obtained thus tend to show that the hyperactivity on the side of the cerebellar lesion, as shown by its being electrically negative ("zincative") to the other side, originates in the contralateral motor area of the cerebrum; that following unilateral ablation of the cerebellum the contralateral motor area of the cerebrum becomes hyperexcitable, has been found by Risien Russell[9] and confirmed in part by Luciani.[4] Their results were denied by Bianchi.[44] Cerebellar incoordination is, therefore, in accord with Gowers' hypothesis, only indirectly cerebellar; it is primarily a cerebral effect, an expression of its hyperactivity consequent to the removal of inhibition or control by the opposite half of the cerebellum. The hyperactivity manifests itself in all the movements in that they are excessive, forcible, unchecked and go beyond the mark. In walking the animal throws its foot violently forward; in seizing food its paw goes beyond it, etc. Clinically, as Babinski pointed out, cerebellar patients, in performing the finger-to-nose test, are unable to stop the movement when the point aimed at is reached, and the finger goes beyond it, violently striking the jaw. Similarly, when tracing on a sheet of paper a line which should be stopped at a certain point, the pen goes way beyond this limit. The symptom of adiadokocinesis is therefore best explained by assuming it to be a result of the dysmetria and excess of each component movement, such as pronation and supination, a view suggested by Thomas, rather than that it is due to a delay in the excitomotor activity, as thought by Babinski, the discoverer of this phenomenon.

This conception of the cerebellar function is also in accord with certain well-established anatomic and clinical facts. The cerebellum develops embryologically from the rhomboidal lip of His, along the sensory tracts, as an accessory to them. Anatomically it is too, as Edinger, Sherrington, Gowers and others pointed out, a sensory organ. The effects of its lesions are, however, motor in character. This contradiction between its anatomy and physiology does not exist if we assume the motor phenomena to be cerebral in origin, and the function of the cerebellum to be that of control and restraint, such, to use a crude simile, as that of the vagus, which is also a sensory structure.[45]

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[40] Sherrington, C. S.: Proc. Roy. Soc. London, 1896, lx, 382; Integrative Action of the Nervous System, N. Y., 1906.

[41] Lowenthal and Horsley: Proc. Roy. Soc. London, 1897, lxi, 20.

[42] Holmes, Gordon: Brain, 1904-1905, xxvii, 364.

[43] Wilson, S. A. Kinnier: The Anatomy and Physiology of the Corpus Striatum, Brain, 1914, xxxvi, 478; Progressive Lenticular Degeneration, Brain, 1911, xxxiv, 465.

[44] Bianchi, quoted by Sherrington: Schafer's Text-Book, ii, 904.

[45] It was held by Waller, Schiff and others that the inhibitory fibers of the vagus originate in the nucleus of the spinal accessory. This seems to be disproved, however, by later investigations. (Luciani: Human Physiology, i, Chapter 9.)

Another mystery cleared up by this conception of the cerebellar function is the path by which the cerebellar effects exhibit themselves on the periphery. As is well known, in view of the fact that the cerebellum has no descending tracts to the spinal cord, and also that the effects of its lesions manifest themselves homolaterally and not contralaterally, as is the case in lesions in all other motor and sensory tracts, it was found necessary to conceive an unusual and circuitous course for the transmission of its impulses. It is assumed that, originating in the deep nuclei of the cerebellum, the impulses first ascend by way of the cerebellomesencephalic tracts to the red nucleus of the opposite side and there are relayed, and finally descend by way of Monakow's bundle, or rubrospinal tract, crossing again to reach the spinal on the side whence they first started. This course, besides being different from that of all other motor and sensory structures which, as a rule, cross to the opposite side to exhibit their effect there, and, if homolateral in function, as the direct pyramidal tract or the vestibulospinal tract, go by direct route to the same side, is also untenable in the light of certain anatomic facts. The cerebellum attains its largest development in man, whereas the rubrospinal tract, by which its impulses are supposed to be carried, has been demonstrated only in animals and is in man at best only rudimentary.

According to our conception, however, each half of the cerebellum exhibits its function on the opposite hemisphere of the cerebrum, its tracts crossing to the other side like those of all other sensory tracts. Its indirect effects, in the form of regulated and well-proportioned movements, manifest themselves on its own side, as, originating in the motor cortex of that hemisphere of the cerebrum, the motor impulses, passing by way of the pyramidal tracts cross to the opposite side before reaching the "final common path" in the spinal cord.

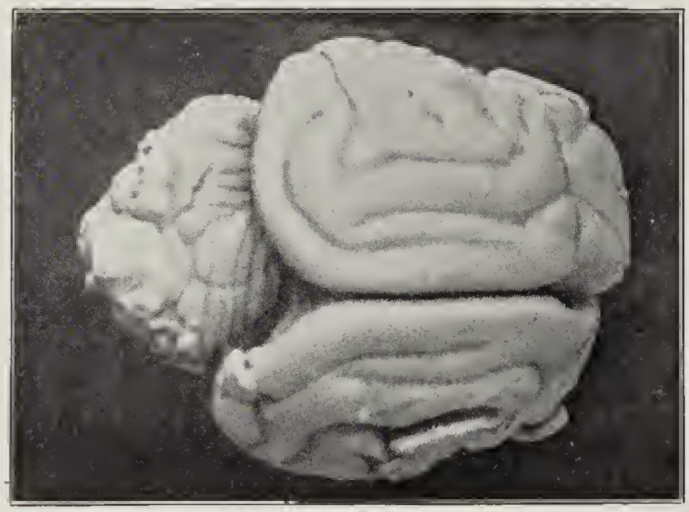
Fig. 6.—Brain of cat shown in Figures 4 and 5.

Finally, there is a good deal of evidence that there is a structural linkage between the cerebral hemisphere of one side and the cerebellar of the other side, and that the cerebellum is subservient to the cerebrum. It has been observed clinically in cases of congenital or acquired atrophy of the cerebrum, and experimentally after destruction of the motor cortex, especially if the optic thalamus was involved in the lesion, that there was simultaneously in the congenital lesions or after some time in the acquired variety, an atrophy or degeneration of the opposite lateral lobe of the cerebellum. These cases are described under the name of crossed hemiatrophy.

With reference to the tremor it appears to be largely dependent on an interaction between the cerebellum and the midbrain structures. I am engaged in some experiments with reference to these points at present and hope to communicate the results at some time in the future.

To sum up, the cerebellum is a complex structure having no direct effect on the periphery, but acting primarily on the motor cortex, the paracerebellar nuclei, and probably also the basal ganglia and ruber. Its primary effects are those of inhibiting, controlling and regulating the activity of these latter structures. Its ultimate effects are appropriate and rhythmic muscular action.

5 South Wabash Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GREY, WEISENBERG AND WORK, AND MEYERS

Dr. W. F. Schaller, San Francisco: Dr. Work brought out the relationship between certain symptoms and definite localization of lesions. Certainly this is progress in the right direction. It is not a question only of posterior fossa disease characterized by a syndrome, it is a question of exact anatomic localization. The only way we shall make an advance in this work is by correlating the symptomatology and pathology; by studying our specimens in macroscopic and microscopic serial sections.

Dr. Meyers does not believe that nystagmus is primarily an expression of disturbed cerebellar function. I am inclined to favor this view, and regard vestibular nystagmus as a reflex and as the motor expression of a stimulus somewhere along the vestibulo-ocular path: labyrinth, vestibular nerve, Deiters' nucleus, posterior longitudinal bundle and oculomotor nuclei. This stimulus may be due to a focal lesion, or to pressure. Dr. Grey in his conclusions stated that in posterior fossa tumor without nystagmus he was inclined to believe that the tumor was intracerebellar; and that in cases of extracerebellar tumor he generally found nystagmus. May I ask Dr. Grey if the reason for this was not that in cases of extracerebellar tumor the intracranial pressure was increased and the nystagmus was due to disturbance of function by pressure? If there be a nystagmus following cerebellar lesions proper, I believe it is due to involvement of the vermis in relation to its efferent fibers to Deiters', i. e., cerebellovestibular tract (*Hacken Bundel, faisceau en crochet*) which forms an arm of the nystagmus reflex in that stimuli are received in this way from the muscles and joints and pass to the vermis before acting on Deiters' nucleus. To illustrate these views I wish briefly to mention three posterior fossa cases recently studied clinically and anatomically. In the first case there was no nystagmus, no intracranial pressure. The lesion was a vascular one, limited to the white matter of both cerebellar hemispheres and involving the dentate nucleus on one side. There was marked ataxia of the cerebellar type. The vestibulo-ocular reflex path was not involved; hence absence of nystagmus. The second case was that of a right sided cerebellopontine angle tumor in which the usual signs of intracranial pressure, vertigo, nausea, headache and choked disks were absent. The tumor had caused a considerable atrophy of the cerebellar hemisphere on the same side and also the pons, and by replacing these structures had not materially added to the contents of the posterior fossa; hence absence of intracranial pressure. Ataxia of cerebellar type was marked. A slight nystagmus more marked to the right was explained by direct involvement of the vestibulo-ocular reflex. The third case was a tumor in the fourth ventricle arising from the inferior tela. The marked nystagmus could be explained by direct pressure of the growth on Deiters' nucleus. Ataxia was absent.

Dr. A. L. Skoog, Kansas City: The subject of cerebellar tumor is always interesting, and might be broadened to include any of the lesions in the cerebellum. The subject of cerebellar function has received a great deal of attention in the last few years and many new facts have been presented. However, as indicated by Dr. Work, many of the statements are really theoretical, which perhaps makes the subject still more interesting. As stated by several of the speakers, it invites the possibility of error in diagnosis. It has been stated that glioma is the most frequent type of tumor found in the cerebellum. This is in accordance with my own view. The glioma is a type of tumor which always springs from glia tissue, but there are those gliomas which are more dense than others, those that have a tendency to be better outlined. The type, however, is the infiltrating one and at times they are rather difficult to differentiate from some simple degenerating conditions of the central nervous tissue. I have always been interested to know whether there is any difference in symptomatology, even though the tumor be located in the same place, between the soft and infiltrating and the more dense one. That might be a reason for the difference in symptomatology which was brought out in the discussion.

DR. G. W. ROBINSON, Kansas City: Dr. Work speaks of the diagnosis of tumors in the posterior cranial fossa. I should like to ask Dr. Work to speak on the differentiation between these and those situated more anteriorly and giving cerebellar symptoms. I recall two or three patients with lesions (tumor or trauma) of the frontal lobe, chiefly of the middle frontal convolutions, the apraxic center, giving a contralateral cerebellar syndrome. Another condition I have observed recently has been a patient with chronic progressive cerebellar tremor, without ataxia or nystagmus. I should like some of the men who read these excellent papers to tell us, if possible, the location of the lesion giving this particular symptom. I have recently observed two patients who had shown no nystagmus. At necropsy one had a degeneration of the right cerebellar hemisphere resulting from an encephalitis (associated with typhoid fever). The other had a large cyst involving the right cerebellar hemisphere.

DR. JOHN S. TURNER, Dallas, Texas: These cases of cerebellar disturbance are very interesting to all of us and I rise to report a case and to present a question and to ask some of the gentlemen in closing to touch on it. It is in reference to a case recently occurring in our part of the country which became almost a medicolegal case, but by having the records properly presented a damage suit was prevented. The case came under my observation with all the typical symptoms of cerebellar tumor—nystagmus and other eye symptoms. The patient was a girl of 18, being able to go about, but not seeing very well, and having headaches, vomiting, titubation, disturbed coordination and considerable emaciation running over a long period of time. After observing the symptoms and making a tentative diagnosis, I sent her to a physician to look over the eye conditions. He confirmed my diagnosis in so far as the eyes were concerned, using some atropin to further dilate the pupil. Immediately after the dilatation the patient became blind and has never seen since that moment. Her headaches ceased, she gained in weight and was physically much better, but was totally blind. A damage suit was threatened against the physician for making the patient blind, but the records showing that she was partially so, and the opinion that she would ultimately become blind anyway prevented the suit.

DR. CECIL E. REYNOLDS, Los Angeles: Dr. Work laid stress on the paralysis of the sixth nerve in cerebellar lesions, and I think it is very important. I remember a case of Dr. Charles A. Ballance of London at the Great Ormond Street Hospital in 1905, in which there was weakness of the sixth nerve on the left side and a bulging of the occipital fossa on the right side. The optic neuritis was more advanced on the left side. Mr. Ballance operated on the side which bulged, but the tumor was eventually discovered on the same side as the sixth nerve paresis. In my experience the signs of intracranial pressure have been more intense in cerebellar lesions and more early than in cerebral lesions, and this fact in a measure militates against the value of sixth nerve paralysis as a localizing sign in cerebellar disease, because in general increase of intracranial pressure the sixth nerve is often first affected by reason of that general pressure.

I would like to ask some of the gentlemen who have spoken as to their experience of the value of skew-deviation as a localizing sign. Dr. Robinson mentioned a confusion of frontal lobe lesions with cerebellar lesions. I have seen several cases in which a frontal lobe lesion was mistaken for a cerebellar lesion, and it appears to me that in cerebellar lesions the head is more twisted, with the chin pointing to the shoulder of the affected side, whereas in frontal lobe lesions the eyes deviate to one side or the other without much tilting of the head. Also I have noticed that in addition to hebetude out of proportion to the pressure, there is usually a slow and deliberate Babinski's sign in frontal lobe lesions, more sluggish than that usually seen in lesions of the pyramidal tract.

DR. GEORGE A. MOLEEN, Denver: Just one remark on what Dr. Work said with reference to the extension of tumors from the thalamus downward. Is it not the rule to find unilateral paralysis of the third nerve prior to the involvement of conjugate deviation, the center of which lies pretty close to the sixth center in the pons? From this we presume there is a communicating fiber to the third, and in these extending tumors it would seem fair to expect a unilateral lesion of the third before the affection or disturbance of conjugate deviation would occur.

DR. PHILIP WORK, Pueblo, Colo.: We found in working up our pathologic material on this subject that cases which we thought definitely cases or tumor of one or other peduncle proved to be cases in which the involvement had gone past the peduncle, and the diagnosis and localization of symptoms has been hindered by the fact that these cases are so far advanced before they come to section. I personally believe that the matter of function of the peduncles—and coincident with it the establishment of a definite symptomatology—can only be hoped for when we have seen a sufficient number of early cases come to section. This is predicated on a series of necropsies from coincident cases in which the brain lesion was discovered incidentally in routine examination. The differential diagnosis of cerebellar and frontal tumor has been mentioned by one gentleman, but is too big a subject, I feel, to take up here. I have in mind several cases in our own series in which that identical question came up. In two cases in which the clinical diagnosis was made of cerebellar trouble, section showed frontal trouble, with definite cerebellar symptoms. These cases are being worked up at the present time, and we hope to be able to report something of value when we get them correlated. The loss of sight spoken of in the medicolegal case would seem to me to be due to the advanced state of the optic condition. The fact that the other symptoms abated more or less I do not attempt to reconcile.

DR. ERNEST GREY, Boston: Dr. Schaller has referred to increased intracranial pressure as an important factor in the production of nystagmus. This is the view of Bárány and others, and in our earlier work we inclined to the same belief. Recent observations, however, have led us to seek another explanation. We found nystagmus present in a group of patients with subtentorial new growths, some of whom had greatly increased intracranial pressure, while others had practically normal pressure. We have had a similar series of patients with the same variations in the degree of intracranial tension; none showed any nystagmus.

DR. I. LEON MEYERS, Chicago: Something has been mentioned in regard to nystagmus. I can simply add what I said in my paper—in my experience true cerebellar lesions do not give rise to nystagmus unless there is additional involvement of the vestibular complex. Skew-deviation has been observed in a few experiments on dogs during the time of anesthesia, but was lost after the animal awakened. Frederick Batten in a paper published in *Brain* in 1903 determined that the position of the head is not diagnostic of cerebellar lesions. It appears that the position of the head is due to the loss of knowledge of special relationship and is vestibular in origin. In my judgment the cerebellum is purely an organ which exerts an influence on other nerve cells in the brain structures—not on the periphery; the control it exerts is chiefly in the motor sphere.

OPERATIVE TREATMENT OF BUNIONS
BY THE MAYO METHOD*

MELVIN S. HENDERSON, M.D.
ROCHESTER, MINN.

DEFINITION

The bunion is a painful bursitis superimposed on a hallux valgus. The degree of hallux valgus is by no means a criterion of the severity of the bunion (Fig. 1). The Mayo operation for bunion is for the relief of the painful bursitis and not a cosmetic operation for doing away with the deformity of the hallux valgus, though incidentally the deformity is reduced. For many years the operation[1] about to be described has been used in the Mayo Clinic and has given such satisfactory results that I think it wise to further emphasize its usefulness.

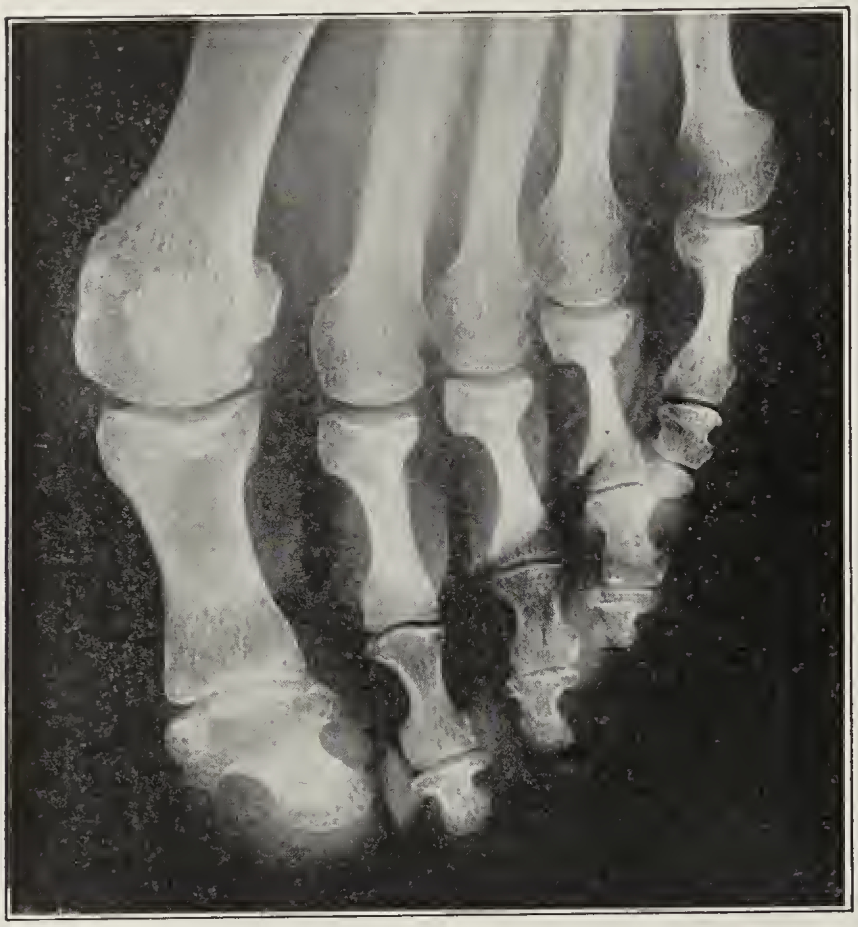

Fig. 1.—Moderate hallux valgus with painful bunion.

ANATOMY

Briefly we may consider the anatomic findings in this deformity. It is not seen in children who have never worn stiff shoes nor is it noted in individuals who have always gone barefoot. In these normal feet the great toe is in line with or turns slightly inward from the inner border of the foot. It has been stated that in the bunion foot the great toe is the longest, whereas the second toe should be of the same length or even a little longer. While this is not invariably true, still in this type of foot, that is, with the great toe the longest, the deformity is often present. In hallux valgus a line drawn through the anteroposterior axis of the great toe courses anteriorly outward at an angle of 30 degrees or more. The condition has generally been caused by wearing too short a shoe and this information is many times voluntarily given by the patient. The tendon of the extensor proprius hallucis becomes displaced outward and further increases the deformity. The pressure and irritation of the shoe causes more or less of a chafing action on the skin over the prominent inner aspect of the head of the first metatarsal bone. This irritation in many cases causes a distinct hypertrophy of the end of the bone and small bony exostoses occasionally form. Nature comes to the rescue with the formation of a bursa and we then have a bunion. It is only when this bursa becomes inflamed, mechanically or by infections, that tenderness results and surgery is indicated. Many cases go on to sepsis. When this occurs, operation should not be undertaken until the infection has completely subsided. Complete rest and alcohol dressings usually promptly clear up the infection. On top of the bursa may come a corn, adding further to the distress and inconvenience of the patient. Thus it may be stated that the symptoms depend not on the deformity but on the inflammatory changes in the bursal sac causing oftentimes continual discomfort and pain. The proximal phalanx of the first toe articulates often only against part of the head of the first metatarsal, the inner portion of the head impinging against the skin of the inner side of the foot. Often in patients in middle life or beyond, rarely in the young, there is an associated arthritis with deposits. These patients do not obtain the great relief accorded the nonarthritic cases. They should not on this account be denied the benefits of the operation, since formation of the new joint is a great relief.

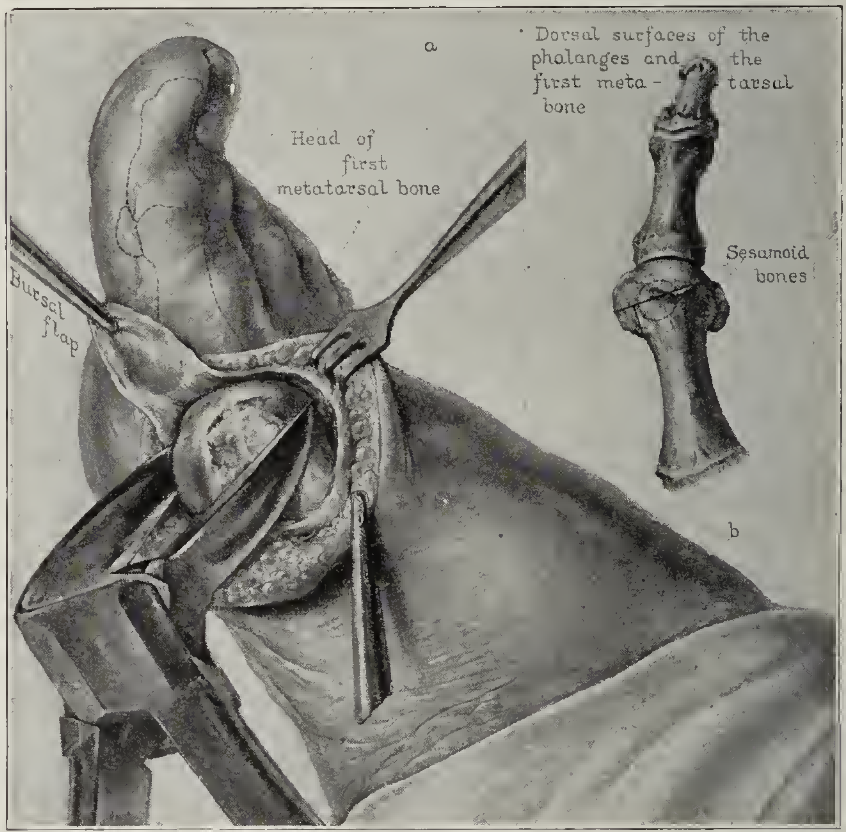
a
Dorsal surfaces of the phalanges and the first meta-tarsal bone
Head of first metatarsal bone
Bursal flap
Sesamoid bones
b

Fig. 2.—*a,* Removal of head of first metatarsal bone. Bursal flap dissected free; *b,* angle at which head of metatarsal is removed, showing short incision at right angles to long incision. The short incision removes the hypertrophy of the bone.

All cases of hallux valgus do not cause inconvenience and many cases of moderate bunion had better not be interfered with surgically. Too often the cases are passed over lightly by the surgeon when the complaint is really a serious and disabling one to the patient and demands surgical interference. Bunion has long been looked on as a trifling condition, but to the individual with the pain it is anything but trifling.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Mayo, C. H.: The Surgical Treatment of Bunion, Ann. Surg., 1908, xlviii, 300.

OPERATIONS

Heuter[2] advised excision of the head of the first metatarsal bone for the relief of the condition. Hamilton[3] later reported eleven cases and his name is often mentioned in connection with the operation. Schede[4] advised excision of the bursa and removal of part of the head of the first metatarsal not in contact with the phalanx. Barker and Reverdin advised removal of the exostoses and of a wedge of the metatarsal just above the head. Various other operations have been suggested, such as removal of part of the proximal phalanx and part of the head of the metatarsal. It has been suggested that the head of the metatarsal bone be removed by an incision between the great and second toes, thus doing away with an incision on the inner side of the foot. The objection to an incision on the inner part of the foot we have found to be theoretic rather than real. By making a curved elliptical incision with the curve upward, it can be so arranged that the pressure of the shoe comes below and not on the line of incision. The operation has been performed in our clinic in 148 cases, nearly all of them double, with, on the whole, most gratifying results.

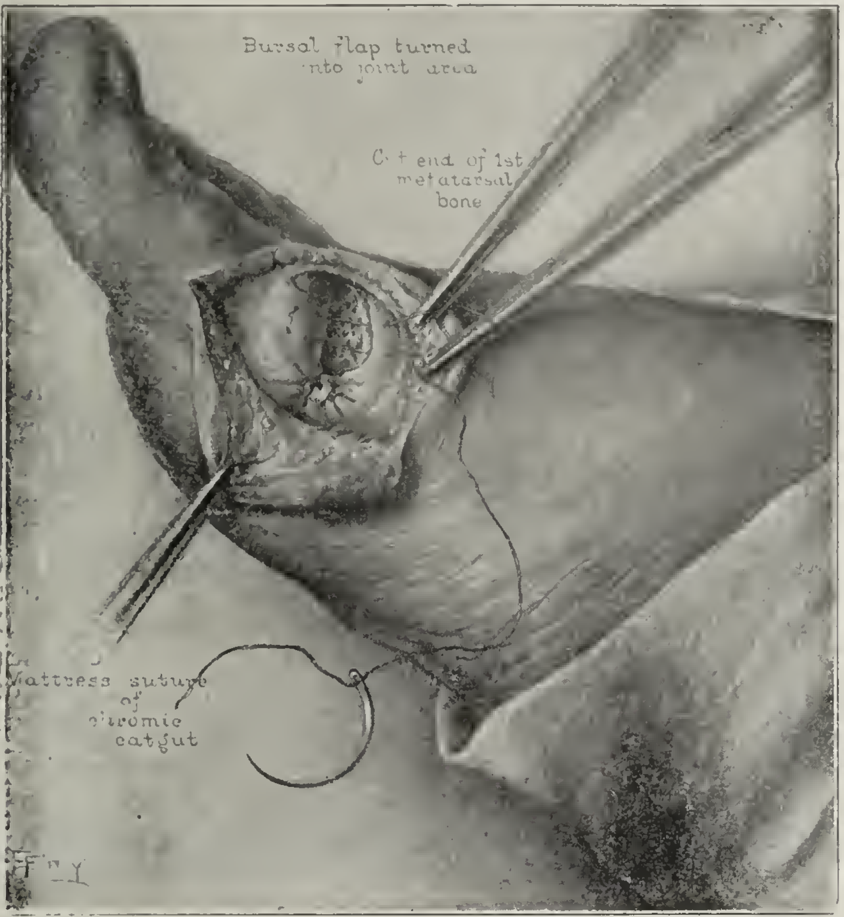
Bursal flap turned into joint area
C·t end of 1st metatarsal bone
Mattress suture of chromic catgut

Fig. 3.—Head of bone removed. Bursal flap tucked in and approximated to periosteum of first metatarsal by two mattress sutures of chromic catgut.

Many patients have the condition associated with hammer toe, callosities on the bottom of the feet, etc., and unless it is carefully explained beforehand to the patients what they may expect from the operation, they may be disappointed that they are not relieved of all their foot trouble. However, in cases carefully selected, the results have been most excellent. Great care must be exercised in patients with flat feet to see that too much of the head is not excised. At the same time, enough must be excised to relieve the condition.

TECHNIC

The actual technic of the operation may be briefly stated: A semilunar incision with the curve upward is made at the metatarsal phalangeal joint of the great toe. The skin is dissected back, being careful not to puncture it. A flap including the bursa is then taken with its base attached to the proximal phalanx, having its convexity extending on to the head of the first metatarsal (Fig. 2a). The fat is then pushed back from around the head of the bone and a large bone-biter is introduced from without inward, aiming to take off most of the articulating surface of the head of the metatarsal bone, leaving sufficient of the enlarged end to serve as a weight-bearing portion (Fig. 3). This bone-biter is introduced at an angle of about 75 degrees so that the outer side of the metatarsal bone is a little longer than the inner side after the piece is removed (Fig. 4). With a rongeur bone-biter the prominence left on the inner side is smoothed down (Fig. 2b). The flap is then tucked in and the base of the flap sewed to the periosteum of the first metatarsal by two mattress sutures of chromic catgut (Fig. 3). This serves to straighten the toe and put it in its proper line. The skin is then closed with one or two sutures of silkworm gut and closer approximation is secured by interrupted horsehair sutures. A pad of gauze is inserted between the great and second toes to straighten the great toe (Fig. 5). A dressing soaked with alcohol is applied and carefully bandaged.

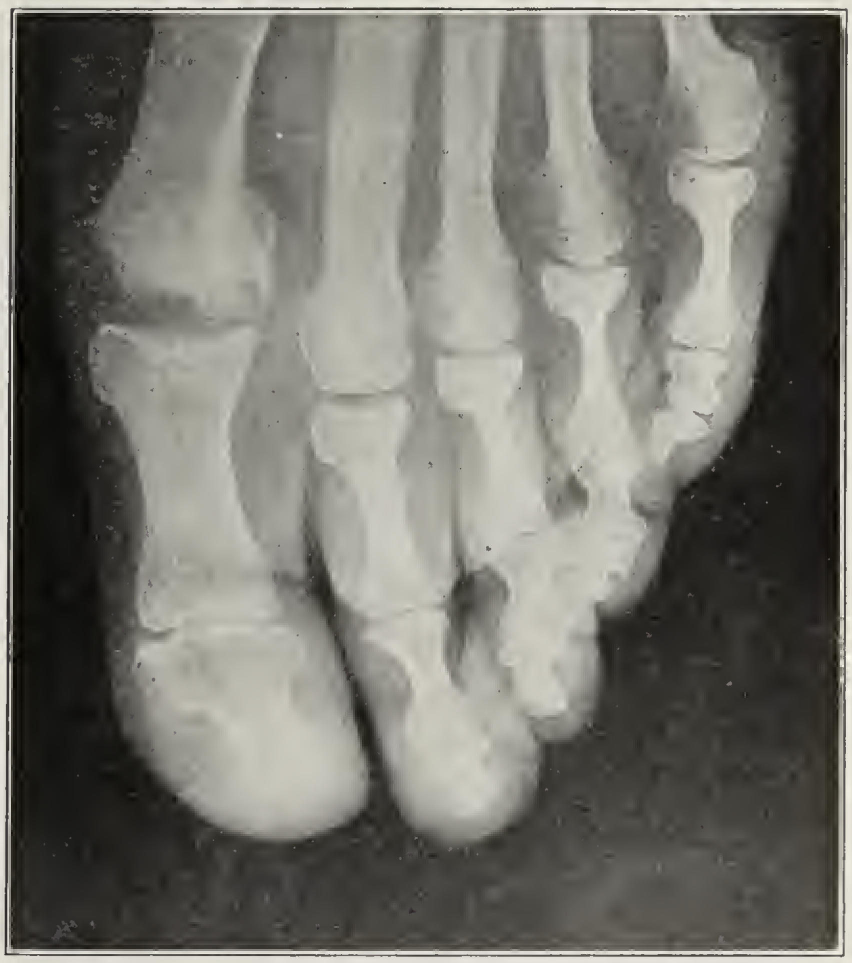

Fig. 4.—Greater part of metatarsal head removed, leaving sufficient of the expansion for weight-bearing.

AFTER-CARE

No splints are necessary. Pressure of the bed clothes is removed by the use of half barrel-hoops. Twice daily the bandage is opened enough at the end of the great toe to allow pouring in of alcohol, thus soaking the dressing and adding greatly to the comfort of the patient. Stitches are removed in a week, weight-bearing permitted in ten days and the patient encouraged to use the feet as soon as possible. A small pad of gauze or cotton is to be worn between the first and second toes for a few weeks. The wearing of shoes with a proper straight inner side is insisted on. All patients will not follow this advice, but by carefully explaining why it is to be desired, the responsibility is then placed on them.

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[2] Heuter: Quoted by Holmes, T., in System of Surgery, Philadelphia, Henry C. Lea's Son & Co., 1882, iii, 372.

[3] Hamilton: Quoted by Holmes, T., in System of Surgery, Philadelphia, Henry C. Lea's Son & Co., 1882, iii, 372.

[4] Schede: Quoted by von Bergmann, von Bruns, and von Mikulicz in A System of Practical Surgery, Philadelphia, Lea & Febiger, 1904, iii, 854.

ABSTRACT OF DISCUSSION

Dr. E. W. Ryerson, Chicago: It is a rather difficult thing for me tactfully to say what I think about the Mayo operation, because I do not think it should often be done, unless it is impossible to bring the end of the first metatarsal bone and the phalanges of the toe into a straight line without undue force. It is undoubtedly true that a great many people have the wrong view of the Mayo operation. I have myself operated under the idea that it consisted in removing the entire head of the first metatarsal bone. That should never be done. It disturbs the balance of the foot so markedly, that people who have had the entire end of the first metatarsal removed are always more or less incapacitated. I have seen some thirty patients, about twenty of whom were operated on by me, and the others were operated on by other men, all of whom have had trouble after the Mayo operation. It is true that the bunion undoubtedly was cured, but they had a painful static disturbance of the foot and a severe type of flatfoot in all of these cases. Now what should be done? In many cases there is no bursa whatever, and in many other cases the bursa is small. There can be a much irritated skin without a bursa, and with the presence of a rather large—not always enlarged—metatarsal head, the divergence of the big toe outward, of course, allows the pressure of the shoe to come against the end of the metatarsal. The thing to do—and I have done it frequently with satisfaction—is to make exactly the same kind of an incision that Dr. Henderson and Dr. Mayo use; to push the toe down where it will be out of the way; to take a sharp chisel and start it at the front of the inner side of the metatarsal bone which is just where the edge of the phalanx comes, and cut backward, chiseling off the projecting portion of the bone. We can remove a piece an inch long, or even more, if necessary, down along the shaft of the bone, the portion of which is making the trouble, and it is extremely important to shave down the shaft of the bone just as carefully as one possibly can, so as to leave no little spicules of bone sticking out and no little shreds of periosteum, and make the whole of the bone smooth and practically cylindrical. Do not disturb the rest of the articular surfaces unless you have to. We all know that in extreme cases the big toe is pushed way out of line, and it cannot be brought anywhere near straight without removing some of the articular surface, and in such cases Dr. Mayo's operation is excellent and has proved its use, as emphasized by the speaker; but the inner side of the bone should be trimmed off very carefully. That is the main thing. It is the inner side of the bone that makes the trouble. It is also wise in many cases to excise the thickened skin as well, but this is not always necessary. One must always suture the skin very accurately and it is well to twist bleeding vessels instead of ligating them. It is my personal opinion that you should avoid the Mayo operation in every case you possibly can.

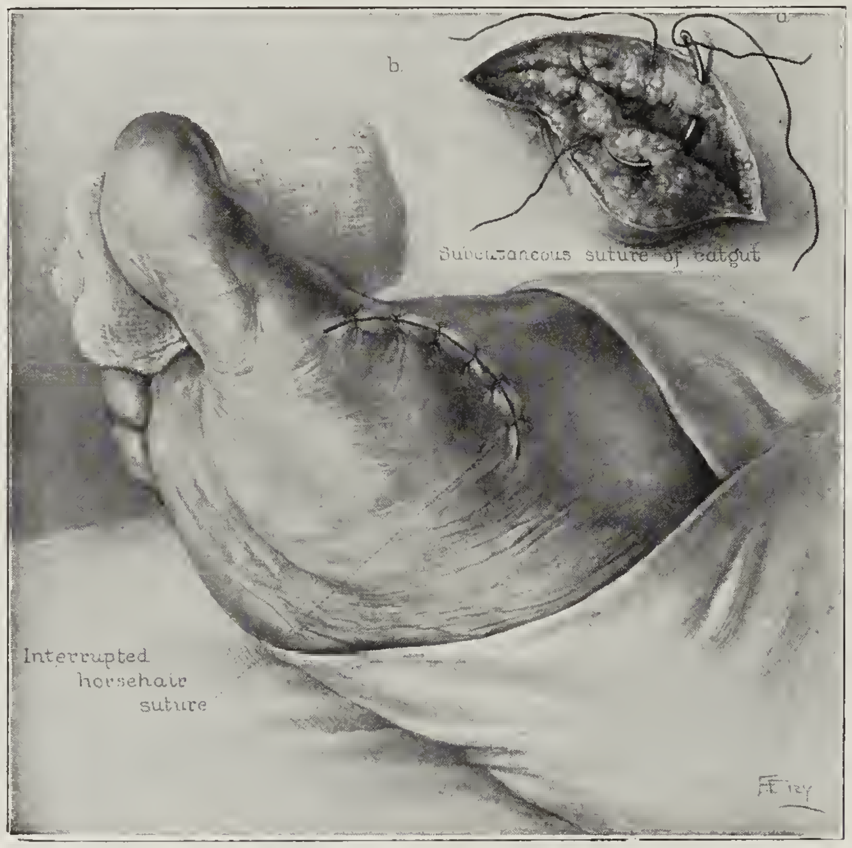

Fig. 5.—*a*, subcutaneous tissue sutured with interrupted catgut sutures; *b*, location of scar where shoe will not press on it. A pad of gauze is placed between the first and second toes to maintain the correct position of the great toe.

Dr. John Ridlon, Chicago: To emphasize the difference of opinion among men working side by side in the same town, I wish to say that I agree with Dr. Ryerson only in one statement; that is, that the Mayo operation should always be avoided. Further than that, I would want to say that I think the Mayo operation a much better operation than the one described to you by Dr. Ryerson. I believe that the success of an operation on a big toe with a bunion or hallux valgus, in order to secure a useful, strong, mobile and painless joint, lies in the taking away of a lot of bone. I remove all of the head, and then some, and all of the knobs, and I am particularly careful to remove any knobs on the plantar surface of the foot.

Dr. J. P. Lord, Omaha: I have performed the Mayo operation since it was first described by Dr. Charles Mayo, and I have undertaken to follow the technic as originally outlined by him, and that technic does not recommend the removal of the whole of the head of the bone—but about three fifths, as I remember it, of the articular enlargement—then the thorough removal of the projecting bone on the inner side, and the following of all of the details. It has never brought me anything but the most complete satisfaction. I think that if too much bone is not removed, the objection raised by Dr. Ryerson, that it is conducive to flatfoot, is not borne out, at least by my experience, and I simply wish to put myself on the side favoring the Mayo operation as being the best procedure for the condition described.

Dr. Leonard W. Ely, San Francisco: There is one point in Dr. Henderson's paper to which I should like to take exception, namely, the causation of a bunion. The simplest things, when we come to examine them, we find are not simple at all. I always assumed that a bunion was caused by short shoes, but people who wear short shoes are not always those who have bunions, and many people who have worn broad shoes and long shoes all their lives have bunions. Young of Philadelphia discovered one cause in a bone which pried the first and second metatarsals apart. Some German observer maintains that a bunion is really not a hallux valgus but a hallux varus, caused by a varus position of the metatarsal bone. He ascribes the ultimate cause of it to an obliquity of the articulation of the metatarsal with the tarsus. That looked extremely probable, and I assembled a great many roentgenograms with the idea of finding out if it was so. It is not, as far as I can make out. It seems to me that our knowledge of this subject will be quickened if we will not assume a cause, but will try to find out the real cause of the deformity, and possibly improve our treatment on that basis. The insertion of a bursa I have never found necessary. I agree with Dr. Ryerson that if one takes off as much bone as is necessary at the end of the metatarsal, one will get a fairly movable joint.

Dr. J. T. Rugh, Philadelphia: I just want to call attention to one little point which I usually have followed in this operation, though the conditions that are present in the individual case should determine the type of the operation. It does not appeal to me to be the best surgery to make the base of the flap anteriorly. The vitality of the flap, I feel, would be endangered. I always make my flap with the base of it posteriorly along the side of the metatarsal to guard against sloughing.

Dr. B. M. J. Conlin, Long Beach, Calif.: Bunions are not caused by either short or tight shoes. After a careful study of bunions for over forty years I have come to the conclusion that they are hereditary. The natives of the Sandwich Islands and the Indians of Mexico, who never wear shoes, have bunions; and the people wearing short, tight, ill-fitting shoes do not have bunions, unless they inherit them. The bunion in the human species is analogous to the ringbone in the horse, and the breeders of thoroughbred horses have demonstrated beyond a doubt that ringbone is transmitted from parent to offspring.

Dr. E. A. Rich, Tacoma, Wash.: In general considerations with regard to feet afflicted with bunions, two facts seem to stand out most prominently; first, a varying degree of flatfoot is constantly present, and second, this flatfoot usually is not of the painful variety. I have in mind cases that present with so marked a degree of flatfoot that the bunion deformity would seem insignificant, yet the bunion is the only part of the foot that causes pain. This fact further illustrates some points recently brought out in the controversy in the columns of The Journal over flat feet, namely, that the degree of flatfoot cannot be gaged by the symptoms. It is my conviction that the flatfoot condition in operative bunion cases does not need treatment and end results will be better if no attempt is made to correct the arch deformity.

We have been doing our own operation on bunions, which is a little more extensive than that of the Mayos. We have taken out more bone. Often the head of the metatarsal has to come out, but usually part of the articulating surface of the joint can be saved. Instead of using the bone clippers we prefer a sharp chisel that will directly cleave the bone and not crush it. We believe that there is less cause for regret when too much bone is removed than when too little is taken away.

Dr. John F. Golden, Chicago: Most of the bunions that have come to me for the last eight years have been operated on according to the method of Dr. Henderson. It occurred to me during the discussion that probably the bunions came earlier to the man in orthopedics and later to the man in general surgery. The bunions that we get are large ones, and usually the foot is markedly flat. In those cases I have acted according to Dr. Henderson's procedure, waiting as long as possible and removing as little as possible, and the results have been very good. I might ask Dr. Henderson in closing this discussion to mention the formation of hematomas, which frequently ensues. We aspirate them about the third day, and we do not touch them with our fingers or with the sutures. Everything is handled with metal; not even touched with gloves. We use ligatures practically not at all, and if hematoma results we simply aspirate that hematoma at the end of the second or third day. I saw Dr. Smith do an operation on a number of stiff fingers, and I noted the analogy between the technic he used and that which is followed by Dr. Henderson in the case of flat feet.

Dr. M. S. Henderson, Rochester, Minn.: I can say that I am just as positive that this method is the best as Dr. Ryerson is that it is not, because I believe the whole thing to hinge on the fact, which I probably did not emphasize in the paper, that the bunion foot is a particular type of foot. The great toe is usually the longest, and it should not be the longest, or at least should not be any longer than the second toe. Now that is not an invariable rule, but in a large majority of cases it is true, and I do not think we can put aside the fact that short shoes produce bunions. They do not always produce them, but they help, and I do not believe a bunion can be cured by the operation Dr. Ryerson describes. Some of the head of the bone—the articular surface—must be taken off to shorten the great toe. Of course, these people come to us in all conditions and the severe type cannot be absolutely cured. They will always have some trouble and we always tell them so, but we can relieve them greatly. Many cases can be cured by proper shoes and care of the feet, and on these we do not operate. Dr. Golden mentions hematoma. I think he is quite right. Unless one is very careful, hematoma forms; this should be aspirated about the second day. Dr. Rugh mentions the type of flap. I have tried all kinds of flaps—from the phalanx with the base backwards, with the base below, and I am of the opinion that the flap in front with the base toward the phalanx is the best. I do not believe that it becomes necrotic; at least, I have had no evidence to point that way.

VACCINE TREATMENT OF HODGKIN'S DISEASE

REPORT OF A CASE

A. R. HATCHER, M.D.
AND
W. G. LEMMON, M.D.
WELLINGTON, KAN.

From 1832, when Hodgkin recorded a series of cases, up to 1913, the treatment of Hodgkin's disease was futile, and the outcome fatal. In the acute forms, death occurred in a few months; while in the chronic type, patients often survived two or three years, during which time remissions of symptoms and size of glands were frequent.

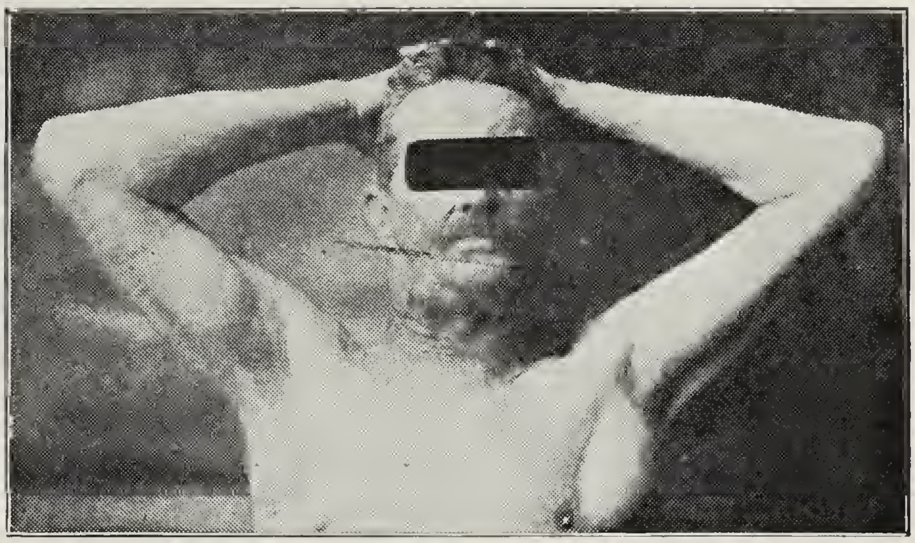

Fig. 1.—Patient, July 1, 1914, before treatment was begun.

The etiology up to this time was unknown. A few believed it to be a tuberculous or paratuberculous adenitis, some held that it was a form of malignancy, while a few others believed it to be an infection probably entering through the tonsils. In 1910, Fränkel and Much found a gram-positive, non-acid-fast, diphtheroid bacillus in smears from the glands in a series of cases. They believed this bacillus to be the specific cause of the disease. In 1913, Bunting and Yates in America and Negri and Mieremet abroad succeeded in cultivating an organism corresponding to the one found in smears by Fränkel and Much. A little later Billings and Rosenow[1] published results of treatment with vaccines made from the organisms. Their method of preparation comprised growing the organisms on Loeffler's blood serum, ascites agar or blood agar, for from twenty-four to forty-eight hours, suspension in physiologic salt solution, and heating from forty to sixty minutes at 60 C. (140 F.).

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[1] Billings, Frank, and Rosenow, E. C.: The Etiology and Vaccine Treatment of Hodgkin's Disease, The Journal A. M. A., Dec. 13, 1913, p. 2122.

The case which we wish to report was treated by vaccines and the Roentgen ray. There was an intercurrent acute suppurative appendicitis.

History.—A retired farmer, aged 63, married, who had had rheumatism when a child, and occasional attacks of myalgia since, but no other illness, in the latter part of February, 1914, had what he described as "a breaking out on the face." A few days later he noticed swellings beneath the angles of the jaws and ears; these gradually increased in size, and in two or three weeks, swelling was noticeable in the axilla and groins. The tumor formations were never painful, tender or red. He rapidly became weak and emaciated, and complained of extreme nervousness.

Examination.—Tumor formations as shown in Figure 1 were present. The masses apparently consisted of enlarged discrete, nonadherent, painless lymph nodes. The mucous membranes were pale. Physical examination otherwise was negative.

The urine was pale amber, acid, specific gravity 1.008, albumin and sugar negative. Microscopically there were a few hyaline casts and amorphous urates. The red corpuscles in the blood numbered 3,200,000; hemoglobin, from 55 to 60; white blood cells, 7,200; polymorphonuclears, 59; mononuclears, 41.

Treatment.—In June, 1914, one of the glands was taken from the neck and sent to Dr. F. W. Gaarde of Chicago for diagnosis and preparation of autogenous vaccine.

July 1, 1914, vaccine therapy was begun, consisting of subcutaneous injections twice a week for seven weeks. There were no severe reactions. The initial dose was 25,000,000; this was gradually increased to 2,000,000,000, and in addition to this the patient was given Roentgen-ray treatment every five days for eight weeks. He received six injections before there was any amelioration in the symptoms or the size of the glands. After this they gradually reduced to about two thirds of their original size. August 27, he was taken ill with acute suppurative appendicitis. He was operated on, September 8, and an abscess was drained. The tubes were removed on the eighth day, and drainage ceased about the eighteenth. During this time there was an extremely rapid decrease in the size of the glands. With cessation of pus there was a corresponding slackening in the retrogression of the glands which did not cease entirely, but has continued until the present time.

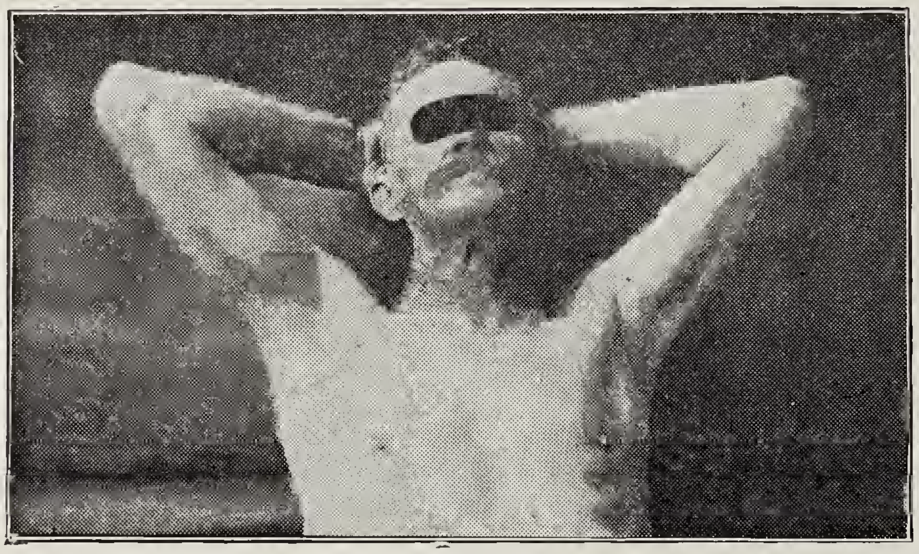


Fig. 2.—Patient, July 1, 1915, showing results of treatment.

Constitutionally, except for a dragging sensation at the site of the scar, the patient feels perfectly well, and is doing his own chore work on the farm.

The question arises as to what influence the pus infection had on the glands. There is no doubt that the toxins from infectious processes at times exercise a profound effect on newly formed tissue, as illustrated by the use of Coley's toxins in sarcoma. The fact, however, that the glands were decreasing under the vaccine treatment, and continued to do so after the infection had cleared up, and that the results are identical with those of Billings and Rosenow, leads us to believe that while the appendicitis may have been a favoring influence, the main results were due to the vaccines.

POLYPUS OF FALLOPIAN TUBE

Lawrence H. Hoffman, M.D., San Francisco
Fellow of the American College of Surgeons

Polypus of the fallopian tube, although mentioned in textbooks of gynecology, is rarely encountered in pelvic surgery. The condition may exist without causing any symptoms and pass unrecognized until it reaches a size to be discovered by palpation during some routine pelvic examination or until the occurrence of rupture of the containing fallopian tube demands operative procedure.

The case I report is interesting on account of its rarity and its simulation of ectopic gestation. I have searched the literature and can find no cases of that nature on record.

History.—The patient, aged 30, married several years, presented herself to Dr. Oscar Mansfeldt with the following history. She had never become pregnant although she had used no preventive measures. Menstruation had always been regular, moderate in quantity, about four days' duration. The April and May menses were normal. The June 1 period was on time but patient menstruated several days longer than usual, with a day's cessation, and a few days of a dark bloody discharge with clots, accompanied by colicky pains in the lower abdomen and slight abdominal distention.

Examination, June 18.—The cervix was conical, of normal consistency. The uterus was normal in size, in axis of pelvis not fixed. A boggy semifluctuating mass was palpable in Douglas' culdesac. The right adnexa was palpable and no abnormality was felt. A mass was felt in the left parametrium about 5 cm. in diameter, immobile, separable from the uterus and tender to the touch. The findings were corroborated by an examination under narcosis June 18, and I was called in consultation to verify the findings. A diagnosis of ectopic gestation was made and operation was decided on and performed June 19.

Operation.—When the peritoneal cavity was opened, by median abdominal incision, some fluid, blood and clots escaped. The left adnexa was represented by a mass 5 cm. in diameter, embedded in blood clots, and ruptured on its superior margin near its distal end. This adnexa was removed typically and the clots evacuated from the peritoneal cavity. The abdomen was closed in four layers. Recovery was uneventful.

The pathologic report, made by Dr. Ophüls, was of rupture of the fallopian tube, which contained a polypus, 2 cm. in diameter, and coagula.

When discussing the case, the existence of ectopic gestation was weighed but the fact that there had been no amenorrhea and that uterine enlargement was absent caused a doubt in our minds. The other symptoms and physical signs were so suggestive of extra-uterine pregnancy that we felt an exploratory operation was demanded, knowing the dangers of such a condition. Until the pathologist's report was received the findings were taken as ectopic pregnancy, and great was our surprise when the true nature of the lesion was disclosed.

530 Butler Building.

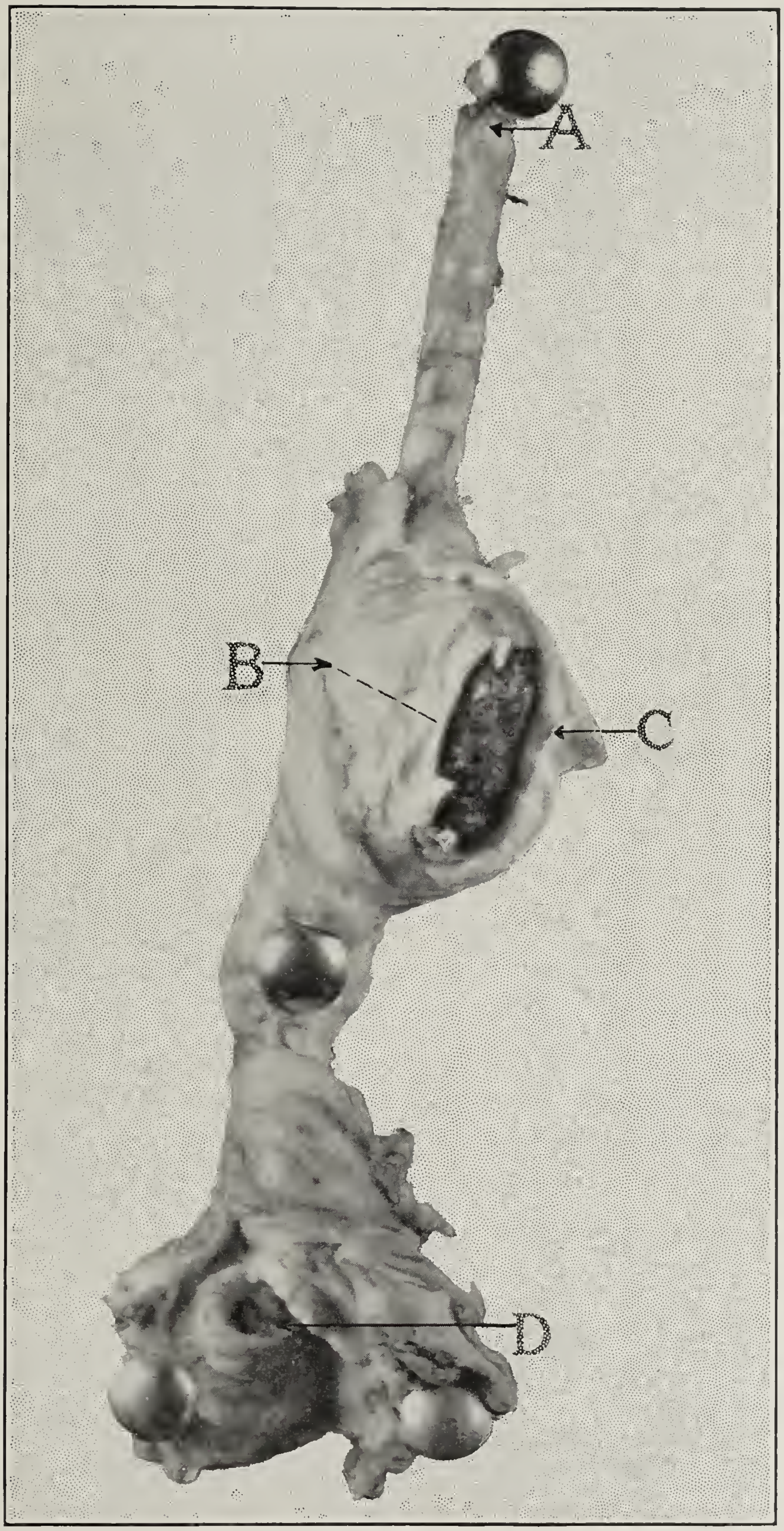
Preventive Medicine.—Within the past thirty years in this country the mortality from tuberculosis has been reduced more than half, and with scarlet fever and diphtheria the results have been more striking. Within the past ten years the average life has been increased four years.—Vaughan.

AN UNUSUAL APPENDIX

W. W. Grant, M.D., Denver

The following case is reported because of its interesting and unusual clinical history and remarkable character and dimensions of the pathologic specimen:

G. H., aged 27, came to Colorado in 1907 for a mild tuberculous infection, it is stated, of the apex of the right lung. In 1908 after a year of partial invalidism, he was pronounced well. He has had persistent constipation for ten years with periodic loss of appetite and occasional gastric disturbance, without any assignable cause. For several years past he has been superintendent of mining operations at Creede, Colo. On the night of May 15, 1915, he was taken suddenly with severe pain over the abdomen, which continued for six or eight hours. It was followed by marked tenderness in the lower abdomen for four or five days. Notwithstanding the severity of the attack and tenderness following, he was up and about, and resumed his labors immediately, though he could not straighten his body, on account of discomfort induced, for several days. He then consulted a local physician at his office, who took his temperature and reported it normal. He had no further reminder of trouble until July 25, when, in bed at night, he had the second attack of more intense, acute pain which lasted eight hours. He called no physician and the following morning was up and about as before in every particular.



An unusual appendix. Length on removal, 10 inches. *A*, cecal end; *B*, intestinal adhesions; *C*, concretion: capsule split open to show stone; *D*, distal opening of appendix with perforation.

In ten days, feeling that the trouble was serious, he came to Denver and consulted, at first, two distinguished internists. One thought, from the personal and clinical history and the localized swelling with some glandular involvement in the abdominal wall about the mass, that it was probably tuberculous. The other thought it was connected with the appendix in some unusual way, but its exact character doubtful. He was then referred to me. A well-defined mass, the size of the clenched fist, just below the umbilicus, with its center at the right border of the right rectus muscle, was manifest on palpation. A few slightly enlarged lymph glands could be felt about the mass in the wall of the abdomen. Only slight tympanitis existed. The temperature was 98, and pulse normal. The mass was fairly well circumscribed and extended deep into the cavity of the abdomen. The clinical history and immediate subsequent events were so characteristic of the pain and history of a perforative appendicitis with protective adhesions, that I had no doubt as to the diagnosis though recognizing that tuberculous history might have had some influence in the case.

I operated on him August 7 at St. Luke's Hospital. Temperature 98.2. Incision to the right of the rectus. With the opening of the peritoneum about a pint of bloody serous fluid escaped, due, doubtless, to the pathologic condition of the omentum and partial constriction of the adherent intestines. There were no enlarged mesenteric glands, or other evidence of tuberculosis. The ill-defined mass was covered by partially gangrenous omentum in front, and on all sides was protected by closely adherent small intestines extending to the posterior wall of the peritoneum. By delicate dissection the intestinal and mesenteric adhesions were released from the tumor. During this performance about 1 ounce of colon bacillus pus gradually escaped, but it did not enter the peritoneal cavity. When the body of the tumor was freed the upper portion of the appendix was stripped of adhesions, and as soon as severed from the intestine a very mobile cecum was observed, with no adhesions above the stump of the appendix. When removed the latter measured 10 inches in length. A drainage tube was inserted and left for five or six days. The temperature was normal throughout the convalescence and the recovery was uneventful.

The exterior of the concretion is a hard shell about one sixteenth of an inch thick, with a distinct metallic ring when tapped with a scalpel. The color is yellow, resembling that of cholesterin, and the surface, as shown in the illustration, is thickly studded with sharp spines resembling a cockle burr. The interior was of a soft, putty-like consistence and was not further examined as I desired to preserve the specimen, the size of a large hickory nut, intact. I have never before seen a case with this pathologic condition, of years' duration doubtless, with such a negative clinical history with the exception of the two brief attacks of pain due to perforation. On September 4 he returned to Creede feeling quite well and the wound had perfectly healed.

Mack Block.

TWO FAVUS FAMILIES

J. E. Lane, M.D., New Haven, Conn.

Favus is not a rare disease in this country and there are usually a few cases in all of the dermatologic clinics of our larger cities. In the parts of Europe where it is most prevalent it is a disease of the country rather than of the city. This is probably due to the fact that the families of the peasants live more closely crowded together and under less sanitary conditions than does our rural population. Still the fact that favus has never become common in this country is largely due to the rigid exclusion by the federal authorities of immigrants affected with it.

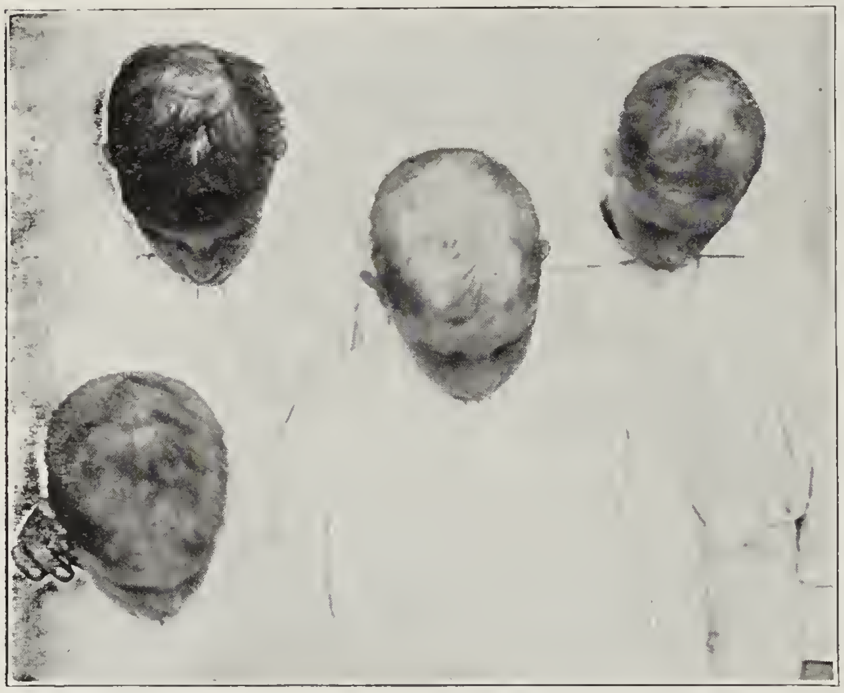


Fig. 1.—Favus in a family of nine, five of whom had the disease.

The following cases illustrate the effect of not properly treating every patient with favus as soon as it is discovered, and the fact that the importance of such treatment is not sufficiently realized in places where it is a rare disease. They also illustrate the fact that favus frequently originates in this country. The impression is still prevalent among many physicians that nearly all cases of favus are found in immigrants, though as long ago as 1896, this was shown by Wende of Buffalo not to be the case. Another point of interest is the rather unusual number of individuals of the same family affected, and the extent of the disease in them.

A few months ago my attention was attracted to the subject by a case of favus in a boy 13 years old, who for five years had been occasionally coming to the dermatologic clinic of the Yale Medical School. A visit to his home disclosed the fact that there were nine children in the family, of whom four others, children aged 10, 8, 6 and 2 years, were affected. The boy of 13 was nearly bald. The disease in the child of 2 was not extensive. In the others, practically the whole of the scalp was involved. None of them had been treated at all except the boy of 13. All of these cases developed in this country, the parents having come from Italy twenty years ago. The extent of the involvement is shown in Figure 1, the photograph having been taken after the removal of the crusts. (In neither family was I ever able to get all five of the children together for a photograph.)

The second family was also Italian, and the parents also came here about twenty years ago. It was discovered by the Visiting Nurses' Association, which had been caring for the other family. In this family there were five children of the ages of 12, 8, 6 and 4 years, and a baby of 10 months. All of the children had favus, and they presented a disgusting appearance, well shown by Figure 2, which was taken before any attempt at cleaning had been made. The scales on the girl's dress, which fell when her cap was taken off, show the ease with which she could scatter the disease if opportunity offered.

All of these cases originated in this country, and I subsequently found out that some of them had been discovered more than five years previously. As favus is not a reportable disease, nothing was done about them, and it was allowed to spread, with the results described. Children with favus are excluded from school, so with the exception of the boy of 13, who at some time or other had been in school for about six months, none of them had ever been in school at all. With the same exception, none of them had had any treatment.

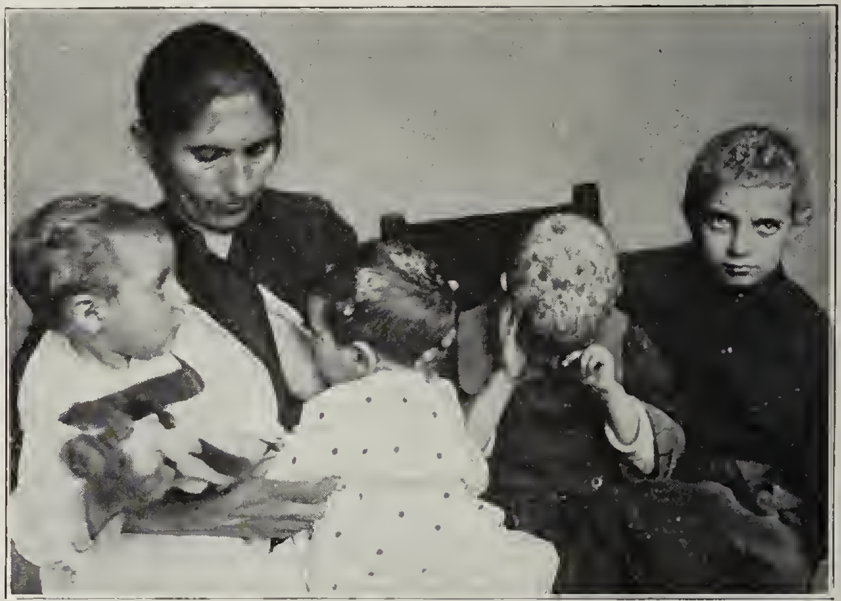


Fig. 2.—All of the five children of this family, of whom four are shown, had favus.

Such a condition not only deprives its victims of an education, but if allowed to continue, deprives them, on account of their disgusting appearance, of practically all means of earning a living until the disease has eradicated itself, which in some cases is not before old age.

It is obvious that favus should be made a reportable disease, and that each case should be properly treated as soon as it is discovered.

Partial Refrigerating Process to Aid in Transportation of Milk.—Our Italian exchange, *Pediatria*, describes a method for keeping milk for long transportation, which has been introduced into the Brazilian province of Minas-Geraes, noted for its dairies. The principle is to cool the milk after pasteurization and pour it into a 300-quart can already containing blocks of frozen milk. The milk is frozen in blocks weighing 22 or 33 pounds, and ten or twelve of these blocks are placed in the large can, which has insolating walls, and the chilled and pasteurized milk is poured over them. Milk which has been thus sealed is said to keep for fifteen or twenty days. When the can is opened the milk is found homogeneous and is said to resemble in every respect the freshly drawn product.

New Instruments and Suggestions

A NEW NECK BANDAGE

A. G. Bettman, M.D., Portland, Ore.

Realizing how difficult it is to apply a dressing high up on the back of the neck and keep it there by the means generally used, I have devised a very simple bandage to accomplish this object by the following procedure:

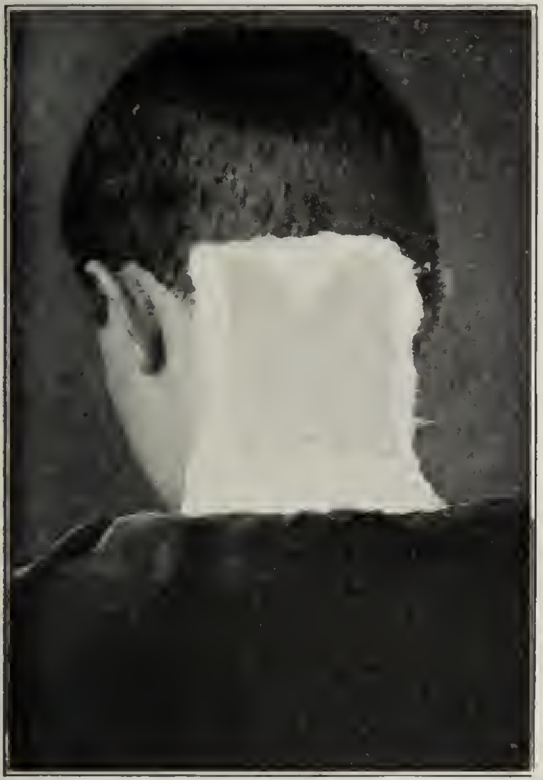


Fig. 1.—Dressings, cardboard and two turns of bandage in place.

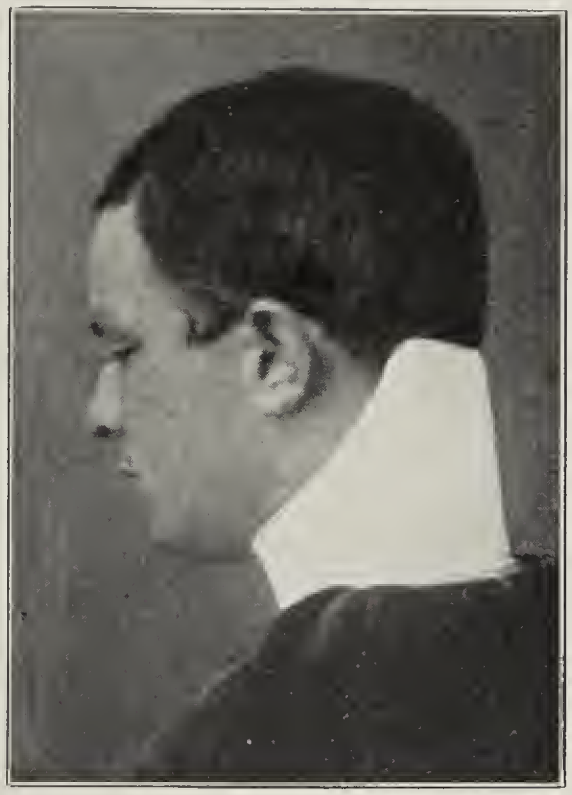


Fig. 2.—Side view of completed bandage.

Put on the dressings in the usual way. Apply a 2-inch bandage twice around the neck, folding it on itself lengthwise the second time around.

Cut a piece of stiff cardboard of suitable size and shape, as shown in Figure 1. Place the lower end of the cardboard in the fold made in the second turn of the bandage. Continue bandaging over the cardboard, fixing an occasional turn over the top. Figure 2 shows the completed bandage.

This bandage I have found very serviceable, especially where the patient objects to having the bandage around the forehead, and adhesive plaster is unsatisfactory.

The advantages are: The bandage is easily and quickly applied. It looks neat and can be made as high as required. It holds the dressings in place. It is not objectionable to the patient. There is no adhesive plaster to annoy the patient.

809 Stevens Building.

A SELF-ILLUMINATED BERGER LOUPE*

Edward A. Shumway, M.D., Philadelphia

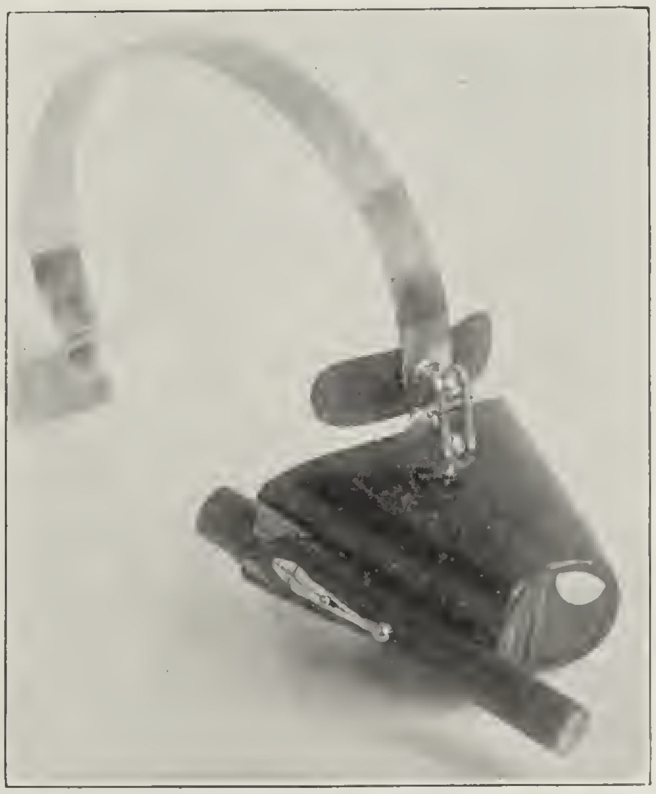
I desire to show a simple modification of the Berger loupe, which consists in the attachment to its side of a brass clip to hold the small flashlight, which has the appearance and size of a stylographic pen. The light has a small, one-cell battery, which illuminates a tungsten filament lamp, and has a permanent turn-on arrangement. It can be purchased at any of the electrical supply houses, or instrument shops.

The light rays from the lamp are projected toward the focal point of the Berger loupe, and give sufficient light to illuminate satisfactorily the eye under examination. It has been of especial value, however, in the removal of foreign bodies from the cornea, and in pulling out delicate misplaced cilia from the eyelids, as it gives an independent source of illumination, and leaves both hands free for manipulation of the eyespud, and for holding the patient's eyelids. It has also the advantage of being independent of wires to batteries or rheostats, and can be readily removed from the loupe when illumination is not required.

The Zeiss loupe has also a lamp to illuminate the eye, but the instrument is much more expensive, the lamp requires a separate battery or rheostat, and moreover, the focus is rather short—1¼ inches—while the Berger loupe focus is rather short—1¼ inches—while the Berger loupe focuses at about 2 inches, giving more space in which to move the spud, or other instrument.

Other arrangements have been employed to illuminate the eye in removing foreign bodies, but they are not sufficient, when the operator requires binocular magnifying power to assist his near sight, and self-illuminated spuds have been unsatisfactory, in my experience, as the illumination is not constant, but varies with the distance of the spud from the eye. Moreover, it is very difficult to get patients to hold their eyes still, as they seem to fear a shock of some sort, when the light from such an instrument, connected by wires to a battery or rheostat, approaches the eye.

The ordinary tungsten lamp furnished by the Ever Ready Company has a plain glass top. For more powerful illumination I have replaced it by an imported lamp, which has a small magnifying lens fused on the top, by means of which the light rays are better concentrated. This makes the apparatus more useful in dispensary work, especially in the examination of inflammatory conditions of the anterior portion of the eyeball or its adnexa, making it usually unnecessary to take patients to a dark room. The loupe has been cut out on each side to remove the obstruction to lateral vision, of which complaint is occasionally made, but this is not a new feature.



Self-illuminated Berger loupe.

The modified apparatus can be obtained from Wall & Ochs, Philadelphia, who will attach the clip and lamp, or furnish the entire outfit.

2007 Chestnut Street.

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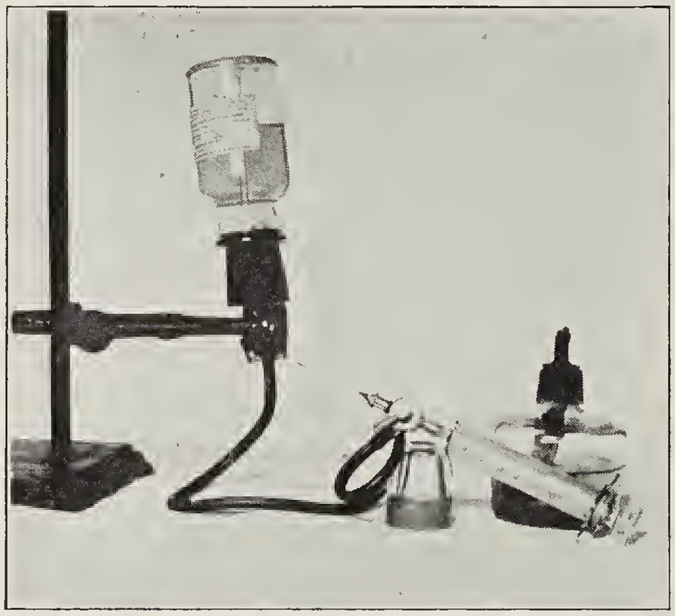
* Shown at the meeting of the American Ophthalmological Society, New London, Conn., July 6, 1915.

RAPID INOCULATION OF LARGE NUMBERS WITH TYPHOID IMMUNIZING VACCINE

E. W. Cleary, M.D., Sugar Pine, Calif.

The immunization of large forces of laborers to typhoid fever by inoculating each individual with the routine series of three doses of prophylactic vaccine is a problem which presents distinct difficulties to the physicians who have to meet it. It is not at all to be compared with the task of the army medical officer, whose patients march with military precision at the hour and to the place which he dictates.



Apparatus used in rapid inoculation of typhoid prophylactic vaccine.

Many workingmen who do not object to vaccination are too inert to go to the doctor's office to be inoculated, or come straggling in at irregular hours, forgetting their appointments for successive doses, and in sundry and several ways dragging out the process of immunization to an impracticable length. Yet a large majority must be immunized in order to render their community reasonably safe. To get such a majority it is necessary to go to the men and inoculate them when they are gathered together for work. Employers naturally object to shutting down a large plant to give opportunity for wholesale vaccination of employees, and, in consequence, vaccination must be done either during the noon hour or at night as the men are leaving their work.

A method of vaccination practicable under such limitations must be safe, simple and rapid. It must be safe outdoors or in dusty buildings, simple enough to be carried out by one physician with untrained assistants, and rapid enough to accomplish the inoculation of a large number in a very short time.

I have used the apparatus shown in the illustration in about 300 cases with entire satisfaction. The apparatus consists of a 5-c.c. Lüer syringe, a three-way metal stopcock, a platinum intramuscular needle (the smaller needles were found too fragile), a No. 18 French soft rubber catheter and a cork pierced by one long and one short glass tube. These articles are all sterilized by boiling. The vaccine bottle used was the 2-ounce, wide-mouthed, prescription bottle in which the sterile vaccine was supplied. When one such bottle was emptied, the cork connected to the syringe was simply transferred to a full bottle. The illustration shows arrangement of syringe, stopcock and needle with catheter connected to a third way of stopcock and, by its other end, to the short glass tube passing just through the cork of the vaccine bottle. The longer glass tube extends above the surface of the vaccine in the inverted bottle, and serves as a vent. If there is any question of contamination of the vaccine from air entering through this vent, it can be loosely plugged with sterile cotton. When one is working in a draft, it is best to provide a shield for the alcohol lamp used for flaming the needle.

When one is vaccinating with this apparatus, three assistants are employed. The first rolls up the sleeve and touches the arm with tincture of iodin, the second shakes the inverted vaccine bottle constantly to insure an even suspension of bacteria, and the third keeps the records. With the third way of the stopcock open, the syringe is filled from the vaccine bottle, then the third way closed, and the channel to the needle opened by giving the lever of the cock a quarter turn. As the vaccine enters by gravity into the syringe through the larger opening in the stopcock, absolutely no air is drawn into the syringe, and the plunger may be pulled back with one rapid stroke, filling the syringe barrel accurately to the 5-c.c. mark. One c.c. of the vaccine is injected just beneath the skin through the iodized area over the insertion of the deltoid. The needle is flamed over the alcohol lamp before each injection. In using the 5-c.c. syringe, five men are inoculated before the syringe is refilled. It was found that by doing this, five or more injections could be made per minute, thus giving little time for uneven dosage to result from settling in the syringe. When injections are made slowly, it is better to use a small syringe and fill for each injection.

The advantages of this method over the method in which the vaccine is drawn into the syringe by thrusting the needle through the rubber cap of the vaccine bottle are obvious. Any one who has filled a vaccine syringe by the last-mentioned method knows that more or less air is drawn into the syringe, and that on this account much time is consumed in adjusting the syringe load for accurate dosage.

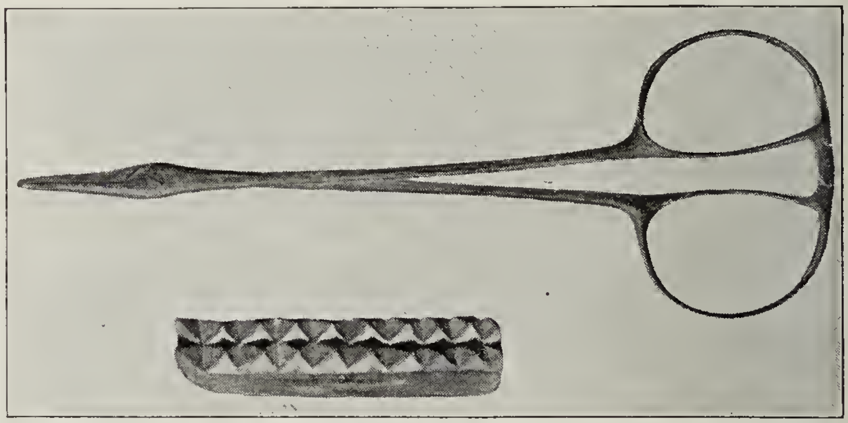
The rapidity of the method described in this paper made it possible, without compulsion, to immunize so large a proportion of the working men in the community in which it was used as to insure against a repetition of such a disastrous typhoid epidemic as had paralyzed industry and taken a toll of several lives from the neighborhood several years before. The extreme simplicity of the operation and the rapidity with which it can be done so minimizes the conception of the serious nature of the process in the minds of the workingmen that many submit who would recoil from a slower or more complicated procedure. The fact that out of a total of nearly 900 doses injected not a single infection, nor even a single unduly severe reaction, occurred evidences the safety and accuracy of the method. The Gay-Claypole vaccine furnished by the California State Board of Health was used.

NEW ARTERY FORCEPS

Carleton Dederer, M.D., Los Angeles

Clinician in Surgery, Los Angeles Department, University of California Medical College

Kocher overcame the difficulty of having the jaws of artery forceps slide across each other laterally by devising the "mouse tooth" at the end. In this pair of forceps nature is imitated by the formation of jaws and teeth which bite firmly without incising. This has been done by making on one jaw a double row of pyramids quite similar in shape to the famous Egyptian pyramids and on the other jaw a series of complementary impressions, all of which give a bite which can be regulated in intensity by the degree of pressure applied.



New artery forceps and magnified model of a portion of one jaw.

This forceps is 6½ inches long and has the new style handle[1] eliminating all acute angles where sutures, ligatures and instruments usually catch.

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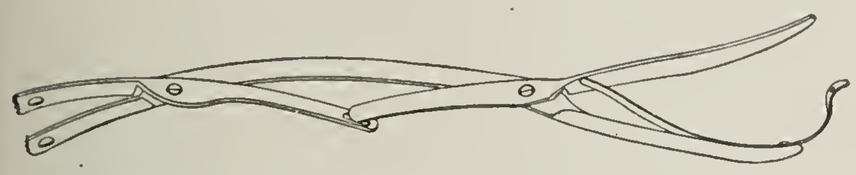
[1] Dederer, Carleton: Time-Saving Forceps, The Journal A. M. A., April 17, 1915, p. 1318.

TONSIL FORCEPS

W. P. Megrail, M.D., Wheeling, W. Va.

This instrument is curved throughout its entire length so that a large part of it and the operator's hand is entirely outside the line of vision, which gives an unobstructed field for operation. It has a compound lever handle which makes a firm grip on the tonsil with a very slight grasp of the fingers. The handles work close, permitting the tonsillotome or snare to be readily passed over them. It also may often be found to be a useful instrument for extracting foreign bodies from the pharynx or esophagus.



Tonsil forceps which may be used for extracting foreign bodies from pharynx or esophagus.

Penn and Zane Streets.

A SIMPLE METHOD OF TRANSFUSION IN HEMORRHAGE OF THE NEW-BORN, WITH REPORT OF A CASE

W. S. Howard, M.D., Chicago

The only apparatus required in this method is a 20-c.c. ground glass syringe with a needle 2 or 3 inches long.

After sterilization of the syringe and needle, 2 c.c. of a 10 per cent. sodium citrate solution is drawn into it. The needle is then inserted into the vein of the donor, the syringe filled and withdrawn. The anterior fontanel region of the infant having been previously cleaned with alcohol and tincture of iodin, the needle is pushed into the superior longitudinal sinus and the syringe emptied. This may be repeated several times if necessary. A smaller needle than the one for the sinus may be used on the vein of the donor if desired.

For entering the sinus the needle is inserted at the superior angle of the fontanel at an angle of about 25 degrees with the scalp. When the needle enters the sinus there is a distinct sensation of decreased resistance perceptible. The sodium citrate solution is used to prevent the rapid coagulation of the blood. Two c.c. of a 10 per cent. solution will make the entire contents of the syringe contain only 1 per cent. of sodium citrate, which has apparently no deleterious effect on the blood.

The advantage of this method is the extreme simplicity of technic. It can be done at almost any place, on short notice, with very simple apparatus, and does not require any great amount of surgical skill for its execution.

The use of the longitudinal sinus in infants for aspiration, infusion and transfusion has been recommended by Helmholz (*Am. Jour. Dis. Child.*, September, 1915, p. 194) and Unger (The Journal, Feb. 13, 1915, p. 582). Unger's method for transfusion requires a special apparatus which is described in the article referred to.

REPORT OF CASE ON PEDIATRIC SERVICE OF DR. F. X. WALLS

Baby B., boy, colored, was born at St. Luke's Hospital, Sept. 7, 1915. Labor normal. Birth weight 6 pounds, 11 ounces. Apparently normal in every respect. The mother is a quadroon, aged 30. Had measles during infancy. Has always been in good health ever since. Has had four children and one abortion at third month. All labors have been normal. Second child died at age of 2 months, of malnutrition. Had the abortion in 1910, one year following the birth of the third child. Father is colored, aged 44; has always been well with exception of slight gastric disturbances.

Patient was apparently normal until the morning of Sept. 9, 1915, when there was a very free hemorrhage from the bowels. This was of a rather bright red color and estimated to be at least an ounce in quantity. At 11:45 a. m. a similar hemorrhage occurred. The infant at this time seemed to be in very poor condition. It was very restless and irritable. There were convulsive movements of the arms and legs, and it yawned constantly. After consent of Dr. Walls had been obtained, 18 c.c. of blood were transfused into the longitudinal sinus by the method described above, the donor being one of the nurses. At 12:40 p. m. another free hemorrhage occurred, and again 18 c.c. of blood were transfused, the donor this time being the father. By this time the baby was in a more apathetic state. It promptly regurgitated all food, the emesis being of a dark color. At 5 p. m. the third free hemorrhage occurred, and 18 c.c. of blood were again transfused from the first donor.

Following this there were slight passages of tarlike stools but no more hemorrhages.

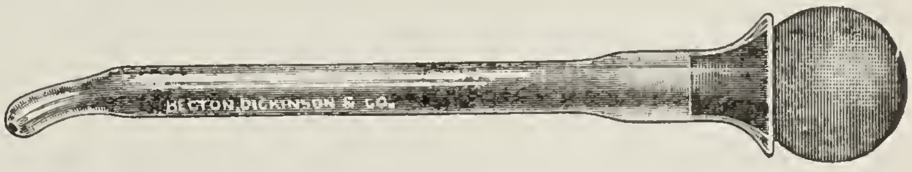
The following day the stools were yellow, the emesis had ceased, and the general condition was much improved. There have been no further evidences of hemorrhage up to the present time. The infant nurses well, has no discomfort following, and is apparently normal in every respect.

St. Luke's Hospital.

URETHRAL SYRINGE

F. A. Van Buren, M.D., Omaha

This syringe was designed for treatment of the female urethra, especially in gonorrheal infections. It is difficult to get a satisfactory syringe, of the piston type, which is positive in action. If the piston is tight enough to insure nonleakage the action is so stiff that one cannot accurately control the pressure or the amount of medication injected. This instrument possesses these advantages over the push type: It is inexpensive, easily cleaned and sterilized by boiling, and is positive in action for the life of the instrument as new bulbs may be obtained. A small hole in the neck of the bulb prevents medication from entering the bulb, thus permitting injection from any position; the tip has the correct curve and caliber for the female urethra. A little pressure against the meatus prevents the fluid escaping, dilates or irons out all folds in the mucosa, thus permitting the fluid injected to reach all parts; more pressure will force the fluid into the bladder if desired.



Syringe designed for treatment of urethral infections in females.

468 Brandeis Theater Building.

Health on the Farm.—The death rate in the rural communities of New York state is higher than that of the crowded city of New York. It still amounts to about 15 per thousand since 1900, while in the city of New York the death rate has dropped about one-third in the last fifteen years. The New York State Department of Health in *Health News* has published papers by various experts to enable the farmer and the country dweller to improve health conditions. It is said that the farmer must be his own sanitary engineer and board of health to a large extent. Among the things he must look out for are proper disposal of wastes, pure water and milk supplies, freedom from insect pests, habits of personal cleanliness, and moderation in all things. The bulletin contains papers by L. H. Bailey on "Good Health and Good Farming," by Henry N. Ogden on "The Farm Water Supply," by Theodore Horton on the "Disposal of Human Excreta and Sewage of the Country Home," by Dr. Alvah H. Doty, New York, on "The Extermination of the Mosquito," and by Dr. William B. May, Albany, on "Health Conditions on Picnic Grounds."

Therapeutics

PLANT POISONING

PRIMROSE

This poisoning is not infrequent, though generally perhaps it is unrecognized, the condition being called acute eczema.[1]

Sharpe[2] thinks that the dermatitis not infrequently seen on the hands of milkers may sometimes be due to the fact that the poisonous substance of the wild primrose is carried on the udders of the cows.

It has been noted that primrose plants do not readily become infected with insects. Montgomery[3] thinks that the cause of this immunity may be the poison exuded by the plants.

The hands and arms are the parts most attacked by the primrose, and the symptoms are burning, puffing, and at times small pin-point blisters. There is also a good deal of itching.

The primary treatment is to recognize and remove the cause. Magnesium sulphate solutions are generally satisfactory in relieving the inflammation. As is true of all acute skin eruptions, catharsis and a milk and cereal diet will hasten the recovery.

IVY, OAK AND SUMACH

While on the subject of plant poisoning it may be well to recall the experimental work done on this subject by Adelung[4] two years ago. Though these plants differ botanically, Adelung finds that their poisonous juices are chemically identical, and this poison is nonvolatile. It has been shown that as little as $\frac{1}{1000}$ of a milligram may produce a dermatitis.

It is now known that the poison of the ivy is of a resinous nature.[5] As it is generally agreed by analysts that the poison is nonvolatile, the assertion that certain susceptible persons may be poisoned by simply passing by the plants remains to be explained. It is certain that neither the pollen nor the plant hairs are toxic,[6] so that direct transmission is the only plausible explanation. As previously shown,[7] Adelung also found that the poison was purely a local one. It is not distributed by the blood.

The latent period or length of time from the infection to the development of the dermatitis is shorter on the parts of the body where the skin is the thinnest, such as the face and the inner sides of the arms and wrists. As is well known, there is a varying susceptibility of individuals, though there seems to be no natural immunity (as shown experimentally). It is a popular idea, however, and seems to be a fact, that some persons may handle the poison ivy, for instance, with impunity. On the other hand, susceptible persons seem to vary as to their susceptibility in different seasons or in different years. This may be entirely due to the variability of the irritant poison.

Adelung found that the rhus plant would yield a pure toxin of about $\frac{1}{1000}$ of its weight. He believes this toxin has a selective action for the epithelial cells. Experimentally Adelung could not demonstrate that immune bodies were formed in the blood or that there were any immune bodies contained in the blood of an individual who was more or less immune to the poison.

Treatment.—If, immediately after exposure to the poison, the parts supposed to be affected are washed with soap and hot water, dermatitis generally will not occur. If it is known that just one small part of the body, as one part of the hand or finger, has touched the poison, the full strength tincture of iodin applied to the part will destroy the poison, according to Adelung.

Protection against poisoning is more or less furnished by oils or fats, as cottonseed oil, smeared over the exposed parts of the body. Any one who is susceptible to such poisoning and knows that he has been exposed, should use, besides the local soap and water, a general hot bath, and should be sure that the possibly infected outer clothing is not again worn until thoroughly brushed and aired.

A strong solution of magnesium sulphate is perhaps one of the best local applications for the dermatitis when it develops. It relieves the itching and limits the inflammation. Other more or less successful treatments are oil or ointment containing ichthyol, potassium permanganate solutions, or the old lead and opium wash. Many people, however, are very susceptible to lead solutions unless they are very weak, and also if the skin is broken too much absorption of lead may occur. As just advised, the magnesium sulphate solution is probably the best treatment. As soon as the acute inflammation is over, any simple talcum powder, or powdered corn starch, is very soothing to the skin.

SUDDEN HEART FAILURE

A correspondent requests a discussion of "an efficient treatment for sudden cardiac failure."

No dogmatic rules can be laid down for the treatment of this condition. The following are suggestions:

1. Put the patient flat on a bed, with the feet elevated, unless it is a case of cardiac dyspnea, in which case he should recline on several pillows.
2. Put a hot water bag over the cardiac region.
3. Use smelling salts for quick momentary stimulation.
4. Give one-half a teaspoonful of aromatic ammonia, in twice the amount of water, if it is at hand.
5. Strychnin sulphate, $\frac{1}{30}$ grain, may be given hypodermically as a stimulant to the central nervous system and to the cardiac nerves.
6. Hot coffee may be given by the mouth.
7. An injection of the contents of an ampule of camphor in oil may be given intramuscularly.
8. Epinephrin may be given in a dose of 5 drops on the tongue, which may be repeated in half an hour if advisable.

All of the foregoing are quick-acting treatments.

9. A little slower than these is the blood-pressure-raising substance of the posterior lobe of the pituitary gland. An ampule of this liquid may be injected hypodermatically, and repeated in two or three hours, if needed.
10. A little slower to act are the contents of a sterile tube of strophanthin, given intravenously. This must not be given if the patient has been taking digitalis, and should rarely be repeated.
11. Slow to act, but projecting its influence for nearly twenty-four hours, is digitalis, best in the form of an ampule of digipuratum fluid, given hypodermically. This should ordinarily be given but once

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1. Foerster, O. H.: The Journal A. M. A., Aug. 20, 1910, p. 642.
2. Sharpe, H. A.: The Journal A. M. A., Dec. 14, 1912, p. 2143.
3. Montgomery: California State Jour. Med., August, 1915, p. 306.
4. Adelung: Arch. Int. Med., February, 1913, p. 148.
5. Stevens and Warren: Am. Jour. Pharm., November, 1907, p. 518.
6. Warren: Am. Jour. Pharm., December, 1913, p. 547.
7. Chestnut: Farmers' Bulletin 86, U. S. Dept. Agric.

in twenty-four hours, and certainly not repeated for twelve hours.

12. With low blood-pressure and a fairly strong heart an aseptic preparation of ergot, given intramuscularly, is often of great value in aiding to save a patient with heart failure.

It is hardly necessary to urge that the cause of the heart failure be determined. A quick blood count will show whether or not there is internal hemorrhage.

Of course it is not necessary to use all of the above-mentioned drugs, and they are only suggestions.

More detailed discussion of "Acute Heart Attacks" and of "Shock" will be found in The Journal, "Disturbances of the Heart," Dec. 21, 1912, p. 2256, and March 29, 1913, p. 996, respectively. A short discussion on "Heart Tire" appeared in this department, Oct. 2, 1915, p. 1184.

HEMOPHILIA

In a severe case of hemophilia in a child of 8, after having carried out the measures usually employed without satisfactory results, a physician asks for suggestions as to treatment and references to recent literature. The following may be offered:

When the part can be reached externally, bleeding may be stopped by pressure, by suprarenal solutions, by hydrogen peroxid solutions, sometimes by gelatin, by thrombokinase in the form of extract of lymph glands, thymus, testis or other source of nucleoprotein, and by many iron salts. It is not desirable to use iron if it can be avoided on account of the disagreeable coagulum that forms and the danger of infection and suppuration underneath.

Bleeding from the stomach may be temporarily stopped by ice, suprarenal solutions, and tannic acid.

The tendency to bleed is due to a blood dyscrasia, and can be prevented only by a change in the character of the blood. Calcium, in the form of calcium lactate or calcium glycerophosphate, may be of value, and its administration for a few days may sometimes prevent profuse bleeding in bleeders, even during or after an operation. A diminished amount of calcium in the blood may be due to increased loss of calcium. Overactivity of the ovaries in adult females, it is said, increases the loss of calcium and the bones become soft. The parathyroids are also believed to have something to do with calcium supply and elimination. It is possible that feeding parathyroid gland substance in hemophilic children may be of value.

The feeding of suprarenal gland has been unsuccessful. The blood-vessel-constricting principle of the suprarenal gland is absorbed from the mouth or mucous membranes, or will act for a short time when injected subcutaneously, but suprarenal, as a whole, when fed, seems to be of little value. The blood pressure raising stuff does not act after the suprarenal substance has been swallowed into the stomach; at best, it acts only locally. Though in normal individuals, especially women, thyroid substance tends to promote bleeding, instances occur in which it seems valuable in stopping bleeding. Just what other glands are stimulated by feeding thyroid, with the effect of changing noncoagulable blood, is not known. It is, however, a clinical fact that not infrequently profuse bleeding is stopped by the feeding of thyroid.

As pituitary substance from the posterior portion of the gland is known to stimulate the suprarenal glands, it might be logical to feed this substance.

The most successful immediate treatment of profuse hemophilic bleeding is blood serum. The serum may be prepared from any human being, a relative often preferred, whose blood shows normal coagulability. A number of cases of successful treatment with blood serum are now on record.

Horse serum also seems to be successful, given subcutaneously, as is diphtheria antitoxin.

The following articles on hemophilia may be consulted:

Normal Blood-Serum in Hemophilia, Queries and Minor Notes, The Journal, Nov. 30, 1912, p. 1993.
Blood-Serum in Hemophilia, Current Comment, The Journal, Oct. 26, 1912, p. 1549.
Schloessmann, H.: Tissue Extract in Treatment of Hemophilia, *Beitr. z. klin. Chir.*, August, 1912; abstr., The Journal, Oct. 19, 1915, p. 1495.
Clough, F. E.: Interesting Case of Hemophilia Treated with Repeated Injections of Blood-Serum, The Journal, July 12, 1912, p. 121.
Claybrook, E. B.: Case of Hemophilia, The Journal, Oct. 28, 1912, p. 1540.
Traver, A. H.: Hemophilia Treated with Human Blood-Serum, The Journal, Jan. 4, 1913, p. 44.
Judd, A.: Decanted Blood-Serum after Severe Hemorrhage and in Hemophilia, Report of Two Cases, *Med. Rec.*, New York, April 17, 1915; abstr., The Journal, May 1, 1915.
Dolmage, G. F.: Case of Hemophilia Treated with Horse Serum, *Jour. Iowa State Med. Assn.*, March, 1915.

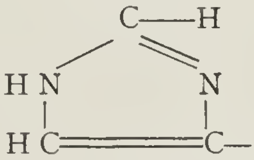
New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

HISTAMINE HYDROCHLORIDE.—



$—CH_2.CH_2.NH_2.HCl$.—The hydrochloride of the base beta-iminazolylethylamine (histamine). Histamine is closely related to histidine, from which it differs in that one molecule of carbon dioxide has been eliminated.

Actions and Uses.—Histamine hydrochloride has a powerful contractile action on certain muscular fibers and a strong vasoconstrictor action. The available evidence does not warrant a recommendation for its therapeutic use, but it is a valuable reagent for the standardization of pituitary and similar preparations.

Histamine was first prepared synthetically from iminazolylpropionic acid by Windaus and Vogt in 1907 (*Ber. d. deutsch. chem. Gesellsch.*, 1907, xl, 3691); it was then prepared by bacterial putrefaction of histidine in 1910 by Ackerman (*Ztschr. physiol. Chem.*, 1910, x, 504) and isolated from ergot in 1910 simultaneously by Kutscher (*Zentralb. f. Physiol.*, Vol. 24, p. 163) and Barger and Dale (*Pharm. Jour.*, June 4, 1910, p. 710; June 18, 1911, p. 757).

Histamine hydrochloride melts at 240 C. (Corr.).

When picric acid is added to an aqueous 1 per cent. solution of histamine hydrochloride, histamine picrate is precipitated promptly; the precipitate should melt at 234 C. (Corr.). Any impurity present in the histamine hydrochloride will prevent or at least very much retard the precipitation of this picrate.

If a 1: 1,000 solution of histamine hydrochloride is made alkaline with sodium hydroxide and a solution of diazobenzosulphonic acid (Pauly's reagent) made alkaline with sodium hydroxide be added, a cherry red color appears.

If a 1: 1,000 solution of histamine hydrochloride is mixed with an excess of bromine water, then boiled until the bromine is evaporated and sodium hydroxide added to the solution, a black discoloration occurs.

Proprietary Preparations:

IMIDO Roche.—A name applied to histamine hydrochloride.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (Hoffmann-LaRoche Chemical Works, New York). No U. S. patent or trade-mark.

Ampules Imido Roche.—Each ampule contains 1.1 Cc. of an aqueous 1: 1,000 solution of imido Roche (1 Cc. contains 1 mg.).

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SATURDAY, OCTOBER 16, 1915

THE PROBLEM OF RURAL HEALTH ADMINISTRATION

The problem of securing efficient administration of public health laws is especially difficult in the rural districts. City and town can today obtain the best health service for which they are prepared to pay. The small community, on the other hand, unless the circumstances are exceptional, cannot command the various kinds of expert knowledge, medical and sanitary, chemical, bacteriologic, engineering and statistical, which are essential for the adequate handling of its problems.

Attempts along several different lines have been made to meet this need. In many Southern states, health officers are provided for on the basis of county units. In Massachusetts an interesting plan of voluntary community cooperation has been worked out under the guidance of the public health faculty of the Massachusetts Institute of Technology. The most promising plan of all is perhaps the organization of a corps of state sanitary supervisors, acting under the direction of the state board of health and bringing to the support of the local health officer the technical knowledge and the moral support of the entire state.

This system has been in force in Massachusetts, in one form or another, for nearly ten years. It has been incorporated in the new public health law of Maryland, and two years ago was made part of the model health law of New York State.

Those who have followed the development of state health organization in this country noted with satisfaction how the attacks made by the legislature on the New York health law last spring were in the main brought to naught by the remarkable support which that law received from the press and the people of the state. What the politicians dared not do openly they attempted, however, to effect by the familiar method of indirection. It appears that while the plan to cut down the number of state sanitary supervisors in New York from twenty to ten was abandoned, the appropriations made allow only for ten of these important functionaries. If the next legislature does not make special provision for this need, the work of the New York state department will be seriously crippled.

It is gratifying to observe that Governor Whitman, in his address of welcome to the American Public Health Association at Rochester, on September 7, placed himself fairly on record against such petty politics. He said:

> I greatly regret that the legislature at its last session did not make appropriations adequate to fully maintain the work of certain divisions of the state department of health, especially the division of sanitary supervisors, whose work has proved most important and beneficial to the local communities, and by means of whom the knowledge and skill of the expert sanitarians of the department of health are placed at the disposal of the health officers of even the most remote rural districts. I sincerely hope that some means may be found by which the services of these physicians may be retained, and feel confident that next year, when the members of the legislature are made fully acquainted with the facts as to the value of these services, funds will be provided for their continuance. I shall use my influence to attain this end, for while rigid economy in the administration of the finances of the state is essential, savings in expenditure attained through decreased efficiency in health work are not only unwise, but resolve themselves, in the end, into irreparable waste of the most valuable resources of the commonwealth.

TRANSFUSION OF BLOOD

The recent review by Ottenberg and Libman[1] of 212 transfusions performed at Mount Sinai Hospital is a good index of the favor with which this form of therapy is being received. The most impressive part of this report deals with forty-two instances in which transfusion appears to have saved life; twenty-nine of the patients were discharged as well, while thirteen were saved from immediate death, although they continued to suffer from chronic ailments. While these and other results demonstrate that transfusion is no small factor in saving life, only a limited number of surgeons feel capable of doing transfusion with reasonable certainty of success. A brief consideration of the present status of the technic of transfusion, therefore, seems not untimely.

Current literature is so replete with papers on the subject that it is difficult to select a simple method for use. Blood transfusion was employed with reputed good results long before the advent of modern surgery. Recent interest, however, dates chiefly from Carrel's excellent work on the suture of blood vessels, and Crile's transfusion by means of metal cannulas.

Brewer and Leggett[2] first used paraffin-coated glass tubes for the conduction of the blood. Curtis and David[3] introduced the use of a large paraffin-coated glass bulb which permits accurate measurement and satisfactory transfer of blood from donor to recipient.

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[1] Ottenberg, R., and Libman, E.: Blood Transfusion: Indications, Results, General Management, Am. Jour. Med. Sc., 1915, cl, 36.

[2] Brewer, G. E., and Leggett, N. B.: Direct Blood Transfusion by Means of Paraffin-Coated Glass Tubes, Surg., Gynec. and Obst., 1909, ix, 293.

[3] Curtis, A. H., and David, V. C.: Transfusion of Blood by a New Method, Allowing Accurate Measurement, The Journal A. M. A., Jan. 7, 1911, p. 35; The Transfusion of Blood, Oct. 28, 1911, p. 1453.

A similar device later invented by Kimpton and Brown[4] has been extensively used with gratifying results.

Lindeman[5] employs sets of ingenious trocar-cannulas to which syringes are attached. The use of salt solution aided by frequent change of syringes prevents clotting. Lindeman's method has met much favor in transfusion at Mount Sinai Hospital. Unger[6] recently evolved a modified syringe method which minimizes traumatism of the vessels and alternately washes out the vessels of the donor and recipient with salt solution.

To prevent clotting — a factor to be reckoned with in any method — Satterlee and Hooker[7] advocate herudin (leech venom), a substance which inhibits coagulation but seems not always devoid of toxic effects. It is not improbable that various preparations differ considerably in the amount of toxin contained. Sodium citrate solution, extensively employed by laboratory workers to prevent coagulation, has been warmly advocated by Weil,[8] and more recently by Lewisohn.[9] The evidence at hand in Lewisohn's report indicates that this solution, when diluted to a point at which it may be introduced freely into the circulation, is still capable of inhibiting coagulation. The most efficacious and generally satisfactory sodium-citrate-blood mixture is as yet unsettled, and perhaps varies according to the blood used; but citrate in a proportion not greater than 0.2 per cent. appears to be satisfactory. In this issue of THE JOURNAL, Simons[10] reports certain experiences which lead him to condemn the use of sodium citrate to prevent coagulation of the transfused blood, so that results of further observation will be required before the availability of the citrate method is determined.

In selecting a donor, two things must be guarded against: First, the transmission of disease, notably syphilis, must be avoided; second, the possibility of hemolysis and agglutination must be excluded. When urgency or lack of laboratory facilities demand, members of the immediate family offer the minimum risk. In all other instances, the Wassermann test and examination for hemolysis of the donor's blood by that of the recipient are necessary. For the latter, the recently described procedure of Rous and Turner[11] is commendable for its simplicity.

To summarize: One who is possessed of average surgical ability can learn to do transfusion; a good technic should be acquired by preliminary work on dogs before human transfusion is attempted. It must, moreover, be recognized that, although many devices now employed yield good results in practiced hands, painstaking care and accurate technic are always necessary. Among the devices which have been successfully used in large series of cases are the glass bulb of Curtis and David, the cylinder of Kimpton and Brown, and the syringe sets of Lindeman. The recent "modified syringe method" of Unger promises much. It would seem probable that eventually through the discovery of harmless anticoagulating methods, transfusion will become a simple procedure. In the meantime, there is no doubt that a more widespread attention on the part of surgeons to the mastery of a good technic of transfusion would be the means of saving many lives.

THE PROBLEM OF SECRETORY NERVES FOR THE THYROID

Evidence which has been presented in favor of the existence of true secretory nerves controlling the thyroid glands has already been reviewed in THE JOURNAL.[1] Among the latest investigators to follow the earlier lead of Asher of Berne, in adducing physiologic evidence supposed to support the view that the glands are under the domination of a nervous mechanism, are Beebe and his collaborators. They base their conclusion on the observation that prolonged stimulation of the thyroid nerves causes a slight reduction in the iodin content of these secretory structures.

It cannot be denied that a histologic basis for the views here referred to exists. Both the vessels and the cells of the thyroids are abundantly supplied with nerve fibers. Vasomotor impulses can readily find a nervous path to the gland. Such structural facts, however, do not conclusively demonstrate the functional necessity of these nervous accessories in the normal activities of the thyroids. There are, today, numerous available illustrations of glandular mechanisms well supplied with nervous structures which nevertheless receive their activating influences through the medium of the circulation. They are stimulated, we now say, by hormones.

Under certain conditions, thyroidal tissue may readily be transplanted to widely separated parts of the body, as, for example, the suprarenal, ovary, subperitoneal tissue, muscle, and subcutaneous fascia of the neck, chest and abdomen. If a sufficient amount of the main gland is removed, under appropriate conditions a compensatory hyperplasia of the remaining stump will ensue; and, in addition, a simultaneous and similar degree of hyperplasia of any transplants may occur independent of their location.

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[4] Kimpton, A. R., and Brown, J. H.: A New and Simple Method of Transfusion, THE JOURNAL A. M. A., July 12, 1913, p. 117.

[5] Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, Am. Jour. Dis. Child., July, 1913, p. 28. Blood Transfusion: Report of 135 Transfusions by the Syringe Cannula System, THE JOURNAL A. M. A., March 28, 1914, p. 993. Blood Transfusion by the Syringe Cannula System, Oct. 31, 1914, p. 1542.

[6] Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL A. M. A., Feb. 13, 1915, p. 582.

[7] Satterlee, H. S., and Hooker, R. S.: The Use of Herudin in the Transfusion of Blood, THE JOURNAL A. M. A., June 6, 1914, p. 1781.

[8] Weil, Richard: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30, 1915, p. 425.

[9] Lewisohn, R.: Blood Transfusion by Citrate Method, Surg., Gynec. and Obst., 1915, xxi, 37.

[10] Simons, Irving: Experiences with the Sodium Citrate Method of Indirect Transfusion of Blood (Lewisohn), THE JOURNAL A. M. A., this issue, p. 1339.

[11] Rous, Peyton, and Turner, J. R.: A Rapid and Simple Method of Testing Donors for Transfusion, THE JOURNAL A. M. A., June 12, 1915, p. 1980.

[1] The Nerve Control of the Thyroid Gland, editorial, THE JOURNAL A. M. A., July 25, 1914, p. 325.

When very small doses of some iodin-containing substance are given, whether by mouth or by cutaneous applications of tincture of iodin, for example, involution of the thyroidal tissue promptly ensues in from two to three weeks. The change affects the transplants, irrespective of their location, in the same way as the main thyroid stump is affected. These facts are due to the investigations of Manley and Marine[2] of the H. K. Cushing Laboratory of Experimental Medicine at the Western Reserve University in Cleveland. If iodin, which protects against thyroidal hyperplasia, is administered prior to or at the time of transplantation, no hyperplasia of either the original gland or transplants occurs until the effect of the iodin has fallen to the level of inducing an insufficiency. Likewise, if iodin is administered following transplantation, no hyperplasia ordinarily occurs during the time of such administration.

But this is not all. If a large part of the transplanted thyroid tissue and of the original gland, thus involuted, is removed, the remaining transplants and the remaining portion of the stump undergo active hyperplasia for the second time. In evidence of the fact that the transplanted thyroid tissue actually can function, Manley and Marine have observed marked amelioration of the symptoms of operative myxedema associated with active hyperplasia of subcutaneous abdominal transplants in animals.

When thyroid tissue can "take" and grow in widely different parts of the body, when the transplanted tissue can undergo hyperplasia simultaneously with the original stump and in a form histologically identical with it, when a drug like iodin can affect these surgically disconnected fragments in the same way and at the same time, an explanation of these phenomena based on a theory of nervous control does not appear to be tenable. The Cleveland investigators believe that the thyroid may function as a true blood-vascular gland in that the stimuli which cause these hyperplasias may reach the gland cells through the blood stream, and that influences causing thyroid involution may be transmitted by the same means.

It would be illogical, indeed, to draw the conclusion, from what has been said, that specific secretory fibers to the thyroid glands do not exist. The new observations just cited do not directly touch this question. They clearly demonstrate, however, as Manley and Marine point out, that secretory fibers are not essential in order that the thyroid tissue may exhibit the characteristic morphologic and physiologic changes known to be associated with great variations in functional activity.

ENGLISH AND GERMAN MEDICAL EDUCATION

On another page[1] we reproduce in abstract a recent article by Mr. Flexner on "The English Side of Medical Education." It is really a comparison of the English with the German system of medical education. It is evident that neither system should be copied in its entirety in the efforts made to develop medical education. In Germany the teaching of the laboratory sciences has reached perhaps its highest stage of development, and the method of selecting teachers for both laboratory and clinical departments is on the basis of scientific eminence. In these respects the German method would be more worthy of adoption in this country. According to Mr. Flexner, however, the German system of medical education is weak in that the lecture still constitutes the backbone of the instruction furnished and, in fact, is largely the bulk of the instruction. Again, in the medical course the student is still a mere onlooker and does not have free admission to the patients at the bedside. The German course, therefore, is excellent in the development of research workers, but the practical benefit is lost by the failure to allow the student to make use of the knowledge obtained in the laboratory departments in first-hand study and treatment of patients. From other sources meanwhile, it is evident that even during the required intern year his freedom in the hospital is seriously limited.

The weaknesses of the English system, on the contrary, correspond almost entirely to the points which are strong in the German system. In England secondary education has not been so thoroughly developed as in Germany; hence the student is not as well qualified to enter on the study of the so-called laboratory sciences. Meanwhile, these laboratory sciences, with the exception of physiology, are not well developed in the English medical school. Only elementary instruction in anatomy is provided for; pathology is taught only from the gross and descriptive points of view; modern pharmacology is almost unrecognized, and adequate provision for scientific research is almost entirely lacking. For this reason clinical teachers are rarely men of scientific vision or enthusiasm, and are unable to impart the spirit of scientific research to their students.

The method of appointing members of the faculty in England is at fault, since it depends on seniority. There is also considerable inbreeding. Younger men, usually recent graduates of the institution, are appointed to the lesser positions in the hospitals, and promotion depends not on productivity so much as on merely a faithful performance of routine duties. If they stay in the hospital, they are bound in time to reach the higher positions.

The strength of the English system lies in the fact that from the beginning the student has free access to the hospital, where, as a clinical clerk, he has free entry to the bedside of patients. This not only gives him his opportunity to observe facts of diagnosis and treatment, but also it is his duty to assist in the examination and care of patients. As Mr. Flexner says, "he observes his master at work; he is permitted to examine the patient, to confirm or to disprove his master's observations and, subject to his master's control, to go through all the motions involved in the practice of medicine." Cases are assigned to the students or clerks in rotation, each clerk being required to make a complete history and description of each of his cases, including the requisite microscopic examinations. "This method," says Mr. Flexner, "fulfils every requirement of sound teaching; the student is at first hand familiar with the patient; he is compelled to observe and to think; he notes and reports progress from day to day; he sees his master on trial as the procedure followed is either vindicated or discredited by the developments."

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[2] Manley, O. T., and Marine, D.: Studies in Thyroid Transplantation, I, Data Relative to the Problem of Secretory Nerves, Proc. Soc. for Exper. Biol. and Med., 1915, xii, 202.

[1] The English Side of Medical Education, The Journal A. M. A., this issue, p. 1391.

It would seem, therefore, that for the highest development of medical education, the medical school should adopt the German method of selecting teachers on the basis of attainments and combine this with the clinical clerk system of hospital teaching as employed by the English schools. Of course, every college needs adequate funds for the employment of full-time teachers, for the adequate equipment of its laboratories, and for the development of medical research. The most useful medical school is not the one which merely passes on the theoretical medical knowledge of former generations, but the one which also, through research, adds to the knowledge of the etiology, diagnosis and treatment of diseases and, through its hospital, and the thoroughly trained physicians graduated each year, gives the public the benefit of this knowledge.

THE DISTRIBUTION OF THE BLOOD IN SHOCK

It almost requires courage to venture on any added discussion of the subject of shock. A multiplicity of more or less isolated facts pertaining to shock have been woven into the fabrics of belief of varied kinds. One of the incentives for increasing the variety and number of hypotheses in regard to shock lies in the eminently practical aspects of the problems that they encompass. A really tenable explanation of shock would find prompt service in the routine of the practitioner. The secretary of commerce recently remarked, in an address entitled "First Get the Facts,"[1] that "the truth of yesterday is not that of today. The truth of today is but the parent of that which is to be tomorrow. . . . Where prejudice is, truth is so far excluded, for no judgment given in advance of known truth is either sound or safe." Therefore it is essential in any progressive vocation that "the sight, whether it be far or near, shall know a fact when it sees it and be ready to abandon a pseudo fact for a real one and to abide by the latter till further facts are found."

The foregoing must serve as the excuse, if such is needed, for reverting to new facts in regard to the distribution of the blood in shock. It is evidently the disturbance in the normal distribution of the circulating fluid of the body that constitutes an essential factor in shock. Janeway and Jackson[2] of the University and Bellevue Hospital Medical College, New York, have adopted for their experimental studies that form of shock which is produced by mechanical means, because, under these conditions, fewer extraneous factors enter into the consequences of the primary disturbance of the normal distribution of the blood. It consists in a controllable partial occlusion of the vena cava inferior in the chest, whereby the amount of blood passing from the veins to the arterial side of the circulation can be accurately controlled, and, in consequence, the blood pressure regulated. The observations made in this way on the altered volume of various visceral organs as the result of induced changes in the blood supply lend emphasis to the importance of what Yandell Henderson has described as the venopressor mechanism, and they confirm its failure in shock.[3]

Through the inability of the blood in the inferior vena cava to discharge adequately into the heart, there results a mechanical distention and increased intravascular pressure in the capillaries and small venules of the regions draining into this vessel. After release of the experimental obstruction, the arterial pressure, which has previously been low, may return for a time to a comparatively high level. According to Janeway and Jackson, the crucial factor concerns a progressive fall in the arterial pressure: after the relief of the obstruction to the flow through the inferior vena cava, there occurs, even after a more or less complete restoration of the arterial blood pressure, a progressive fall until death. This, they assert, can be the consequence only of some change in the walls of the vessels primarily affected by the occlusion of the inferior vena cava, namely, the capillaries and small venules. On this basis, then, in mechanically induced shock, a mechanical distention of a certain degree and persistence is liable to cause an alteration in some normal property of the capillaries — of their tone — as the result of which they lose the power of emptying the increased quantity of contained blood through the heart into the arterial side of the circulation. This power is retained, however, after shorter periods of overdistention or distention of lesser degree.

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[1] Redfield, W. C.: First Get the Facts, Science, July 9, 1915, p. 39.

[2] Janeway, H. H., and Jackson, H. C.: The Distribution of the Blood in Shock, Proc. Soc. Exper. Biol. and Med., 1915, xii, 193.

[3] Some Conditions Inducing Excessive Respiration, editorial, The Journal A. M. A., June 13, 1914, p. 1897; The Vasomotor Center in Shock, Current Comment, May 8, 1915, p. 1588.

Overdistention of the capillaries may result in various ways: By obstruction to the venous return to the heart there may be a draining back of blood within the capillaries, or in other forms of shock there may be sudden discharge of blood at high pressure into the capillaries. It seems to be a fact that in any case the normal quota on the arterial side of the circulation is diminished. Even after the original cause of the disturbed distribution of the blood, whether mechanical, toxic or inhibitory in nature, is removed, the circulatory condition may persist; and in fatal cases the abnormal diminution of the blood apparently progresses from local peripheral causes alone until death occurs. Janeway and Jackson express the abnormality by saying that shock consists in a general displacement of what may be termed a critical quantity of blood from the arterial to the capillary and venous side of the circulation, a displacement which is therefore accompanied by comparatively insignificant volumetric changes, and dependent largely on a loss of existing tone in the walls of the small venules and capillaries.

THE SOY BEAN, ITS ENZYMES AND CARBOHYDRATES

The soy bean (*Glycine hispida*) is an annual leguminous plant, a native of southeastern Asia. In Japan and China, where it has been grown from time immemorial, it is used for human food and is an important crop in many provinces.[1] Over two hundred varieties of the bean are reported, and many and varied kinds of food are made from it. Though known in Europe since the latter part of the eighteenth century, and in the United States since 1829, it long remained a botanic curiosity in both places. It was introduced into the United States on the return of the Perry expedition from Japan in 1853. For more than twenty-five years it has been under investigation by the U. S. Department of Agriculture and by some of the state agricultural departments, and is just now beginning to take a place as a farm crop. The North Carolina Experiment Station recommends soy beans as a palatable vegetable, but their use has not become general; they are used in this country chiefly as forage plants, for ensilage and to enrich the soil.

Recently the soy bean has achieved some degree of medical prominence because of two characteristics: It contains several enzymes, one of which, urease, decomposes urea into ammonia and carbon dioxid. This enzyme is therefore used to determine the amount of urea in the urine, the blood and other body fluids.[2] Also, being very rich in protein and fat and containing only traces of starch, soy bean products have been recommended as foods for diabetics.[3] In combination with condensed milk and barley flour, their use has been advised in the form of a gruel for infant feeding in cases in which fresh milk cannot be obtained or the milk supply is questionable. They have been recommended in certain cases of inability to digest cow's milk and of temporary intestinal derangement.[4]

Although the soy bean is almost completely free from starch, it contains about 20 or 25 per cent. of nitrogen-free extract (total carbohydrates) which, until recently, had not been thoroughly studied. Since starch is not the only carbohydrate injurious to diabetics, it is desirable that the identity, amounts and percentages of the various carbohydrates in the bean should be worked out. Street and Bailey[5] of the analytical laboratory of the Connecticut Experiment Station, present analyses of several varieties of soy beans which have been grown on the experiment station farm. The average percentages are: water 10, ash 5.54, protein 38.29, fiber 4.64, nitrogen-free extract (total carbohydrates) 26.64 and fat 14.89. The average percentages from similar analyses of several commercial soy bean flours are: water 5.1, ash 4.5, protein 42.5, fiber 3.7, nitrogen-free extract 24.3 and fat 19.9. The greater proportion of protein and fat in the commercial flour is attributed by Street and Bailey to loss of the other ingredients through bolting and other purifying manufacturing processes. The constituents of the nitrogen-free extract were especially studied for a single variety of the beans grown on the experiment station farm. The results in percentage are: total sugars 4.51, starch 0.50, dextrin 3.14, pentosan 4.94, galactan 4.86 (less 0.24 due to raffinose), cellulose 3.29, organic acids 1.44 and waxes, color principles, etc., 8.60. Street and Bailey remark that, of these constituents, only the first three—the sugars, starch and dextrin—amounting to 8.15 per cent., may be considered objectionable in a strict diabetic diet. "The remaining nitrogen-free extract, 22.93 per cent., about three fourths of the whole, consists of . . . forms which are not generally considered a source of danger in a diabetic diet."

These investigators also studied the enzymes of the soy bean, finding a protease of the peptoclastic type, a peroxidase and a lipase in addition to the urease, amylase and glucosid-splitting enzyme previously reported. Sucrase and protease of the peptonizing type were not found. Owing to the wide distribution of enzymes in vegetable tissues and the ease with which they can usually be detected, less importance is attached by the authors to this section of their report.

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[1] Piper, C. V., and Nielsen, H. T.: Soy Beans, Farmer's Bull, 372, U. S. Dept. Agric., 1909. Ball, Carleton R.: Soy Bean Varieties, Bur. Plant Ind. 98, U. S. Dept. Agric., 1907.

[2] Two urease preparations (arlco-urease and urease-Dunning) have been admitted into New and Nonofficial Remedies (N. N. R., 1915, p. 362).

[3] See for instance Friedenwald and Ruhräh (The Use of the Soy Bean as a Food in Diabetes, Am. Jour. Med. Sc., December, 1910, p. 793). Diabetic foods (hepco flour, hepco dodgers, and hepco grits) made from the soy bean have been admitted into New and Nonofficial Remedies (N. N. R., 1915, p. 193).

[4] Ruhräh, John: The Soy Bean and Condensed Milk in Infant Feeding, Am. Jour. Med. Sc., October, 1915, p. 502.

[5] Street, J. P., and Bailey, E. M.: The Carbohydrates and the Enzymes of the Soy Bean, Jour. Indust. and Engin. Chem., October 1915, p. 853.

The chief interest of their work naturally centers in the carbohydrate analyses.

An interesting point is the suggestion that differences in starch content of the beans found by various investigators are probably due to differences in ripeness, or rather to differences in the circumstances under which they are allowed to ripen. "Harz found that, when the beans do not ripen thoroughly, or when they are allowed to ripen after the vines are cut, starch may be present, certain varieties being more likely to contain it than others, whereas if the beans are thoroughly ripened they are practically free from starch." In this connection it should be noted that Street and Bailey do not state whether or not the beans which they analyzed were hulled. Ruhräh[4] lays stress on the importance of the removal of the skins or "coarse fibrous hulls which contain little protein in the preparation of soy beans for diabetic or infant food." In any case, it is satisfactory to know that the total amount of sugar-forming carbohydrates contained in soy beans falls well within the limit of 10 per cent. regarded as safe for diabetics.

Current Comment

"AT THE BAR OF PUBLIC OPINION"

When the medical profession gives the public facts regarding the fraudulence and dangers connected with the exploitation of "patent medicines," the "patent medicine" manufacturer has a stock retort ever ready: "The doctors are opposed to 'patent medicine' because it hurts their business; because 'patent medicines' cut into the income of the medical profession." Few excuses ever rested on a less substantial basis. Considered from the financial standpoint only, the fraudulent "patent medicine" business is the physician's greatest boon. Far from curtailing his income, the advertising and selling of fraudulent "patent medicines" greatly augment it. Every lurid "patent medicine" advertisement that frightens the healthy into the belief that they are ill sends four of such people to the doctor to one that it sends to the "patent medicine" counter. No small proportion of the physicians' patients are those who, neglectful of disease in its early stages, and believing the claims made for fraudulent "patent medicines," have placed their dependence on these products until they have reached a condition where prolonged medical attention is imperative. For years most newspapers and many magazines have been under the blighting influence of the profits of quackery. But a change is taking place and many newspapers and magazines of the better class are now outspoken in their denunciation of the cruelty and fraud that seem to be inseparable from the exploitation of "patent medicines." The Propaganda department of The Journal has collected some editorial opinions on the "patent medicine" business and quackery from newspapers and magazines and reprinted them in pamphlet form.[1] These editorial excerpts are from publications that not only have no possible connection with the medical profession but could, if they would, be beneficiaries of the "patent medicine" industry: they are criticisms of a business that, as the price of silence, would willingly give fat advertising contracts to the publications that have voiced them.

AMINO-ACIDS AND TUMOR TISSUE

The importance of certain amino-acids for the functions of growth has been emphasized by the recent work of Osborne and Mendel[2] and other investigators. When the proteins furnished in the diet are deficient in the amino-acids lysin and tryptophan, for example, growth is halted. These derivatives evidently cannot be synthesized by the animal organism; so that when they are lacking the protein structure of newly formed tissues cannot be built up. When the missing amino-acids are supplied either as such or in the form of proteins yielding them, youthful tissues can resume their growth. In contrast with normal tissues, malignant tumors are characterized by an exceptional tendency to grow. This fact, in connection with the features cited above, has raised the question whether or not these pathologic tissues show any unique composition with respect to the amino-acid "building stones" which enter into them. The chemical analyses of tumor tissue recorded up to date have been all but encouraging so far as any light thrown on the tumor problem is concerned. They have been fragmentary and inadequate in respect to both methods and results. There are, however, a few amino-acids which can be estimated at the present time with some approach to accuracy. The list includes arginin, histidin and lysin. This has encouraged Kocher to attempt a new comparison of the content of normal somatic and tumor tissue of man in respect to the amino-acids just mentioned.[3] Their quantity was found in five cases of malignant neoplasm to be approximately double that found in normal tissue. Whether such high percentages of these important amino-acids is a peculiarity of tumors or whether a corresponding increase will be found in normal rapidly growing tissue is a problem now under investigation. Kocher believes, however, that his results suggest a new approach to the study of the cancer problem, especially as it relates to metabolism. He recalls the evidence offered by Sweet, Rous and others[4] that when white rats having carcinoma are fed on a diet deficient in these basic amino-acids the tendency to metastasize is frequently diminished. Sometimes the tumors grow rapidly in these experimental cases, but there is a correspondingly rapid emaciation of the body. This fact, says Kocher, may indicate that the somatic tissue in such instances is broken down to furnish the required amino-acid to the rapidly growing tumor cells.

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[1] This pamphlet, entitled "At the Bar of Public Opinion," will be sent on receipt of a two-cent stamp.

[2] Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1912, xii, 473; 1912-13, xiii, 233; 1914, xvii, 325; 1915, xxii, 241.

[3] Kocher, R. A.: The Hexone Bases of Malignant Tumors, Jour. Biol. Chem., 1915, xxii, 295.

[4] Sweet, J. E.; Corson-White, Ellen P., and Saxon, G. J.: Jour. Biol. Chem., 1913, xv, 181. Rous, P.: Bull. Johns Hopkins Hosp., 1915, xxvi, 146.

THE SELECTIVE ACTIVITY OF THE KIDNEY

A comparison of the composition of the urine from each of the two kidneys after damage to one of them might be expected to reveal evidence regarding the possible selective power of the renal cells in relation to waste products. The modern blood analysis has already furnished facts to indicate that under pathologic conditions the kidneys may not be equally "permeable" or "impermeable" to all of the usual urinary components. Accordingly the "retention" of one or another of the familiar excretory products is announced and the expressions "salt retention," "nitrogen retention," etc. have come into use. They are indicative, without being conclusive, of a possible specific functional deterioration of the kidneys. Folin and Denis[1] have obtained complete and simultaneous collections of urine from each kidney, for reasonably long periods, after damage to one of these organs. The patients had been operated on for malignant growths in the bladder, so that a double ureterostomy rendered possible the collection of "single kidney" urines. In each case one or both kidneys had been infected and in addition somewhat damaged by the pressure of the bladder tumor on the ureteral opening. The hydronephrosis resulting from such back pressure is currently believed to injure the convoluted tubules rather than the glomeruli. The comparative analyses of a limited number of cases show that the damage produced by moderate hydronephrosis complicated by pyelitis is not particularly uniform in character so far as the excretory power of the kidneys is concerned. Comparisons of chlorid and nitrogenous excretion show that the capacity to eliminate nitrogenous substances is more easily or more frequently damaged than is the salt excretion. Indications of more detailed selective injury are seen in the lack of correspondence between the variations in phosphate and chlorid excretion. The output of creatinin and uric acid likewise did not vary together. A new conception is indicated by these unique clinical experiments. Without generalizing too minutely on the basis of the still limited data, Folin and Denis believe that their figures agree with the view that the excretion of urine by the kidney can be subdivided into an unknown number of more or less independent excretions. This is in harmony with other established physiologic facts regarding renal excretion.

MUSCULAR TISSUE IN THE AURICULOVENTRICULAR VALVES

Stanley Kent[2] has recently described muscular tissue, in the valve segments of the hearts of mammals, where its existence has hitherto apparently not been generally recognized. The muscle is striated, of a character similar to that forming the walls of the heart's chambers, and is continuous with the contractile tissue of the auricular wall. The muscular tissue may penetrate the valve flap to a considerable distance, and there is reason to suppose that this valvular muscle contracts in sympathy with the auricle and as a direct result of impulses derived from it. It is likely, as Kent suggests, that muscle in the situation described and with the connections referred to may exercise an important function in connection with the closure of the auriculoventricular valves of the heart.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Sanatorium Act Repealed.—The act of 1911 establishing a state sanatorium for tuberculosis has been repealed by the senate. The original act appropriated $40,000 for this purpose, and of this, $16,000 was spent for the purchase of a site in Cullman County, but the property has never been improved and no step has been taken for the erection of a building.

Plague Bill Passed.—The bill introduced by Senator Hartwell carrying a conditional appropriation of $10,000 to prevent the introduction of bubonic plague into Alabama through the port of Mobile or through any other avenue, has been passed by the senate by a vote of 13 to 8. It was explained that the funds are to be made available, if necessary, and in that case are to be handled by the State Board of Health with the approval of the governor.

Personal.—Drs. J. Alston Maxwell and Herbert Patton have been appointed surgeons for the student body of the University of Alabama, Tuscaloosa.——Dr. Tucker H. Frazer has been appointed dean of the Mobile School of Medicine of the University of Alabama, succeeding Dr. Eugene D. Bondurant, resigned, on account of ill health.——Dr. William M. Hestle, Buena Vista, was operated on recently in Baltimore for the removal of a growth from the lip, and has returned home.——Dr. Benjamin J. Baldwin, Montgomery, lost $5,000 as the result of a fire which destroyed his buildings, September 30.

CALIFORNIA

Health Department Moves.—The health department of Los Angeles has moved its headquarters from the City Hall to the Normal Hill Center.

Refuse to Rescind Isolation Regulation.—The board of supervisors of San Francisco, by a vote of 15 to 1, turned down the petition of the Parents' Rights League to take action to nullify the power of the local health board to isolate diphtheria carriers.

Prevention of Blindness.—The Jones bill for the prevention of blindness was passed by the legislature and became a law in June, 1915. The act gives the definition of ophthalmia neonatorum, requires that cases of this disease shall be reported within twenty-four hours, and provides that certain measures of prevention shall be taken by the local health officer and the State Board of Health. The new vital statistics law provides in the birth certificate a query whether the prophylactic for ophthalmia neonatorum was used.

GEORGIA

Prison Hospital Opened.—The hospital annex to the Federal Penitentiary, Atlanta, was opened September 29. The institution will accommodate 150 patients, and will be in charge of the surgeon-in-chief, assisted by professional men who are serving sentences in the Federal Penitentiary.

Urologists and Dermatologists Organize.—The Atlanta Urological and Dermatological Society was organized September 9, with an initial membership of twelve. Dr. Bernard Wolff was elected president; Dr. William L. Champion, vice president, and Dr. Omer F. Elder, secretary-treasurer.

Home for Crippled Children Opened.—The Home for Crippled Children established by the Scottish Rite Masons of

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[1] Folin, O., and Denis, W.: Some Observations on the Selective Activity of the Human Kidney, Jour. Biol. Chem., 1915, xxii, 321.

[2] Kent, A. F. S.: Illustrations of Muscular Tissue in the Auriculo-Ventricular Valves of the Mammal's Heart, Proc. Physiol. Soc., Jour. Physiol., 1915, xlix, p. xxxix.

Atlanta was formally opened, September 23, with fourteen inmates. The institution has two cottages in charge of a physician and nurse. The home is capable of accommodating twenty patients.

Medical Society Organized.—At a meeting of the physicians of Marion County held at Buena Vista recently, the Marion County Medical Association was organized with the following officers: president, Dr. Wesley Jefferson, Buena Vista; vice president, Dr. S. A. Murray, Tazewell; and secretary-treasurer, Dr. A. H. Drane, Buena Vista.

Personal.—Dr. and Mrs. Dean F. Winn, Atlanta, have returned from Russia. Dr. Winn was given the rank of lieutenant colonel in the Russian service on account of work done in the American Red Cross Hospital at Kiev.——Dr. Mather M. McCord, Rome, has been elected health commissioner of Floyd County and will assume office in January.——Drs. William P. Harbin and James C. Watts have been elected members of the board of trustees for the General Hospital to be established by Rome and Floyd County.

State Medical College Scholarships.—Scholarships in the medical department of the University of Georgia, Augusta, have been awarded by Governor Harris to the following applicants subject to the required examination: First district, S. H. Titshaw, Lyons; second district, R. W. Wimberly, Fort Gaines, and W. J. Ford, Sylvester; fourth district, Dr. W. E. Thomason, Texas; R. T. Park, Newnan, and Lee Reeves, Carrollton; eighth district, Jones Weems, Eaton, and Lamar Craft, Elberton; ninth district, Hoke S. Cantrell, Cornelia, and H. C. Chilson, Alpharetta; eleventh district, Lamar Harris, Wrightsville.

ILLINOIS

State Hospital Staffs to Meet at Elgin.—The State Hospitals' Medical Association of the State Hospitals of Illinois announces that its next meeting will be held at the Elgin State Hospital, October 28 and 29.

Personal.—Dr. George A. Zeller, Springfield, has been appointed alienist of the State Board of Administration.——Dr. and Mrs. Frederick E. Tulley, Granite City, have returned after a summer spent on the Pacific Coast.—Dr. William H. Maley, Galesburg, was painfully injured by the overturning of his automobile south of Maquon, October 3.

Joliet Hospital Must Enlarge.—The Will County Medical Society gave a dinner, September 23, in honor of the board of directors of the Silver Cross Hospital, Joliet, at which Dr. Frederick W. Werner presided. A maternity wing is urgently needed for the hospital, and plans have been made and approved for this addition. It was shown that the hospital had on hand about $30,000 to apply on the building fund. This leaves $45,000 to be secured in addition, and a committee was appointed to take up this matter.

Charity Conference.—The twentieth State Conference of Charities and Correction will be held in Danville, October 23 to 26, under the presidency of Dr. George T. Palmer, Springfield. The first day of the conference will be devoted to public health, nursing, visiting nurses, antituberculosis, etc., under the auspices of the Illinois Association for the Prevention of Tuberculosis.——The Illinois Association of County Home Superintendents and Illinois Probation Officers Association will hold their annual sessions in Danville, October 22 and 23.

Chicago

To Raise Money for Hospital in China.—Dr. Hie Ding Lin, an intern at Mary Thompson Hospital, made an appeal before the Women's Association of Commerce, September 30, to raise money for a free hospital for women and children at Foo Chow, China.

Tuberculosis Society Meeting.—The sixteenth meeting of the Robert Koch Society for the Study of Tuberculosis will be held at noon, October 18, at the City Club. On this occasion Dr. Francis M. Pottenger, Monrovia, Calif., will speak on "The Diagnosis of Tuberculosis by Palpation."

Physician's Wife Dies.—The sympathy of the members of the medical profession of Chicago goes out to Dr. Robert B. Preble in the sad affliction that has fallen on him. On October 6, through a fire that started in his house, Mrs. Preble and her mother were burned so that the latter died immediately and the former within a few hours.

Personal.—Dr. G. French S. Cary was severely injured last month while on a motor trip with his wife and baby near McCool, Ind., when the car went over a bank into a pool of water 18 feet deep.——Dr. and Mrs. Charles Adams have returned to Chicago after an absence of two years in Hawaii, the West Indies and Central America.——Dr. Reinhard Rembe is reported to have been decorated with the Iron Cross by the German emperor. Dr. Rembe has been in service with the German army since the outbreak of the war.——Dr. and Mrs. Arnold C. Klebbs, Switzerland, will spend the winter in Washington, D. C.——Dr. William S. White was operated on at the Evanston Hospital, October 8, for appendicitis and the removal of gallstones, and is reported to be improving.

MARYLAND

Typhoid in Baltimore.—During September, 189 new cases of typhoid fever were reported, with twenty-two deaths. During September, 1914, 130 cases occurred.

The Fight Against Malaria.—Senior Surg. Henry R. Carter, U. S. P. H. S., in charge of the Marine Hospital at Baltimore, has been detailed by Surgeon-General Blue to cooperate with the State Board of Health in stamping out malaria in Virginia.

Suits Decided in Favor of Physician.—Suits aggregating $15,000, brought against Dr. Alexander E. Muse, in which damages were claimed for injuries alleged to have been sustained by a 3-year-old boy who was struck by an automobile belonging to Dr. Muse, were decided in favor of the physician, October 1, as the fact was established that the automobile was being driven by a colored man without permission from Dr. Muse.

Physicians Form Civic Club.—At a meeting of physicians recently held at the Medical Library, a movement was started for the organizing of the Physicians' Civic Club, the object being to familiarize physicians with the city government and other subjects of interest to them. Dr. William T. Watson was elected temporary chairman and Dr. Frederic V. Bietler temporary secretary. The chairman was authorized to appoint a committee to draft a constitution and by-laws and another to nominate officers.

Personal.—Dr. William F. Lockwood, formerly dean of the College of Physicians and Surgeons, has been chosen dean of the School of Medicine of the University of Maryland to fill the vacancy caused by the death of Dr. R. Dorsey Coale. Dr. Lockwood is professor of medicine in the university and is a graduate of that school. Dr. Arthur M. Shipley, Baltimore, who has been acting dean since Dr. Coale's death, refused the deanship.——Dr. B. Merrill Hopkinson, professor of oral hygiene in the University of Maryland, delivered the introductory address to the students of the several classes, October 4.——Dr. John D. Blake, commissioner of health, has announced the appointment of Dr. William Travis Howard, Jr., as assistant commissioner, in place of Dr. C. Hampson Jones, Baltimore, and Dr. Austin H. Wood as secretary to the department.——Dr. Nathan R. Gorter, former health commissioner of Baltimore, has qualified as a member of the State Board of Health, to which he was appointed by the governor soon after his successor as health commissioner was named by the mayor.——Dr. Mary R. Fleming, a medical missionary of the Presbyterian Church, has arrived at Tabriz, Persia. She is a graduate of the Johns Hopkins Medical School, and at Tabriz will be physician and surgeon in charge of the hospital for women.

MASSACHUSETTS

Must Not Wrap Food in Newspapers.—Dr. Francis X. Mahoney, health commissioner of Boston, has issued an order to storekeepers prohibiting the use of unclean wrappers for food.

Ether Day.—The sixty-ninth anniversary of Ether Day was celebrated at the Massachusetts General Hospital, October 16. The exercises were held in the lower amphitheater in the outpatient department, and Dr. William Williams Keen, Philadelphia, delivered the address.

Course in Medicine and Pathology.—A course in medicine and pathology is to be given during October and November in the Pathological Amphitheater of the Massachusetts General Hospital by Dr. William H. Smith, visiting physician, and Dr. Oscar Richardson, assistant pathologist of the institution. The course will be given on Wednesday from 3:15 to 5:15 p. m.; is open to graduates of medicine and to third and fourth year students.

Personal.—Dr. Michael F. Fallon, Worcester, has been appointed a member of the Board of Registration in Medicine.——Dr. Alura A. C. Hughes, Boston, has been appointed medical inspector in charge of the nurses in the child hygiene division of the health department.——Dr. Benjamin H. Metcalf, Winthrop, has recently completed a tour by automobile to the Pacific Coast and return, a continuous journey of about 10,000 miles.——Dr. Edward C. Briggs, Boston, has resigned as professor of materia medica and therapeutics in Harvard Medical School and has been made professor emeritus.

MICHIGAN

Higher Entrance Requirements.—An official report states that beginning in the fall of 1916 the entrance requirements of the University of Michigan, Homeopathic Medical School, will be raised to two years of collegiate work. This makes forty-six medical colleges which in 1916 will have put into effect for admission the requirement of two or more years of collegiate work.

Personal.—Dr. Marinus L. Holm, Lansing, formerly state bacteriologist, but recently placed in charge of the branch laboratory of the State Board of Health at Houghton, has resigned and will practice in Lansing.——Dr. Albert F. Stone, Bay City, injured his left hand in the gear of his automobile September 30, necessitating the amputation of the first and third fingers.——Dr. Christopher G. Parnall, Jackson, has been appointed district medical inspector for Jackson and Lanawee County.——Dr. Arthur E. Ames, Morrice, was seriously injured by the overturning of his car in a collision with another automobile recently.——Dr. Morton Gallagher, Bay City, is reported to be seriously ill following an attack of sciatica.

MINNESOTA

New Medical Building.—The new twelve-story building to be erected on Seventh Street, Minneapolis, for the use of physicians at a cost of more than $300,000, is to be commenced this month.

Emergency Ambulance Service.—An emergency ambulance association is being formed among the physicians of Duluth. The object of the organization is to place in service an automobile ambulance. Dr. William A. Coventry, Duluth, is in charge of the project.

Hospital Notes.—Dr. Giles R. Pease, Redwood Falls, expects to open his new hospital in that city this month.——Dr. Fletcher W. Powers has added a two-story porch and sun parlor to his hospital building in Barrett and has renovated the entire building.

New State Officials.—At the annual meeting of the Minnesota State Medical Association in Rochester, September 29 to October 1, the following officers were elected: president, Dr. J. Warren Little, Minneapolis; vice presidents, Drs. John J. Donovan, Litchfield; Arthur C. Rogers, Faribault, and Charles O. Wright, Luverne; secretary, Dr. Thomas S. McDavitt, St. Paul (reelected); treasurer, Dr. Earle R. Hare, Minneapolis; and councilors, Drs. Richard J. Hill, Minneapolis, fourth district, and Franklin A. Dodge, LeSueur, seventh district.

Personal.—Dr. William A. Bessesen, Albert Lea, suffered a loss of $4,000 in the destruction of his building by fire, September 28.——Drs. Herman W. Froehlich, Harvey G. Hieber, Francis Gambell, Jesse E. Douglass and Oscar F. Mellby, Thief River Falls, were the guests of honor at a dinner given by the local commercial club, September 24, as an appreciation of the work done by the physicians in establishing the new hospital at Thief River Falls.——Dr. Andrien J. Kirghis, St. Cloud, has started for France and expects to enter the French medical service.

MISSOURI

St. Louis

Personal.—Dr. Frederick Hagler has returned from abroad where he has spent several months in the service of the Red Cross.

Reduction of Feebleminded in Schools.—Dr. J. E. Wallace Wallin, director of the psycho-educational clinic of the St. Louis public schools, in his first annual report, shows a decrease of nearly 25 per cent. in the number of children listed as feebleminded, as compared with last year. When Dr. Wallin took charge of the clinic, 468 pupils were receiving instruction in special schools for the feebleminded. By classifying these children he has reduced the number of pupils in special schools to 372. Of the total number of children examined by him, 7 per cent. proved normal; 12 per cent. showed evidence of retarded intellect; 33 per cent. were listed as backward; 11 per cent. were on the borderline between backwardness and the first state of feeblemindedness; 15 per cent. were morons; 14 per cent. imbeciles, and 1 per cent. idiots. Of the entire number, 20 per cent. had speech defects.

MONTANA

School Inspection.—The members of the Gallatin County Medical Society have again secured the inspection of the Baker Creek school district. This is the only rural school in the state under inspection.

Personal.—Dr. Edward M. Gans has been elected mayor and president of the Commercial Club of Judith Gap.——Drs. James F. Blair and Joseph H. Delaney, Bozeman, toured Yellowstone Park by automobile during September.——Dr. James F. Blair, Bozeman, has gone east for postgraduate work and the surgical congress.——Dr. Herbert H. Judd, Bozeman, spent his vacation in an automobile tour of Glazier Park.——Dr. William C. Riddell, Helena, was in charge of the safety and health committee of the Montana State Fair, which was visited by 40,000 persons during the week.

NEW YORK

Personal.—Dr. Otto R. Eichel has been appointed by Dr. Biggs to the position of director of the division of sanitary supervisors of the State Department of Health.

Harvey Society Lectures.—The first lecture of the eleventh course of the Harvey Society will be delivered at the New York Academy of Medicine on October 16 at 8:30. At this time Prof. C. W. Stiles of the Hygienic Laboratory, Washington, D. C., will lecture on "Recent Studies on Schoolchildren with Special References to Hookworm Disease and Sanitation."

New York City

New Buildings for Randall's Island.—The aldermen have voted $650,000 in corporate stock for new buildings for the children's hospital and schools on Randall's Island and for the nurses' home on Blackwell's Island.

Pensions for Widowed Mothers.—The Board of Child Welfare which is to administer the Widowed Mothers' Pension Law has for the first time presented its budget for this city, and the board will ask $483,000 for the relief of widowed mothers and $36,000 for office expenses. Applications are in from 3,166 mothers who are estimated to have 9,204 children. These figures do not include 1,500 children who are now in institutions who might be returned to their mothers. Each case is to be investigated and passed on before 1916.

Health Department Will Aid in Diagnosis of Glanders.—The health department announces that it is prepared to test, free of cost, by the blood reaction for glanders, all horses in the greater city of New York. Horse owners are urged to take advantage of this facility by employing a competent veterinarian to collect a specimen of blood from each horse in their stable and to forward it to the department together with the number which is issued to the horse by the department of agriculture of the state. The department intends to have all horses in the city tested. If an owner indicates that he cannot have a specimen for examination collected by a private veterinarian the department will consider a request to have it done by a veterinarian in the employ of the city.

Physical Examination of Schoolchildren by Private Physicians.—The attention of all the physicians in the city has been called to that section of the sanitary code and to the regulations governing the physical examination of schoolchildren of the city of New York. It is the desire of the department of health to have all schoolchildren physically examined by their private physicians and to have the medical inspectors assigned to duty in the schools examine only those children whose parents are unable to afford the services of a private physician. The department announces that it counts on the cooperation of the medical profession and that prompt examination with the immediate return of the card, properly filled out, will greately facilitate the work of the Bureau of Child Hygiene. A copy of the card form together with the regulations of the board of health with respect to this examination is being sent to all physicians in the city.

The Interstate Commission to Fight Mosquitoes in 1916.—In order to avoid a repetition of this year's mosquito experience, Commissioner Goldwater proposes the formation of an interstate commission to fight mosquitoes in 1916. New York City was not alone in its suffering from mosquitoes during the past summer; the situation was no better in the neighboring states. The residents of the nearby states have a common interest in this matter with those of New York City. Furthermore, no permanent relief from the nuisance can be expected by New York, unless vigorous preventive measures are simultaneously prosecuted in Connecticut, New Jersey and Westchester County. For these reasons the formation of an interstate commission is proposed. It will be organized if Dr. Goldwater's plans are carried out at the end of this year. The U. S. Public Health Service has been invited to join and has been requested to nominate a chairman to direct the work of the commission.

OHIO

Portrait of Dr. Conner Presented.—An oil painting of the late Dr. Phineas S. Conner was presented to the Cincinnati General Hospital by Dr. Charles E. Caldwell, September 14.

Hospital Dedicated.—The Good Samaritan Hospital, recently completed at Clifton and Dyxsmith Avenue, Cincinnati, was dedicated with appropriate ceremonies, October 2. The buildings and equipment have cost thus far about $175,000, only one wing of the institution being completed. The plans call for a five-wing edifice, which will cost more than $300,000. The addresses on the occasion were delivered by Dr. Charles L. Bonifield, Cincinnati; Dr. Henry T. Sutton, Zanesville, a member of the State Board of Health, and Dr. Lewis S. McMurtry, Louisville, Ky.

Personal.—Dr. Philip D. Wilson, Columbus, has returned after a term of military hospital service in France.——Dr. John R. Johnson, for more than two and a half years superintendent of the district tuberculosis hospital at Lima, resigned, the resignation taking effect October 15. After a postgraduate course in New York City, he expects to return to Lima and enter practice.——Dr. Roger S. Morris has been appointed full-time professor on the staff of the Cincinnati General Hospital.——Dr. Rufus A. Van Voast, Cincinnati, has returned home after several months' hospital service with the French army.

Work on New Medical School Begins.—Dr. Christian R. Holmes, Cincinnati, announced September 27, that the work of grading the ground for the new medical school directly opposite the contagious group of buildings of the Cincinnati General Hospital had begun. The school will be ready for occupancy in about a year and a half. The cost of the buildings will be about half a million dollars and the institution will have accommodations for about 200 students.

Saturday Evening Free Lectures.—The following is the program of the Saturday evening free lectures before the B. Merrill Ricketts Experimental Surgical Research Laboratory for the season 1915-1916:

October 16—Dr. Mortimer Frank, Chicago. The History of Glands. (Illustrated.)

October 23—Dr. Frank Winders, Columbus. The Heart Comparative Anatomy. Function, Uses and Abuses. (Illustrated.)

October 30—Dr. Sydney E. McKee, Cincinnati. Two Years' Travel Around the World. Medical and Scenic. (Illustrated.)

November 6—Dr. Axel F. Werelius, Chicago. Surgery of the Heart, Lungs and Trachea. (Illustrated.)

November 13—Dr. Chas. T. Souther, Cincinnati. The Stomach Comparative Anatomy, Function and Surgical Aspects. (Illustrated.)

November 20—Dr. DeEnna D. DeNeen, Cincinnati. The Ureter Anatomy, Function and Restoration. (Illustrated.)

November 27—Dr. David I. Wolfstein, Cincinnati. The Cerebellum and Its Function. (Illustrated.)

December 4—Dr. Wm. E. Schenck, Cincinnati. Optical Instruments Construction and Uses. (Illustrated.)

December 11—Dr. William J. Thomasson, Newport, Ky. The Upper Air Passages and Tonsils. Comparative Anatomy and Diseases. (Illustrated.)

December 18—Dr. Sparrell S. Gale, Roanoke, Va., Chief Surg. N. & W. R. R. Safety First, How It Saves Life and Property. (Demonstrations.)

January 8—Prof. Chas. T. P. Fennel, Cincinnati. Poisons and Narcotics (Mineral, Vegetable, Animal and Insect). (Illustrated.)

January 15—Dr. Willard D. Haines, Cincinnati. Cancer of the Stomach, Precancerous Condition and Surgical Aspects. (Illustrated.)

January 22—Dr. Joseph E. Pirrung, Cincinnati. Hare Lip and Cleft Palate. Their Embryology, Causes and Correction. (Illustrated.)

January 29—Dr, Chas. F. Hicks, Welch, W. Va. Six Hundred Gun Shot Wounds in Mining Practice. Conclusions. (Illustration of Muscles.)

February 5—Dr. Frank Warner, Columbus. A Study of the Relationship of Arteriosclerosis to Malignancy. (Illustrated.)

February 12—Dr. Wm. M. Doughty, Cincinnati, and Mr. J. R. Kelley (Kelley-Koett). The Roentgen Ray, Its Use and Abuse, Demonstrations and Development of Plates.

February 19—Dr. Hugh W. MacMillen, Cincinnati. Teeth, Their Comparative Anatomy, Uses, Care and Diseases. (Illustrated.)

February 26—Dr. Robert C. Heflebower, Cincinnati, Ohio. Comparative Study of the Eyes. (Continued.) (Illustrated.)

March 5—Dr. Wm. Seaman Bainbridge, New York City. To be announced.

March 12—Dr. Joseph A. Stucky, Lexington, Ky. Mountain Ophthalmia. Report to Kentucky State Investigating Commission as to Cause, Frequency and Cure. (Illustrated.)

March 19—Dr. Frank U. Swing, Cincinnati. Artificial Eyes and Lenses, Old and New. (Illustrated.)

March 26—Dr. Eben B. Shewman, Cincinnati. The Kidney, Its Anatomy with Reference to Its Function and Pathology. (Illustrated.)

April 3—Drs. Benjamin M. Ricketts, John H. Wilms and DeEnna D. DeNeen. Experiments and Demonstrations.

OKLAHOMA

New Hospital.—Dr. Henry A. Lile, Aline, is building a three-story fireproof hospital to cost about $10,000.

Laboratories Transferred.—The laboratories of the State Board of Health have been transferred from Norman to Guthrie.

Drug Addicts.—Dr. John W. Duke, Guthrie, state commissioner of health, is collecting data on the number of drug addicts in the state who are affected by the Harrison Act.

Personal.—Dr. William M. Cott, Okmulgee, has succeeded Dr. Virgil Berry, Henryetta, as health officer of Okmulgee County.——Dr. Percy A. Smithe, Enid, who joined the American Red Cross in Vienna shortly after the outbreak of the war, has returned to the United States.——Dr. Edward B. Mitchell, Lawton, has returned after a year in Florida.——Dr. William M. Taylor, Oklahoma City, is slowly recovering from the serious injuries sustained in a collision between his automobile and a passenger train.

PENNSYLVANIA

Personal.—Dr. Clinton T. Saylor, Rockwood, who was operated on recently at the Memorial Hospital, Johnstown, for appendicitis, is reported to be convalescent.

Hospital Cornerstone Laid.—The cornerstone of the hospital of the Masonic Home, Elizabethtown, was laid with impressive ceremonies, September 29. Gifts of $52,000 were announced for the hospital, which is being erected as a memorial by the Freemasons of Philadelphia, and is to consist of five buildings to cost altogether about $175,000.

Cannot Provide for Consumptives.—There are said to be 1,107 sufferers from tuberculosis in Pennsylvania on the waiting list of the three sanatoriums of the state. These sanatoriums at Mont Alto, Cresson and Amburg are overcrowded, and the State Board of Health cannot begin the erection of more buildings because of the cutting down of the appropriation for this purpose.——The 115 tuberculosis dispensaries scattered through the state treat on an average of 10,000 cases a day, and in addition a state nurse makes stated calls at the home of each of these patients.

Sixty Typhoid Cases at Shippensburg.—Sixty cases of typhoid fever and twenty-eight suspects were reported October 7 to the State Health Department from Shippensburg. Six health department engineers and nurses are now on the ground aiding the health authorities of the town. A temporary filter plant has been constructed, and an emergency hospital for the treatment of the more advanced cases established. The source of contagion has now been definitely located in the water supply of the town, which comes from springs on state forest reservation plots. The Cumberland Valley State Normal School has been affected, and four girls, two residing in Carlisle and two in Harrisburg, have been sent to their homes. Other cases are being treated in the school infirmary.

Philadelphia

Endowment for Medical College.—It was announced at the formal opening exercises of Hahnemann Medical College, September 27, that the institution would receive at least $50,000 as an endowment through the will of the late Dr. Edward R. Greggs of Pittsburgh.

Union Meeting of Pediatric Societies.—A joint meeting of the Philadelphia, New York and New England pediatric societies will be held in Philadelphia, November 8 and 9. A series of clinics is being arranged, and through the courtesy of the local committee an invitation is extended to the members of the American Association for the Study and Prevention of Infant Mortality.

Hospitals Plan Whirlwind Campaign.—The Children's Hospital campaign for a fund of $500,000 will be under the direction of E. T. Stotesbury, Arthur H. Lea and other prominent citizens, and will begin on October 18, to last ten days.——The Mercy Hospital and School for Nurses, which sets $150,000 as the goal, will start on October 20. The superintendent of the hospital, Dr. R. B. Jackson, sent a letter to the Children's Hospital Committee pleading with it to select another date, as the Mercy Hospital had been planning its campaign for the last six months.

Child Federation Election.—Dr. Joseph S. Neff, former director of the Health and Charities, was chosen president of the Child Federation, at its annual meeting, October 7. He succeeds Edward W. Bok, who declined reelection, but was chosen honorary president. F. Wallis Armstrong, Dr. Samuel McClintock Hamill and Francis S. McIlhenny were elected vice presidents, and J. Ernest Richards, treasurer. The board of directors will include the officers and the following: Albert P. Gerhard, John D. Johnson, George C. Shane, Dr. Henry D. Jump, Mrs. Thomas Robins, Mrs. Alfred Stengel, Charles Z. Tryon and Ernest L. Tustin.

Personal.—Dr. Raymond T. Wayland has gone to San Jose, Calif., where he has been placed in charge of the construction of a large hospital.——Dr. Ruth Webster Lathrop, professor of physiology in the Women's Medical College of Pennsylvania, Philadelphia, has been nominated by the faculty to fill one of the six vacancies in the board of education.——Dr. William C. Hollopeter, for fifteen years professor of pediatrics in the Medico-Chirurgical College of Philadelphia, has retired from the teaching faculty.——Drs. David N. Vogt, Joseph P. Garvey, Robert W. Rubin and Samuel L. Immerman have passed the examination of the Civil Service Commission for resident physician of the bureau of health.——Dr. William B. Swartley sailed September 18 to join the American Ambulance Hospital at Paris.

National Committee Campaign on Feebleminded.—Headquarters have been opened in the Empire Building by the recently formed Committee on Provision for the Feebleminded, a national organization formed to disseminate knowledge concerning the menace of feeblemindedness, and to initiate methods for its eradication. The work of the committee is being financed by private subscriptions. The board of directors includes: chairman, Dr. Milton J. Greenman, director of Wistar Institute; R. Bayard Cutting, member board of directors of training school at Vineland, New Jersey; Dr. Charles H. Frazier, president of the Pennsylvania Public Charities Association, Philadelphia; Bleecker van Wagenen, member of the board of directors, training school at Vineland, New Jersey; Mrs. C. C. Rumsey, New York City; Henry V. Osborne, judge court of common pleas, Newark, N. J.; Mrs. Caroline B. Wittpenn, Hoboken, N. J.; E. R. Johnstone, superintendent of the training school, Vineland, N. J., and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, New York City.

TENNESSEE

Public Health Sunday in Nashville.—Prominent physicians occupied the pulpits in the National Church, October 17, and preached the gospel of sanitation and health preservation.

Health Inspection Tour of Middle Tennessee.—Dr. Reese Q. Lillard, Nashville, secretary of the State Board of Health, accompanied by Dr. Olin West, Nashville, of the Rockefeller Sanitation Committee, and Dr. John A. Ferrell, New York City, assistant inspector-general of the International Health Commission, started on a health inspection tour of middle Tennessee, September 28.

Reporting Tuberculosis.—In a report, September 16, to the city commission, it was shown that the physicians of the city had reported only nine cases of tuberculosis in Chattanooga during the previous four months, while there had been forty-five deaths from the disease. The state law makes it compulsory on the part of physicians to report this disease, and they were severely criticized by Commissioner Huffaker for their failure to do so. The names of tuberculosis patients are kept secret by the department.

Personal.—Dr. Heber W. Jones, Memphis, who has been seriously ill in the Baptist Memorial Hospital, is reported to be out of danger.——Dr. Samuel W. Hodge, Knoxville, has returned after several months' work against typhus fever in Serbia. For his services, Dr. Hodge received the decoration of the cross of the Order of St. Savo from King Peter I.——Dr. J. Victor Henderson, Lafollette, company physician for the Lafollette Coal and Iron Company for the last nine years, has resigned, and after a term of postgraduate study in the East, will practice in Knoxville.

UTAH

Personal.—Dr. David W. Henderson, Brigham, has been appointed local physician for the Ogden-Logan and Idaho Electric Railway Company.

New State Officers.—At the twenty-first annual meeting of the Utah State Medical Association held in Salt Lake City, September 28 and 29, under the presidency of Dr. Robert S. Joyce, Ogden, the following officers were elected: president, Dr. Eugene W. Whitney, Salt Lake City; vice presidents, Drs. Lashbrook B. Laker, Eureka; Charles F. Osgood, Ogden, and Frederick Dunn, Springville; treasurer, Dr. Howard P. Kirtley, Salt Lake City (reelected); councilor, second district, Dr. Thomas C. Gibson, Salt Lake City (reelected); and delegate to the American Medical Association, Dr. Solomon G. Kahn, Salt Lake City (reelected). Salt Lake City was selected as the next place of meeting.

WEST VIRGINIA

Typhoid Epidemic.—Charleston is reported to have the worst epidemic of typhoid fever which has been experienced in many years. The health officer estimates that nearly fifty cases are under treatment. No cause for the epidemic has as yet been found.

Change of Address.—Dr. Samuel L. Jepson, for two years secretary of the State Board of Health, was appointed, under the new law, as state health commissioner, and has removed his office from Wheeling to Charleston, where he occupies rooms in the Capitol Building.

Society Suggests Expansion.—At the August meeting of the Mercer County Medical Society, held at Bluefield, the first steps were taken toward the organization of an association to include Mercer and McDowell counties, W. Va., and Tazewell, Russell and Wise counties, Va.

Hospital Association Formed.—The West Virginia State Hospital Association, composed of physicians and superintendents of state hospitals, was organized at Charleston, September 21, with an initial membership of twenty-five. Dr. George C. Schoolfield, Charleston, was elected president, and Dr. Wade H. St. Clair, Bluefield, secretary-treasurer. The next meeting will be held in Wheeling.

Practice of Medicine and Surgery Defined.—The new law of West Virginia enacted in 1915 says: "The term, 'Practice of Medicine and Surgery' as used by this act shall be construed to be treatment of any human ailment or infirmity by any method. To open an office for such a purpose or to announce to the public in any way a readiness to treat the sick or afflicted, shall be deemed to engage in the practice of medicine and surgery, within the meaning of this act."

Hospital Internship Not the Equivalent.—The West Virginia Public Health Council (formerly the State Board of Health) has refused to accept a hospital internship as the equivalent of a year of practice required to those seeking licenses through reciprocity. A year of actual practice is considered necessary to establish a physician's character and ethical conduct. The council is considering the advisability of extending the requirement to two years of actual practice.

WISCONSIN

More Money Needed for Sanatorium.—Bonds were voted by the Milwaukee County board last month for an additional $160,000 which is needed for the Muirdale, the new county tuberculosis sanatorium.

Personal.—Dr. Austin O. Olmstead, Green Bay, who has been critically ill in a local hospital for two months, has recovered and resumed practice.——Dr. Samuel D. Greenwood, Menasha, fractured his arm at the elbow while cranking his automobile, September 30.

Medical Women Meet.—At the annual meeting of the Wisconsin Women's Medical Society held in Milwaukee, October 5, Dr. Mary Piper Houck, La Crosse, was elected president; Dr. Minnie M. C. Hopkins, Oconto, vice president; Dr. Ada B. Chandler, Pardeeville, secretary, and Dr. Ella Chaffee Fay, Whitewater, treasurer. The next meeting will be held in La Crosse, and at this time the medical women of Iowa and Minnesota will be invited to meet with the women physicians of Wisconsin.

CANADA

Hospital News.—The Toronto branch of the Red Cross Society has raised during the past hospital year, ending

September 30, $166,872.——The cornerstone of a new hospital was laid at Port Hope, Ont., October 8. It is to cost $25,000.

More Ontario Doctors for the Front.—Forty doctors from the Toronto military division have been selected by Lieut.-Col. Fredk. W. Marlow for the Royal Army Medical Corps, and they have been ordered to prepare to leave at once. Toronto General Hospital will lose a large part of its house staff as many of the senior house physicians have volunteered and been accepted for overseas service.

Personal.—Dr. Wm. Norman Gilmour, Brockville, Ont., was in Australia when war broke out. He went at once to South Africa and joined the forces under General Botha, afterward proceeding to England, where he joined the R. A. M. C.——Dr. George Musson, Chatham, Ont., has been appointed medical officer of health in that city in succession to the late Dr. William R. Hall. Dr. Musson is at present in France.

Ontario Medical Commission Gets to Work.—Notice has appeared in the public press stating that the commission will hold a public session in the Parliament buildings, Toronto, October 16. The object of this meeting will be to ascertain what bodies or individuals wish to present their views to the commissioner. It is the desire of the commissioner to be in possession of the views of those concerned before entering on any contentious questions.

Bruce Returns to Toronto.—Speaking of Lieut.-Col. Geo. G. Nasmith, sanitary officer with the First Canadian Overseas Force, and formerly chief of the laboratories of Toronto, Lieut.-Col. Herbert A. Bruce, on his return to Toronto, states Dr. Nasmith sent the first report to British headquarters on the gases used when the Germans broke through at Langemarck. Dr. Nasmith's opinion has since proved to be correct, and his recommendations the best means for counteracting their effects. His suggestions were immediately adopted by the War Office. Dr. Bruce made a tour of inspection of Canadian overseas hospitals. Canada has over 5,000 beds in England and about 5,000 beds in France; and there are no hospitals in France superior to the Canadians', is his opinion. He visited No. 2 Canadian Hospital at Treport which is in command of Major J. T. Clark, a former practitioner in Toronto. Major Clark has worked out a particularly good method of admitting patients which enables them to be handled with great rapidity, and his method has been adopted by a number of British hospitals. Dr. Bruce also visited McGill Base Hospital at Camiers.

GENERAL

Meeting of Pellagra Association.—The National Association for the Study of Pellagra will hold its third triennial meeting at Columbia, S. C., Oct. 21 and 22, 1915. An excellent program, covering a complete survey of the pellagra situation, has been arranged.

New York and New England Surgeons to Meet.—The twenty-fifth annual meeting of the New York and New England Association of Railway Surgeons will be held at the Hotel Astor, New York City, October 21 and 22, under the presidency of Dr. William H. Marcy, Buffalo.

Red Cross in Mexico Recalled.—Telegraphic instructions have been sent from Washington to close the Red Cross station in Mexico City and directing Charles J. O'Connor, the Red Cross representative in the Mexican capitol, to return to the United States. The Carranza authorities declare that relief work is no longer necessary in the city of Mexico.

Annual Meeting of American Roentgenray Society.—At the annual meeting of the American Roentgenray Society, held at Atlantic City, September 22 to 25, the following officers were elected: president, A. W. Crane, Kalamazoo, Mich.; vice presidents, W. B. Bowman, Los Angeles, and A. P. Gibbs, Columbia, S. C.; secretary, W. F. Manges, Philadelphia; treasurer, W. A. Evans, Detroit.

Erie Surgeons Hold Meeting.—The annual meeting of the Association of Erie Railway Surgeons was held in Buffalo, September 30 and October 1, under the presidency of Dr. John D. Zwetsch, Gowanda, N. Y. Dr. Salem Heilman, Sharon, Pa., was elected president; Dr. Rufus S. Harnden, Waverly, N. Y., vice president, and Dr. Bertis R. Wakeman, Hornell, N. Y., secretary-treasurer (reelected).

Antituberculosis Conference.—At the third annual meeting of the Mississippi Valley Tuberculosis Conference held in Indianapolis, September 29 to October 1, it was decided to drop Montana, Wyoming, Colorado and Idaho from the conference territory. There were 640 delegates who registered during the session. It was decided to hold the 1916 conference in Louisville, Ky., and the following officers were elected: president, Mr. Walter D. Thurber, Indianapolis; secretary-treasurer, Dr. Dunning S. Wilson, Louisville, Ky.; and councilors, Mr. Courtenay Dunwiddie, Cincinnati; Miss Carol F. Walton, Ann Arbor, Mich., A. W. Jones, Jr., St. Louis; Dr. Walter J. Marcley, Minneapolis, and Dr. Ethan A. Gray, Chicago.

Meeting on Prevention of Blindness.—The first annual meeting of the National Committee for the Prevention of Blindness will be held in the Russell Sage Foundation Building, New York, Nov. 4, 1915. Among the speakers who will be present are Ex-President William H. Taft and Dr. George E. deSchweinitz, Philadelphia. The national committee has a number of exhibits which are loaned to individuals or organizations desiring to promote the work of the prevention of blindness. The committee also distributes a large number of publications. In the year 1914-1915 about 100 blind children, victims of ophthalmia neonatorum, were sent to the various schools for the blind. The number of such children, however, is decreasing as shown by the figures of this society; from 23.9 per cent., for 1910-1911, to 15.1 per cent., in 1914-1915.

Red Cross Christmas Seals.—Over one-half million dollars was raised last year in the United States from the sale of Red Cross Christmas Seals. Much good is derived from the educational influence of the seal campaign as well as by the work which is supported by this huge sum. A banner is presented to the winner making the largest sales among villages, towns, cities, or counties in each of ten groups of localities, classified according to the amount of their population. A similar banner is awarded to the state in each of three groups which sells the most seals per capita. Announcements of the winners in the pennant campaign will be made April 1, 1916. Literature concerning the campaign is furnished by the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-Second Street, New York, which together with the American Red Cross, conducts this campaign.

FOREIGN

Danish Periodical Index.—A Copenhagen exchange states that the librarians of Denmark have made arrangements to publish an annual index of the contents of the periodicals published in Denmark. There are about 125 on their list.

Deaths in the Profession Abroad.—At Florence Hugo Schiff, professor of general chemistry and brother of the physiologist Moritz Schiff. He was one of the founders of the *Gazetta clinica italiana.*——A. Oppel, professor of anatomy at the University of Halle, aged 53.

WAR NOTES

River Ambulances of the Italian Red Cross.—Six steam barges have been fitted up for this purpose and are doing good service on the Po and Mincio rivers. They take the wounded to the base hospitals at Cremona, Mantua and Piacenza.

Anticholera Vaccination in Italy.—A decree issued, August 22, makes anticholera vaccination compulsory in the army and provides for its application to certain categories or groups of persons in the civilian population as the authorities may deem it necessary. The expense is to be borne by the state.

Notification of Dysentery at Naples.—The prefect of the province of Naples has ordered that all cases of dysentery and those even suspected of dysentery should be reported immediately to the authorities under severe penalty. It is hoped in this way to detect and check epidemics of dysentery and cholera in their incipiency.

The Quirinal Transformed into a Hospital.—The entire first floor of the royal palace at Rome has been transformed into a hospital with 206 beds for the wounded. The famous halls, eleven in number, have been named for the first eleven soldiers decorated for conspicuous gallantry. The queen has planned and equipped this hospital, which is unique in its artistic setting and historied past. Dr. E. Scafi is medical chief of the hospital.

BERLIN LETTER

Berlin, Sept. 15, 1915.

Personal

September 11 Leipzig lost its municipal physician for children, Professor Taube, who died at the age of 63. Through his efforts Leipzig became the first German city to make provision for the children's welfare, especially extending protection to illegitimate children. In 1896 Leipzig instituted the so-called Leipzig system which provided municipal guardianship for these children. Taube further aided in procuring proper care for the nurslings.

The War

BANDAGE MATERIAL

The cessation of the importation of cotton threatened for a time to embarrass seriously the manufacture of bandage material. Both in school and at home the children, and the women as well, began to make lint, and physicians were advocating the use of old bandages which had been disinfected thoroughly. Since then the war ministry has given notice that no fear need be had of a shortage of bandage material and that it was unnecessary for any one to spend time making lint. In fact, the use of lint has been forbidden because the material from which it is made can be made use of to good advantage for other purposes.

RESTRICTION OF SALE OF LIQUOR

The activities of the authorities to regulate the use and distribution of foods have been extended recently to curtailing the sale of whisky and other spirits. The police authorities of Berlin have forbidden such sale between 9 p. m. and 9 a. m. in places in which the service is automatic or where it is rendered by women. No one is allowed to sell any liquor to intoxicated persons. Drug stores may continue to sell brandy for medicinal purposes. The punishment for failure to observe these rules is imprisonment or a monetary fine as high as 10,000 marks ($2,500).

MEASURES AGAINST VERMIN

Continued effort is being made to free the soldiers from vermin and to prevent the spread of epidemics by flies and other insects. Disinfection stations are being built everywhere along the eastern border, usually in the immediate vicinity of railroad depots. Eight such institutions have been constructed in various cities and villages of East Prussia and Poland, and two are now being built in Bavaria near the southern border. Each institution consists of eight individual buildings in which 500 men can be taken care of at one time. After a delay of eight hours these troops are transported further. Each institute can take care of 12,000 men in each twenty-four-hour period. Each of the eight individual buildings comprising such institutions is divided into a clean and an unclean part so that mingling of people is impossible. A chief surgeon is in charge, with two assistant surgeons and three inspectors on his staff. A central powerhouse provides the steam necessary for disinfection and light, power and everything else needed in the institution. Two hundred tons of coal are burned daily in each powerhouse. Laundries, kitchens and administrative quarters are provided. The officers are housed in a building containing bath tubs.

The plan of procedure in each institution is as follows: At the entrance, on the unclean side, every man receives a white net, in which he can place his clothing, and a brown net in which are to be placed other than cloth wearing apparel, such as his helmet, his boots, leggings, knapsack—anything to be sterilized by dry heat. A smaller net is given out in which are placed articles of value such as note books, tobacco, portfolios, etc., and finally a distinguishing mark is placed around the neck of the soldier containing a number which corresponds to that found on each net. Each man does his own packing. The nets containing valuables are gathered together in larger nets. The soldier then enters the institution, having first been given a pair of slippers, deposits the nets containing the leather goods and valuables at one window. At another window he deposits his watch, tobacco, articles of food and anything which does not need to be disinfected. He steps into the waiting room of the unclean side. One hundred and twenty-five men disrobe and each places his clothing in the white net which is taken to the large room in which are the steam disinfecting apparatus. Provision is also made for hair cutting so that soldiers who are in need of tonsorial services may receive them. Each man then takes a shower-bath for fifteen minutes, after which he is given a towel. In ninety minutes the 125 men are cleansed thoroughly, are given new slippers and underwear and pass on to the clean side where they receive their disinfected clothing. In six hours 500 men have passed from the unclean to the clean side, and the disinfection of their leather goods and valuables having now been completed, these articles are returned to them. After eight hours these 500 men have left the institution. During their stay on the clean side the soldiers are also given meals, officers receiving the same food as privates. Each disinfecting station is provided with clean clothes for 100,000 men. All worn-out clothing is replaced. Any article which may be the carrier of vermin or which has been badly worn by usage, and therefore is not worth while disinfecting, is replaced. The soldiers then march into disinfected railway coaches. The employees at each disinfecting institute number 380. Special provision is made for the transportation of horses and trains. The detail in charge consists of one staff officer, six commissioned officers, forty-two noncommissioned officers and 910 men.

Ample provision has been made for water at each place. In Alexandrowo two wells, each 38 meters in depth, were constructed and these furnish sufficient water. At other places river water had to be used, the water having been previously sterilized. The outflow from the institute is also disinfected and conveyed into some running stream. To secure efficient service, good system is absolutely necessary. Everything is provided for and everything is done at a certain time and in a certain way. Bell signals are used to give notice of everything that needs to be done. Everything that is not to be used again is destroyed by fire in a specially provided incinerating oven.

The Russian prisoners are very hard to handle in this regard as they do not cooperate with the German authorities in carrying out these disinfection methods. They bury their vermin infested clothing, or, if possible, sell it to their countrymen in other companies. The reason for such action is not very apparent, although superstition may be at the bottom of it. Therefore, it is unfortunately not possible to carry out these plans for disinfection as effectively among the many thousands of prisoners as one would desire.

It has been determined that the Russians display a much greater resistance to typhus than the Germans. Whereas the mortality among the Russians is only 2 per cent., the mortality among the German doctors and nurses is about — per cent. [This percentage is deleted from the original letter by the censor.] However, strenuous efforts are now being made to rid the Russian prison camps of vermin. Each person is disinfected once a week and it is expected that before long the authorities will have full control of the situation.

It is apparent from what has been said that the entire eastern front has been converted into a huge filter to guard against the spread of epidemics and the carrying of disease. Each man in the army, from the general down to the private, prisoners as well as our own troops, must conform to the regulations made by the military and sanitary authorities before he can enter the German empire.

PARIS LETTER

Paris, Sept. 23, 1915.

The War

QUESTIONS AFFECTING THE WORK OF AN AMBULANCE UNIT AT THE FRONT

At one of the last sessions of the Société de chirurgie de Paris, Dr. R. Picqué, surgeon of the hospitals of Paris, who, since the first day of mobilization, that is, for thirteen months, has been in command of the same ambulance unit, read an interesting paper, showing how ambulances of the old type may be so improved by the aid of the resources of the medical service as to be adapted to the novel and imperative necessities of the present war. The leaving of considerable initiative to the medical heads and the supplying of all their demands have permitted the rapid transformation of obsolete organizations into formations in which all surgical operations can be performed. If circumstances permit the units to remain stationary for a considerable length of time, they can be extended into veritable front-line hospitals without losing their essential mobility.

Picqué was therefore surprised to hear at the meeting of the society, during numerous discussions on military surgery, the practical unanimity with which speakers advocated the rapid removal of the wounded toward hospitals at the rear provided with competent staff and surgical equipment.

He was particularly surprised to hear this doctrine applied to patients with important fractures, whose chances for the preservation of their limbs, and even their lives, would be so much enhanced by immediate surgical treatment in the ambulance. In his opinion the present war, from the outset, has shown the importance of intensive surgery of the first line; and the long defensive warfare has singularly favored the extension of this first-line surgery. Such surgery today is possible, not only for surgeons furnished with one of the modern automobile surgical ambulances, not only for those whose good fortune it is is to be able to install themselves in buildings, such as colleges, barracks or châteaux, easily transformable into first-class hospitals, but even for surgeons who, like Picqué, have at their disposal only an isolated mill. With the resources which the medical service offers without red tape to those who wish to make use of them, it is easy for any man of initiative to create an organization which meets all the necessities of present day surgery. In fact, Picqué has seen almost 10,000 wounded men pass through his transformed ambulance to be operated on by him under very satisfactory conditions, the operations including all the procedures that one may be called on to employ in times of war.

Dr. Delbet, professor of clinical surgery at the Faculté de médecine de Paris, while complimenting Dr. Picqué on his ingenuity and perseverance and the methodical way with which he has created his present organization, thinks there is notwithstanding a defect in the principle. Whatever Picqué may say, the organization has thus lost the essential character of an ambulance unit, namely, mobility. Moreover it is installed too near the firing line, that is, only 8 kilometers away. In warfare in which the troops are incessantly in motion, at 8 kilometers one is exposed to the fluctuations of combat; in the present war one is exposed to ordinary shells. The wounded greatly need rest and quiet; they have neither of these in the midst of the noise of cannonshot and the still more disagreeable noise of bursting shells. The distance at which the ambulance unit should be stationed, moreover, depends on the means of transportation. With horse-drawn vehicles, 8 kilometers is a long distance to traverse. It takes no more time to traverse 18 or 20 kilometers with an automobile. For these reasons the superior consulting commission of the medical service has demanded that surgical ambulance units provided with numerous automobiles for the transportation of the wounded should be placed 18 or 20 kilometers from the firing line.

Dr. Tuffier, agrégé professor in the Faculté de médecine de Paris and surgeon of the hospitals, likewise emphasizes the danger of ambulances placed too near the firing line. The operating rooms that he has seen installed at the Harazée and at the Four de Paris a few months ago have been nonexistent for several weeks, having been destroyed by the enemy's bombardment. Moreover, immobilized ambulance units, in order to act as real hospitals, ought to possess a considerable number of beds, while, if they accumulate many seriously wounded patients, they may be obliged to remove them too rapidly, which is infinitely more dangerous for the patients than if they had in the first place been sent farther on, 15 or 20 kilometers, before anything had been done for them.

IMPROVEMENT OF THE MEDICAL SERVICE

In response to suggestions made by M. Astier, senator from the department of the Ardèche, for the improvement of the medical service, M. Justine Godart, assistant secretary, has explained the plan of reform which he is putting in practice. In order to utilize more effectively the special abilities of physicians, he has ordered the regional directors of the medical services to report each month particulars with regard to the physicians in their respective regions—the name, the age, the specialty, etc. He has, moreover, recently consulted a commission composed of professional surgeons for the purpose of studying the best orthopedic methods of furnishing cripples with necessary apparatus within the shortest possible space of time. Competitive examinations and the utilization of the professional abilities of pharmacists, dentists and nurses have already been the subject of careful study.

WOUNDS OF THE HANDS BY SMALL PROJECTILES AND THE OPERATIONS WHICH THEY REQUIRE

At a recent session of the Académie de médecine Dr. E. Delorme, medical inspector general of the military medical service, called attention to the fact that manipulations and massage are often insufficient to reduce the deformities of the hand and fingers and the gross functional incapacities produced by wounds of the hands from small projectiles. Under such conditions it is often well to make use of restorative surgery. Amputation, which is the ordinary method of treating crooked, ankylosed and troublesome fingers, is acceptable, in Delorme's opinion, only when well-directed restorative orthopedic surgery has shown itself insufficient. The most important operations for the treatment of wounds of the hands consist of excisions of cicatrices, generally combined with disengagement or restoration of the tendons and reduction of stiffness, sometimes excision of articular extremities or calluses. Direct suture of the tendons being often impracticable, Delorme has recourse to various other well-known procedures. The care of the patients after these conservative operations is very important. It consists in progressive mobilization (passive and active) of the fingers, electricity, compression and massage of cicatrices, compression of edemas, etc.

THE FORM OF CRUTCHES

The minister of war has called the attention of the head physicians of all hospitals to the importance of the form of the crutches furnished or lent to men wounded in the legs. The straight crutch with a single cross piece, if badly padded or ill proportioned, frequently causes paralysis by compression of nerves.

A DUTCH FLYING HOSPITAL

The Dutch steamship *Batavier III*, from Amsterdam, has landed at Havre a flying hospital, organized by private subscription and placed under the command of Dr. Bierens of Haan, who has already directed organizations of this kind in the South African war of 1899-1901 and the Balkan wars. The staff comprises, besides Dr. Bierens, 4 physicians, 26 female nurses and 5 male nurses. This Dutch hospital unit, composed of 200 beds and capable of being moved in forty-eight hours, was sent to Paris, where it was received at the Saint Lazare station by representatives of the assistant secretary of the medical service and by Medical Inspector-General Dziewomski, director of the medical service of the military government of Paris.

AN AMERICAN GIFT

Mr. Frederick H. Allen of New York has just remitted to the president of the municipal council of Paris, in the name of the Committee of Mercy, of which Mr. Allen is president, the sum of 21,000 francs ($4,200) for the Oeuvre des trains de blessés.

LONDON LETTER

London, Sept. 24, 1915.

The War

THE DEARTH OF ARMY SURGEONS

The difficulty of obtaining a sufficient number of surgeons for the army still remains a pressing problem. Though nearly a fourth of the whole profession is engaged in military duties in one form or another, there is still a shortage of nearly 2,000. A subject which has been under the consideration of one of the war emergency committees (bodies formed under the auspices of the British Medical Association) is the making of some arrangement in the event of physicians dying while on military service. It is thought that those who join would feel the sense of responsibility to their families less overburdening if some arrangement was in force for looking after their interests in the event of death. It has been agreed to form small local subcommittees, consisting of a few men of high standing in the local profession, to act as professional advisers and to collaborate with the legal executors of those who die. Their duty would be either to sell the practice on the best terms available or to see that the practice is carried on until some period after the war when practices again become salable. The Central Emergency Committee of the British Medical Association has issued an appeal to the public pointing out that physicians at the call of duty are going to assist in saving the lives and relieving the sufferings of their countrymen at the risk not only of death and injury but also of the loss of the means of livelihood on their return. While recognizing the right of every one to consult any physician he chooses, the committee appeals to all citizens not to give up their usual medical attendant on account of temporary absence on military duty. All the physicians who have left their practices have either appointed a locum tenens or arranged with neighboring physicians to carry on the work while away. The committee hopes that patients will inform any physician they may consult that their own physician is absent on military service and that they intend to place themselves again under his care when the need arises on his return. The physicians who remain are willingly attending the patients of those on service on the distinct understanding that they shall not be asked to continue to do so after the war. Addressing a board of guardians (the bodies in the country who are entrusted with the care of the poor) a well-known consultant, Sir James Barr, said that all the medical work of the country could be done by physicians over military age and thus all the younger men released for foreign service. "Get men over military age for either part or whole time service for your work until the war is over," he said, "and you will thus be able to set all your young men free to serve their country as they will never have chance of doing again." If the number of men necessary cannot then be found, he considered that the only course would be to apply to the United States.

THE RESPONSE OF THE COLONIES

The manner in which the British self-governing colonies are voluntarily assisting the mother country in this critical hour is an object lesson to the world. Like ourselves, they are willing to make any sacrifices. The federal government of Australia has determined to augment the Australian General Hospital in France by an additional 1,040 beds, bringing the total number up to 2,000. The equipment will be undertaken in England, but the personnel will be obtained in the commonwealth. To staff the second portion of the hospital, thirty-six physicians, fifteen noncommissioned officers, eighty nurses and 170 orderlies will be required. In addition, physicians will be sought from time to time for reinforcements, and the organization of still another unit is under consideration. But, as in England, the demand for medical officers is greater than the supply.

HOSPITAL SHIP SUPPLIED BY NEW ZEALAND

One of the best hospital ships afloat is being equipped in New Zealand. A large steamer, the *Maheno*, is being utilized. Cabins have been removed and the saloon transformed. There are two special wards for five patients, an officiers' ward, a noncommissioned officers' ward and ten wards for the rank and file. One row of beds is composed of fixed cots, while a second is so constructed that the individual cot can be allowed to swing with the movement of the vessel or fixed by means of a metal plate dropping into a slot. It is proposed to admit the more seriously wounded into a special ward amidships, while the less serious cases will be in the space over the transom. The total number of beds for patients is 388, but if necessary the officers' and nurses' drawing room can be transformed into a ward of sixty additional beds. The patients will be received through iron watertight doors at the ship's side, at the level of the lower deck, and hoisted on stretchers which act as mattresses for the beds. Trolleys will be used to convey the stretchers along the passages, and capacious lifts to transfer them from the lower to the main or upper deck. The laundry is well equipped; there are superheated steam cauldrons, electric apparatus for ironing, drying centrifuges, etc. The most modern plant for sterilizing dressings and instruments has been provided, and there is a special system for the automatic delivery of sterilized instruments and dressings on sterile trays on which they are conveyed to the operation theaters. There are two operating theaters, the smaller for minor surgery. The larger is equipped in the latest fashion; white enamel and bright metal are everywhere in evidence. The Roentgen-ray room and the bacteriologic laboratory have been planned with great care. It is said that no field hospital can offer the wounded soldier greater comfort and security, and that few base hospitals are so well equipped.

FLY PLAGUE AT THE FRONT

It was foreseen that a plague of flies was to be expected both in Flanders and in Gallipoli, owing to the conditions inevitably associated with military operations. In Flanders elaborate precautions were taken and date back to April last —that is, before the commencement of the house-fly season, when a circular memorandum on "The Abolition of Flies in Camps, Billets and Hospitals" was issued by the director-general of medical services of the British forces in the field. He pointed out that within the area occupied by the British forces there were concentrated enormous numbers of men and horses, with the result that great quantities of stable manure and other waste organic matter were produced, and that in places along the line of the front there were many unburied bodies. He anticipated that in consequence flies in unparalleled numbers would appear in the course of the summer and autumn, unless adequate measures were taken to prevent breeding. The memorandum contained full instructions for the prevention of the fly plague, and among other fly poisons enumerated was the solution of sodium arsenite which has been recently employed with success in South Africa. Soon after the issue of this circular, a special entomologic commission for service in the field was appointed; it consisted of three well-known entomologists, Mr. Robert Newstead, F.R.S., professor of medical entomology, Liverpool University; Mr. R. W. Jack, government entomologist, Southern Rhodesia, and Captain E. E. Austen of the British Museum. The commission was instructed to study the question on the spot and to inquire into the efficacy of the measures for the suppression of flies adopted or projected. An extensive series of experiments was made with a view to ascertaining the best method of dealing with fly-breeding places which it might be impossible to destroy by fire. As a result, further recommendations were issued. Since then the commission has been continuously engaged in visiting all parts of the front in turn with a view to giving advice to sanitary officers and others. Visits have been paid to a large number of casualty clearing stations, field ambulances and advanced dressing stations, to the town of Ypres, to the trenches and to farms and other billets within range of the enemy's guns. The flies to be dealt with have been house-flies, bluebottle flies, and greenbottle flies. The places where the insects were found to be breeding, and the best practical means for checking them were indicated. In the trenches themselves house-flies have been less numerous than bluebottle and greenbottle flies, although in certain places in the war zone in France and Belgium house-flies have been more numerous than could be wished. The blow-flies, blue and green, have presented greater difficulties. Dr. Shipley has shown that there are two species of bluebottle or blow-flies, *Calliphora erythrocephala* and *Calliphora vomitoria.* They are outdoor flies which enter houses in search of a suitable place to deposit their eggs, by preference on fresh or decaying meat, but even on wounds. The habits of the greenbottle fly, *Lucilia caesar,* are similar, but it is said to prefer fish. Though no practical means for destroying these flies in the trenches on a wholesale scale have been devised, it has been found possible to drive them away by periodic spraying with a suitable fluid.

The Fear of Premature Burial

The fear of premature burial leads from time to time to strange requests. In the latest case a maiden lady bequeathed $100 to her physician on condition that he should see that her throat was cut from ear to ear before burial.

Marriages

Captain William Stevens Shields, M.C., U. S. Army, to Miss Eileen Goggan, Galveston, Texas, at Dallas, Texas, September 25.

Joseph Edwards Kerney, M.D., Providence, R. I., to Miss Bertha Pendorf of Oneida, N. Y., at Philadelphia, September 25.

Welcome Blaine Tilton, M.D., to Miss Violet Deming, both of Clinton, Okla., at Oklahoma City, Okla., September 28.

Sterling Bunnell, M.D., San Francisco, to Miss Maude Compton of Santa Rosa, at Berkeley, Calif., September 22.

Russell Adams Scott, M.D., Evanston, Ill., to Miss Julia Beauchamp Hinkle of Hawesville, Ky., October 14.

Harry Marshall Armitage, M.D., Chester, Pa., to Miss Emily Van Gordon Pudan, of Yale, Okla., recently.

Burlington Earl Smith, M.D., to Miss Annette Florence Erickson, both of Portland, Ore., September 22.

William Lee Gills, M.D., Roanoke, Va., to Miss Elsie Louise Jones of Cheshire, Conn., September 15.

Selmer Martin Johnston, M.D., Buhl, Minn., to Miss Louise de Hass of St. Paul, September 18.

Ray Ranney Kulp, M.D., Davenport, Iowa, to Miss Marie Miller of Fort Wayne, Ind., October 12.

Albert Allen, M.D., to Miss Agnes Marguerite Cross, both of Los Angeles, September 22.

Samuel Bell, M.D., to Jean A. Vernier, M.D., both of Detroit, August 13.

Deaths

John Gaunt Brooks, M.D. Jefferson Medical College, 1868; aged 74; formerly a Fellow of the American Medical Association; a charter member and president of the Kentucky State Medical Association in 1887; Southwestern Kentucky Medical Society and Paducah Medical and Surgical Society; commissioned as traveling physician of the Queen of the Hawaiian Islands for the islands of Maui, Molokai and Lanai; for several years a member of the City Council and of the Board of Education of Paducah and of the health boards of Paducah and McCracken County; for more than twenty-seven years a director of the City National Bank of Paducah; died in a sanatorium in Louisville, September 25, from fatty degeneration of the heart. At a meeting of the McCracken County Medical Association, September 25, it was decided to prepare a resume of Dr. Brooks' achievements as a physician, for publication in the Kentucky State Medical Journal.

Edward Nelson Tobey, M.D. Harvard Medical School, 1901; aged 44; a member of the Massachusetts Medical Society; instructor in tropical diseases in the St. Louis University since 1914; demonstrator and research assistant in the Liverpool, England, School of Tropical Medicine in 1906-1907; assistant in bacteriology in his alma mater from 1907 to 1911; instructor in tropical medicine in the Harvard Summer School of Medicine from 1908 to 1910; instructor in pathology in St. Louis University from 1911 to 1914 and thereafter instructor in tropical diseases; assistant city pathologist and bacteriologist of St. Louis; who had been making an investigation of tropical fever in British Honduras; is believed to have been drowned when the steamer *Marowijne* of the United Fruit Company's line, on which he sailed from Belize, August 13, was lost at sea during the hurricane of August 16.

Samuel Kennedy Spalding, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1874; Bellevue Hospital Medical College, 1882; aged 68; of Omaha; a member of the staff of St. Joseph's Hospital, Omaha; neurologist to the Omaha General Hospital; Professor of Nervous and Mental Diseases in the John A. Creighton Medical College, Omaha; for several years chief of the Douglas County, Neb., insanity board; from 1896 to 1899 Health Commissioner of Omaha; and for several years treasurer of the Board of Education; a veteran of the Civil War; while attending the national encampment of the Grand Army of the Republic in Washington, D. C., was stricken with cerebral hemorrhage, September 28, and died the next day.

John Thomas Gibbons, M.D. College of Physicians and Surgeons in the City of New York, 1889; aged 50; a member of the Association of Military Surgeons of the United States; Major-Surgeon of the Forty-Seventh New York Volunteer Infantry during the Spanish-American War with service in Porto Rico; a member of the staff of St. Catherine's and Bushwick hospitals, Brooklyn, died at his home in that city, October 2, from heart disease.

Stuart Whedon Smith, M.D. University of Michigan, Ann Arbor, 1877; aged 64; a graduate in pharmacy; for twelve years a practitioner of Port Huron, Mich., and later of Denison, Texas, where he made a specialty of diseases of the eye, ear, nose and throat; consulting oculist to the Missouri, Kansas and Texas railroad; died at his old home in Port Huron, Mich., September 24.

William Alexander Graham, M.D. Louisville, Ky., Medical College, 1892; aged 56; a member of the Medical Association of the State of Alabama; formerly president of the Fayette County Board of Censors, county health officer, and secretary and treasurer of the Fayette County Medical Society; died at his home in Fayette, Ala., July 12, from angina pectoris.

Kenneth Frank Junor, M.D. New York University, New York City, 1886; aged 69; of Brooklyn; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for several years a missionary of the Presbyterian Church in China and afterward a clergyman of New York City; died in Toronto, Ont., September 26.

Andrew C. Saylors, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1894; a member of the State Medical Association of Texas, a practitioner and druggist of Bynum, Texas; who was stabbed and seriously wounded in an affray in Bynum, in December, 1914, and afterward shot and killed his adversary; was shot and killed at Hillsboro, Texas, October 2.

Frederick Fillmore Burtis, M.D. Albany, N. Y., Medical College, 1898; aged 38; of New York City; formerly city physician and police physician of Schenectady, N. Y., and coroner's physician and deputy coroner of Schenectady County; surgeon of the Panama Railroad and Steamship Company's steamer, *Advance*; died on board that ship, September 6.

Robert H. Hews, M.D. University of Buffalo, 1874; aged 70; of Rockwell City, Iowa; local surgeon of the Illinois Central and Chicago, Milwaukee and St. Paul systems and a member of the Municipal Board of Health; died September 11, at Long Beach, Calif., where he had gone ten days before on account of ill health.

Warwick Evans, M.D. Georgetown University, Washington, D. C., 1852; aged 87; a Fellow of the American Medical Association; professor of anatomy in his alma mater for several years, beginning in 1856; said to be the oldest practitioner in Washington; died at his home September 30, from heart disease.

Luther Hern Keller, M.D. College of Physicians and Surgeons, Baltimore, 1875; aged 63; of Hagerstown, Md.; a Fellow of the American Medical Association; a specialist on diseases of the ear, nose, and throat; died in the Washington County Hospital, Hagerstown, September 30, from heart disease.

Andrew Victor Jova, M.D. College of Physicians and Surgeons in the City of New York, 1883; aged 56; a Fellow of the American Medical Association; visiting physician to St. Luke's Hospital, Newburgh; died at his home in Newburgh, N. Y., September 20, from tubercular laryngitis.

William G. Webb (license, years of practice, Ohio, 1898); aged 79; of Cameron, Ohio; a Fellow of the American Medical Association; for fifty-five years a practitioner; died in the Ohio Valley General Hospital, Wheeling, W. Va., September 27, a few days after a surgical operation.

Samuel Stewart Marr, M.D. Georgetown University, Washington, D. C., 1876; aged 71; for more than forty years in the employ of the General Land Office, Washington, D. C., as chief of the Railroad Division and later as law clerk; died at his home in Washington, September 26.

Mark Dunklin Sullivan, M.D. College of Physicians and Surgeons in the City of New York, 1906; aged 39; a member of the South Carolina Medical Association, and a practitioner of Pelzer; died in Greenville County, S. C., recently from heart disease.

William L. Parmenter, M.D. Homeopathic Medical College, Cleveland, 1873; aged 81; for forty-two years a practitioner of Buffalo; a member of the Buffalo Academy of Medicine; died in Port Stanley, Ont., September 16, from anemia.

Marquis Lafayette Johnson, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1901; aged 67; a member of the Medical Association of the State of Alabama; of Natural Bridge, Ala.; died at Nauvoo, Ala., June 25, from diabetes.

Prudence Fenneman, M.D. Cleveland Homeopathic Medical College, 1899; aged 51; for thirty years a practitioner of Hamilton, Ohio; died at the home of her sister in Canfield, Ohio, September 22, from carcinoma of the kidney.

Charles Louis Carriere, M.D. Homeopathic Medical College of Missouri, St. Louis, 1871; aged 76; for more than half a century a clergyman, and for forty-three years a practitioner of St. Louis; died at his home, September 17.

Mattie Virginia Seams Lee, M.D. Howard University, Washington, D. C., 1911; aged 41; a colored practitioner of Washington, D. C., and later of Charleston, W. Va.; died in Asheville, N. C., August 8, from pulmonary tuberculosis.

William Sheldon Clark Perkins, M.D. College of Physicians and Surgeons in the City of New York, 1860; aged 78; a member of the Connecticut State Medical Society; died at his home in Norwich, Conn., August 7, from diabetes.

Lester R. Lantz, M.D. American Medical University of Pennsylvania, Eclectic, Philadelphia, 1879; aged 55; of Wyalusing, Pa.; died suddenly from cerebral hemorrhage while making a professional call, September 21.

John A. Currie, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1889; aged 56; of Memphis; a member of the Tennessee State Medical Association; died in the Baptist Memorial Hospital, Memphis, September 27.

Payton Chester Madison, M.D. College of Physicians and Surgeons, Chicago, 1893; aged 52; died, October 1, from heart disease.

Charles Henry Scott, M.D. Eclectic Medical Institute, Cincinnati, 1897; aged 48; of Rupert, Ida.; died in that place, July 17, from the effects of injuries received in a collision between his automobile and a railway train.

Claude Earl Bucher, M.D. Northwestern University Medical School, Chicago, 1912; aged 32; of Williamsville, Ill.; was killed October 5 by the overturning of his automobile while responding to a professional call.

Pearl Tinkler, M.D. Barnes Medical College, St. Louis, 1911; aged 26; of Taylorville, Ill.; formerly a Fellow of the American Medical Association; died in the Baptist Hospital, St. Louis, August 9, from septicemia.

Robert P. Sorrells, M.D. Medical College of Georgia, Augusta, 1875; about 60 years of age; a practitioner and druggist of Clarke County, Ga.; died suddenly at his home in Danielsville, Ga., September 24.

M. M. Welsh, M.D. Keokuk, Iowa, Medical College, 1896; aged 52; a member of the Illinois State Medical Society; died at his home in Odell, Ill., September 28, from pneumonia complicating typhoid fever.

Alphonse Joseph Pierre Garneau, M.D. Laval University, Quebec, 1893; aged 48; for more than twenty years a practitioner of Fall River, Mass.; died at his home in that city, September 20, from heart disease.

Herman Delmar Hunt, M.D. Syracuse, N. Y., University, 1874; aged 68; for nineteen years supervisor and for four years postmaster of Preble, N. Y., died at his home in Preble, July 30, from angina pectoris.

David Benjamin Crediford, M.D. Medical School of Maine, Brunswick, 1892; aged 51; a Fellow of the American Medical Association; died at his home in Rialto, Calif., July 18, from angina pectoris.

Orson Pope Kingsley, M.D. Baltimore Medical College, 1907; aged 36; of Brush, Colo.; a veteran of the Spanish-American war, with service in the Philippines; died in a hospital in Denver, September 23.

Willis T. Honsinger, M.D. University of Vermont, Burlington, 1874; formerly a member of the General Assembly from Clinton County, N. Y.; died at his home in West Chazy, N. Y., September 21.

Gideon Hill Morgan, M.D. University of Tennessee, Nashville, 1881; aged 63; died at his home in Fountain City, Tenn., September 29, from tetanus due to a nail wound of the foot ten days before.

Ithamar Davisson, M.D. Baltimore Medical College, 1893; College of Physicians and Surgeons, Baltimore, 1910; aged 60; died at his home in Flemington, W. Va., July 4, from cerebral hemorrhage.

Nicholas Gibbon Moore, M.D. Jefferson Medical College, 1891; aged 48; of Mooresville, N. C.; died at a hospital in Statesville, N. C., September 19, after an operation for disease of the intestine.

James Bates McKinley, M.D. Starling Medical College, Columbus, Ohio, 1891; aged 49; of Harrisburg, Ohio; died at the home of his sister in Columbus, Ohio, September 17, from heart disease.

Elijah A. Shippey, M.D. University of Louisville, Ky., 1854; aged 82; a Confederate veteran; one of the oldest residents of Hot Springs, Ark.; died at his home in that city, September 22.

John S. Mitchell, M.D. University of Pennsylvania, 1852; aged 87; for sixty-five years a practitioner of Bedford County, Va.; died at the home of his daughter near Bedford, Va., September 8.

Marcus Foster Clemmons, M.D. Vanderbilt University, Nashville, Tenn., 1887; of the Baird's Mill neighborhood, near Lebanon, Tenn.; died at his home September 22, from typhoid fever.

John B. Kennedy, M.D. Vanderbilt University, Nashville, Tenn., 1870; aged 70; formerly of Goldsboro, N. C.; a Confederate veteran; died at his home in Grantham, N. C., September 28.

Frank D. Vreeland, M.D. New York Homeopathic Medical College, 1879; aged 64; of Paterson, N. J.; died at the home of his son in Passaic, N. J., October 4, from cerebral hemorrhage.

Hayes B. Jones (license, Iowa, Jan. 10, 1891); aged 69; of Des Moines, Iowa; a veteran of the Civil War; died in the Methodist Hospital, Des Moines, September 18, from pneumonia.

John Hunter Pope, M.D. University of Virginia, Charlottesville, 1868; a Confederate veteran; for many years a practitioner of Marshall, Texas; died in that city about September 20.

Joseph Francis O'Malley, M.D. Rush Medical College, 1892; aged 47; of Ewen, Mich.; died in St. Mary's Hospital, Marquette, Mich., September 19, from carcinoma of the stomach.

Amelia E. Burroughs, M.D. Homeopathic Hospital College, Cleveland, 1881; physician to the Burroughs Place Dispensary, Boston; died at her home in that city, September 25.

Edmund Beckwith, M.D. Homeopathic Hospital College, Cleveland, 1865; aged 78; a pioneer practitioner of Petaluma, Calif.; died in Talmadge, Calif., about September 21.

Charles Isaac Eberle, M.D. University of Michigan, Ann Arbor, 1879; aged 61; of Blairsburg, Ia.; died in Mercy Hospital, Webster City, Ia., September 20, from heart disease.

Thomas Street Norwood, M.D. Tulane University, New Orleans, 1906; aged 34; a Fellow of the American Medical Association; died recently at his home in Norwood, Pa.

Stephen H. Carroll, M.D. New York Homeopathic Medical College, New York City, 1870; aged 73; died at his home in Albany, September 22, from disease of the liver.

George Clarendon Clarke, M.D. New York University, New York City, 1877; aged 65; died at his home in East Douglass, Mass., August 7, from angina pectoris.

Oliver S. Trimmer, M.D. Cleveland University of Medicine and Surgery, 1864; aged 81; died at his home in Pacific Grove, Calif., July 5, from valvular heart disease.

Albert Maldonado, M.D. Bellevue Hospital Medical College, 1887; of San Francisco; died in Lane Hospital in that city, September 15, from atrophy of the liver.

Alfred O. Pitcher, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1867; aged 72; died at his home in Mt. Pleasant, Iowa, September 18.

S. S. Stacy (license, Arkansas, 1903), aged 89; a practitioner since 1868; died at his home in Willcockson, Ark., July 27, from chronic diarrhea.

John Schnee Thompson, M.D. Rush Medical College, 1873; aged 68; died at his home in Palestine, Ill., July 12, from hemorrhage of the stomach.

Charles B. Roberts, M.D. Ensworth Medical College, St. Joseph, Mo., 1890; died at his home in Towanda, Ill., September 21, from heart disease.

Joseph R. Cox, M.D. Cleveland University of Medicine and Surgery, 1896; aged 44; died at his home in New Castle, Pa., August 21, from paresis.

C. J. Hill Chipman, M.D. McGill University, Montreal, 1868; of Port Arthur, Ont.; died in Ottawa, Ont., July 9, from cerebral hemorrhage.

Duncan MacFarlan, M.D. Hahnemann Medical College, Philadelphia, 1875; aged 63; died at his home in Philadelphia, September 26.

Charles C. Taggart, M.D. University of Maryland, Baltimore, 1887; aged 49; died at his home in Marshfield, Ore., September 11.

F. W. Max Klonk, M.D. Baltimore Medical College, 1894; aged 63; died at his home in Oakland, Calif., October 2.

John B. Foster (license, Mississippi, 1880), aged 76; died at his home in Vimville, Miss., September 22.

S. D. Bliss (license, Missouri, 1885), aged 89; of Aurora Springs, Mo.; died in Higginsville, Mo., August 13, from carcinoma of the stomach.

Ephraim A. Santee, M.D. Jefferson Medical College, 1869; aged 77; died at his home in Wapwallopen, Pa., September 16, from senile debility.

C. E. Cox (license, Indiana, 1898), aged 73; died at his home in Cannelton, Ind., August 13, from chronic parenchymatous nephritis.

William H. McDowell (license, Kansas, 1901), aged 71; died at his home in Iola, Kan., August 1, from cerebral hemorrhage.

Charles D. Ware, M.D. Medical College of Ohio, Cincinnati, 1888; died at his home in Bodie, Calif., September 18.

W. F. A. Edney (license, Arkansas, 1903), aged 65; died at his home in Abbot, Ark., July 7, from cerebral hemorrhage.

Emmet E. Whitaker (license, Arkansas, 1903), aged 44; died at his home in Riddle, Ark., July 21, from hemiplegia.

The Propaganda for Reform

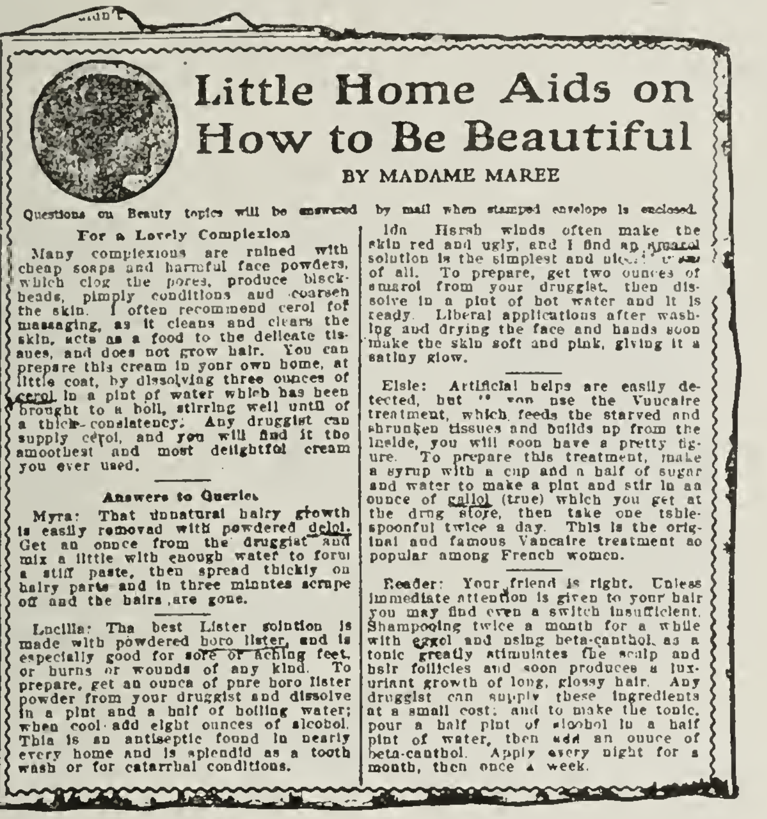
IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

AMAROL

Amarol is a so-called "complexion beautifier" advertised under the "prescription fakes" method. It has been exposed by various state health boards. According to the bulletin on "Medical Frauds" issued by the Indiana State Board of Health the stuff is put on the market by the F. W. Scharff Co., Chicago, and has the following composition:

Epsom salt	95 per cent.
Borax	5 per cent.



Little Home Aids on How to Be Beautiful

BY MADAME MAREE

Questions on Beauty topics will be answered by mail when stamped envelope is enclosed.

For a Lovely Complexion

Many complexions are ruined with cheap soaps and harmful face powders, which clog the pores, produce blackheads, pimply conditions and coarsen the skin. I often recommend cerol for massaging, as it cleans and clears the skin, acts as a food to the delicate tissues, and does not grow hair. You can prepare this cream in your own home, at little cost, by dissolving three ounces of cerol in a pint of water which has been brought to a boil, stirring well until of a thick consistency. Any druggist can supply cerol, and you will find it the smoothest and most delightful cream you ever used.

Answers to Queries

Myra: That unnatural hairy growth is easily removed with powdered delol. Get an ounce from the druggist and mix a little with enough water to form a stiff paste, then spread thickly on hairy parts and in three minutes scrape off and the hairs are gone.

Lucilla: The best Lister solution is made with powdered boro lister, and is especially good for sore or aching feet, or burns or wounds of any kind. To prepare, get an ounce of pure boro lister powder from your druggist and dissolve in a pint and a half of boiling water; when cool add eight ounces of alcohol. This is an antiseptic found in nearly every home and is splendid as a tooth wash or for catarrhal conditions.

Ida: Harsh winds often make the skin red and ugly, and I find an amarol solution is the simplest and [illegible] of all. To prepare, get two ounces of amarol from your druggist, then dissolve in a pint of hot water and it is ready. Liberal applications after washing and drying the face and hands soon make the skin soft and pink, giving it a satiny glow.

Elsie: Artificial helps are easily detected, but if you use the Vancaire treatment, which feeds the starved and shrunken tissues and builds up from the inside, you will soon have a pretty figure. To prepare this treatment, make a syrup with a cup and a half of sugar and water to make a pint and stir in an ounce of gallol (true) which you get at the drug store, then take one tablespoonful twice a day. This is the original and famous Vancaire treatment so popular among French women.

Reader: Your friend is right. Unless immediate attention is given to your hair you may find even a switch insufficient. Shampooing twice a month for a while with eggol and using beta-canthol as a tonic greatly stimulates the scalp and hair follicles and soon produces a luxuriant growth of long, glossy hair. Any druggist can supply these ingredients at a small cost; and to make the tonic, pour a half pint of alcohol in a half pint of water, then add an ounce of beta-canthol. Apply every night for a month, then once a week.

An advertisement in the form of an Answers to Correspondents department. Each "answer" recommends a "patent medicine" put out by the Scharff-Cooper concern: "Amarol," "Cerol," "Delol," etc.

The estimated value of the ingredients is 1 cent but it sells for one-half dollar. According to the advertising, Amarol will "make the skin soft and pink, giving it a satiny glow." The F. W. Scharff Co. operates from the same offices as the Cooper Pharmacal Co., "Valeska Suratt," etc.

ANTI-FRECKLE LOTION

This product, according to the Indiana State Board of Health, is put on the market by E. B. Gustin, Logansport, Ind. The Indiana chemists reported that it had essentially the following composition:

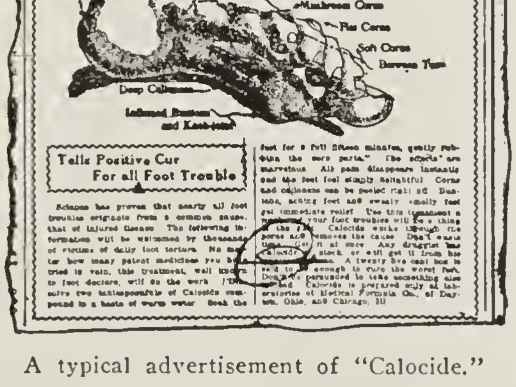
Bichlorid of mercury	1.5 per cent.
Alcohol	2 per cent.
Water	96.5 per cent.

According to the same authority the stuff retails for 50 cents, while the estimated value of the ingredients is 1 cent.

CALOCIDE

Advertisements of Calocide have described it as a "positive cure for all foot trouble." According to one advertisement, when Calocide is used:

> "All pain disappears instantly and the feet feel simply delightful. Corns and callouses can be peeled right off. Bunions, aching feet and sweaty, smelling feet get immediate relief."


Surface Callouses
Aching Feet from Congested Nerves
French-heel Strain
Excess Sweating and Bad Odor
Mushroom Corns
Flat Corns
Soft Corns
Between Toes
Deep Callouses
Inflamed Bunions and Knob-joints

Tells Positive Cur For all Foot Trouble

A typical advertisement of "Calocide."

This marvelous compound, which is also recommended for "frost bites, chilblain, burning, aching tender feet" is put on the market by the Medical Formula Laboratories of Dayton, Ohio, and Chicago. Various chemists have analyzed this preparation and their reports agree in essentials. The following are results reported by the state chemists of Connecticut:

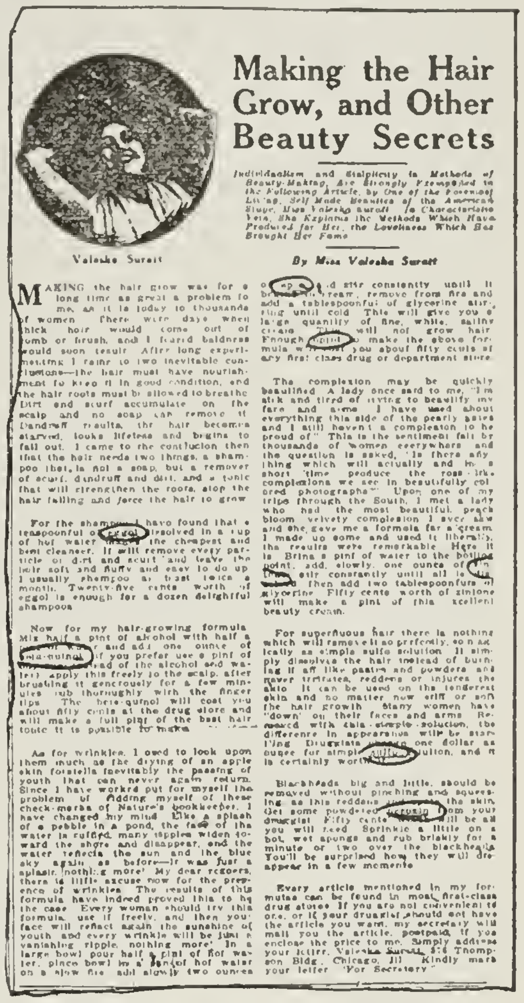
Common salt, about	22.44 per cent.
Borax, about	37.58 per cent.
Alum, about	39.35 per cent.
Tannin	Small amount

Dr. Harvey W. Wiley, who has also analyzed the preparation, states in the book "1001 Tests" that Calocide "might be very drawing and drying to the feet, undesirably so under some conditions."

CEROL

Cerol is another preparation sold on the "prescription fake" method and marketed by the Scharff-Cooper concern, that puts out Amarol, etc. According to an advertisement published in the form of an "Answers to Correspondents" department entitled "Little Home Aids on How to be Beautiful by Madame Maree" Cerol "cleans and clears the skin" and also "acts as a food to the delicate tissues." Various reports from boards of health assign to Cerol the following composition:

Boric acid Stearic acid Perfume



Making the Hair Grow, and Other Beauty Secrets

Valeska Suratt

By Miss Valeska Suratt

"Valeska Suratt, Thompson Bldg., Chicago," is a name used by the Cooper Pharmacal Co. in exploiting its nostrums, "Eptol," "Eggol," etc.

CLEAROLA

Clearola is said to be put on the market by G. W. Carpenter, Jaffrey, N. H. It is sold as a preparation which will "whiten the skin" and has been reported on by the state chemists of Indiana, Ohio and Kansas. They all agree in declaring that Clearola is nothing more mysterious than ordinary sulphur.

CUTICLE ACID

This product, put on the market, apparently, by Richard Hudnut of New York is said to "remove dead skin." According to the Kansas State Board of Health Bulletin for August, 1914, Cuticle Acid is mostly water with:

Alcohol	10 per cent.
Oxalic acid	2 per cent.

DERMA-ROYALE

Derma-Royale emanates from the Derma-Royale Co. of Cincinnati. Some years ago it was advertised under such claims as:

> "Cures Eczema and Tetter."
> "Absolutely and permanently removes Blackheads, Freckles, Pimples, Redness, Sun spots and Tan."

The present claims, while not so definite, are no more modest. According to the state chemists of Connecticut, as given in their report for 1914: "This preparation is a dilute alcohol-glycerin solution with small amounts of camphor, myrrh, benzoin and possibly other aromatics in suspension."

EPTOL

"There is little excuse now for the presence of wrinkles. The results of this formula have indeed proved this to be the case. Every woman should try this formula, use it freely and then your face will reflect against the sunshine of youth and every wrinkle will be just a vanishing ripple, nothing more!" Thus, to the gullible, appeals the Cooper Pharmacal Company of Chicago in a fake "Beauty Secrets" department published under the name of "Miss Valeska Suratt." The "formula" referred to is Eptol, plus some glycerin and water. Eptol is a white powder perfumed with rose which sells for 50 cents for a 1½-ounce box. According to the state chemists of Connecticut, Eptol has essentially the following composition:

Borax	37 per cent.
Soap and stearic acid	63 per cent.

FATOFF

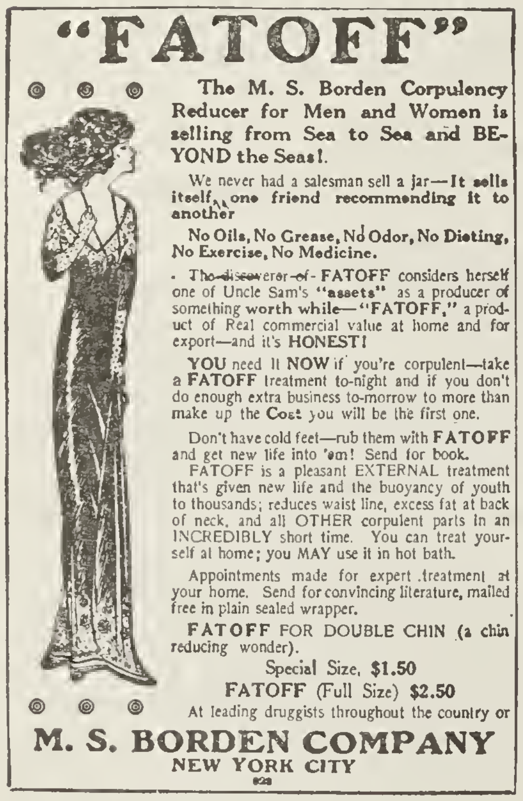
Fatoff is supposed to be the "discovery" of one Mary S. Borden and is put on the market by the M. S. Borden Co. of New York City. According to a booklet put out by the concern, "Fatoff has been granted a patent." We find from the patent records that Mary S. Borden of New York City was granted a patent on what she termed a "toilet cream." The patent specifications give the following composition of this product:

Water	14 lbs.
Washing soap	6 oz.
Extract of bladder-wrack	1 oz.
Washing soda	1 oz.
Potassium carbonate	135 grains
Thyroid gland of sheep	30 oz.
Tincture of iodin	¼ oz.
Perfume	½ oz.

The patent specifications do not give any indication that the preparation is to be used for the reduction of weight; in fact Mary S. Borden states specifically:

> "The object of my invention is to provide or produce a new and useful composition, which, when applied to the skin, will protect the covered part from the air and at the same time operate as a cleanser or purifier for the removal of foreign matters or accumulations."

Elsewhere in the patent specifications, however, Mrs. Borden speaks of the use of her toilet cream "to secure *other* and *further* useful results." [Italics ours.—Ed.] Naturally, there would be no object in using bladder-wrack, thyroid, tincture of iodin, etc., in an ordinary toilet cream sold for cleansing and protective purposes only. All of these drugs, however, are more or less common ingredients in so-called "obesity cures." Some time ago the government published a report in which the federal chemists had the following to say about M. S. Borden's "Fatoff":



"FATOFF"

The M. S. Borden Corpulency Reducer for Men and Women is selling from Sea to Sea and BEYOND the Seas!

We never had a salesman sell a jar—**It sells itself, one friend recommending it to another**

No Oils, No Grease, No Odor, No Dieting, No Exercise, No Medicine.

The discoverer of **FATOFF** considers herself one of Uncle Sam's "**assets**" as a producer of something **worth while—"FATOFF,"** a product of Real commercial value at home and for export—and it's **HONEST!**

YOU need It **NOW** if you're corpulent—take a **FATOFF** treatment to-night and if you don't do enough extra business to-morrow to more than make up the **Cost** you will be the first one.

Don't have cold feet—rub them with **FATOFF** and get new life into 'em! Send for book.

FATOFF is a pleasant EXTERNAL treatment that's given new life and the buoyancy of youth to thousands; reduces waist line, excess fat at back of neck, and all OTHER corpulent parts in an INCREDIBLY short time. You can treat yourself at home; you MAY use it in hot bath.

Appointments made for expert treatment at your home. Send for convincing literature, mailed free in plain sealed wrapper.

FATOFF FOR DOUBLE CHIN (a chin reducing wonder).

Special Size, **$1.50**

FATOFF (Full Size) **$2.50**

At leading druggists throughout the country or

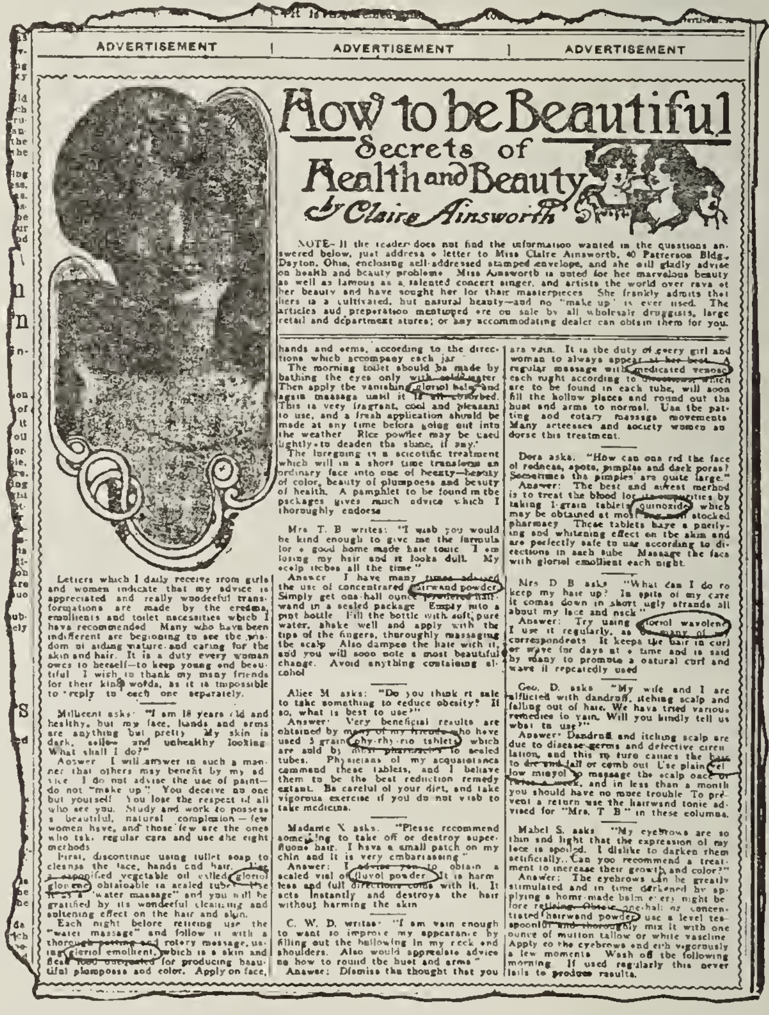
M. S. BORDEN COMPANY
NEW YORK CITY

"Analysis shows that the product is a paste made of soap and water containing 10 per cent. soap and 90 per cent. water."

The Indiana State Board of Health in its bulletin on "Medical Frauds," issued in 1914, states that Fatoff is essentially "soft-soap." It declares further, that while the selling price of this preparation is $1.50 the value of the ingredients is 5 cents. From the facts submitted it would seem that, while originally Fatoff may have contained such drugs as thyroid, bladder-wrack, iodin, etc., it no longer has these drugs in it. Why should it? It is just as easy to fool the obese with a soft-soap mixture sold under a fancy name at a fancy price as it is to humbug them with a more elaborate product—and the profits are greater!

GLORIOL BALM

This is one of a large group of nostrums put on the market by the Blackburn Products Company, a concern run by two men, one of whom is said to have been in the advertising business and the other in the cigar trade. The Prescription Products Company and the Lesslie Company are two other names under which the same men do business. Gloriol Balm is apparently put out under the name of the Lesslie Company. The advertising is done largely by the "prescription fake" method, usually under the title "The Doctor's Advice by Dr. Lewis Baker" although sometimes by means of an "Answers to Correspondents" department entitled "How to be Beautiful, Secrets of Health and Beauty by Claire Ainsworth." Gloriol Balm is a toilet cream of the "vanishing" type. It is said to "make the skin smooth and clean." It is found listed among medical frauds in the bulletin on this subject issued by the Indiana State Board of Health. According to the Indiana chemists it has the following composition:



ADVERTISEMENT | ADVERTISEMENT | ADVERTISEMENT

How to be Beautiful
Secrets of Health and Beauty
by Claire Ainsworth

NOTE—If the reader does not find the information wanted in the questions answered below, just address a letter to Miss Claire Ainsworth, 40 Patterson Bldg., Dayton, Ohio, enclosing self-addressed stamped envelope, and she will gladly advise on health and beauty problems. Miss Ainsworth is noted for her marvelous beauty as well as famous as a talented concert singer, and artists the world over rave of her beauty and have sought her for their masterpieces. She frankly admits that hers is a cultivated, but natural beauty—and no "make up" is ever used. The articles and preparations mentioned are on sale by all wholesale druggists, large retail and department stores; or any accommodating dealer can obtain them for you.

Another fake Answers to Correspondents department. The "answers" here recommend "patent medicines" or toilet articles put out by the Blackburn Products Co., of Dayton, Ohio, or of one of its subsidiary concerns.

Stearic acid, soap and borax	23.7 per cent.
Water	76.3 per cent.

GLORIOL GLOWENE

This preparation is put out by the same concern as Gloriol Balm and is advertised by the same methods. According to one advertisement appearing in a fake "Answers to Correspondents" department:

> "Soap is a destroyer of a beautiful skin and I want all my fair readers to discontinue its use. Instead use Gloriol Glowene which is really a water massage. . . ."

According to the state chemists of Indiana, of Kansas and of Michigan, "Gloriol Glowene" is soft soap!

ZEMO

Zemo (E. W. Rose Medicine Company, St. Louis, Mo.) is sold as "A Preparation for the Treatment of Eczema, Pimples, Dandruff and Similar Affections of the Skin and Scalp." While, in accordance with the requirements of the Food and Drugs Act, the manufacturer admits the presence of 35 per cent. alcohol in his product he gives no further information regarding its composition. Some of the claims that have been made for this preparation, through the medium of those newspapers that are willing to cater to this sort of business, are:

> "There is nothing known that will stop itching like Zemo."
>
> "You simply apply it on the afflicted part . . . all eczema sores and pains, prickly heat, rash, tetter, inflamed or reddened skin, all disappear."
>
> "It also cures dandruff, which is scalp eczema."
>
> "Every form of Scalp Disease Cured Quick by Zemo."

As is the case with many of the "patent medicines" sold for external application, Zemo is used as a "come-on" for the purchase of another nostrum put out by the same company: "If your case does not readily yield to Zemo use Zemotone, which is primarily a blood tonic and purifier. . . ." Then there are "Zemo Laxative Pepsin Tablets" and "Zemo Soap." The purchaser is told, too, that "if after using Zemo freely the trouble appears worse it indicates that Zemo is drawing out the germ life."

A specimen of Zemo was purchased on the open market and turned over to the Association's laboratory for analysis. An abstract of the chemists' report follows:

> One original bottle of Zemo, manufactured by the E. W. Rose Medicine Co., St. Louis, was submitted to the Chemical Laboratory for examination. The bottle contained a brown fluorescent liquid, acid to litmus. The amount of alcohol was 28.35 per cent. absolute alcohol by volume. Alkaloids, heavy metals and iodids were not found. From the result of the tests made, it would appear that Zemo is a watery-alcoholic solution containing methylsalicylate, thymol, borax, tannic acid, glycerine, menthol and a phenol-like body.

With the veil of secrecy torn aside by the chemists, Zemo stands exposed as a very ordinary mixture sold under misleading and fraudulent claims.

THE PROPRIETARY EVIL FROM A LAY VIEWPOINT

The New York Sun Warns the Public to Shun the Proprietary-Prescribing Physician

In an address delivered before the alumni of the College of Physicians and Surgeons by Prof. Francis Carter Wood, as reported in the *Sun*, the doctor points out that the love of the mysterious is the chief element in the popularity of quack remedies, ranging from the scorched cat's whiskers to the "latest synthetic drugs from Germany." The doctor made facetious reference to the confidence in the new-fangled remedies, without, however, solemnly warning against their use. Derivatives mostly from coal tar and chiefly composed of antipyrin, antifebrin combinations are the most vicious form of empiricism. But the young graduate prescribes them because some young, doubtless well-paid docent has written a certificate to testify to their curative value, because, forsooth, he has tried them on animals, a kind of experimentation to which the student is accustomed to look for enlightenment.

The *Sun* has endeavored to impress on its readers the fallacy, if not the danger, of accepting prescriptions from doctors who, too indolent or unscientific to think out their own prescriptions, write for "Kill or Kurem's" Hydrated Phosphate Compound, or C., D. & X. Company's "Diostenin," or "Professor Chadelle's Cresolated Compound," the composition of which they either do not know at all or accept from the manufacturers. The chief aim of the latter naturally is to popularize these preparations by leaving samples at the doctor's office or offering them in generous quantities for the mere cost of a postal card. This injustice and danger to the lay patient will never be removed, because the medical journals with but a very small exception advertise these preparations, the value and uses of which the manufacturers, with the most brazen effrontery, offer to teach the doctor who will listen.

In looking over the advertising pages of one of the most respectable medical journals, to which our best physicians do not hesitate to contribute, we find in its last issue not less than eighteen proprietary medicines, mostly native, which Dr. Wood did not mention.

As we have repeatedly urged, it rests with the general public to protect itself against lazy or indifferent doctors and their dangerous empiricism by examining their prescriptions and refusing to use any that are written for a medicine that bears the name of the manufacturers or is purchasable in original packages. If in doubt, any one may, by copying the name of the article suspected, ascertain from the druggist before showing the prescription if the medicine prescribed may be bought "by the bottle." Lest this method be regarded as unwarranted, let it be considered that we trust the doctor because we know him and that this trust is misplaced if he prescribes a drug the composition of which he does not know.

Another point suggested by this address is the fact that when Professor Wood said that "the remedy for the love of the mysterious is education," and when he praised the campaign being inaugurated by physicians through bulletins of medical societies and public health officers, "which will abate somewhat the density of popular ignorance," he lost sight of the far more potent influence of those newspapers which devote space to approving comments on these publications and print original articles on the subject, as has been done for many years by the *Sun*, that would never otherwise reach the public.—Editorial, New York *Sun*, Oct. 7, 1915.

Correspondence

American Salvarsan

To the Editor:—It may interest you to know that, in the course of chemotherapeutic researches which Dr. Raiziss, Dr. Kolmer and myself have carried out in the Dermatological Research Department of the Philadelphia Polyclinic during the past year or more, we have reproduced salvarsan and have made a number of new arseno-benzol products. We have given over 100 injections of our salvarsan to hospital patients with excellent therapeutic results and with no untoward effects.

I understand that the supply of salvarsan in this country is exhausted and that the American agents do not know when the drug can be imported from Germany. The American patents are held in the name of Ehrlich and Bertheim, but have doubtless been consigned to the manufacturing company of Lucius and Brüning of Frankfort, Germany.

As salvarsan is necessary to save life as well as to prevent the spread of syphilis, it is eminently desirable that this country should not be deprived of the drug. We could not supply salvarsan to the medical profession at the present time without infringing the existing patent rights of the Frankfort company. To have the patent laws amended would doubtless require congressional action. Should we be permitted to supply the drug to the profession, I think we could offer it at one third of the price which it has recently commanded. All profits accruing therefrom would be devoted to the establishment of a permanent fund for further scientific research.

If you think it desirable to bring this matter to the attention of the Board of Trustees of the American Medical Association, I shall be glad to furnish you with any further information that you might desire.

J. F. Schamberg, M.D., Philadelphia.

[Note.—Bearing on the subject-matter of Dr. Schamberg's letter are the following resolutions, which were unanimously adopted by the House of Delegates of the Medical Society of the State of Pennsylvania in session in Philadelphia, Sept. 22, 1915:

> *Whereas,* An important drug, necessary for the cure of disease and likewise the prevention thereof, is no longer available to the medical profession of this country by reason of the European war, and
>
> *Whereas,* This drug has been produced in this country, but cannot be supplied to physicians because its manufacture is protected by patents, therefore, be it
>
> Resolved, By the Medical Society of the State of Pennsylvania that the Secretary of the Interior or the Commissioner of Patents be respectfully urged to call upon the patentees to supply this drug or permit the same to be supplied by others, or to take such other means as his judgment may dictate to relieve the existing condition.

—Ed.]

Sixteenth Century Medical Poets

To the Editor:—The following stanzas by Dr. John Halle, written in 1564, were given me by Dr. George Dock of St. Louis in 1905. To the best of my recollection, Dr. Dock found them while browsing about among the old book shops of London, during the preceding summer. The verses contain much good advice applicable to medical practice today.

I have been unable to trace the history of John Halle. His name is not mentioned in the "Biographical Memoirs of the Most Celebrated Physicians and Surgeons" by Pettigrew, published in London about 1840. I have understood that he was the Dr. John Halle who married the eldest daughter of William Shakespeare. She was born in 1583. The verses were written in 1564, nineteen years before her birth, which would throw some doubt, although it would not contradict, this historical statement. As a commentary on gentlemanly conduct and medical ethics of the sixteenth century, I trust the verses will prove interesting to your readers.

Willard J. Stone, M.D., Toledo, Ohio.

GOODLYE DOCTRINE AND INSTRUCTION

By John Halle, 1564

When thou arte callde at anye time,
A patient to see;
And doste perceave the cure to grate,
And ponderous for thee:

See that thou laye disdeyne aside,
And pride of thyne owne skyll:
And thinke no shame counsell to take,
But rather wyth good wyll.

Gette one or two of experte men,
To helpe thee in that nede;
And make them partakers wyth thee,
In that worke to procede.

For in so doinge, thine honestye
Thou shalte well kepe and save;
Also thy patiente thereby
Right greate comforte shall have.

By thys meanes thou mayste haplye learne,
Ryghte seldome sene before;
Of thee, or hym, whych fyrste thee taughte,
Though thou have cunnynge store.

And also if oughte goe a wrye,
Or hinder in thy cure,
The one maye mende the others faulte,
While friendship dothe endure.

The wounded or sore man also,
Shall have no cause to grudge
In you suche uniformitye,
Whyle he maye see and judge.

But one thinge note, when two or moe
Together joyned be;
Aboute the paynfull patient,
See that ye doe agree.

See that no discorde doe arise,
Nor be at no debate;
For that shall sore discomforte hym,
That is in sycke estate.

For noughte can more discomforte him,
That lies in griefe and peyne,
Then heare that one of you dothe beare
To other suche disdeine.

Wherefore what so ye have to saye,
In thinges about your arte;
Let it be done among yourselves,
In secrete and a parte.

With one consent uniformlye
Comforte the wounded man;
But unto some good frende of hys
Express all that ye can.

See thou dispraise none other man
His error though thou knowe;
For sure an other for thy plage,
Shall then like curtyse showe.

[Comment.—Dr. Stone seems to have somewhat confused Dr. John Halle with Dr. John Hall.

John Hall, who was born in 1575 and died in 1635, married Susanna Shakespeare, June 5, 1607. He is reported to have been a medical man of more than the average knowledge and ability, and was deservedly held in high esteem. Dr. Hall could not have been the author of the poem printed above if it was written in 1564. He was, however, the author of a book of which the following description occurs in the Surgeon-General's Index:

> Select observations on English bodies; or, cures, both empericall and historicall, performed upon very eminent persons in desperate diseases. First written in Latine by . . . living at Stratford upon Avon in Warwick-shire, where he was very famous, as also in the counties adjacent, as appeares by these observations drawn out of severall hundreds of his, as choysest. Now put into English for common benefit by James Cooke.

Dr. John Halle was borne in 1529. His biography is published in J. Aikin's "Biographical Memoirs," London, 1780, p. 181. In a series of articles on Archaeologia Anatomica by E. Barclay-Smith, published in the *Journal of Anatomy and Physiology,* 1900, xxxiv, 275, his work is especially discussed. He is the author of a book thus described in the Surgeon-General's catalogue.

> An historicall espostulation against the beastlye abusers, both of chyrurgerie and physyke, in oure tyme: with a goodlye doctrine and instruction, necessarye to be marked and followed of all true chirurgiens.

It is probable that the poem printed above is a portion of this work. Barclay-Smith states that:

> The "Compendious work of Anatomie, more utile and profitable than any heretofore in the Englyshe tongue publyshed," annexed to Mr. John Halle's "A most excellent and learned woorke of Chirurgerie," is perhaps the earliest anatomical treatise written by an Englishman, and published in England, now existent, but Halle is far from being the earliest English anatomical writer of whom we have record.

So far as can be determined, the first edition of his work has disappeared completely.

Barclay-Smith states that Halle, like many writers of his age, was bitten with an inexpressible desire to sing. He bursts into poetry on the slightest provocation. The following poem is quoted:

But chieflye the Anatomye
Ye oughte to understande:
If ye will cure well anye thinge,
That ye doe take in hande.

For by the same above the reft,
Ye shall greate fame deserve,
The life of many from manye streightes,
To save and well preserve.

Without the knowledge of whyche arte,
Thou canste not chose but erre:
In all that thou shalte goe aboute
Thy knowledge to preferre:

As if ye cutte or cauterize,
Or use Phlebotomye:
Ye can not but erre in the same,
Without Anatomye.

He is no true Chirurgien
That cannot shewe by arte,
The nature of eurye member,
Eche from other aparte.

For in that noble handye worke,
There dothe nothinge excell,
The knowledge of Anatomye,
If it be learned well.

Endeoure therefore by all meanes,
The same to knowe and cunne,
For when thou haste it perfectlye,
Thine arte is halflye wunne.

For thereby shalt thou understande,
Of eche member in dede,
Their nature and their offices,
And howe they doe procede.

And unto what good use they serve,
As well the leaste as moste,
And by their hurte Prognosticate,
What action will be loste.

Whereby of knowledge and greate skill,
Thou shalt obteine the brute,
And men to thee in generall,
For helpe shall make their sute.

Wherfore all honour, laude and praise,
To God ascribed be,
The Father, Sonne, and holye Ghoste,
One God and personnes three.

—Ed.]

The Fate of Bone Transplants

To the Editor:—We have received a letter from Dr. C. A. McWilliams of New York, complaining that our Conclusion 2 on experimental bone work (The Journal, September 18) was unfair, in that it implied that because of lack of sufficient contact and immobilization, his wounds *suppurated.*

We hasten to correct this impression, as if this interpretation were put on the conclusion it would be manifestly unfair to Dr. McWilliams.

Exactly what we meant was that there was not sufficient contact and immobilization in his dog experiments, and not sufficient contact in his three clinical cases to secure primary union between the transplant and parent bone.

So far as other criticisms of the article by Dr. McWilliams are concerned, they pertain to the scientific value of the contribution, and will be answered at another time if need be.

We hope that the foregoing explanation will make the conclusion plain.

W. L. and C. P. Brown, El Paso, Texas.

[The foregoing letter was referred to Dr. McWilliams who replied:]

To the Editor:—The original article by Brown and Brown is loosely put together, for most authorities consider "free" grafts to be nonpedicled grafts in contradistinction to pedicled grafts (either temporary or permanent). Brown and Brown evidently use the term "free grafts" to mean *noncontacting grafts,* but without any explanation of this fact, as one has to go through the article to learn what is meant. The authors have explained in the preceding letter their use of the term "primary union" in Conclusion 2. Universal application of the term "primary union" makes these words refer to the absence of infection. Brown and Brown have found a new use for these words.

As for the criticism of the lack of sufficient contact and immobilization in my animal and clinical cases to secure "primary union" between the transplant and the parent bone, if we grant, for the sake of argument, that these were insufficient, then these grafts died because of the lack of periosteum, for they evidently had not sufficient life in themselves to live and they could not get nourishment from the lack of contacting points. If, on the other hand, periosteum had been on these grafts, they would all have lived despite the pretended lack of contact and immobilization for there are almost no reported failures of transplants made *with* periosteum. Grafts *with* periosteum have been proved by many to be living entities in themselves and do not need contact with living bone to maintain their own life, e. g., Gill (*Ann. Surg.*, June, 1915) has proved that neither contact nor immobilization is absolutely necessary for the life of the grafts, if periosteum be on them, for he transplanted the entire metatarsal bone with periosteum from one leg of a dog to the other leg. There was no bony contact and no immobilization in any one of the cases, yet five transplants lived perfectly for eight months after the transplantations despite suppuration in all but one case. These transplants are all perfectly normal in appearance. Barth was the originator of the theory that contact is necessary for the life of grafts, but in 1908 he entirely repudiated his original ideas and came to believe that periosteum was the necessary element in their life. Murphy is the sole defender of the contact idea, now backed up by Brown and Brown, but Murphy has never advanced any proofs to support the theory. Whether Brown and Brown have done so is left to the judgment of the profession. In addition there are numerous human transplantations of metatarsals and phalanges of the foot into the metacarpals and phalanges of the hand, which have succeeded perfectly without any bony contact being made. These cases absolutely invalidate the contact theory.

C. A. McWilliams, M.D., New York.

The Relation of Selective Tissue Affinity to Infection

To the Editor:—Your recent editorial on this subject (The Journal, Sept. 25, 1915, p. 1114) would seem to open up the path for important clinical progress. If a pneumococcus which has an affinity for the lungs is grown on artificial mediums, it loses this specificity and is apt to locate in other tissues. It has really become another strain. This selective affinity may be assumed to be due to the fact that the toxins of the particular organism in question are especially toxic to this tissue, and having lowered its resistance, grow there with greater freedom, or that certain tissues themselves do not resist the invasion of these strains, or both.

It would seem that a vaccine produced on artificial mediums would be from necessity another strain, and even though it be an autogenous vaccine, its characteristics would probably differ somewhat. By the use of vaccines prepared from cultures grown on mediums containing homologous tissue extracts, the specificity of the culture would be maintained and a greater number of antibodies produced. For instance, a pneumococcus vaccine intended for use in pneumonia could be prepared from cultures grown on mediums containing extracts of lung tissue. A vaccine to be used in pyelitis could be prepared from culture mediums containing an extract of kidney tissue. This would raise the resistance of the particular tissue involved and produce a vaccine with the same characteristics as that of the invading organism. This theory would naturally have its limitations, but in certain fields would open a new door in vaccine therapeusis.

E. L. Ward, M.D., Santa Fe, N. M.

Progress.—The drama of progress, whether displayed in the evolution of living things or in man's age-long struggle to comprehend the world of which he is a product, stirs the imagination by a warmer appeal. Without it we should miss something that we fain would keep.—E. B. Wilson, *Science*.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LENGTH OF GESTATION IN ECTOPIC PREGNANCY

To the Editor:—Recently I assisted in an operation for ectopic pregnancy in which the uterus was empty and showed no signs of rupture. The child was alive, fully developed and weighed 9 pounds. The mother claims she was always regular with menstruation and there was never amenorrhea until this, her first pregnancy. She claims further that she has been pregnant fifteen months up to the time of this operation and had felt life for nine months. Can you inform me how many cases are on record in which a child remained alive in ectopic pregnancy longer than nine months? The operation was performed two months ago; mother and child are still doing well.

L. T. H., Idaho.

Answer.—It is well known that the duration of pregnancy frequently exceeds 280 days. Of course the exact duration is never known because there is always uncertainty as to the date of the beginning of pregnancy. Even when there is a single coitus the time of fertilization may be delayed, possibly several days. Numerous cases of pregnancy lasting about 302 days are on record and a few cases between 330 and 336 days are accepted as reliable. No credible reports of gestation prolonged more than 349 days are extant.

Such a report as is given by our correspondent can make no claim to credibility. The mother's assertion that she was pregnant fifteen months or that she had felt life nine months means nothing to the reader of the report. Every pertinent part of the personal and family history bearing on the reliability of the patient should be given. The exact dates of menstruation, cohabitation, nausea, symptoms of disturbance from extra-uterine pregnancy, etc., as far as possible should be stated; likewise the exact weight and length of the child, as well as the state of the development of the bones, should be recorded.

While there are numerous reports of cases of abdominal pregnancy with the child living at term, there are very few in which the child lived beyond the usual term of gestation. Uterine contractions generally occur, accompanied by contractions in the extra-uterine fruit sac, and the child dies. Parry ("Ectopic Gestation," 1876) reports a case of twins, one intra-uterine the other extra-uterine, in which the patient felt the movements of the extra-uterine child seven weeks after the birth of the uterine child. He also cites a case from Grassi, who claims to have felt the fetal movements in a case of abdominal pregnancy twenty-three months after cessation of the menses. These reports are good illustrations of interesting medical gossip that have no claim to scientific credence.

The following references may be quoted:

Cushing, E. W.: A Case of Extra-Uterine Pregnancy; Operation at Ninth Month; Recovery, *Am. Gynec. and Pediat.*, 1890-1891, iv, 214.

Dalton, H. C.: Ectopic Pregnancy Operated on at Full Term; Recovery, *Tr. Med. Assn. Missouri*, 1898, xi, 91.

Rafferty, T. M., and Rafferty, H. N.: Operation at Term with Living Child, *Med. Rec.*, New York, 1901, lx, 472.

Root, E. F.: Living Child by Operation at End of Term in Extra-Uterine Gestation, *Am. Surg. and Gynec.*, St. Louis, 1902, xvi, 204.

Urbain, A.: Grossesse extra-utérine à terme; opération; enfant vivant, *Bull. Soc. belge de gynéc. et d'obst.*, 1893, iv, 130.

Horsley, J. S.: Abdominal Pregnancy with Living Child, *Surg., Gynec. and Obst.*, July, 1913.

Himmelsbach, W.: Case of Abdominal Pregnancy, *California State Jour. Med.*, December, 1914.

Lewis, D. G.: Abdominal Pregnancy; Eight and One-Half Months' Gestation; Eclampsia; Celiotomy; Recovery of Mother; Child Lived Three Days, *Washington Med. Ann.*, 1907-1908, vi, 315.

FORMATION OF ALCOHOL DURING DIGESTION—ITS OXIDATION BY THE LIVER—EXTENT OF ACIDITY IN HYPERCHLORHYDRIA

To the Editor:—1. Is alcohol formed in the process of digestion?
2. Is it broken up in the liver?
3. In marked cases of hyperchlorhydria does the acid as such continue in the intestines?

H. A. M., Philadelphia.

Answer.—1. A trace of ethyl alcohol appears to be present in the ileum and probably also in the large intestine during digestion and absorption. It is commonly held that this alcohol is the product of bacterial fermentation of the carbohydrates of the food rather than due to the action of the digestive ferments of the pancreatic and the intestinal juices. But this point is still unsettled. It is indeed, possible that the trace of alcohol present in the intestine is excreted from the blood. A trace of ethyl alcohol seems to be present in the blood of normal persons, even when no alcohol is ingested, and when the absorption of alcohol from the digestive tract is excluded. This trace of ethyl alcohol in the blood is, therefore, a product of tissue metabolism. It is well known that alcohol, once in the blood, is eliminated through all the secreting and excreting organs, including the intestinal mucosa.

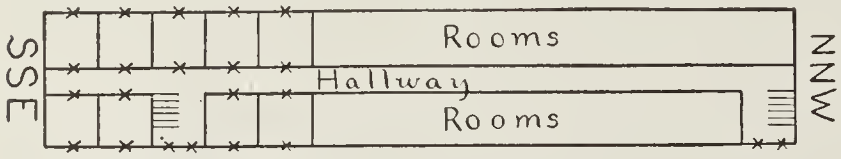
2. There is little or no evidence that the liver oxidizes ethyl alcohol with greater rapidity than do the other organs in the body. It is probable that all the body tissues are capable of oxidizing ethyl alcohol. Experimental work along this line has been concerned with the question whether or not the alcohol is really burnt in the body, and in what way this affects metabolism, rather than with the question as to which particular organ is responsible for the oxidation.

3. In cases of persistent hyperacidity there is hypersecretion. The contents of the duodenum are acid; pylorospasm then occurs, keeping the remaining food in the stomach until sufficient pancreatic juice is secreted to neutralize the acid contents of the duodenum.

VENTILATION

To the Editor:—There is a floor in a school dormitory in this place which approximates this sketch. It is the top floor of a four-story building, and has no overhead ventilation in the hall; therefore all the ventilation is by way of the windows in the rooms and the two staircases. In every instance the window is exactly opposite the door, both being stock size. The rooms are 12 by 12 by 9. There is no method of artificial ventilation in the building, no way of forcing air in or out. The ends of the hall are closed, so that there is no north and south ventilation at all. The building is on a hill to the south of the town, and there are not a dozen residences, and no factories, etc., within a quarter of a mile.

These top floor rooms have been heretofore used for the accommodation of but one pupil, but this year the number of applications exceeds the room-space of the college, and the question of putting two girls to a room on the top floor is being considered. Considered from the standpoint of ventilation, would this be permissible? The average age of the pupils is about 15 or 16.



Sketch of school dormitory; the crosses indicate the location of windows and doors.

Now please don't say that each individual requires 3,000 cubic feet of air an hour and that about 2,500 feet can be passed without perceptible draft through a space of 424 feet, or that in large halls 300 feet per individual is sufficient. I know all that and all the other things about ventilation that do not do me a bit of good. I have to solve a concrete proposition. All girls will not keep their windows open, and in this case it is useless to talk about installing a system of forced ventilation. I know too that on a windy day, if all the windows were opened, you would find it delightful on that floor. The question is, Should I permit them to put two girls in one of those rooms? E. F. Howard, M.D., Vicksburg, Miss.

Answer.—Recent scientific investigation has shown that the bad hygienic effects of an insufficient air supply are more dependent on heat stagnation in the body than on chemical impurity in the air. The easiest and most available method of carrying away the body heat is by means of moving air. Therein lies the chief purpose of ventilation. It is not a question of the quantity of fresh air supplied, but of the quantity of heat that it is capable of carrying away. Hence temperature is also of much importance. If this does not rise above 68 or 69 F., relatively small amounts of air will answer the purpose and no ill effects will be observed. If it goes much above 70, then larger quantities are demanded and some artificial device for maintaining motion becomes necessary.

With these principles in mind we are justified in saying that there should be no objection to placing two girls in a room 12 by 12 by 9 feet and laid out according to the accompanying sketch. The cubic space is quite enough to answer all practical purposes, and the arrangement of doors and windows is such as to make efficient ventilation probable. It is not stated whether the doors are fitted with transoms. It is to be hoped that they are, since such an arrangement will aid materially in the freedom of air movement in and out of the room. As a practical suggestion, it is proposed that the windows of these rooms be supplied with snugly fitting 2-inch boards placed on the sill so that the lower sashes rest on them. This will maintain an open crevice between the upper and lower sashes and secure a ready entrance for air from without. The pupils should be taught that the maintenance of such a crevice may be of value to them.

Recent literature bearing on the principles of ventilation is to be found in the following:

Hill (and others): The Influence of the Atmosphere on Our Health and Comfort in Confined and Crowded Places. Smithsonian Miscellaneous Collections, 1913, Publication 2170.

Lee: Fresh Air, *Pop. Sc. Month.*, April, 1914.

Winslow (and others): Results of the First Year's Work of the New York State Commission on Ventilation, *Am. Jour. Pub. Health*, 1915, v, 85.

Crowder: On the Reinspiration of Expired Air, *Arch. Int. Med.*, October, 1913, p. 420.

TESTS OF PANCREATIC SECRETION

To the Editor:—Please describe the following tests in full:

1. Fulde-Gross stool test of the external secretion of the pancreas.
2. Wohlgemuth's urine test of the external secretion of the pancreas.
3. Volhard's oil gastric test of the external secretion of the pancreas.
4. Loewi pupillary dilatation test.

J. W. Shuman, M.D., Sioux City, Ia.

Answer.—1. The Fulde-Gross trypsin determination method depends on the fact that casein, undigested, is precipitated by acetic acid, while digested casein is not. The estimation is made in units, one unit representing the ability of 1 c.c. stool filtrate to digest 1 c.c. of starch or casein solution.

Fecal solutions of 1:10, 1:100 and 1:1,000 are made and poured into nine test tubes as follows: First three tubes: 1:10 solution, 2, 1 and 0.5 c.c. starch solution 1 per cent., or casein solution 1:1,000. Second three tubes: 1:100 solution, 2, 1 and 0.5 c.c. Third three tubes: 1:1,000 solution, 2, 1 and 0.5 c.c. To each tube are added 5 c.c. of 1 per cent. soluble starch solution or 1:1,000 casein solution. The tube showing digestion, that is, no reaction, by the weakest fecal solution after twenty-four hours' incubation, is taken as the index of digestion. The casein reagent is acetic alcohol (1 per cent. acetic acid may be used); the starch reagent is Lugol's solution.

If a tube containing 1 c.c. of 1:1,000 fecal dilution is the greatest dilution which can digest 5 c.c. starch or casein solution, then 1 c.c. of undiluted fecal filtrate would be able to digest 5,000 c.c. starch or casein solution. This represents 5,000 units. The average normal reading is from 500 to 1,000.

2. Wohlgemuth's method is based on the extraction of a weighed portion of feces with a 1 per cent. sodium chlorid solution and the determination of the amylolytic activity of gradually decreasing volumes of this centrifugated extract, by means of a series of tubes in each of which 5 c.c. of 1 per cent. soluble starch is used as a substrate. After twenty-four hours at 38 C. (100.4 F.) the tubes are treated with a solution of iodin, and the extent of digestion determined colorimetrically. According to Hawk (*Arch. Int. Med.*, October, 1911, p. 553), this method does not yield dependable results when the stools are markedly acid. In his article he gives a modification to overcome this difficulty.

As applied to the urine, this is a test of diastase, 1 c.c. of urine being allowed to act on starch solution. Corbett found that the amount of starch-reducing ferment passed in twenty-four hours is fairly constant, the *d* value or index being 10 to 20 units, each unit representing 1 c.c. of 0.1 per cent. starch solution converted into dextrin in half an hour by 1 c.c. of urine. High readings are found in cases of pancreatic disease, in certain infective conditions and in some forms of eclampsia.

3. Volhard's method is based on the fact that normally there is a slight regurgitation of pancreatic juice into the stomach. The patient receives 1 gm. of magnesium oxid (calcined magnesia), half an hour later 200 c.c. of olive oil or 250 c.c. of sweet cream, and half an hour later again 1 dram of magnesium oxid. The stomach is emptied forty-five minutes later and the Gross method for the examination is carried out. According to Brugsch, the negative findings of trypsin are conclusive only in case erepsin is present.

4. Loewi's test consists of the instillation into the eye of a 1:1,000 epinephrin solution. If dilatation of the pupil takes place within an hour, the test is positive. In cases of pancreatic inefficiency, and occasionally in exophthalmic goiter, the test is positive. Beyond the fact that in these cases there is increased susceptibility of the sympathetic system to stimulation by epinephrin, there is no available explanation of the reaction. It is, of course, necessary to ascertain that the cornea is intact.

SOMNOFORM

To the Editor:—What is the present status of Somnoform as an anesthetic for minor operative procedures and what is its mortality rate in comparison to gas, ether and chloroform?

X. Y. Z.

Answer.—Somnoform is the proprietary name of a mixture introduced in 1901. It was originally composed of ethyl chlorid, 60 per cent., methyl chlorid, 35 per cent., and ethyl bromid, 5 per cent. It was found that the mixture soon decomposed, which was largely due to the unstable nature of ethyl bromid.

The formula was changed and the mixture is now said to contain but 1 per cent. ethyl bromid. Small doses increase the pulse rate; large doses reduce it. The heart continues to beat after respiration ceases. Small doses increase the rate and depth of respiration. Large doses cause death by respiratory paralysis through overstimulation of the respiratory center, the diaphragm being in a state of tonic contraction. Breathing is usually easily established by artificial means unless the dose be a very large one, which is probably because the heart is so little affected that anemia of the medullary centers does not occur. Like ethyl chlorid, Somnoform has been employed as a substitute for nitrous oxid before ether anesthesia and for short operations, but has been used mostly by dentists for extractions. It is very rapid in its action, surgical anesthesia, which lasts from one to two minutes, being produced in from twenty to thirty seconds. The dose for adults is from 5 to 7 c.c., and for children 5 c.c. Patients have been kept narcotized for from fifteen minutes to half an hour, but few anesthetists care to risk repeating the dose more than once or twice. About 2 per cent. of the patients vomit and many suffer from intense headache which appears shortly after awaking. It is doubtful if the mixture has any advantage over straight ethyl chlorid, of which it is so largely composed. The methyl chlorid is supposed to hasten anesthesia, while the ethyl bromid prolongs it, but the small percentage of ethyl bromid can hardly be of any value unless a disagreeable odor is an advantage. As with ethyl chlorid, the chief danger with Somnoform is respiratory paralysis. The mortality is 1 in 10,000 or 12,000, which is less than that of chloroform (1 in 5,000 or 6,000), twice as great as that of ether (1 in 20,000 or 25,000) and four times as great as that of nitrous oxid (1 in 50,000). On account of the exceedingly rapid action of both ethyl chlorid and Somnoform it can readily be understood how easily the limits of safety may be overstepped and a dangerously deep degree of narcosis be produced in a few seconds. Reference may be made to Queries and Minor Notes, March 16, 1912, p. 806.

CARAMEL SUGAR FOR DIABETICS

To the Editor:—1. What is the chemistry of fully polymerized sugar as advised in the treatment of diabetes by Grafe (*München. med. Wchnschr.*, June 30, 1914; abstr., The Journal, Aug. 1, 1914, p. 437) and Umber (*Deutsch. med. Wchnschr.*, Feb. 11, 1915; abstr., The Journal, March 27, 1915, p. 1113)?

2. Is this sugar handled by any firm in this country?

Roy Blosser, M.D., Atlanta, Ga.

Answer.—The chemistry of caramel is not well understood. Earlier investigators regarded caramel as a complex substance composed of several ingredients, but later research, especially that of Stolle (*Chem. Centralbl.*, 1899, xi, 1021), shows that the several constituents previously isolated from caramel were not chemical entities. Stolle concluded that caramel prepared by heating sucrose (cane sugar) was a single definite chemical substance having the formula $C_{12}H_{18}O_9$. This, he claimed, is formed by the elimination of water from sucrose as follows: $C_{12}H_{22}O_{11}=C_{12}H_{18}O_9+2H_2O$. The caramel of Stolle is an amorphous substance exhibiting a conchoidal fracture and a red brown color. It melts between 134 and 136 C. and is soluble in water, but insoluble in alcohol. It contains only 0.7 per cent. unconverted sugar.

Commercial caramel, commonly called sugar coloring and used to impart a brown color to various commercial products, is usually made by heating glucose instead of sucrose. It is a dark, syrupy liquid and instead of being a definite chemical body is a complex mixture of several substances, among which are coloring substances, an odorous principle, some undecomposed sugar, a bitter substance probably caramelan, and varying amounts of water.

2. We know of no firm that sells purified caramel in the United States.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

The English Side of Medical Education

An article under this title by Mr. Abraham Flexner in the *Atlantic Monthly* for October, makes an important contribution to the literature on medical education. It really furnishes a comparison of the English with the German system of medical education, and shows the defects and the good points in each. Medical education in this country can doubtless benefit much by avoiding the defects, and by adopting the good qualities of the two systems. An abstract of Mr. Flexner's paper follows:

The English medical school is an outgrowth of the English hospital, for it began when the English medical student attached himself to a master whom he followed through the hospital wards. Such additional instruction as the student required—for example, in anatomy and pharmacy—he obtained in schools that grew up outside the hospital, but in close relation to it. In course of time, the separate masters, coming together, formed a "faculty," and their apprentices, being pooled, formed a student body. Thereon the so-called "anatomical schools" became part of the hospital schools. But the medical training was essentially a hospital apprenticeship. The organization consisted of practicing hospital physicians; the resources were merely student fees, and the spirit was intensely and immediately practical. The so-called laboratory subjects, therefore, gradually edged their way into busy hospital schools. Their teaching was at first entrusted to certain members of the hospital staff—usually the younger members—but this soon proved to be unsatisfactory, and the teaching of the underlying sciences was in time differentiated and committed largely to full-time teachers.

The German medical schools vary in extensiveness and completeness, but all possess adequate laboratory and clinical facilities. The preliminary education has been largely along classical rather than modern lines, and without special adaptation to the demands of medical training; yet it has been a serious education of uniformly high quality. Medical teachers have been selected because of scientific eminence. These teachers are called from one university to another as vacancies occur, and in these respects laboratory and clinical teachers are on the same footing. They represent precisely the same university type of activity and ideal. In all these respects English medical education fares badly in comparison.

The English medical school possesses a hospital, and, as a rule, the hospital and its outpatient departments contain material enough for the purposes of instruction, but this material has not been carefully differentiated. Medicine, surgery and obstetrics are recognized as separate divisions; but there is little intensive specialization, and research suffers in consequence. The English hospital also lacks the laboratory equipment and staff needed for the critical study of disease, and research laboratories with competent assistants and adequate support are almost unknown.

While in Germany the underlying sciences are well developed, particularly from the standpoint of research, in the English schools physiology is the only laboratory science which is creditably represented. The arrangements for anatomy suffice only for elementary instruction; pathology is taught only from the gross and descriptive points of view, and modern pharmacology is almost unrecognized. The meager facilities and barren outlook of the medical sciences result in a type of teaching, scientifically uninspiring to both student and instructor. In preliminary training the English students are less homogeneous and less competent than the German. The school and hospital staff from the educational standpoint is inferior. Promotion by seniority generally prevails, and there is serious inbreeding. The lower posts are filled with recent graduates, who succeed automatically to the leading positions. The worldly, as well as the professional and scientific future of the German clinician depends on his scientific productivity; he will rise only if he has successful performance to his credit. The English medical man has no such spur. Once started on the hospital ladder, he is destined to rise if he is faithful in the performance of his routine duties. Between the practicing and teaching clinical profession in England there is no distinction, and the atmosphere of the English medical school is the atmosphere of English medical and surgical practice. Facilities are not furnished for the purpose of scientific investigation. A lack of cordiality is evident between the staff physicians and the teachers of chemistry and physiology. Whereas the German university clinic is alive with ideas and with the spirit of inquiry, the English hospital casual and incidental.

The German medical school began in a university that for centuries had a lecturing faculty. During this entire period medical education had no contact with disease in the concrete. As recently as 1805, the medical students at Tübingen preferred theoretical instruction to interrogation in the presence of patients, and almost half a century later Helmholtz, on the occasion of his graduation as military surgeon, publicly expounded the operation of tumors, although he had never seen a tumor operated on.

With the development of the laboratory sciences in the university, German medicine came into close contact with disease and its manifestations. As a result, the lecturing and expounding medieval university has been transformed into the modern critical, investigating university. In one important respect, however, medical teaching in Germany has failed to modernize. The lecture course, the traditional exercise of the medieval university, is still the backbone and furnishes largely the bulk of the instruction. Even in the hospital, the student is a mere onlooker and is not freely admitted to the bedside of the patient. It is precisely at this point—and it is a point of priceless value—the comparison is all in favor of the English method.

In England the student, from the first, sees the patient at the bedside. Privileges in the English hospitals are heartily extended and the hospitals have profited thereby. The student body, serving as clinical clerks, are utilized as important aids in the care of the sick. All parties, therefore, are equally benefited by the arrangement—the patient, the hospital administration, the medical staff and the medical student.

The clinical clerkship is the only effective method of clinical education ever devised. Small groups of students—six, for example, at the London Hospital—are assigned to a visiting physician and his assistant, who have, at the same hospital, a service of sixty beds. Cases are assigned to the students or clerks in rotation. Each clerk is required to make a complete history and description of each of his cases, including the requisite microscopic examination. For these purposes he has free entry to the bedside. The student's notes, criticized and revised by a member of the staff, form permanent and essential parts of the case records. Ward rounds are made daily. The chief, his assistants and his clerks move almost noiselessly from cot to cot, conversing in low tones over the patient. At each bed the clerk in charge steps forward, reads his notes, proposes his diagnosis and suggests a line of procedure. The chief questions, criticizes, offers alternatives and stimulates a discussion in which the entire group is involved. Meanwhile, the clerk can do no harm, for, free as he is to suggest, only the chief or his assistant can prescribe.

Modern medicine on these terms is indeed an ideal educational discipline. The modern physician must be an accurate and cautious observer; he must on this basis construct his tentative hypothesis or diagnosis, which suggests a definite therapeutic procedure; and the results vindicate his observation and judgment or send him back to the facts for fresh observation and reflection. The English clerkship furnishes an opportunity for a prolonged training along these lines. The student's reaction must constitute the raw stuff out of which the teacher must develop orderly and effective mental processes. That is, the learner must act before the teacher can react on him. To begin by telling him, by pointing out, by interpreting, as the lecture or demonstration does, would be to deprive him of that initiative which is so highly educative. Learning is a game in which, whenever possible, the learner must move first. English medical education complies with this fundamental and general educational principle.

The reason so admirable a method produces such unsatisfactory results is that the clinical teachers are rarely men of scientific vision or enthusiasm. They move contentedly within the area of the known; they lack intellectual discipline, maturity and interest in research. When such teachers undertake to train students, the instruction, while conscientious and thorough, is likely to be uniform, mechanical and uninspiring. Every school offers substantially the same course; every student does substantially the same things, and spends no small amount of time and energy doing them over and over, so as to be examination-proof. Despite an excellent method, the clinical atmosphere is depressing.

The defects of both German and English medical education may be cured without sacrificing the peculiar virtues of either and, curiously enough, such remedy requires that the two methods be combined. The German method of university teaching by men who are actively and systematically engaged in the advancement of knowledge in the subject they teach, should be combined with the English method of clinical teaching.

Connecticut Homeopathic July Report

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 13, 1915. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. Two candidates, graduates of the New York Homeopathic Medical College and Flower Hospital, 1915, were examined and passed, with averages of 84 and 85.

Alabama July Report

Dr. W. H. Sanders, secretary of the Alabama State Board of Health, reports the written examination held at Montgomery, July 6-8, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 98, of whom 64 passed and 34 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Alabama	(1910) (1915)	79; 75.3, 76.7, 78.2, 79.3, 79.8, 80.5, 80.9, 83, 83.2, 83.4.
Birmingham Medical College	(1914) (1915)	75.1, 75.2, 75.5, 78.5; 75, 75.5, 76.9, 78, 78.7, 82.9, 83.2, 83.9.
Atlanta Medical College	(1914) (1915)	75.2, 77.6; 76.4, 76.7, 77.8, 80.8, 81.3, 82.7, 84.6.
Chicago Coll. of Med. and Surg.	(1914) (1915)	77.5; 80, 83.9
University of Louisville	(1912)	78.1
Tulane University of Louisiana	(1908) (1915)	80.4; 77.6, 85, 85.6, 85.7, 86.8, 87.9.
Johns Hopkins University	(1915)	75.9
Woman's Medical College of Baltimore	(1900)	79.2
University of Michigan Medical School	(1914)	80.7
St. Louis University	(1914)	83.4
University of Missouri	(1904)	78
Leonard Medical School	(1913)	85.7

Medico-Chirurgical College of Phila.	(1914)	76
Meharry Medical College	(1915) 79.2, 80.4,	87.2
University of Nashville	(1911)	79.2
University of Tennessee	(1912) 77.1; (1915) 75,	75.6
Vanderbilt University	(1915) 75, 77.1, 80.8, 80.9, 84.3,	88.6
University of Virginia	(1912)	85.5
FAILED		
Birmingham Medical College	(1913) 68.1, 70.6; (1914) 64.7, 66.9, 68.1, 68.3, 69.6, 70.4; (1915) 49.4, 52.1, 55.7, 57.7, 59.8, 61, 63.2, 65.5, 66.4, 66.6, 67, 67.9, 70.3, 71.2.	
University of Alabama	(1915)	73.7
Atlanta Medical College	(1915)	64.5
University of Georgia	(1906)	58.9
Chicago College of Med. and Surg.	(1910) 64.6; (1915)	61.1
Hahnemann Med. Coll. and Hosp., Chicago	(1899)	67.2
Meharry Medical College	(1915)	65.9
Memphis Hosp. Medical College	(1912) 56.8; (1913) 43.4,	51.5
University of Tennessee	(1915)	61.1
Vanderbilt University	(1914)	72.6

Book Notices

A Campaign Against Consumption. A Collection of Papers Relating to Tuberculosis. By Arthur Ransome, M.D., F.R.C.P., F.R.S., Consulting Physician to the Manchester Hospital for Consumption. Cloth. Price, $3.25. Pp. 263. New York: G. P. Putnam's Sons, 1915.

This book contains twenty-two papers on social, administrative and medical phases of the tuberculosis problem, read by Dr. Ransome before various medical societies from 1881 to 1913, and previously published. It represents an experience gained in an active participation in the antituberculosis movement, covering a period of fifty-three years, beginning in 1860, when Dr. Ransome initiated in Manchester and Salford a voluntary weekly register of all new cases of certain diseases, of which phthisis was one. In an analysis of the gradual decline of the tuberculosis death rate in England and Wales, from thirty-eight deaths per 10,000 population in the year 1838 to less than ten per 10,000 in 1913, Dr. Ransome points out the steady decline of mortality from tuberculosis in England, resulting from general improvement of sanitary conditions, the marked reduction occurring in the period of forty-three years, preceding the year 1881, when Koch's discovery of the specific organism led to direct repressive measures against the spread of the disease. While in accord with the present policy of direct repressive measures in the control of individual cases of tuberculosis, the author lays chief emphasis on general improvement of sanitary conditions as the most effective means in the gradual eradication of the disease.

In 1894, on the basis of the previous steady decline of the tuberculosis death rate in England, Dr. Ransome predicted the disappearance of tuberculosis in England in thirty years. This prediction the author revised in a subsequent article, in 1904, in which the eradication of tuberculosis in England is set for 1930, provided general sanitary reforms, combined with modern repressive measures against individual cases of the disease, continue to develop, eliminating from the life of the nation the conditions responsible for the propagation of tuberculosis, among which the author lays special emphasis on the necessity of better land drainage, purer outer air in communities, effective ventilation of homes, public buildings and working places, improvement of housing conditions, a more wholesome food supply, temperance and other sanitary reforms. This idea of the greater effectiveness of general sanitary reforms (as against direct repressive measures at present in operation) runs through the book, substantiated by study of English mortality statistics, comparative study of the effect of poorly and well drained localities and improved housing conditions on the prevalence of tuberculosis, the effect of better food supply, better ventilation of public buildings and working places, the effect of intemperance, etc. Impure air charged with organic matter ("air sewage") insufficient light and lack of sunshine are emphasized as factors in keeping up the virulence of tubercle bacilli in dried sputum ("tubercle dust"), the propagator of the disease in infected homes, public buildings and working places.

The author gives his experience in 1884-1887 with the use of iodoform and ozonized oxygen, in the treatment of pulmonary tuberculosis, with no apparent effect on the course of the disease. Two articles give the results of painstaking study of growth of tubercle bacilli under varying conditions of light and fresh air. In an analysis of the causes of decline of the tuberculosis death rate in England, the author reiterates the great importance of general sanitary reforms in the fight against tuberculosis. The book will prove of special interest to the medical profession, particularly at present, when in the gradual realization of institutional and administrative provision for the control of tuberculosis in our communities, the further improvement of general sanitary conditions is receiving comparatively insufficient attention.

Gas Poisoning in Mining and Other Industries. By John Glaister, M.D., D.P.H., F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow, and David Dale Logan, M.D., D.P.H., Surgeon to the Coltness Ironworks, Newmains. Cloth. Price, $3.50 net. Pp. 471, with illustrations. New York: William Wood & Co., 1915.

This is an exceptionally complete study of the entire subject. The prevention and treatment of gas poisoning is of particular interest to the mining industries. Cases of poisoning are continually brought to the attention of medicolegal authorities, and must be studied from the aspects both of a coroner's office and of the Workmen's Compensation Act. The first author of the book is a medicolegal authority of note; the second author has been for many years chief surgeon of mining and iron working industries in Scotland. The literature has been studied exhaustively, and numerous references are quoted throughout the book.

In the chapter on resuscitation is a discussion of the various apparatus for rescue work, and considerable space is devoted to one particular resuscitating device. Unfortunately, the authors have apparently not observed the report of the joint committee appointed by the U. S. Bureau of Mines and the American Medical Association, which considers resuscitation from mine gases and which does not give unqualified approval to this apparatus.

For those especially interested in this field, this book is a unique and invaluable reference work.

Malay Poisons and Charm Cures. By John D. Gimlette, M.R.C.S., L.R.C.P., Resident Surgeon of Kelantan. Cloth. Price, 85 cents. Pp. 127. Philadelphia: P. Blakiston's Son & Co., 1915.

There are few books which give encyclopedic information about the poisonous plants of tropical countries. While the descriptions are by no means confined to the plant kingdom, nevertheless the Malay poisons as elsewhere are largely of vegetable origin. The information recorded was obtained during a residence of eighteen years in the Malay States. Malay medicine is a mixture of tradition, superstition and sorcery with some empiric knowledge; the author has tried to differentiate the last from the others. The native name of the poison is given, together with the native and botanic names of the plant furnishing it. The symptoms produced, the native antidotes, if any, and, where known, the chemical constituents and pharmacologic action, are briefly mentioned. The most astonishing feature of the work is the lack of scientific information concerning the chemistry of the poisonous plants described. This is not the fault of the author, for he has a good command of the literature, but it is due to the fact that phytochemistry is an almost unexplored region. Doubtless, there are thousands of plants in Africa and South America of whose chemistry and pharmacology science is as ignorant as it is of the Malay plants. The book can have little value to the practitioner of medicine (except in the Orient), but it is a worthy contribution to science.

A Guide to the Use of Tuberculin. By Archer W. R. Cochrane, M.B., F.R.C.S., Major, Indian Medical Service, and Cuthbert A. Sprawson, M.D., B.S., M.R.C.P., Major, Indian Medical Service. Cloth. Price, $2.25. Pp. 181. New York: William Wood & Co., 1915.

This book is a practical manual for practitioners on the method of administration of tuberculin. Particular attention is paid to the question of dosage. Typical cases are described, and the method of estimating the dosage for each is outlined. The theory of the use of tuberculin is considered only enough to show the actual indications for its use.

Miscellany

Effective Industrial Hygiene

An important result of the present "safety first" campaign is the opening of our eyes to a realization of the fact that it is not sufficient to make industries "safe" merely from an accident standpoint: they shall be "safe" also from a health standpoint. This principle is the keynote of an article by J. W. Schereschewsky of the Public Health Service in *Public Health Reports* on a plan for education in the avoidance of occupational diseases and injuries, in which he gives a tentative scheme for accomplishing this object. He says that the approximate average yearly loss through sickness of workers in this country would probably be about the same as it is in Europe—not far from eight to nine days for each of the 25,000,000 to 30,000,000 industrial workers, or an economic loss of $360,000,000 if the average annual earnings are $600. This would not take into consideration the loss due to premature physical decline or reduction in earning capacity, which at present cannot be estimated.

Any plan for improvement in this respect involves the education of every one concerned, which, Schereschewsky says, must be general in nature because of the close interdependence of all the units of society. Improvement in this respect first requires the education of the medical profession and the stimulation of interest in the study of diseases of occupation, the collection of clinical data bearing on occupational diseases, and the promotion of research along these lines. Education of the public is important, because an enlightened public opinion is necessary to the successful carrying out of any measures which may be recommended after careful study of the problems involved.

Schereschewsky says that although industrial workers constitute by far the largest class of medical patients, yet physicians in general regard the study of the relation of disease to occupation as a specialty with which the general practitioner and the specialist in other fields are not closely concerned.

The influence of the industries on health is a subject which has been given little attention in the courses of instruction in medical schools. Hospitals are the chief sources of clinical material and are the natural locations where intensive studies of diseases may be made. In order to utilize this source of information in regard to occupational diseases, the adoption of systematic methods and terms for recording occupations and diseases is necessary. Standard methods of history taking must also be employed. Death certificates should correctly and exactly indicate occupation and use the international system of recording deaths. Accurate information of this kind would be invaluable in the study of the mortality of occupations. Even if this were carried out in a relatively small number of hospitals, it would soon produce an accumulation of valuable information.

The instruction of the public to cooperate in procuring safety in the industries and the securing of personal and collective hygiene and sanitation, Schereschewsky says, must be the result of governmental action, federal, state and municipal, allied with other civic agencies. Minimum standards of industrial sanitation and legislation must be established, and this must be the work of the federal government. The adoption of such standards is the work of the legislatures of the states, but this need not preclude the adoption of additional measures by municipalities or by the employers of labor, labor organizations, etc.

As features of a public educational campaign in the prevention of occupational diseases and injuries, Schereschewsky gives the following outline: permanent exhibits; traveling exhibits including moving pictures; public lectures; bulletins issued for popular distribution by federal, state and local health authorities and by private associations; popular articles in the public press, and instruction in the public schools. All of these measures have been adopted and carried out to a certain extent in a few communities; some have been more generally employed.

Extensive results from any plan of education can be expected only after years of work similar to that outlined above. The employers of labor of course constitute an important factor in the improvement in respect to the prevention of occupational diseases. They too need to be educated, but now the idea is fast gaining ground among them that it is poor social and business economy to subject workers to avoidable industrial hazards. As a consequence, many employers are voluntarily improving working conditions in their plants, supervising the health of their employees and attempting educational measures among them. These measures have been found to yield increased efficiency and economy in production and have fostered the spirit of cooperation.

Liability for Pure Water

In an important decision by the supreme court of New Jersey in the case of *Jones* v. *Mount Holly Water Company*, the verdict obtained by the plaintiff for $750 damages on account of the illness of his children has been affirmed. It was shown to the satisfaction of the jury and the supreme court that contamination of the water supply by fecal matter, which was declared to be the cause of the illness of the children, was the result of negligence on the part of the water company. The responsibility and duty of a water company to furnish pure water is thus stated by Judge Kalisch:

> "It must be borne in mind that the defendant company was in the water-supply business for profit. The plaintiff had paid for the supply which he was to receive, in advance. Hence it became the duty of the defendant company to give to the plaintiff water fit for domestic purposes, including fitness for drinking. Water is a necessity of life, and one who undertakes to trade in it and supply customers stands in no different position to those with whom he deals than does a dealer in foodstuffs. He is bound to use reasonable care that whatever is supplied for food or drink shall be ordinarily and reasonably pure and wholesome. . . . Actual notice or knowledge of the unwholesomeness of the water was not an essential element to be proven in order to establish the defendant's liability. It was sufficient if there was testimony tending to show that the defendant, in the exercise of reasonable care, might have discovered the unwholesomeness and dangerous condition of the water."

Health Test for Garment Workers

The United States Public Health Service has announced the results of an investigation of the garment workers of New York City. About 3,000 garment workers volunteered for physical examination, 1,000 of whom were women. Of this number only about 2 per cent. were free from physical defect or disease. None was found to be suffering from vocational disease but the sedentary industry was found to exercise a deleterious effect on health and efficiency in those having certain defects and diseases. There were recorded in all 13,367 defects of all kinds of which 3,916 were in females, or an average of four defects and diseases in each individual examined. Among the male workers the incidence of tuberculosis was found to be about ten times that in the United States Army and three times the army rate among women. It was of interest to note that the previous military training to which the foreign workers had been subjected before coming to this country had a marked effect in preventing the development of faulty posture habits.

The Antivivisectionists

Mr. Stephen Coleridge is a director and the mouthpiece of the English National Anti-Vivisection Society. Concerning complaint of its attitude toward him and the Society the *Medical Press and Circular* has, among other things, the following to say: "We regard the National Anti-Vivisection Society with the same benevolent amazement with which we regard anything else which is at once picturesque, emotional, and futile—the Society for the Restoration of the Stuarts to the Throne of Great Britain, for example. And, as to Mr.

Coleridge himself, we esteem him to be a great asset to the world of science. He relieves the monotony of accuracy which too frequently besets it. His excursions into it, like the Iron Duke's excursions into the French language, are courageous; they cause distraction and increase the gaiety of nations. A lawyer steeped in sentiment is sufficiently rare to be really remarkable, but when he insists upon floundering about the quagmires of scientific investigation with no better guide than a tremulous tenderness for the nerves of the nether animals, he becomes a priceless public possession. When the Hon. Stephen Coleridge takes the floor to suffer for a rose in aromatic pain, or to writhe vicariously for a narcotized newt, the chorus of sterile spinsters weeps in wistful sympathy, the eunuchs applaud, and the world wonders. For ourselves we emphatically disclaim any semblance of spleen, but we confess to a share in the wonder."

Medicolegal

Another Fraudulent and Unlawful Use of the Mails

(Moses vs. United States (U. S.), 221 Fed. R. 863)

The United States Circuit Court of Appeals, Second Circuit, affirms a judgment against the defendant Moses, who was the general manager of a company that made "oxypathors," and who was convicted of having made unlawful use of the mails. The court says that the indictment charged that the defendant had devised a scheme to defraud; that the scheme was to sell the device called an oxypathor on positive representations that it, among other things, "begets in reality a supplementary breathing through the skin and membranes of the human body"; that its application "increases the amount of oxygen consumed by the body"; that it "has the direct effect of increasing vital combustion and the circulation"; that it "causes the body to attract oxygen from the air"; that "by the proper use of the oxypathor the owner is absolute master of disease in all acute affections and in far advanced stages of the most formidable chronic diseases," etc.; that the scheme was to sell the oxypathor by means of said representations for $35, and to effect the sales by means of letters and advertisements sent through the mail; that the defendant knew these representations to be false; that the oxypathor was in truth and in fact wholly inert, powerless, lifeless, and dead, and utterly worthless and incapable of producing any of the results aforesaid, and was entirely useless for any purpose, except to sell to people who did not know the falsity of said representations; that as one of the instruments of said scheme to defraud, and "in and as a part of the executing of said scheme to defraud, and in attempting so to do, defendant did feloniously, unlawfully, and knowingly cause to be delivered by mail a certain letter," which was set forth. It gave instructions to an agent as to methods of effecting sales, and, as the indictment charged, was delivered through the mail to the addressees. It was contended that the indictment did not charge a crime within any statute of the United States; but the court deems it too plain for argument that the indictment charged an offense under Section 215 of the criminal code. Again, counsel for the defendant treated the cause as if the only alleged false representation was that the oxypathor "would cure all diseases," and that unless the government showed that it was absolutely worthless as a cure for disease the charge in the indictment was not proved. He ignored entirely the other representations. But whether the defendant would have made as large sales if he had merely represented the oxypathor as a cure-all was not important. He went further—quite shrewdly as the court thinks—and sought by his suggestions as to its oxygen-increasing effects to induce its purchase by people who had heard of oxygen and the absolute necessity of its introduction into the system by breathing pure air. If the evidence justified the jury in finding that these assertions were false, and that he believed them to be false, they might find a verdict against him. The physicians called for the government did not undertake merely to express some general condemnation. The witnesses testified that to an experienced physician nothing was indicated by the circumstance that a man felt better after he had lain recumbent for a time with the oxypathor applied to him when the only ailment he testified to was a "lame back" or "nausea." They testified to the value of rest, compresses, hot and cold, of diet, of bathing, of exercise, of sleep, of fresh air, of regularity in the functions of the bowels, of hygiene and sanitation generally. The defendant's literature impressed on all users of the oxypathor the importance of paying great attention to these things, and the government's witnesses testified that the mere circumstance that some one had used an oxypathor at the same time that the treatment was going on was no indication that it contributed anything to the result.

When Damages Allowed for Mental Suffering and Without Evidence Thereof

(Muskogee Electric Traction Co. vs. Rye (Okla.), 148 Pac. R. 100)

The Supreme Court of Oklahoma, in affirming a judgment in favor of plaintiff Rye for damages for personal injuries sustained while he was alighting from one of the defendant company's street cars, says that the rule is well settled that mental pain and suffering, accompanying personal injury or physical pain, is always the subject of compensation. The mental anguish, however, should be connected with the bodily injury, and be fairly and reasonably the natural consequence that flows from it. In this case the evidence tended to show that the plaintiff had suffered a severe injury to his hip and shoulder; that the injury to his shoulder was not only permanent but it was also progressive, that is, it would continue to grow worse as long as the plaintiff lived; that he suffered and was still suffering great physical pain. In such circumstances, direct testimony of mental anguish and suffering, while proper, is not indispensable to a recovery therefor. Damages of this nature are ordinarily determined by the circumstances of the case, as disclosed by the evidence, the amount thereof depending on the seriousness of the injury.

Charges for Medical Attention as Advances to Tenant

(Ligon vs. Roberts (Ala.), 68 So. R. 319)

The Supreme Court of Alabama affirms a judgment, disallowing a charge of $7.50 by the plaintiff for three visits as a physician, in this action to enforce a claimed landlord's lien for advances alleged to have been made to the defendant as the plaintiff's tenant. The court does not say clearly that the plaintiff would under any circumstances have been entitled to such a lien for such services. It says that he testified: "The professional visits that I made to Mr. Roberts' were June 16, 17 and 18. I charged $2.50 for each visit." To whom these visits were made was not shown by the plaintiff. If it be assumed that medical attention to the tenant or his family, or to his laborers, is advances under the statutes, the evidence for the plaintiff did not show that such services were rendered the tenant, the tenant's family, or the tenant's laborers; if rendered pending the tenancy, they might have been performed for some one else at the defendant's residence located on other lands than those rented from the plaintiff.

Use of One Roentgenogram to Illustrate Criticism of Another

(Boddington vs. Kansas City (Kan.), 148 Pac. R. 252)

The Supreme Court of Kansas says that in order to show the nature of the plaintiff's injury, alleged to have been sustained by reason of a defect in one of the defendant's streets, a roentgenogram was used, purporting to show a fractured rib and an injury to the shoulder. In order to elucidate the criticism of this roentgenogram another witness offered a roentgenogram of the breast of a child 5 years old to show the location of the ribs. It was urged that this was incompetent and prejudicial. But its significance was for the jury, who were told it was the picture of a child, and not of a man of the plaintiff's age, and, like an ordinary map, diagram, or model, it might be properly used by way of illustration.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 27-29.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
National Assn. for the Study of Pellagra, Columbia, S. C., Oct. 21-22.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Virginia State Medical Society, Richmond, Oct. 26-28.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

The President, Dr. F. B. Wynn, Indianapolis, in the Chair

Increased Blood Pressure

Dr. W. J. Leach, New Albany: The ophthalmologist is frequently the first to discover the ill effects of increased vascular tension, manifested in various ways, as in retinal hemorrhage or in retinitis, which so often accompany the various forms of nephritis, especially the interstitial form. Vascular tension is a symptom or manifestation of a disease which it sometimes seems absolutely necessary to relieve in order to cope successfully with the original disease. The specific cause of increased vascular tension seems to be some form of toxemia; however, cardiac hypertrophy or vascular sclerosis may be secondary causes. Atheroma is most common and most damaging in the arterioles. A class of patients who are very prone to have atheroma are those who are overfed and have overmuch mental work, and too little physical exercise: those who carry heavy responsibilities, especially if inclined to worry about affairs. All such should have frequent pressure records made. Blood pressure record is more important than temperature record in patients past middle life. In the treatment, nutritional balance should be reestablished. Toxins being the cause of hypertension, we must stop their production and force their elimination. Of the long list of eliminants, I have chosen the following for their general utility and reliability: mercury, saline salts, potassium iodid, water, digitalis and pilocarpin. In most cases a narrow limitation of the protein foods is absolutely imperative. Chloral and veratrum viride are choice remedies with which to relax the arterioles and flush the skin. We should keep in mind the importance of healthy lymph vessels and an unimpeded lymph stream, remembering that if the blood tension is too high the lymph stream is impeded; therefore the two circulatory systems are incoordinated.

DISCUSSION

Dr. Lafayette Page, Indianapolis: Some of us have very little definite knowledge of the relationship between high blood pressure and eye conditions, or even conditions of the ear, nose and throat. Often hyperemias of the retina and retinal hemorrhages point to nephritis long before the general practitioner has any inkling of the existence of such condition.

Dr. Frederick C. Heath, Indianapolis: Dr. Leach said that the ophthalmologist is frequently the first to discover the ill effects of increased vascular tension. That is correct. The question I want to raise is: Do those changes really come early in the disease, or has the disease been in the system for a long time before such changes take place in the retina? My opinion is that those changes in the eye would not be produced until the disease has been in the system a long time, producing changes first in the blood and secondarily in the eye and other parts of the system.

Dr. W. J. Leach, New Albany: It is futile to attempt to treat diseases which have their foundation in a systemic condition in any local way. Retinitis or hemorrhagic conditions in the retina are not early manifestations of a nephritis: they are manifestations of continued intoxication. Toxemia is the first manifestation in these cases; then come the gradual changes in the vascular, blood and lymph systems.

Use and Misuse of the Tinted Lens in Refraction

Dr. Fred M. Ruby, Union City: While tinted lenses probably do not come under the medical practice act, they should, inasmuch as they are applied for or to a pathologic condition. Before resorting to the use of tinted lenses we should first consider the causes of photophobia—the mild cases that cause the patient to be restless in strong lights, especially if he uses his accommodation. We should try to remove the cause, and thus obviate the necessity for any lens. To give a patient a tinted lens, however, with the idea that it will alleviate discomfort until the rational treatment has had time to take effect, is all right. In choosing such a lens, we know that the normal eye is accustomed to a certain proportion of the ultraviolet rays, but as this proportion increases, the irritation likewise increases. It would seem that a light-absorbing lens which admitted none of the ultra-violet rays would be ideal; but such is not the fact. We find many eyes being as distinctly irritated by the total absence of these rays as with too many. The ideal lens, so far as I have been able to determine, is one which absorbs most of the irritative rays, but allows a few to penetrate and stimulate a certain healthy reaction in the receiving end-organs of the retina. Naturally, the same lens absorbing the same proportion of the ultraviolet rays will not satisfy every eye. I have found tinted lenses of use in picture show operators, chauffeurs, workers on white goods, workers in blast furnaces, glassblowers, and oxyacetylene welders; also when structural deficiencies allow the ultraviolet ray to penetrate too much into the eye; when the patient has asthenopia as one of a train of nervous symptoms, and also following light trauma. As an adjunct to the treatment of conjunctival photophobias it is a valuable agent, provided the primary object has not been lost sight of and the conditions corrected.

DISCUSSION

Dr. John R. Newcomb, Indianapolis: There are certain occupational conditions in which tinted lenses are necessary, but until we know the effect of these various rays of light on the natural structures of the eye we really are practicing slapstick therapeusis when we attempt to prescribe "So-and-So's" lenses for every patient who complains of a little irritation. My experience has shown me that the vast majority of photophobias are due to the fact that the patient has not the proper correction, and the majority of such patients, with proper correction, will get rid of the photophobia very quickly. If you give that patient a tinted lens, regardless of whether he needs it or not, you will make a cripple out of him, so far as his eyes are concerned. They will become utterly dependent on subdued light, which is not natural. Before using a tinted lens, we must determine that there is actual retinal irritation, or some change in the eye which demands protection from light, which is absolutely normal and natural.

Dr. A. B. Knapp, Vincennes: I have always regarded tinted lenses more as a commercial fad than as a therapeutic necessity. If we would examine carefully enough all of our cases of asthenopia, we could find the cause and apply the remedy. If the nares, including accessory sinuses, lacrimal apparatus and conjunctival sac, are carefully searched, we shall frequently find the cause. We must also look into the environment and general physical condition of these patients.

Dr. G. F. Keiper, Lafayette: This subject is enveloped in a haze because we are not expert enough to know how to make the application of colored lenses. At the foundation of all this work must necessarily lie some instrument of precision, and I believe we have that instrument in the spectroscope. In certain selected cases, colored glasses are necessary in order to cut out harmful rays of light; but in order to arrive at the conclusion as to the kind of a glass needed, some particular form of instrument, like the spectroscope, is needed. Dr. Newcomb has well emphasized the point that the very first essential is correction of the error of refraction, and in this correction a great many of these irritative troubles immediately disappear.

Dr. A. E. Bulson, Jr., Fort Wayne: The tinted lens has only a limited use for the skilful ophthalmologist. The majority of cases of sensitiveness to light have a foundation that requires most careful consideration, not alone so far as pertains to correction of errors of refraction, but also correction of various anomalies requiring general treatment.

Dr. J. O. Stillson, Indianapolis: I have frequently seen cases in which a very light tinted lens was a great comfort. It is not my habit to allow patients to wear these glasses for any undue length of time, on account of the psychologic effect which might lead their minds astray. However, the only colored glasses with which I have had much experience are the very light bluish ones, which are tinted just enough to take off the glare of light.

Dr. J. D. Heitger, Bedford: To cut out all the ultraviolet light is bad; but if there is an excess, it is advisable that it be toned down. To use a tinted lens as a continual lens is a mistake.

Dr. F. C. Heath, Indianapolis: I am in accord with what has been said as to the necessity of making careful diagnoses so as to ascertain the cause of the sensitiveness to light, and also with regard to avoiding the formation of the smoked glass or tinted glass habit. Some of us are going to an extreme in our opposition to tinted glasses. They certainly have a field of usefulness. A large number of patients coming to the oculist are neurotics—at least there is a neurasthenic element in the case. Whether you call it a psychologic effect or something else, they occasionally get relief from the tinted lens.

Dr. Casey A. Wood, Chicago: Probably the most common ordinary cause of chronic photophobia is some form of heterophoria. The difficulty of using both eyes together with ease and without strain may, of course, be associated, as it often is, with a refractive error; but when you correct the refractive error you really relieve the extrinsic muscle difficulty, and there is where the patient gets relief from the photophobia. Photophobia is almost always due to congestion of the vessels of the choroid. Every case of photophobia that comes to us should be very carefully investigated, and the cause discovered, if possible, and removed.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fifth Annual Meeting, held at Louisville, Sept. 21-23, 1915

The President, Dr. J. W. Kincaid, Catlettsburg, in the Chair

Pneumonia in Children

Dr. J. Martin, Cynthiana: Outside the general management of each individual case, we must, first, relieve the congestion; second, stimulate the specific phagocytosis, and third, prevent absorption. Symptoms must be relieved as they arise. Drugs intelligently prescribed do good; but when they are ordered carelessly or according to an unreasoning routine, much harm may be done.

Lobar Pneumonia

Dr. Burnett W. Wright, Bowling Green: Developing in the course of some other pulmonary disease, lobar pneumonia may be more or less limited; but when it does not occur as a complication of a previous affection of the lungs, it as a rule affects at least an entire lobe. In the large majority of cases, the condition is acute, but it does occur in a chronic form, resolution occurring with a solidification present for several weeks, after the crisis should have occurred. Occasionally the exudate fails to liquefy, takes on a fibroid change, and the solidification becomes permanent. The question of the immunity to lobar pneumonia is one of individual resistance against the virulence and amount of the infection. The bacterial cause we may consider omnipresent, and repeated attacks must be blamed on damaged lung tissue of subnormal resisting power.

DISCUSSION

Dr. Phillip Barbour, Louisville: The mortality of lobar pneumonia in adults is quite high, while in young children it is not over 5 per cent., and most authorities put it at from 1 to 3 per cent. A child with a deposit of fibrin in the lung, and with a heart strong enough to pump blood through the rest of the lung, will live through a lobar pneumonia. But a child with catarrhal or bronchopneumonia, with every bronchus and bronchiole filled with mucus, will die because it will strangle to death with its own fluid.

Dr. Henry E. Tuley, Louisville: One reason for the difficulty in making a diagnosis of pneumonia is that we are too prone to do away with the stethoscope in the examination of the child's chest. Take an infant of 1 or 2 years of age, and it is absolutely impossible to examine the chest of that child throughout with the ear. It is absolutely essential to use a bell stethoscope which will cover every area of the child's chest. This is particularly true of areas of consolidation, largely of the infra-axillary vein, where it seems that there is considerable distance between the back of the head and the ear. I have seen a case of central pneumonia with delayed transmission of the sounds to the surface that would give bronchial breathing, and except for the clinical signs one would not be able to make a diagnosis for several days until the process had gradually worked its way to the surface. One of the most frequent of the valuable diagnostic signs is the absence of a respiratory murmur over the consolidated area.

Dr. Leon Solomon, Louisville: During the winter of 1893 and the spring of 1894 there visited Kentucky, and in particular Louisville, a type of pneumonia which will be remembered by many of the Louisville physicians, all of the patients dying. I recall the case of a man who died of pneumonia before the diagnosis could be made. Patients in the wards recovered fully from other diseases, were ready to go home, were stricken with pneumonia and were dead within from twenty-four to thirty-six hours, the diagnosis not having been made until necropsy revealed the nature of the disease.

Dr. W. W. Anderson, Newport: I should like to emphasize the point of a sense of resistance under the percussion finger as of use in determining small areas of deep consolidation. In any case of acute inflammation of the lungs or of beginning chronic inflammation, while it is still in the early stages, you will find a resistance just exactly as you find it over the inflamed appendix or gallbladder.

Dr. W. F. Boggess, Louisville: The treatment of pneumonia resolves itself into some very simple, practical way of handling it. First, is plenty of fresh air. The patient should be kept in a room which is well ventilated, with all the windows wide open even in winter time. Some years ago we had a patient in the City Hospital, with double pneumonia, with a temperature of 105, pulse 140, and respiration 60. It looked as though the patient was going to die. He was put under the awning of an open window, and the next morning, instead of being dead, when I raised the awning he was much better. He slept well, and subsequently recovered.

Dr. W. T. Reddick, Paducah: The use of creosote carbonate is very advantageous in the treatment of aged persons and infants who have pneumonia, particularly in those patients who are plethoric and have a full-bounding pulse. Veratrum is especially valuable in these cases.

Dr. Arch Dixon, Henderson: The best treatment for pneumonia is, first, good ventilation, with the windows of the room wide open, and second, cold packs, especially in the sthenic cases; the whole chest should be enveloped with them, and they should be taken off and reapplied. In this way the temperature is reduced and the patients go to sleep. I have used creosote carbonate a great deal and with good results.

A Plea for a More Thorough Examination of Cases Presenting Symptoms Referable to Pulmonary Tuberculosis

Dr. O. O. Miller, Louisville: The following are the indications which should lead us to the examination of the chest for evidence of pulmonary tuberculosis: 1. A family history of tuberculosis in persons complaining of ill health. 2. A history of hemoptysis. 3. A history of pleurisy or fistula in ano. 4. Evidence of past or present tuberculosis of lymphatic glands or other structures. 5. Cough with or without expectoration. 6. Hoarseness or loss of voice. 7. Loss of flesh or strength without obvious cause. 8. Light lividity or restlessness on exertion. 9. Persistent pyrexia, rapid pulse, low blood pressure, or complaint of night-sweating, or repeated chills. 10. Anemia or dyspeptic symptoms in a young adult. 11. A recent acute illness with protracted convalescence, especially from the infective fevers of the young. 12. Continued general weakness following childbirth. 13. History of recent exposure to infection. 14. History of malaise, langor, anorexia or what the patient may call being run down.

Medical Treatment of Incomplete Abortion

Dr. Bernard J. O'Connor, Louisville: Two distinct facts stand out prominently in the causation of hemorrhage and infection. In the former, the uterus contains some foreign body which it is trying to expel, or the musculature of the uterus is impaired, while in the latter, the infectious material has in some manner been introduced from without into the body of the uterus. An unemptied uterus predisposes to infection. The scientific treatment for incomplete and inevitable abortion is to empty the uterus promptly, avoiding at the same time any procedure which might lead to the introduction of infectious material, into either the uterus or the blood stream.

DISCUSSION

Dr. Edward Speidel, Louisville: We should avoid vaginal examination in cases of abortion unless there is a positive indication for them. My treatment of abortion is active interference.

Ossification of the Bones of the Hand

Dr. J. W. Pryor, Lexington: My belief that normal ossification of bones presents evidence of heredity is based on the facts that we may find similar conditions in the chronological order in the ossification of the bones of the carpus, and that when extra epiphyses are found to be present they may be found in the hands of the brothers and sisters. I have encountered only a few instances in which there was an extra epiphysis present, such as that occasionally found at the proximal extremity of the metatarsal bone of the index finger. Unfortunately, when I did find this extra epiphysis present, the phenomenon occurred in most instances in the only children of the parents, and I have not been able to follow the families. I have had abundant opportunity to observe the similarity of the order of the ossification of the bones of the carpus in the hands of brothers and sisters. I have followed these cases through a number of years. In some instances I have made examinations several times during the year, and when necessary during the period of several years in succession in order to obtain results.

Complications of Middle Ear Suppuration

Dr. L. S. Givens, Cynthiana: In the acute diseases of the middle ear cavity which may lead to brain abscesses, the two most vulnerable spots by which infectious matter may enter the brain tissue or its membranes directly are the tegmen tympani or tegmen antri, by erosions or through dehiscences. Labyrinthitis with acute otitis media is usually the avenue to a fatal meningitis in those cases in which death occurs a few days after the beginning of the suppurative process. Secondary involvement of the labyrinth is seldom encountered in chronic suppuration. When present, the mischief has usually been done in the acute stage of the disease, and although both the oval and the round windows may have remained bathed in pus for years, extension to the labyrinth seldom follows. In four of twenty-one cases, the duration of the suppuration was unknown, in seven there was a history of chronic suppuration, while in ten intracranial involvement following an acute suppuration of the middle ear occurred.

DISCUSSION

Dr. William J. Thompson, Newport: Ninety-five per cent. of all middle ear troubles originate in the throat or nose. From the middle ear it is only a step to the antrum, and only a short step from the antrum to the mastoid cells. When the mastoid cells are involved, we may not only have abscess of the brain, but also have the lateral sinuses denuded, and the patient is liable to die before we think he is seriously ill.

Dr. B. A. Bledsoe, Newport: In a chronic otitis media with a large perforation in the drum, with pus escaping from the perforation, only a small part of the necrotic area is seen. The destruction is going on in the entire middle ear and extending back into the mastoid antrum, involving the mastoid cells. Unless tension is increased in the mastoid cells, there are not going to be marked symptoms of mastoiditis. In chronic cases, when the drainage is free, a mastoid inflammation may produce an acute exacerbation, and the most important complication to remember is that of brain abscess.

Dr. W. B. McClure, Lexington: The remedy to prevent this condition is free drainage by opening the tympanum. The general practitioner may very readily, with a good light and the proper instrument, establish drainage, and in a large percentage of these cases the mastoiditis and other extensions following mastoid involvement may thus be prevented. I believe that in every case in which there is a bulging red ear drum, with pain, if an incision is made and the contents of the middle ear let out, not only will the pain be relieved and external drainage established, but complications also will be prevented.

Dr. J. F. Reynolds, Mount Sterling: No doubt many have diagnosed abscesses in the liver, kidney, spleen and various other organs without being able to tell the origin of the septic material. Have these patients ever been asked if they have ever suffered from middle ear suppuration? If we cannot find the origin of the septic material elsewhere, we should always inquire of these patients as to whether or not they have suffered from middle ear inflammation.

Focal Infections

Dr. N. T. Yager, Louisville: In all cases of obscure systemic derangement, a thorough examination of the oral cavity should be made by a competent dentist and roentgenograms taken of every tooth. One should not take the patient's word for the condition of his teeth and mouth. Many teeth are extracted for apical abscesses from which the patient has experienced no local inconvenience. More attention should be paid to physical diagnosis and bacteriology by the dentist and cooperation of the medical and dental professions.

DISCUSSION

Dr. M. L. Ravitch, Louisville: The teeth sometimes play an important part in infections. I recall a case in which the jaw was affected, and the disease was diagnosed as cancer. At my suggestion certain teeth were extracted, and after the use of mild antiseptics, healing took place and very little scar was left. It was not a case of cancer at all but a condition brought about by diseased teeth.

Dr. John J. Moren, Louisville: At one time I began to suffer with pain in my joints and hands, so that shaking hands was absolutely painful to me. I had a lower molar tooth which was hurting me a great deal. I went to a dentist for the purpose of having it extracted, if necessary, but he refused to extract it because he wanted to save it. I decided to take the initiative myself. I had a roentgenogram made, and it showed an abscess in two roots. The tooth was removed, and within two weeks I had practically no pain either in my joints or in my hands. I did not take any medicine.

Dr. Michael Casper, Louisville: It is a common occurrence for patients to have unerupted teeth. A great many cases of facial neuralgia and of headache, especially lateral headache, can be explained on the ground of unerupted teeth which are not discovered until roentgenography is resorted to.

Dr. C. E. Purcell, Paducah: A few years ago a young woman came under my care who had intolerable pain over the side of her face. Her condition had been diagnosed as tic douloureux, and she was advised by a surgeon to have the ganglion resected. He was about to remove the ganglion, but for some reason or other his time was so occupied that he did not get to do it, and the girl was dismissed from the hospital. She went home, her dentist extracted a molar tooth which was badly decayed, and she recovered.

(*To be continued*)

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

(*Continued from page 1304*)

Treatment of Fractures

Dr. John B. Roberts, Philadelphia: The essentials of subcutaneous fracture treatment, so far as the injury is concerned, are anesthesia, with comparison of the normal limb and accurate reconstruction of bony contours; verification of line of fracture and accuracy of reduction by Roentgen ray when practicable; anatomic and physiologic knowledge of muscles and bones; well-fitting retentive appliances; early frictions, skilful early mobilization, and careful massage with frequent inspection.

Dr. John B. Lowman, Johnstown: Open treatment of fractures has taught us that in some cases delayed union is caused by too close approximation, thus inhibiting callus formation, producing bone absorption and leading to infection and necrosis of bone; it has also taught us never to plate a compound fracture. The open treatment is indicated in fractures which cannot be reduced properly, especially complicated fractures around joints. Bone grafting seems to be superior to all other methods, although these other methods have their advantages. In all fractures of the bone shaft, plating is the best method and should be done as early as possible. Out of twenty-five fractures of the shaft of the femur plated, twenty-three patients are back at work at their former occupation; this has been the exception in those treated by the closed method.

DISCUSSION

Dr. William L. Estes, South Bethlehem: The American Surgical Association appointed a committee two years ago to standardize as far as practicable the various results as regards treatment of fractures, but at the very outset our work was almost entirely nullified by the fact that we could get proper records from only a very few sources in the United States. For that reason the committee elaborated a form of record which we are trying to have introduced, and which we believe will give us an opportunity to collect data which will finally lead to some sort of result in establishing what ought to be the proper treatment of the ordinary fracture.

Dr. P. G. Skillern, Jr., Philadelphia: Nitrous oxid gas should always be administered to afford the surgeon as well as the patient the best conditions for a complete reduction. After the attempt at reduction, a roentgenogram should be taken. If the fragments are still unreduced, the cycle of administering gas, reducing and making roentgenograms should be repeated. It may be necessary to repeat this cycle two, four or even six times in obstinate cases, but each cycle is harmless, though perhaps slightly inconveniencing to the patient. It is only after such repeated attempts by their failure prove the fracture to be irreducible clinically that operative treatment is indicated. After reduction, a copiously padded and carefully applied fixation dressing should be put on, treating each fracture in an individual and not a routine manner. Of the methods of operative fixation, that by the use of metal plates is the least desirable, and, if indicated at all, metal fixation is best employed for fresh fractures, and not for cases of nonunion. For nonunion, by far the best method is the employment of the autogenous bone graft.

Dr. Edward Martin, Philadelphia: I am in accord with the dictum that metal plates always delay union, and are to be avoided save in exceptional cases. The statistics studied by Estes show that operative treatment is less frequently required in children than in adults. This is in part due to the fact that in the young a moderate deformity has a tendency on use to gradual correction. Such tendency is never exhibited in the adult. In the latter, a good union with moderate and allowable deformity, if the bone be a weight-bearing one, may become on use a crippling and deforming one. Hence, given even a slight angulation of the leg, bone weight bearing should not be allowed for many months.

Dr. Charles E. Thomson, Scranton: In regard to the statement that fractures should be treated by skilled surgeons, that is not practicable. Our fractures occur in the country, and the skilled surgeons live in the big medical centers. The general practitioner has to treat many of our fractures. Dr. Roberts says, "Teach your students to treat fractures." This is the key to the situation.

Acute Pancreatitis

Dr. John B. Deaver, Philadelphia: By acute pancreatitis we ordinarily understand the classical severe type, described by Fitz, in which there is hemorrhage and extravasation of pancreatic juice, resulting in profound general shock, intoxication and local destruction of tissues with ensuing gangrene or suppuration. In the last few years, surgery has revealed that the lesser inflammatory lesions of the pancreas are common. It has not been sufficiently pointed out that acute pancreatitis without the severer manifestations of hemorrhage and extravasated ferments is not uncommon. Many cases in which operations have been performed have been unrecognized, and attributed to disease of the biliary tract. The treatment of pancreatitis has not as yet been standardized because of lack of knowledge of its exact cause and the mechanism of its production. Pancreatitis is a result of infection or duct obstruction or a combination of the two. Operative intervention should aim to establish the cause and relieve it. Infective pancreatitis secondary to disease of the biliary tract should be treated by the measures adapted for the relief of biliary infection. Obstructive pancreatitis due to stone in the papilla of Vater or to other abnormality of the papilla demands relief of the obstruction. In ultra-acute cases, the question of operability enters strongly and may forbid everything except simple drainage. I protest against the sending of acute abdominal cases to the medical wards of the hospital. By the time they reach the surgeon, valuable time has been lost.

DISCUSSION

Dr. Ernest Laplace, Philadelphia: There has always been some mystery connected with the question of disease of the pancreas. This question of pancreatitis is in the same condition as appendicitis was fifteen or twenty years ago. There is no such condition as an uncomplicated pancreatitis any more than there is an uncomplicated appendicitis. When a violent pain is felt in the epigastrium with symptoms of shock, that patient should be transferred to the surgeon immediately and we will drain at once. Some of these cases are accompanied by a dilated duodenum with intestinal sepsis as a predisposing cause to the infections which will travel up through the ampulla of Vater and carry to the pancreas whatever infection has found its way up there. The complications of pancreatitis and cholecystitis travel together. It is the same infection. Dr. Deaver first called attention to the lymphatics. The duodenum and pancreas are supplied by the same lymphatics and the spleen and body of the pancreas by the same lymphatics. I make a plea for early operation.

Dr. Lawrence Litchfield, Pittsburgh: I have been associated with medical wards for the past twenty-five years, and I have often regretted the time lost by the fact that these cases were first sent to the medical wards. I wish to emphasize also the fact that valuable time is lost in many cases by delaying operation too long in the hope of making a definite positive diagnosis. There are several conditions in which an operation must be undertaken before a positive diagnosis can be made, if the patient's life is to be saved.

Management of Toxic Goiter

Dr. Charles H. Frazier, Philadelphia: Toxic goiter may begin as simple goiter and be transformed into the toxic variety or the true exophthalmic goiter. The principal distinction to be made surgically is in reference to the severity of the case. The treatment of this condition belongs essentially to the domain of surgery. If the circumstances of a person suffering with moderate thyrotoxicosis are such as to render impracticable a prolonged period of rest, I strongly urge immediate operation and the removal of as much of the offending gland as conditions indicate. The mortality is insignificant. I have not lost a case of this type. In a grave form of intoxication the watchword is caution. It is out of the question to say what the order of procedure should be until after the patient has been under observation in bed for a few days, during which a study of the body functions and all the available secretions and fluids has been made. Each case presents its own problem as to whether it should be treated by boiling water injections, ligation of one or more vessels at one or more sittings or by partial thyroidectomy. A good working rule when in doubt is to err on the side of conservatism. A patient should not be operated on in the stage of acute exacerbation. Rest is the most fruitful nonoperative measure. I have tried the Roentgen rays and radium without appreciable effect. The relation of the thyroid to other ductless glands, especially the thymus, should not be overlooked. In seventy-six thyroidectomies for toxic goiter I have had no deaths, and in twenty-four ligations two deaths. I would not at this time consider such cases as the two fatal ones suitable for that particular operation at that cycle of the disease.

DISCUSSION

Dr. John D. Singley, Pittsburgh: Careful interpretation of the history and of the clinical manifestations of toxic goiter has taught us to avoid operation during the periods of exacerbation and in the final stages of the disease. To this, much more than to any great improvement in operative technic, is due the marked reduction in operative mortality which has taken place in recent years. The earlier that goiter patients are operated on, after the onset of toxic symptoms, provided operation is not done during acute exacerbations, the better the results, both immediate and remote. No operation is of any avail, and any will probably prove fatal in the most serious advanced cases, with widespread terminal degenerations, especially of the heart muscle, with irregular pulse, low blood pressure, and periodic attacks of delirium cordis (Kocher). The after-treatment is of the greatest importance. These patients should not be discharged from the hospital after operation to work out their own salvation, as they too often are. Careful supervision by a competent medical adviser should be carried out for several years at least.

Dr. James D. Heard, Pittsburgh: The severity of the cardiovascular disturbances in toxic goiter makes it important that patients of this type should be studied carefully in regard to disturbances of cardiac mechanism before they are submitted to operation. Alternation in force of ventricular systole should be sought for diligently, and when found in connection with a heart rate which is approximately normal, it is to be regarded as greatly increasing the gravity of prognosis in a given case. The administration of belladonna should not be a routine procedure. It should be remembered that belladonna in full dosage removes the inhibiting action of the vagus, and this result would be undesirable in cases in which the heart rate is already unduly accelerated. For like reason, the administration of atropin to guard morphin would be unscientific. Morphin requires no guarding. It acts favorably in these cases, partly through its action on the vagus, and it would be a distinct disadvantage to remove this inhibitory action in cases in which the heart rate is already accelerated.

Dr. G. M. Astley, Philadelphia: It is a question in my mind as to whether injections of boiling water should not be used first before ligation. The problem seems to be the throwing out of commission of a certain amount of gland substance. The boiling water will accomplish that. I have known cases in which, when boiling water was used, the subsequent surgical sections were very simple.

Dr. S. J. Waterworth, Clearfield: If we avoid the trachea, I believe we will have fewer bad symptoms following operation. As to operation following hot water injections, I have injected with hot water and know it renders operation much more difficult. There is produced a general thyroiditis. The tissues become matted together, and you have more difficulty in getting the goiter out.

Rectal Anesthesia in Thyroidectomy

Dr. Walter Lathrop, Hazelton: In the oil-ether rectal anesthesia the brain is not deeply narcotized, and the patient regains consciousness rapidly, while the sensation of pain is held in abeyance for a considerable time; the eye reflex is seldom lost, but muscular relaxation is complete. The method is very valuable where fear is a prominent element, as is the case in hyperthyroidism. The postoperative effects are much milder than after inhalation narcosis. In thyroidectomy, in which freedom from obstruction in the operative region is desirable, the rectal method is ideal. Also the patient can be anesthetized in bed and removed to the operating room and thus have no conception of what has occurred. This is a great aid in realization of the anociassociation method. I have used the method in 118 cases since June, 1914, with most satisfactory results.

DISCUSSION

Dr. John W. Luther, Palmerton: My experience with colon-oil-ether anesthesia is limited to forty-seven cases; thirty-six were abdominal operations in which complete muscular relaxation is of greater importance than in head and neck work. In twenty-two of my cases no additional anesthesia was required, and in eighteen of the remaining cases only a dram to an ounce of ether by inhalation was needed. The duration of operation varied from fifteen minutes to two hours. On account of the slowness in preparation, the method is not suitable when several persons are to be operated on in succession. One of my patients died of pneumonia seven days after operation; but this was a septic case, and the result cannot be attributed to ether. The narcosis is uniform from beginning to end.

Dr. W. Hersey Thomas, Philadelphia: My experience in operating on seventy-three patients under colonic anesthesia has convinced me of its value in selected cases. I have not found that rapid return to consciousness is the rule. Although the presence of some of the superficial reflexes would indicate a light anesthesia, the great majority of my patients were profoundly anesthetized. I have seen the anesthesia deepen after return of the patient to the ward, in spite of rectal irrigation. The conviction has grown that the liver, which bears the brunt of the attack in this method, is markedly affected, and that it is a toxic change in this viscus which prolongs the anesthesia. The return of consciousness is hastened by the introduction of saline solution. The patient should be kept under skilled observation for several hours after return to the ward.

Dr. Walter Lathrop, Hazleton: In abdominal cases we have had quite an experience, especially in miners having asthmatic conditions. If you start ether in these cases they choke, and must stop. These patients sleep perfectly under rectal anesthesia. I have seen very few who could not be aroused.

Surgical Treatment of Ascites

Dr. Robert T. Miller, Jr., Pittsburgh: Of five cases in which ascites was associated with cirrhosis of the liver, four were due to alcoholic or syphilitic cirrhosis, and the fifth almost certainly was due to malignant diseases. The patients varied in age from 18 to 60 years. Ruotte's operation was made in each case, four times unilaterally and once bilaterally (two sittings); in three cases general anesthesia was used, and in two local anesthesia. The only mortality was the malignant case. In all but the malignant case, abdominal paracentesis was necessary at frequent intervals before operation; after operation, the necessity for tapping the abdomen was absolutely done away with in two cases and all but eliminated in two other cases, while in the fifth case (malignant) the abdomen was not tapped either before or after operation. In one case operation (double) was followed by a decrease of the umbilical circumference from 110 to 97 cm., and an increase in average daily urinary output from 480 to 150 c.c. Of the four cases of cirrhosis of the liver, three were restored to self-support, and the fourth, a boy of 18, was advanced from a condition of invalidism to a position of helpfulness in the household. In no instance was any ill effect observed from drainage of the ascitic fluid directly into the circulation. The results obtained are encouraging; so good, in fact, as to warrant recommending a trial of this method.

DISCUSSION

Dr. James D. Heard, Pittsburgh: Statistics available as to the result of the Talma operation show that from 35 to

50 per cent. of cases of ascites due to cirrhosis of the liver may be cured by early operation. These statistics should be brought prominently to the notice of internists. The statistics of Ruotte, Soyesima and Miller indicate that venoperitonostomy is capable of yielding such favorable results that a further trial of this method is to be recommended strongly. Operative measures should be resorted to in the early stages of ascites before the patient has been subjected to the local irritation which results from frequent tappings, repeated withdrawal causing loss of protein, and general failure of patient owing to the continued presence of a condition which, in spite of repeated tappings, usually slowly progresses toward an unfavorable end.

Dr. J. E. Sweet, Philadelphia: In 1876, von Eck devised his operation, anastomosis between the portal vein and the vena cava. This operation has been applied only three or four times. Usually in true cirrhosis the portal vein is so tied up in adhesions that a true Eck fistula is not feasible. Dr. Edward Martin and I devised a modification of the Eck fistula consisting on an anastomosis of one of the large mesenteric veins with the iliac vein at the point at which they cross. That is a more positively curative procedure than the operation advocated by Dr. Miller, which amounts to continuous tapping.

Fulguration Treatment of Bladder Papilloma

Drs. A. A. Uhle and W. H. MacKinney, Philadelphia: Since November, 1911, when we first employed high frequency destruction, we have observed 51 primary neoplasms of the bladder. A diagnosis of benign papilloma was made in 22 cases, of papillary carcinoma in 3, and carcinoma in 26. High frequency destruction was employed in 19 of the benign papillomas, in 3 cases of papillary carcinomas, and 7 cases of infiltrating carcinomas. In all cases of tumor of the bladder, hemorrhage is the predominating and frequently the only early symptom. The bleeding is usually marked and ceases as promptly as it began. With three exceptions the monopolar Oudin current, generated from a Wappler coil, was employed and found perfectly satisfactory. The illumination was derived from a dry cell battery, and the spark from the circuit. General anesthesia is not necessary, a satisfactory local anesthesia being obtained by the use of novocain. In nervous patients or patients with a highly sensitive urethra, treatment may be facilitated by a hypodermic of morphin administered one hour previously. A clinical cure was based on freedom from symptoms, a clear urine, microscopically free from blood and pus, and the absence of any evidence of tumor by cystoscopic examination three months after the last treatment. Every patient was impressed with the possibility and danger of recurrences and advised to return at intervals of six months for cystoscopic examination.

DISCUSSION

Dr. B. A. Thomas, Philadelphia: To treat a papilloma of the bladder by any means other than high-frequency sparking or electrocoagulation must be regarded as a serious surgical error, poor judgment or selfishness. On the other hand, any form of endovesical treatment for a malignant growth, preeminently sessile carcinoma, provided it is curable radically, is the height of folly. My experience comprises not less than sixty-nine tumors, varying in size from a pinhead to masses almost completely filling the bladder. Almost invariably bleeding has been a prominent factor, but fortunately, as a rule, the first effect of electrocoagulation is hemostatic. A few patients have been so exsanguinated as to require preliminary supporting measures. In one case with 19 per cent. of hemoglobin, two transfusions were done before the treatment of the tumor of the bladder was undertaken. Without exception, cure has resulted in each case of papilloma, as well as in papillary carcinoma with a nondegenerated pedicle. In no case of sessile carcinoma or other malignant growth involving the bladder wall has cure been obtained. I have employed both the Oudin and d'Arsonval currents, and prefer the former. It seems to make little or no difference whether the current be degenerated by a static machine or a coil; the results are equally good with the latter.

Dr. John L. Laird, Philadelphia: The character of the bladder growth in relation to its amenability to this form of treatment is a serious consideration, the benign and the superficially malignant tumors being appropriate, the infiltrating malignant growths demanding immediate surgical intervention. The treatment of the various types of benign papillomas requires a selection of the kind of current to be used. The interval between treatments is important, and should be governed by three factors: the extent of bladder involvement, the type of current employed and the degree of reaction to the treatments. I wish to emphasize that all vesical papillomas are potentially malignant and, therefore, early diagnosis and eradication are of the utmost importance. High frequency destruction is beyond doubt the method of choice. For the same reason, after an apparent cure, each case should be followed for a possible recurrence. Some severe and obstinate cases require patience, and frequently the result is unsatisfactory and disappointing; but the majority respond promptly with a result little short of miraculous.

Dr. Edward Martin, Philadelphia: First in regard to the operative treatment of bladder tumors, by which I mean the cutting operation: Those who observe and wish to hear from patients notice, to their astonishment, that the old operating cystoscope gives very much better results in papilloma operation than does the open operation. Those who have a certain number of these papilloma cases have observed a widespread recurrence after the operation, and there seems no adequate explanation of this, except the disturbance caused by gross traumatism. We have, first, the lesson that the local nontraumatizing treatment is better than instrumentation. The second point I wish to bring out is the innocuousness of this desiccation in the ordinary run of cases. For all practical purposes the majority of these people could attend to their ordinary business. They have no further discomfort and their lives are not materially interfered with. When the cystoscopist is unable to decide as to the malignancy or the benign nature of the lesion, I feel that this desiccation treatment should be tried and resort to our perhaps grosser methods follow.

Dr. H. M. Christian, Philadelphia: I want to emphasize the point made by Uhle and MacKinney that every so-called benign tumor of the bladder must be considered potentially malignant, and that a man with a so-called benign tumor in his bladder has to all intents and purposes dynamite in that bladder. In cases on the borderline, where there is a chance, the patient should be given the high frequency current. I want to emphasize again the importance of looking on sudden, inexplicable, rapidly disappearing hematuria, rapidly reappearing hematuria, with or without pain, as very significant of bladder tumor and requiring examination directly.

Dr. Alexander Randall, Philadelphia: I wish to call attention to the efficiency of electric fulguration of vesical papillomas (benign) and the recognition of the ultimate and potential malignancy of all such growths. In their early stage, therefore, while still benign, vesical papillomas represent a precancerous state. By their prompt and early recognition and treatment we shall be taking a definite step forward in the present campaign for the eradication of cancer.

Venous Thrombosis and Embolism

Dr. Angus McLean, Detroit: Although various causes have been assigned for thrombosis, our experiments have shown that an infection or toxin is necessary to its production. In our series of 1,610 laparotomies, thirty-three cases were followed by thrombosis or embolism. The embolus appeared on an average about two weeks after operation. The usual symptoms are chill and fever; if the obstruction is near the surface, pain is a prominent symptom. As for treatment, when once the condition has developed, absolute rest, warmth and measures to encourage the venous circulation are indicated. In the case of a thrombus, absolute rest should be insisted on as a precautionary measure against secondary embolism. This rest must be continued until the clot has had a chance to become thoroughly organized, a process which will usually take from three to four weeks.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

September, XXXVI, No. 9, pp. 425-466

1 *Form of Reflexes in Chorea. W. B. Swift, Boston.
2 *Study of Reflexes in Diagnosis of Nervous Diseases; Alteration and Absence of Umbilical Reflex in Diagnosis of Typhoid. H. C. Gordinier, Troy.
3 Case of Pituitary Disease (Acromegaly) with Polyglandular Syndrome. J. L. Bendell, Albany.

1. **Form of Reflexes in Chorea.**—Some authors believe in a single reflex in chorea—the knee jerk. Swift shows a reflex form that may appear during the elicitation of any of the normal reflexes. This form of reflex is really so peculiar as to amount to a sign of chorea of equal dignity with the respiratory signs of Graves and the new voice sign in chorea. The form of the reflex consists in an enhancing, retarding, or otherwise varying of the normal form of the reflex. It is described as the jerk-flop-wabble form of reflex response. It is any change of reflex motion caused by a choreic contraction. It occurs most frequently in the medium severe cases; and as a whole probably about one in five cases. It may be present in all the other normal reflexes.

2. **Diagnosis of Typhoid.**—Gordinier's study is based on the study of 111 cases certified to as cases of typhoid. Of this number four proved to be cases of la grippe, three of infectious endocarditis, four of pneumonia, one of pericarditis, and one of acute miliary tuberculosis. In only one of the above-mentioned cases was there the slightest alteration of the infra-umbilical reflex. This was a case of massive pneumonia that developed a suppurative peritonitis, the result of a deep-seated ulceration, with perforation of the ascending colon; and not until this perforation complicated the case did this reflex absent itself. The ninety-nine remaining cases were true cases of typhoid, and in eighty-six of these cases there was a definite alteration of the infra-umbilical reflex — 86 7/10 per cent. Most cases of typhoid came in during the second or third week of the febrile reaction, and hence in sixty of these cases the reflex on admission was absent on both sides. In thirty-nine cases, however, that were seen during the onset of the febrile reaction it was noticed that during the beginning of the febrile reaction the reflexes were normal or slightly exaggerated, such as often occurs with the deep reflexes at the onset of multiple neuritis. But at the termination of the first week and the beginning of the second the reflex presented a characteristic alteration; that is, it was diminished first on the right side, then on the left, and in a day or two absented itself in the same manner first on the right and then on the left side. The reflexes remained absent until the temperature remained normal for several days when convalescence was well established. Then the reflexes reappeared, usually first on the side lost and then on the opposite side.

If the abdominal reflex is persistently absent after the febrile reaction has ceased, one should anticipate a relapse. In two cases of this type a definite relapse followed. In eight other cases with relapse, in which the reflex during the subsidence of the fever had reappeared, it again disappeared on the advent of the fever of relapse. Gordinier has never observed the infra-umbilical reflex absent in other febrile affections unless the abdominal cavity or peritoneum were directly affected. In three cases of paratyphoid responding at first to both the *Alpha* and the *Beta* types of the colon groups, it was absent on both sides until convalescence was complete, about two weeks after the evening temperature had remained normal. Gordinier has observed its absence on one side or other in six cases of pelvic peritonitis due to tubal disease, also in three cases of suppurative peritonitis due to perforative appendicitis, in one case of general peritonitis from ruptured gallbladder, in one case of perforation of a duodenal ulcer, and in a case of general suppurative peritonitis following perforation of the ascending colon. In thirteen cases of acute appendicitis without rupture it was absent only on the right side, reappearing again after operation. He has frequently found it present in scarlet fever and measles, and it was also present in fifteen cases of lobar pneumonia. In two cases of Laennec's cirrhosis of the liver with moderate ascites, it was present, and also in several cases of intra-abdominal tumors. It was found absent in three cases of multipara with large, loose, pendulous abdominal wall. Gordinier believes that this reflex is absent only on the rarest occasions unless some abdominal or serious peritoneal complication has ensued. He regards it as being highly suggestive or diagnostic of typhoid, or of the paratyphoid group.

American Journal of Orthopedic Surgery, Philadelphia

July, XIII, No. 1, pp. 1-178

4 *Direct and Muscular Neurotization of Paralyzed Muscles. P. Erlacher, Graz, Austria.
5 *Method of Direct Neurotization of Paralyzed Muscles. A. Steindler, Des Moines, Ia.
6 *Operative Treatment of Osteo-Arthritis. E. G. Brackett, Boston.
7 *Local Treatment of Painful Nontuberculous Joints. G. G. Davis, Philadelphia.
8 Treatment of Convalescent Stage of Infectious and Atrophic Types of Arthritis. C. F. Painter, Boston.
9 Osteo-Arthritis in Its Relation to Mouth Infection. J. Head, Philadelphia.
10 Anatomic Specimens of Unusual Clinical Interest. A. W. Meyer, Palo Alto, Calif.
11 Osteitis Deformans (Paget's Disease). F. J. Gaenslen, Milwaukee, Wis.
12 Case of Congenital Elevation of Scapula—Sprengel's Deformity. D. E. Smith, St. Louis.
13 Symmetrical Congenital Anomaly of Fourth Metatarsal Bone. C. L. Lowman, Los Angeles.

4. **Neurotization of Paralyzed Muscles.**—Experiments performed by Erlacher on monkeys showed that it is possible to achieve a useful functional result within six weeks after stitching a severed motor nerve into a new point of the muscle. Also he was able by histologic examination to demonstrate abundant nerve fibers within the muscle. Experiments on guinea-pigs achieved the same results, this clearly proving that the point of entrance of the nerve into the muscle is nonessential, and that a paralyzed muscle can be sufficiently supplied from any other point with nerve fibers. Histologic examination showed that fine fibrillae had grown out from the thick nerve fibers and had formed motor end-plates on muscle fibers of perfectly normal appearance, with all the characteristic signs of accumulation of nuclei observed normally, though much thinner and finer. So that within the first four to six weeks it was possible to differentiate without error between the end-plates of the normal and the implanted nerves.

Erlacher advocates not to be satisfied with the simple neurotomy after Stoffel, because this method does not sufficiently protect against recurrences. It is better to follow Spitzy's suggestion and do a plastic operation, attaching the surplus nerve fibers of the spastic muscles to the overstretched and weakened antagonists, attempting on the one hand to strengthen the latter by supplying them with an excess of impulses from a center which is "overirritable," and, on the other hand, avoiding the danger of recurrence by attaching the severed nerve to another nerve track, or implanting it directly into another muscle. Erlacher was also able to establish that in order to supply a paralyzed muscle it is not necessary to use the prescribed nerve tracks, but that one can supply a muscle sufficiently by sewing a motor nerve directly into it at any point, thus producing a "neurotizing" function from that point.

From experiments Erlacher draws the following conclusions: First, the nearer the periphery the motor nerve was cut, the more rapid and certain was its regeneration; often in a short time (sixteen days) the complete regeneration of the motor end-plates takes place. Second, a dissected muscle flap can be sufficiently nourished and supplied with nervous elements from the underlying muscle. Third, degenerative changes occur rapidly in an isolated muscle flap even if it remains united only by connective tissue with a healthy underlying muscle, but no such high degree of degeneration is seen, as is seen in the case of poliomyelitic paralysis. Fourth, under the influence of the rapidly regenerating motor nerve a quickly progressive regenerative transformation takes place also in the muscle; thus after six weeks it might be considered as recovered in a functional and anatomic sense. Hence, it was evident that a paralyzed muscle can only achieve sufficient nervous functional capacity if its wounded surface rests widely on a healthy muscle.

Proceeding from these suppositions, in a further series of experiments Erlacher paralyzed a muscle by resecting its nerve, and sewed into it a broadly dissected centrally pedunculated flap from an adjoining muscle. These experiments confirmed that it is possible to supply a paralyzed muscle with nervous elements, namely, to neurotize it by way of another healthy muscle when the latter is broadly dissected and stitched into the former. Summarized, the following are the facts established: First, to provide a sufficient nervous supply for a paralyzed muscle it is not necessary to make an end-to-end anastomosis of the paralyzed nerve with a healthy one, but it is sufficient to stitch the healthy nerve directly into the muscle. Second, if no healthy nerve is at hand it is sufficient to use a flap of a healthy muscle for "neurotization"; this flap must be centrally pedunculated in order to provide sufficient innervation. Third, the point of implantation of the "*neurotiseur*" is less important.

5. **Neurotization of Paralyzed Muscles.**—Experiments as well as three clinical observations lead Steindler to believe that in the method of direct nerve implantation and muscle-to-muscle attachment, there is a possibility of a motor impulse being transmitted to the paralyzed muscle through physiologic channels. Neurotization of paralyzed muscle tissue from live nerve directly implanted seems probable, but neurotization of healthy muscle tissue by direct implantation of additional healthy nerve does not seem probable. At least Steindler found the speedy regeneration of the normal nerve and its end organs to be a barrier to the neurotization from a second nerve, or hyperneurotization, and although in one case it was possible to follow the nerve fibers as they entered the muscle tissue, still it was impossible to obtain muscle contraction from stimulation of this implanted nerve because of the preceding regeneration and restoration of the original nerve supply. In the three clinical cases cited a physiologic impulse is apparently acting on the paralyzed muscles, though Steindler cannot say as yet whether this actually means complete restoration of the nerve elements from the implanted nerve. He says that it is difficult to recognize the state of regeneration of nerve fibers in the microscope, but the finding of striated muscle fibrillae is surely suggestive of this possibility. But even in the event that the muscle-to-muscle attachment alone should be responsible for the impulse on the paralyzed muscle, which is not probable, this method would seem to be a good expedient to elicit cooperative muscle action.

6. **Operative Treatment of Osteo-Arthritis.**—The operative treatment of osteo-arthritic joints Brackett believes is applicable only: (*a*) when the disease is localized (monarticular, traumatic); (*b*) when it is the residuum of a process, which has been arrested. He cites cases.

7. **Painful Nontuberculous Joints.**—Davis is firmly convinced that the greatest cause of the persistence of pain in joints once injured or diseased is the irritation of repeated often slight traumatisms due to the movement of the parts. That this has not been generally recognized heretofore is due to the difficulty in successfully carrying out a treatment of immobilization. Davis advises absolute fixation as a cure.

Archives of Diagnosis, New York

July, VIII, No. 3, pp. 201-300

14 *Studies in Schick Diphtheria Reaction. A. Levinson and M. L. Blatt, Chicago.
15 *Diagnosis of Abnormalities of Myocardial Function. T. S. Hart, New York.
16 Pituitary Extract; Its Value in Distinguishing Between False and True Labor Pains. S. W. Bandler, New York.
17 Perversities of Internal Secretions in Their Bearing on Oral Pathology. H. Stern, New York.
18 Case of Acute Myeloid (Myeloblast) Leukemia. A. F. Beifeld, Chicago.
19 Situs Viscerum Inversus Totalis. F. Tice, Chicago.
20 *Clinical Study of Case of Epilepsy Apparently of Intestinal Origin. E. E. Cornwall, Brooklyn.
21 Diagnosis from Standpoint of Physicodynamics. J. M. Taylor, Philadelphia.

14. **Schick Diphtheria Reaction.**—Levinson and Blatt tested 208 children. Of this number sixty were normal, fifty-five were afflicted with diseases other than diphtheria or tuberculosis, eighty-six were tuberculous or suspects on whom a Pirquet was done, six had been vaccinated a few days before the Schick test was applied, and one was a case of diphtheritic paralysis. Series 1 consisting of sixty normal children between the ages of 7 months and 9 years, gave 47, or 78.13 per cent., negative and 13, or 21⅔ per cent., positive. Sex played no rôle whatever in the result of the reaction. Age on the other hand, did. All the children under 1 year of age showed a negative reaction, the susceptibility increasing with advance of age. In Series 2, out of fifty-five children afflicted with diseases other than diphtheria and tuberculosis, 34, or 61.8 per cent., showed a negative reaction to the Schick test. Here, also, as in the case of normal children, sex exerted no influence. Age was a factor, all children under 6 months reading negatively. In Series 3 thirty-three children, suspects of tuberculosis, received the Schick simultaneously with the Pirquet test. They seemed to have no influence on each other, some children giving a positive Schick and a negative Pirquet and vice versa. In Series 4, out of thirty-eight children that received tuberculin treatment, sixteen were positive. The result, however, bore no relation to the reaction obtained from the tuberculin treatment.

15. **Abnormalities of Myocardial Function.**—There is little doubt in Hart's mind that every subject of paroxysmal tachycardia has a defect of the myocardium that must be seriously considered. The prognosis is most difficult. Some patients over a period of many years have attacks which incommode them but little and the attacks become less severe, less alarming, and in some instances disappear altogether. Some have only a few attacks before the fatal termination. Hart has never seen a case that was fatal until a number of attacks had occurred, nor has he found such a case reported in the literature. The condition of the heart in the intervals between attacks is important as an aid in determining the seriousness in the individual case. If at these times the heart shows no abnormality other than occasional extra systoles, there is no imminent danger. If, however, marked valvular defects are present, if there is evidence of an old inflammation of the pericardium, if there is a general arteriosclerosis, if extra systoles constantly occur at frequent intervals, and if the heart is embarrassed in maintaining an adequate circulation in the periods of slow rate, the paroxysms will rightly be viewed with much apprehension. The paroxysm is exhausting to the heart. If the myocardial damage is made evident by the attacks only, the heart will probably successfully carry this stress; if, however, other evidences of myocardial damage exist, the strain of the paroxysm is a far more serious matter. The patients who do particularly well are young subjects with no evidence of cardiac abnormality between attacks. Middle-aged and elderly individuals sooner or later invariably develop other evidences of myocardial insufficiency and, while they may have many and frequent attacks of tachycardia without serious manifestations, the ultimate outlook is less favorable.

The frequency and duration of the individual attacks do not seem to be important factors in determining the prognosis. Much more important is the severity of the attacks as estimated by the degree of circulatory embarrassment, cardiac dilatation, the congestion of lungs and liver and edema of the extremities. Attacks associated with unconsciousness should be viewed with gravity. With a history of a moderate number of attacks over a number of years in a young adult, with intervening periods of normal heart action, one may usually give a good prognosis. When the patient is more advanced in years and has paroxysms of increasing frequency and severity, and intermediate periods characterized by signs of cardiac insufficiency, the outcome of any particular attack is doubtful, the prognosis for the future is not good.

20. **Epilepsy of Intestinal Origin.**—Of the facts observed or elicited by Cornwall's study of this case, the following are among the more significant: The family history was negative. In the patient's previous personal history constipation appears prominently, with gastric and intestinal flatulence and discharge of foul gases from the bowel. There was a peculiar sensation experienced in the upper right quadrant of the abdomen, brought on by running, described as "feeling as a lump bumping up and down," which was sometimes accompanied by pain. For some months before the convulsive attacks appeared, the patient devoted himself closely to study and neglected ordinary amusements, social diversions and out-of-door exercise. The most significant physical findings were those revealed by the Roentgen-ray examinations, which showed a coloptosis, with the transverse colon in the pelvis; the ascending colon extending one and a half inches above the iliac crest, and the descending colon extending 3 to 4 inches above the iliac crest, notable dilatation of the terminal portion of the ileum, and insufficiency of the iliocecal valve; but no distinct obstruction anywhere in the course of the gut, and no particular stasis except in the terminal portion of the ileum. The constipation showed a tendency to persist unless relieved by laxatives.

The convulsive seizures resembled, in general, those commonly observed in epilepsy, but they showed considerable variation in character, intensity, duration and the occurrence of premonitory and subsequent symptoms. They occurred six times during the year 1913, and eleven times between Jan. 1, 1914, and June 1, 1914. After being put on a course of treatment which was aimed chiefly at relieving constipation and intestinal putrefaction, the attacks diminished greatly in frequency. One attack occurred seven days after beginning the treatment, and then there was freedom from the attacks for more than six months. During the remainder of the period of a little over a year, while under this treatment, four attacks occurred, which were milder and less typically epileptic in character than the former ones. Three of these four attacks occurred while the patient was occupied with his college work, and was getting an insufficient amount of sleep; and they took place while he was sitting at a table studying, instead of when lying down as before. The facts observed suggest the possibility of a toxic-exciting or mechanical cause of intestinal origin and they also suggest what seems to be the most promising line of treatment.

Archives of Ophthalmology, New Rochelle, N. Y.

September, XLIV, No. 5, pp. 481-610

22 Some Practical Points in Eye-Work. A. Duane, New York.
23 Fibro-Adenoma of Ciliary Body. A. J. Bruecken, Pittsburgh.
24 Protection of Normal Crystallin Lens Against Harmful Effect of Ultraviolet Light. W. E. Burge and A. J. Neill, Chicago.
25 Some Unusual Changes in Visual Fields. W. C. Posey, Philadelphia.
26 Vision; Its Economic Value and Conservation. L. B. Whitham, Baltimore.
27 Operation for Ptosis with Formation of Fold in Upper Lid. E. Machek, Lemberg.
28 Etiology and Pathology of Brawny Scleritis. W. Gilbert, Munich.

Arizona Medical Journal, Phoenix

September, III, No. 8, pp. 1-10

29 Surgical Indigestion. A. L. Blesh, Oklahoma City.
30 Pyorrhea Dentalis. H. H. Braxton, Phoenix.

Boston Medical and Surgical Journal

September 20, CLXXIII, No. 14, pp. 489-526

31 Child and Community. E. O. Otis, Boston.
32 Transvesical Prostatectomy. P. M. Pilcher, Brooklyn.
33 *Study of Effect of Rowing on Heart. R. I. Lee, W. J. Dodd and E. L. Young, Jr., Boston.
34 *Experimental and Clinical Observations on Blood Pressure in Spinal Anesthesia. G. G. Smith, Boston.
35 Pituitary Extract as Hemostatic in Hemorrhages of Lungs. M. J. Konikow, Boston.

33. **Effect of Rowing on Heart.**—The authors found that there is little difference in the size of the heart of men who have been rowing for two or four years and men who have been rowing over ten years. The hearts of these two groups are slightly larger than the hearts of a younger group who have not as yet participated in serious competitive rowing. These differences seem to be explained by the differences in age and development. The only conclusion drawn from this study is that prolonged participation in rowing under the system now in vogue at Harvard University and the Union Boat Club of Boston does not materially increase the size of the heart when the heart is sound at the beginning.

34. **Blood Pressure in Spinal Anesthesia.**—Smith claims that the blood pressure can be lowered as much by spinal anesthesia as by section of the cord in the cervical region. In his experimental work the greatest fall was caused by injection of the drug in the thoracic region, in which the vasomotor fibers which supply the splanchnic area leave the cord. This part of the vasomotor mechanism is the first affected by the drug when the injection is made in the lumbar region. The extent of diffusion of the drug within the dural sac appears to be influenced more by the bulk of the solution injected than by any other one factor. A given amount of drug in a concentrated solution diffuses less and consequently lowers blood pressure less than does the same amount of drug in a more dilute solution. The greatest effects on blood pressure were noted when epinephrin was combined with novocain. Entire fixation of the drug does not take place within twenty minutes after the time of injection. When a solution of greater specific gravity than spinal fluid is used, the extent of diffusion may be increased by gravity. Attempts to raise the blood pressure by the intravenous injection of pituitary extract or epinephrin gave only a transient rise.

Canadian Medical Association Journal, Toronto

September, V, No. 9, pp. 757-852

36 Appendicitis; Appreciation of Ochsner Method. E. S. Hicks, Brantford.
37 Bacteriology of Hodgkin's Disease. L. J. Rhea, Montreal.
38 Practical Value of Knowledge of Sympathetic and Autonomic Nervous System. J. W. McIntosh, Vancouver, B. C.
39 Tissue Respiration in Light of Recent Research. D. F. Harris, Halifax, N. S.
40 Foreign Body in Esophagus. H. H. McNally, Fredericton, N. B.
41 Unusual Case of Needle Lodged in Duodenum. W. A. Lincoln, Calgary.

Florida Medical Association Journal, Jacksonville

September, II, No. 3, pp. 65-96

42 Relaxed Vaginal Outlet, Its Diagnosis and Treatment. G. R. Holden, Jacksonville.
43 Conservation of Tissue and Function in Amputations. W. R. McKinley, Columbus, Miss.
44 Suprapubic Prostatectomy. J. C. Vinson, Tampa.
45 Locating Surgical Border-Line Gastro-Intestinal Cases. G. M. Niles, Atlanta, Ga.

Indiana State Medical Association Journal, Fort Wayne

September, VIII, No. 9, pp. 413-454

46 Is Diagnosis of Sarcoma Sufficient? M. F. Porter, Fort Wayne.
47 Episiotomy, Perineal Safety Measure. C. J. Rothschild, Fort Wayne.
48 Papillomas of Bladder. J. C. Fleming, Elkhart.
49 Complete Intraplacental Uterine Rupture During Labor. J. M. Stoddard, Anderson.

Journal of Cutaneous Diseases, New York

September, XXXIII, No. 9, pp. 611-666

50 *Spinocelled Cancers of Skin. H. H. Hazen, Washington, D. C.
51 Human Serum and Blood in Treatment of Psoriasis and Other Skin Diseases. H. Fox, New York.
52 *Treatment of Psoriasis with Autogenous Serum. W. B. Trimble and J. J. Rothwell, New York.
53 New Apparatus for Intravenous Administration of Neosalvarsan in Concentrated Solution. L. Thompson, Hot Springs, Ark.

50. **Spinocelled Cancers of Skin.**—There are, says Hazen, two varieties of prickle-celled cancer, a malignant type and a warty type, that will metastasize only under special circumstances. These growths always arise from abnormalities, hence many of them could be prevented, or at least operated on at an early date. Spinocelled cancers are apt to metastasize to the regional glands, even at an early date. The best results have come from the local removal of the growth, together with the radical removal of the draining

lymphatic glands. Any form of treatment which does not permit of the proper diagnosis and differentiation of the primary growth is to be deplored. At this point it would be well to point out that many basal-celled cancers can be clearly distinguished in the gross.

52. **Psoriasis Treated with Autogenous Serum.**—Fifty cases of psoriasis were selected by Trimble and Rothwell; thirty of these were given the serum treatments, the remaining twenty being used as controls. The controls were divided into two groups of ten each, one group being placed on 2 per cent. chrysarobin ointment, and the other on a 10 per cent. white precipitate of mercury ointment. An ointment of 2 per cent. chrysarobin was given to each patient taking the serum injections, after the sixth treatment, but so far as possible the injections were continued until the total number reached ten. In twenty-eight of the thirty patients receiving the serum injections, there was absolutely no change in the eruption before the salve was prescribed; after this time, resolution progressed with fair rapidity. The control cases furnished some interesting points. To ten of these was given 2 per cent. chrysarobin ointment, so as to compare the rapidity of action with and without the serum injections; ten also were put on the unguentum hydrargyri ammoniati, 10 per cent., to see how the rapidity of action compared with the weak chrysarobin applications. It has been almost a routine measure in the clinic to give all cases of psoriasis, at the first visit, the unguentum hydrargyri ammoniati. In a certain small percentage of mild or early cases this application would remove the lesions; if so, then the disagreeable staining, irritating chrysarobin would be avoided; if not, the case was put on the chrysarobin ointment. The controls using the white precipitate of mercury ointment acted about as was expected; some were benefited and some were not, but the comparison sought was decided. The mercury ointment was not to be compared in efficiency with the 2 per cent. chrysarobin.

The controls using the chrysarobin furnished some valuable information and caused the greatest surprise. First, the action of the drug was about the same in the control cases as in the serum group. If there was any difference, it was in favor of the control group; they seemed to progress more favorably and effectively than the injection cases; this may have been a coincidence due to individual tendencies. The surprising observation was that the 2 per cent. chrysarobin seemed to act quite rapidly and effectively and to produce dermatitis with the same frequency as the same ointment in 10 per cent. strength. The psoriasis lesions would vanish, leaving the same white areas and the same surrounding dermatitis as when a 10 per cent. ointment was used. In one or two instances a marked dermatitis was produced with the supposedly weak ointment. In one of the serum cases, a young woman, the 2 per cent. salve produced an intense dermatitis, the redness, heat and edema of the skin causing great tenderness on pressure, and being sufficient to cause sleepless nights.

Lancet-Clinic, Cincinnati

September 11, CXIV, No. 11, pp. 221-240

54 "Rochester 'Live Little Longer' Plan in Operation." M. E. Bingeman, Rochester, N. Y.
55 Hysterectomy from Viewpoint of General Surgeon. W. D. Haines, Cincinnati.
56 Five Years' Experience with Salvarsan in Syphilis. A. Nelken, New Orleans.

September 18, No. 12, pp. 241-260

57 Anesthetics. C. S. Skaggs, East St. Louis, Ill.
58 Barany Tests as Used in Differential Diagnosis of Cerebellar and Internal Ear Disease. C. E. Shinkle, Cincinnati.
59 Tuberculous Meningitis in Adults; Report of Case. H. T. Ratterman, Cincinnati.
60 Policyholders as Medium for Increasing Longevity. W. F. Blackford, Louisville, Ky.

Medical Record, New York

October 2, LXXXVIII, No. 14, pp. 551-592

61 School-Spread of Contagious Diseases and How to Control It. M. Solis-Cohen, Philadelphia.
62 Intraspinal Treatment in Syphilis; Spinal Fluid Findings. L. A. Levison, Toledo.
63 Importance of Personal Equation in Treatment of Tuberculous. W. H. Swan, Colorado Springs, Colo.
64 Diagnosis and Treatment of Gastric Neuroses. S. Wendkos, Philadelphia.
65 *Treatment of Acute Epididymitis by Aspiratory Puncture. H. W. E. Walther, New Orleans.
66 Rocky Mountain Spotted Fever Treated with Suprarenal Secretion. M. H. Smith, Basin, Wyo.
67 What Patients with Toxic Goiter Should Do and What They Should Not Do. G. P. Coopernail, Bedford.

65. **Treatment of Acute Epididymitis.**—The technic Walther has adopted is as follows: The scrotum is prepared aseptically as for any operation; the practice being to shave the skin, thoroughly cleanse the same with green soap and sterile water, and then paint the site of puncture with tincture of iodin. The affected testis is then firmly grasped with one hand, the epididymis to be punctured pointing uppermost, and the skin over the selected area of entrance of the needle is put on tension. A sharp-pointed, fairly large needle which is connected to a 10 c.c. record syringe, and which has been previously sterilized, is then thrust through the skin of the scrotum into the substance of the epididymis for one-half to two-thirds inch, and then the attempt is made to aspirate gently some of the seropurulent content. By withdrawing the needle slowly aspirating all the while, one will often succeed in obtaining fluid from the different levels in the gland when the same would not be gotten if the needle was held in only one plane. Usually two or three punctures at different points in the affected organ are made. The wounds are then sealed with a collodion dressing and a suspensory applied to the scrotum. Confinement to bed is not necessary. The only anesthetic used has been that of spraying locally the site of puncture with ethyl chlorid to freeze the part. As a rule, little fluid is withdrawn. The effect of the aspiration, however, becomes manifest by an almost immediate relief from pain, and within six to twelve hours the swelling in the gland and the fever have diminished considerably.

Missouri State Medical Association Journal, St. Louis

September, XII, No. 9, pp. 399-432

68 Congenital Heart Lesions in Infancy and Childhood. E. H. Schorer, Kansas City.
69 Renal Tuberculosis. J. P. Henderson, Kansas City.
70 Kidney Tuberculosis; Special Reference to Some Inoperable Cases. C. E. Burford, St. Louis.
71 Treatment of Congenital Club-Foot. C. A. Stone, St. Louis.
72 Suppurations of Kidney. T. A. Blackmore, Windsor.
73 Roentgenotherapy for Angiomas; Report of Cases. E. H. Skinner, Kansas City.
74 Motility of Aortic Arch. G. H. Hoxie, Kansas City.
75 Clinical Contribution to Study of Uterine Fibroids. M. H. McLean, St. Louis.
76 Cystoscopic Report of Case of Hematuria. M. Goldman, Kansas City.
77 Surgical Treatment of Goiter. A. C. Crank, Canton.

New Mexico Medical Journal, Las Cruces

September, XIV, No. 6, pp. 161-200

78 Suggestion with Regard to Medical Treatment of Cancer. E. C. Prentiss, El Paso, Tex.
79 Medical Organization and Public Health. W. R. Joyner, Roswell.

New York Medical Journal

October 2, CII, No. 14, pp. 689-736

80 New Method for Treatment of Inoperable Cancer. S. P. Beebe, New York.
81 Autolysin Treatment of Cancer of Light of Proteomorphic Theory. H. S. Williams and J. W. Beveridge, New York.
82 *Infantile Eczema. H. W. Cheney, Chicago.
83 Repair of Female Perineum. A. S. Brinkley, Richmond, Va.
84 Backache. H. Weinstein, New York.
85 Advantages of Quinin and Urea Hydrochlorid as Local Anesthetic. J. L. Amster, New York.
86 Management of Obstetric Case. S. J. Druskin, New York.
87 Radium in Rhinoscleroma. J. Guttman, New York.
88 Pituitary Extract in Obstetrics. L. J. Friedman, New York.
89 General Miliary Tuberculosis with Unusual Spinal Fluid Findings. J. Roby and A. Kaiser, Rochester.

82. **Infantile Eczema.**—In speaking of the treatment of this disease, Cheney emphasizes that external applications are not to be considered first. First thought and consideration should be the nutrition of the child, and a careful inquiry as to the food which has been given will give us a clue to proper treatment. If it is a breast-fed baby, one may often find that it has been fed at frequent and irregular intervals,

perhaps every two hours, and the mother has an oversupply of rich milk. For such a baby endeavor to do two things; first, decrease the abundance and richness of the mother's milk, and second, cut down the baby's supply. For the mother, advise more exercise and a lessening of the quantity of food which she takes, omitting particularly milk, cream and the cereals. For the baby, prescribe regularity of nursing and long intervals between feedings. The baby should not be nursed oftener than once in four hours, and not allowed to stay at the breast too long. The food can be diluted by giving the baby 1 or 2 ounces of water or barley water just before each nursing, partly filling its stomach, and thus it will not take so great a quantity of milk. Some cases persist after all these trials. They are probably cases in which there is an intolerance for some ingredient in the mother's milk, and for such a wet nurse may be tried, or if one can make the baby fairly comfortable, worry along for a few months until the child is old enough for other food. For the bottle-fed baby, vary the food constituents to suit each case. Cases which still resist all such feeding often can be cured by using the so-called albumin milk.

New York State Journal of Medicine

September, XV, No. 9, pp. 327-372

90 Metabolic Studies in Diabetes. F. M. Allen, New York.
91 Treatment of Fibroids of Uterus by Roentgen Rays. G. E. Pfahler, Philadelphia.
92 Twilight Sleep. A. J. Rongy, New York.
93 *Experiences with Malt Soup for Institution Marasmus. T. S. Southworth, New York.
94 *Blood Coagulation in Infancy. H. L. K. Shaw and F. J. Williams, Albany.
95 Treatment of Rigid Rotary Lateral Curvature of Spine by New Brace. S. Kleinberg, New York.
96 *Reinforcing Paralytic Flail Joints by Intra-Articular Silk Strands to Limit Motion and Increase Stability. B. Bartow, Buffalo.
97 Present Status of Tuberculin Therapy in Ocular Tuberculosis. W. B. Weidler, New York.

93. **Experiences with Malt Soup.**—The method adapted by Southworth was to select from day to day those cases whose condition was most critical, and to employ for each infant, in making up its daily supply of food, the number of ounces of milk, or top milk, which it would properly receive in an ordinary suitable formula. To this, and the requisite amount of water, was added the malt soup extract and wheat flour, usually in the proportion of one level tablespoonful of each for approximately each 10 ounces of the total food. The mixture was brought slowly to a boil to gelatinize the starch, and was then strained, cooled and bottled. As a life saver, or at least prolonger of life, the malt soup mixtures proved successful in nearly every instance in which they were given. The prophecy made at the start that flocculent white and green stools would become smooth and brownish within twenty-four to forty-eight hours, was, as a rule, justified. Infants who seemed doomed, ceased to lose weight, and in many instances promptly showed moderate gains.

94. **Blood Coagulation in Infancy.**—Shaw and Williams made examinations in 108 healthy infants under 2 years of age by this method, and found the determinations were between one minute fifteen seconds and one minute forty-eight seconds, and the average coagulation time was one minute thirty seconds, which is a slightly shorter time than in adults. They used the coagulometer of Russel and Brodie, as modified by Boggs and described by Emerson, consisting of a moist chamber with a glass bottom which can be placed on the stage of the microscope.

96. **Reinforcing Paralytic Flail Joints.**—The main ideas in the plan of treatment employed by Bartow are an attempt to provide better opportunities than are contained in the available operative methods for relieving these forms of disability, and also their timely employment to lessen the amount of muscular deterioration depending on disuse of a limb. The purpose kept in view has been to formulate a plan consistent with use in both the early and late periods of residual paralysis and also in young patients if desired. The procedure does not mutilate the joint, and as it causes no interference with the muscle supply, does not jeopardize the chance of improvement or recovery by natural processes inasfar as this is possible. Ankylosis, unless desired, is not the outcome of this procedure, but limitation only. At the same time the procedure possesses a range in its application whereby its repetition will safely prove additional limitation of any required degree. In about 150 cases in which this plan has been used, there has been no mortality, and in no instance an infection of a joint. This plan, proposed by Bartow about three years ago, contemplates fastening the paralytic flail joint by means of paraffined silk strands, inserted within the joint, to limit motion and promote stability for weight carrying.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

September, XXI, No. 3, pp. 93-137

98 First Aid Treatment of Fractures. J. C. Motley, Abingdon.
99 Plea for Reduction of Death Rate from Cancer of Breast. B. C. Willis, Richmond.
100 Internationalized Profession. J. M. Northington, Boardman, N. C.

Public Health Journal, Toronto

September, VI, No. 9, pp. 421-473

101 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto.
102 Standardized Death Rate of British Columbia. W. E. Home.
103 Duties of Medical Officer of Health. J. W. S. McCullough, Toronto.
104 Cheap Food for Babies. R. J. Ewart.

Tennessee State Medical Association Journal, Nashville

September, VIII, No. 5, pp. 205-249

105 Acute and Chronic Rheumatism. F. Billings, Chicago.
106 Colossal Goiters. W. D. Haggard, Nashville.
107 Etiology and Experimental Production of Appendicitis, Ulcer of Stomach and Cholecystitis. E. C. Rosenow, Rochester, Minn.
108 Management of Pellagra. B. G. Tucker, Nashville.
109 Hospital Situation in Tennessee. E. C. Ellett, Memphis.
110 Cases of Removal of Foreign Bodies from Lower Respiratory Tract and Esophagus. W. L. Simpson, Memphis.
111 Eugenics and Marriage. L. A. Stone, Memphis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 11, II, No. 2854, pp. 389-424

1 *Acidosis in Diabetes Mellitus. A. P. Beddard, M. S. Pembrey and E. I. Spriggs.
2 *Significance of Alveolar Carbon Dioxid Determinations in Treatment and Prognosis of Diabetes. E. P. Poulton.
3 Paroxysmal Hemoglobinuria; Report of Case. E. Emrys-Roberts.
4 Congenital Dislocation of Right Foot with Almost Complete Absence of Right Fibula. E. M. Sympson.

1. **Acidosis in Diabetes.**—The chief practical result of the work done by Guy's Hospital during the past twelve years on the question of acidosis in diabetes has been the demonstration that analyses of the carbon dioxid in the alveolar air of the lungs afford an index of the degree of acidosis and a guide in treatment and prognosis. The authors show that in cases of diabetes there is a relation between the alkalinity of the serum and the amount of carbon dioxid in the venous blood; the two rise and fall together without being actually parallel. In the nondiabetic cases, which were taken for the purpose of control, the alkalinity of the serum ranged from twenty-fifth-normal to thirtieth-normal. They also determined the tension of the gases of the blood circulating in the body. The means of fifty observations on ten men are 5.57 volumes per cent. of carbon dioxid and 14.89 of oxygen; the maxima are 6.11 and 15.59, the minima 4.87 and 13.91. Diabetic patients may have alveolar pressures of carbon dioxid, which are within the normal limits, although they are passing large quantities of sugar in the urine. When there is acidosis the carbon dioxid falls, and in diabetic coma reaches as low a figure as 1 or 2 volumes per cent. If under treatment with sodium bicarbonate the patient recovers, the pressure of carbon dioxid may gradually rise to the normal level. Moreover, in diabetic patients, massive doses of sodium

bicarbonate may raise the pressure to a height beyond the normal range.

2. **Alveolar Carbon Dioxid Determinations in Treatment of Diabetes.**—The object of alveolar CO_2 determinations is to measure the severity of the acidosis. Hence, Poulton says, it is useless to apply the method he used when the urine, in a case of diabetes, gives a negative result with the nitroprussid test. Under these circumstances the alveolar CO_2 pressure will always fall within normal limits. However, when the urine contains acetone bodies, it is usually impossible from the nitroprussid or ferric chlorid tests alone, to say how severe the acidosis is. In any of these cases the alveolar CO_2 pressure is a sure guide. By its means cases can readily be divided into two categories: 1. The mild cases, in which the alveolar CO_2 pressure falls within normal limits; in these cases the prognosis with regard to coma is relatively good. 2. The severe cases in which the alveolar CO_2 is definitely lower than normal; here the utmost care must be taken to prevent the onset of coma. All the time the CO_2 is below normal the patient is, as it were, on the edge of a precipice, and any disturbance, such as sudden excitement or worry, or the administration of too rigid a diet, may push him over the edge.

In these cases the actual CO_2 pressure observed will give the measure of the danger. A value of 2 per cent. means that coma may supervene within twenty-four hours. A value of 3 or 4 per cent. is less dangerous; in the worst event, coma will not come on for at least two or three days. A sudden drop in the alveolar CO_2 is also of significance; it means that acidosis is increasing, and, though the immediate danger may not be great, there is always the possibility of a further increase until coma sets in. Again, it is possible to be misled if reliance is placed on symptoms alone, without determining the alveolar CO_2, because it not infrequently happens that the rapid onset of coma may be suspected from symptoms, even when the alveolar CO_2 still remains relatively high. It does not necessarily follow that the chance of averting coma is hopeless because a low CO_2 pressure is obtained. It may be kept off for a considerable time by judicious treatment.

Edinburgh Medical Journal

September, XV, No. 3, pp. 161-240

5 Lesions of Occipital Lobe and Affection of Vision. B. Bramwell.
6 Case of Rat-Bite Fever. T. Reid and J. Ritchie.
7 Wasting of Hand; Report of Six Cases. A. F. Hewat.
8 Two Cases of Bronchiectasis (Nontuberculous) Treated with Autogenous Vaccines. R. A. Fleming and H. J. C. Gibson.
9 Three Cases of Malignant Pustule of Anthrax. A. Miles.
10 Id. J. W. Dowden.

Journal of Obstetrics and Gynecology of the British Empire, London

March-May, XXVII, Nos. 3-5, pp. 105-150

11 Investigation of Causes which Determine Lie of Fetus in Utero. W. S. A. Griffith.
12 Prevalence of Congenital Syphilis Among Newborn of East End of London. P. Fildes.
13 Condition of Larynx and Trachea in Stillborn Infant and Its Bearing on Artificial Respiration. E. A. Barton.
14 Case of Torsion of Normal Ovary. F. J. F. Barrington.
15 Two Cases of Congenital Malformation of Female Genitalia. R. P. Beatty.

Lancet, London

September 11, II, No. 4802, pp. 587-634

16 Common Aims of Science and Humanity. A. Schuster.
17 *Pathology of Trench Frost-Bite. J. L. Smith, J. Ritchie and J. Dawson.
18 *Phenolization in Treatment of Gas Gangrene. L. Mencière.
19 Plastic Operation for Closing Certain Unhealed Gunshot Wounds of Head. C. W. G. Bryan.
20 Value of Prolonged Rest in Treatment of Heart Disease in Young. G. D. Barton.
21 Succus Allii (Garlic Juice) in Control of Suppuration in Wounds. A. D. S. Cooke and V. Gabriel.
22 *Strength of Picric Acid as Antiseptic. H. L. Tidy.

17. **Trench Frost-Bite.**—The observations recorded by the authors were made on rabbits. One of the hind feet was shaved and the animal was then placed in a wide glass cylinder standing on a layer of earth which was kept dry or moist according to requirements. By this means it was found possible to reproduce in the rabbits' feet the edematous swelling characteristic of trench frost-bite. In the first place, it was found that when the mud was both wet and cold the swelling became marked in from two to three days. On the other hand, when the mud was kept dry the cold had much less effect. Constriction of the limb by means of a band of sticking plaster increased the tendency to edema in the feet exposed to cold. This effect was not obtained by a single band, but when the band was taken twice round the limb the cold produced edema more rapidly.

The effect of applying warm water (at 37 C.) to the foot after it had been exposed to the cold was to increase the edema markedly. The swelling was confined to the parts which were directly exposed to the cold; it was less marked in the hind foot which had not been shaved. The animal with a swollen foot could still walk with it, though there was a certain amount of limping. On the other hand, the evidence of anesthesia in the foot was indefinite. When the rabbit was placed in its cage in the animal house after an experiment, the swelling rapidly disappeared and it walked about normally after twenty-four hours. The microscopic examination of the tissues showed that the chief effect of the cold was on the blood vessels. The lumen was dilated and contained a certain amount of fibrin deposit; the endothelium of the intima was swollen; there was vacuolation in the muscle fibers of the media, and there was an increase in the number of cells in the perivascular tissue. In certain cases, and especially when the edema had been present for a longer time, there was a diffuse infiltration of the swollen tissue with leukocytes. The changes in the nerves consisted in edematous swelling of the axis cylinders, and this appeared to be merely a part of the general edema of the feet. There was no sign of degeneration of the myelin. The nerve cells in the cord were normal.

18. **Phenolization in Treatment of Gas Gangrene.**—In order, Mencière says, to prevent infection, the best means is embalmment of the wound. The technic is as follows: Long incisions, cleaning up the gangrenous cavity, removal of splinters and fragments of clothing, extraction of the projectile, usually a bullet or piece of shell. Protect the neighboring parts with cotton-wool and compresses, which should be as impermeable as possible, block any counter opening with a tampon, or defer making a counter incision until after phenolization. Hold up the edges of the wound with Kocher's forceps in order to form a pit. Fill the wound to the brim with a solution of crystals of 9 parts pure phenol, 1 part alcohol, and with small tampons swab out all its recesses. Allow this solution to remain in contact with the wound for one to one and a half minutes. Avoid cauterization of the surrounding skin. This requires some dexterity. Remove all excess of phenol with tampons and by gentle irrigation with strong alcohol to the amount of 3 or 4 liters (5 to 7 pints). Then at the same sitting, embalm with 150 to 200 gm. (6 to 8 ounces) of a solution consisting of 1 liter ether, 10 gm. each of iodoform, guaiacol, eucalyptol, 30 gm. balsam of Peru, and 100 c.c. 90 per cent. alcohol.

22. **Picric Acid as Antiseptic.**—Tidy found experimentally that a 0.165 per cent. solution of picric acid has the same bactericidal powers toward the culture of typhoid bacteria as has the standard 1 per cent. solution of phenol. Thus the Rideal-Walker phenol coefficient of picric acid is exactly 6.

Archives des Maladies du Cœur, etc., Paris

September, VIII, No. 9, pp. 281-316

23 Paroxysmal Premature Contractions of the Heart in Wounded Soldier. (Crises extrasystoliques provoquées par les exercices physiques chez un soldat presentant des lésions multiples des nerfs craniens.) O. Josué and J. Heitz.
24 False Alternation of Weak and Strong Beats of Heart and Pulmonary Artery. (Fausse alternance du cœur et de l'artère pulmonaire d'origine complexe.) C. Pezzi.

Bulletin de l'Académie de Médecine, Paris

August 24, LXXIV, No. 34, pp. 205-224

25 Mixed Vaccines for Typhoid and Paratyphoid. (Vaccinations antityphoidiques et antiparatyphoidiques, mixtes, doubles ou triples.) F. Widal.

26 Experimental Research Suggesting Nourishing Value of the Animal Matter of Bone, Ossein. E. Maurin.

August 31, No. 35, pp. 225-242

27 Mixed Typhoid and Paratyphoid Vaccines. H. Vincent and Chantemesse.
28 *Tardy Tetanus. L. Bérard and A. Lumière.
29 Syndrome Resulting from Wound of Cauda Equina. (Syndrome de la queue de cheval par projectile de guerre.) H. Claude and R. Porak.

28. **Tardy Tetanus.**—Bérard and Lumière have encountered a number of cases of tetanus developing on the occasion of some operation or trauma affecting a wounded soldier who had been given preventive antitetanus serum injections and had long recovered apparently from his wound. There must have been some latent spores lurking in the tissues and roused to life by the operation or trauma. The onset of the resulting tetanus is insidious, but the symptoms slowly and gradually increase in severity, the respiratory muscles finally become involved, with fatal asphyxia. Early progressive and permanent contracture of the abdominal muscles is almost constant in these tardy cases. The necessity for repeating the preventive injection of antitetanus serum before any contemplated operation or in case of trauma was emphasized by these experiences. Since this has been made a routine procedure, no further cases of this tardy tetanus have developed in their service. The early preventive injections evidently transform the clinical picture of the tetanus to a very slow but progressive disease.

Presse Médicale, Paris

September 2, XXIII, No. 41, pp. 333-340

30 Agglutination in Differential Diagnosis of Typhoid and Paratyphoid. L. Bernard and J. Paraf.
31 *Technic for Transfusion of Blood. L. Bérard and A. Lumière.

September 9, No. 42, pp. 341-352

32 The Evolution of Tuberculous Purulent Pleurisy. Chauffard.
33 Emergency Sterilization of Drinking Water. (Purification chimique des eaux de boisson: Javellisation et chloration.) H. Labbé.
34 Meningococcus Arthritis. (Manifestations articulaires meningococciques.) P. Sainton and J. Maille.
35 Conservative Economical Amputations on One Plane. (Amputation plane économique.) V. Pauchet.

31. **Transfusion of Blood for the Wounded.**—Bérard and Lumière report almost miraculous recoveries of many soldiers practically moribund from loss of blood, after transfusion of blood from another person. They give an illustrated description of their technic and discuss the precautions necessary, and the accidents and incidents that have occurred in their practice or are liable to occur. They are connected with a Lyons hospital, and relate that an advertisement inserted in the daily papers brought them 150 donors in one week. The first to apply was a physician. During the last six months they have been selecting women for the donors almost exclusively, and have never had any difficulty in obtaining all the donors needed. Carrel's technic is followed quite closely. Among the accidents that may be encountered is the finding the radial artery too small to admit the cannula; this is especially liable when the donor is a woman. The diameter of the artery should be estimated beforehand. The donor may experience discomfort or even syncope after a period of pallor, sweating, chilliness of hands and feet, thirst and acceleration of the pulse. When these symptoms appear, hot drinks, grog, tea with rum, should be given, the extremities warmed and the position of the body changed. These measures usually succeed in reviving the donor; if not, the transfusion should be interrupted and saline and camphor injected. They have never had any symptoms indicating hemolysis in the blood of the receptor. They regard the risk of hemolysis as a comparatively slight danger in view of the impending death if blood is not supplied from some source.

Archiv für Verdauungs-Krankheiten, Berlin

August, XXI, No. 4, pp. 255-334

36 *Diffuse Idiopathic Dilatation of the Esophagus in Man of 65. A. Schüle.
37 *Spastic Ileus from Tumor in Fourth Ventricle in Woman of 35. A. Schüle.
38 *Occult Hemorrhage in Gastro-Intestinal Tract. (Ueber okkulte Blutungen des Verdauungskanals.) A. Schüle.
39 *Methods for Testing the Pancreatic Secretion. (Zur Prüfung der äusseren Pankreassekretion.) J. J. Schleicher.
40 *Roentgen Differentiation of Disease of Esophagus and Stomach. (Der diagnostiche Wert des Röntgenverfahrens bei Speiseröhren- und Magenkrankheiten.) H. Elsner and H. Ury.
41 Determination of Gastric Acidity Before or After Filtering. (Soll die quantitative Aciditätsbestimmung im filtrierten oder im unfiltrierten Mageninhalt vorgenommen werden?) F. Weinberg.

36. **Dilatation of the Esophagus.**—Schüle's patient was a man of 65, apparently entirely healthy until the last year, during which occasionally food with an acid taste came up into his mouth, but there was never actual vomiting. Roentgenoscopy showed the esophagus dilated to the capacity of a liter. Treatment has been restricted to teaching the patient to empty his esophagus himself from time to time. As this extreme dilatation developed without symptoms, it seems that there must have been a congenital tendency.

37. **Spastic Ileus with Tumor in Fourth Ventricle.**—The ileus in the woman of 35 was accompanied by persisting accumulation of bile in the stomach without admixture of feces and without much peristalsis or meteorism. Schüle had a similar case some years before in which no organic obstruction was found on opening the abdomen, but the jejunum was contracted and anemic and the further course of the case revealed a tumor in the fourth ventricle. It was close to the nerve center for the vagus, and he assumes that in this way spastic ileus had been induced. Experiments have shown that irritation of the vagus in the dog causes phenomena in the small intestine. Bechterew has seen the bowel contract in dogs during irritation of the posterior corpora quadrigemina. In the present case nothing to explain the ileus was found at the operation aside from the pale and totally contracted jejunum. At necropsy two months later a tumor was found at the site of the vagus center. The bowel had not been distended and the stomach did not stiffen. Stenosis at the pylorus is liable to induce stiffening of the stomach but with stenosis below the pylorus the stiffening never passes on into the stomach past the pylorus barrier. There may be stenosis without this stiffening, but when it occurred it always indicated a high degree of stenosis, in Schüle's experience.

38. **Minor Points in Testing for Occult Hemorrhage.**—Schüle advises his patients to clean their teeth with a cloth and not brush them for two or three days before the test, as the brush may cause some minute bleeding of the gums which would interfere with the findings. He declares that examination for occult hemorrhage in the gastro-intestinal tract is one of the most important achievements that has been realized in the last ten years in the diagnosis of stomach and bowel trouble. Further research is necessary, however, to ascertain whether and how often occult blood can be found in the stools with disease processes elsewhere than in the gastro-intestinal tract. Appendicitis might prove misleading. He obtained a positive response to the test in three of six cases of uncomplicated gallstone trouble, without being able to detect any lesion in stomach or bowel at necropsy. The same occurred also in a case of cancer in the liver and pancreas. With pure gastric achylia, no blood was found in the stools in four cases examined by an exploratory laparotomy on suspicion of cancer.

39. **Tests of Pancreas Functioning.**—Schleicher devotes eighteen pages to a description and discussion of the nine various technics in vogue, commending the Gross and Wohlgemuth methods for qualitative and quantitative determination of the trypsin and diastase content in stools and urine. They have always given reliable insight into the functioning of the pancreas in acute cases. The findings in the twenty-two cases in which the various tests were applied are tabulated for comparison under sixteen headings. The diagnosis of cancer of the pancreas based on the responses to the tests in one case was confirmed by the operation. In another case the operation revealed a cyst and in a third case a nonmalignant fibrous pancreatitis. The cyst was successfully drained and the woman of 51 recovered. In the other case all the tests speak for complete absence of the

pancreas ferments, but the woman keeps in fairly good health since recovery from acute fibrous pancreatitis. The pancreas secretion was found intact with achylia, which can be explained, he thinks, by the soaps of the neutral fats stimulating pancreatic secretion.

40. **Roentgenoscopy in Esophagus and Stomach Disease.**—Cancer of the esophagus does not require roentgenoscopy, as it is clinically evident without this aid. But roentgenoscopy is of great importance in the diagnosis of cancer of the cardia and of spasmodic contraction in this region. Simple gastric or duodenal ulcer does not require it as a rule, but with suspicion of cancer or of a callous or penetrating ulcer or hour-glass stomach, roentgenoscopy is of decisive importance. When cancer is known certainly to be present in an inoperable condition, roentgenoscopy is scarcely necessary, but if an operation is still possible, roentgenoscopy should not be omitted. With the least doubt as to the malignant character of a process in the stomach, Roentgen examination is necessary to complete the diagnosis and in some cases is of decisive importance.

Berliner klinische Wochenschrift

August 23, LII, No. 34, pp. 885-908

42 Eczema of Surgeon's Hand Heals Under Protecting Medicated Adhesive Plaster. P. G. Unna.
43 Artificial Cultivation of Variola Vaccine Virus. F. Proescher (Pittsburg).
44 Precipitation Test for Syphilis. (Unter welchen Bedingungen hat die Herman-Perutz'sche Luesreaktion Anspruch auf Gleichberechtigung und praktische Anwendung wie die Wassermann'sche Reaktion?) J. Zadek.
45 Salvarsan in Syphilis; Two Thousand Cases. (Ein Fall gelungener Sterilisatio magna und durch Salvarsan-Merkur-Jodbehandlung günstig beeinflusste Syphilisfälle.) M. v. Zeissl.
46 Soldiers' Whistle to Call Aid When Severely Wounded. (Zur Auffindung von Schwerverletzten.) Alkan.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 28, XLV, No. 35, pp. 1089-1120

47 Pathology of Juvenile and Incipient Fatty Degeneration of the Coats of Arteries; Atherosclerosis. S. Saltykow. Commenced in No. 34.

Deutsche medizinische Wochenschrift, Berlin

September 2, XLI, No. 36, pp. 1057-1084

48 Dysentery in Peace and War. (Die Ruhr.) W. Kruse.
49 Serodiagnosis of Masked Cases of Chronic Dysentery. H. Strauss.
50 Technic for Enrichment of Meningococci in the Lumbar Puncture Fluid. E. Fränkel.
51 The Presumptive Germ of Typhus. (Ueber den mutmasslichen Erreger des Fleckfiebers.) G. Arnheim.
52 *Specific Treatment of Trachoma. E. Löwenstein and Herrman.
53 *Appendix Utilized in Correction of Hypospadias. H. Weitz.
54 Wounds of the Brain. (Beobachtungen bei Schussverletzungen des Gehirns.) A. Stern.
55 Operative Treatment of Wounds of the Limbs. (Zur Kriegschirurgie der Gliedmassen.) W. von Brunn.
56 Successful Operation for Progressive Thrombosis of Subclavian Vein. P. Rosenstein.
57 The Patient, Physician and Consultant. (Kranker, Arzt und Konsiliarius.) A. Neisser.

52. **Specific Treatment of Trachoma.**—Löwenstein and Herrman squeeze out the contents of a trachoma granule, grind it in saline and inject subcutaneously, and report promising results in three cases with this method of specific treatment.

53. **Treatment of Hypospadias.**—Weitz reports two cases in which he performed a successful operation for hypospadias, utilizing the transplanted appendix. The patients were boys of 11 and 13. The serosa layer of the appendix was removed before it was implanted to form the new urethra.

Medizinische Klinik, Berlin

August 22, XI, No. 34, pp. 933-958

58 *Origin and Importance of the So-Called Starvation Fever in the Newly Born. (Hungerfieber beim Neugeborenen.) A. Mayer.
59 Venereal Diseases. (Zur Bekämpfung der Geschlechtskrankheiten.) W. Fischer.
60 Principles for Surgical Work in the Field. (Chirurgische Gesichtspunkte für das Feldlazarett auf Grund bisheriger Erfahrungen.) Körber.
61 *Trichinosis. Lipowski.
62 Papular and Pustular Hemorrhagic Purpura. (Die Blutknötchenkrankheit.) S. v. Waldheim.
63 Roentgen Localization of Projectiles. (Röntgenologische Fremdkörpersuche bei Kriegsverwundeten.) K. Kaestle.
64 Overhead Cable for Transportation of the Wounded. (Beförderungsart Kranker und Verwundeter mittels Seilbahn.) S. Placzek.
65 First Aid for Fractures. (Erste Versorgung bei Knochenbrüchen.) H. Spitzy and A. Hartwich.

58. **Starvation Fever of the Newly Born.**—Mayer refers to the abruptly downward trend of the weight and upward trend of the temperature during the first three or four days after birth. The prognosis is favorable, and the disturbance does not have much practical importance. Cool packs to reduce the temperature and possibly a change in food rapidly correct the condition as a rule. It is probably the result of certain elements of normal food getting abnormally into the circulation from some transient insufficiency of the protective ferments. It soon rights itself as a rule.

61. **Trichinosis.**—Lipowski urges that the possibility of trichinosis should always be borne in mind when confronted with a case of febrile muscular rheumatism. Differentiation is especially important in soldiers, as simulation is liable to be assumed. The diagnosis is made from a scrap of tissue excised from the point where the tendon of the biceps merges into the muscle. The scrap of tissue is kept in saline and can be forwarded to any laboratory.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

September, XLII, No. 3, pp. 199-282

66 *Serodiagnosis of Pregnancy. (Das Prinzip der Abwehrfermente und der Abderhalden'schen Serodiagnostik.) E. Baumann; (Zur Abderhalden'schen Fermentreaktion bei Nichtschwangeren.) G. H. van Waasbergen.
67 *Gynecology and the Pancreas. L. Prochownick.
68 *Liver Functioning in the Pregnant. (Zur Frage der Leberfunktionsstörung während der Gravidität.) B. Bauch.
69 Proposed Legislation on Craniotomy. (Perforation und Strafgesetzreform.) H. Lieske.

66. **Serodiagnosis of Pregnancy.**—Baumann tabulates the findings with the Abderhalden technic in 159 women at Basel. The findings were correct in all but 1.5 or 2 per cent. Van Waasbergen analyzes the findings with this test in sixty-nine nonpregnant women. He obtained a positive response in all but seven, but the response was less pronounced, as a rule, than in the pregnant.

It seems that the positive reactions are more frequent and intense in younger women, and that a febrile temperature magnifies the action of the protective ferments. He also found that the reaction was more intense as the menstrual period approached, and grew weaker after it was entered. This waxing and waning of the reaction corresponds with the development of the corpus luteum, and it seems probable that the corpus luteum thus has a stimulating action on the metabolism. He says that as a rule we can count on a positive reaction in all pregnant women and in all women during the premenstrual period.

67. **Gynecology and the Pancreas.**—Prochownick discusses the interaction of the pancreas and the internal genital organs. There is no question that pregnancy and diabetes influence each other to an extreme degree. Severe changes in the pancreas have been found in fatal cases of diabetes in pregnant women, easily explained by the interacting internal secretions. Diabetes is also liable to be aggravated by losses of blood and protracted affections in the ovaries or tubes, but especially by myomas. Many physicians can remember cases of apparently typical gallstone colic in pregnant women, but which never returned outside of a pregnancy or childbed. Women with gallstones are also especially liable to have colics at these times. He has had several cases in which violent and apparently typical gallstone colics developed between the third and eighth day after delivery, but the women have never had anything of the kind before or since. He finally interpreted these colics as having some connection with the pancreas, and modified the diet accordingly, with excellent results.

The incoercible vomiting of pregnancy also may be accompanied by pain in the stomach and cramps, persisting for some time and independent of the phases of digestion, the stomach functioning otherwise normally. These cases have been labeled neurotic or hysteric, as nothing to suggest gallstone disease can be discovered in them, but small amounts of sugar are found in the urine, and the assumption of pancreatitis explains the above symptoms. The gradual aggravation of the symptoms and the increasing amounts of sugar in the urine in one such case gave the warning for terminating the pregnancy.

There is one case on record in obstetric annals of necrosis of the pancreas following the puerperium, and surgeons have casually mentioned in a number of cases that the women had borne a child not long before. Some mention that the women had had "gallstone colics" before, but the biliary apparatus was found normal. There can be no question that acute and chronic gynecologic affections, entailing adhesions with the omentum or thrombosis in the veins of the omentum or mesentery, may lead to necrosis of the pancreas. This is especially liable to follow a gynecologic operation.

In conclusion, Prochownick states that the literature and his own experience confirm the close physiologic connection between the pancreas and the internal genital organs, but further research is needed in this line. Functionally, also, we can assume a connection between the pancreas and glucosuria in pregnant women and the severer forms of incoercible vomiting. The data already available warn the gynecologist of the necessity for special care in operating not to leave conditions at any point that might favor thrombosis or embolism in the veins of the omentum or mesentery.

68. **Liver Functioning in the Pregnant.**—Bauch applied the galactose alimentary test systematically to twenty-two pregnant women. The responses were constantly within normal range except in one case in which a pathologically high sugar content in the blood before the test increased under the galactose.

Münchener medizinische Wochenschrift, Munich

August 31, LXII, No. 35, pp. 1173-1208

70 *Mechanism of the Agglutination Reaction. (Zur Theorie der Gruber-Widalschen Reaktion.) B. Stuber.
71 Treatment of Pulmonary Tuberculosis with Intensive Red Light. H. Gerhartz.
72 *Convalescent Serotherapy in Scarlet Fever. (Serumbehandlung des Scharlachs.) E. Reiss and J. Hertz.
73 Origin of Hard Traumatic Edema of Back of Hand. K. Stromeyer.
74 *Sensitive Test for Mercury in the Urine. M. Perelstein and J. Abelin.
75 *Early Diagnosis of Tuberculosis of the Vertebrae. (Frühdiagnose der Wirbeltuberkulose.) T. Janssen.
76 Clinical Phenomena and Operative Treatment of Aneurysms. H. Lengnick and O. Weiss.
77 Treatment of Wounds of the Eye in War. (Der Wert der Bindehautdeckung im Kriege.) R. Cords.
78 Wounds of the Skull. (Erfahrungen über Schädelschusse; Bedeutung des Röntgenbildes für die Schädelchirurgie.) E. Joseph.
79 Vibrio Like That of Cholera Found in Sausage. F. Kutscher.
80 Culture Medium for Meningococci. F. Kutscher.
81 Recovery After Removal of Shrapnel Ball in Right Ventricle. (Schrapnellkugel in der rechten Herzkammer.) R. Freund and C. Caspersohn.
82 Wounds of the Face Involving the Nasal Cavity. (Gesichtsschüsse mit Beteiligung der Nasenhöhle.) G. Krebs.
83 Emergency Orthopedics. (Apparate zur Kriegsorthopädie.) A. Heymann.
84 Medicinal Antivermin Arm and Leg Bands. (Imprägnierte Schutzringe gegen Ungeziefer.) R. Bohlmann.

70. **Theoretical Explanation of Agglutination Test.**—Stuber describes his personal research on this phenomenon of immunization which, he is convinced, has to do with fats rather than albuminous substances. Testimony is accumulating more and more, he asserts, in regard to the unreliability of the agglutination test, and he was himself able to induce a positive agglutination response with the most heterogeneous bacteria. It was also positive in dysentery in Gaehtgens' research. There is, however, a specific agglutination titer, and precision in the diagnosis of typhoid can be obtained only when the highest titer of possible agglutination is determined for a large number of typhoid cases and an average taken as the standard to differentiate typhoid. There is much to sustain the assumption that the fats are the most amenable of all substances to chemical reactions. The albumin molecule seems to act merely as the transporting molecule for the chemically readily reacting fat cleavage products. The response to the agglutination test seems to be a quantitative specific process with a relative chemical identity of the bacterial cell.

72. **Serotherapy of Scarlet Fever.**—Reiss and Hertz used the mixed serum from several scarlet fever convalescents, injected it intravenously in large doses, and declare that their further experience with this form of serotherapy has fully confirmed its preeminent efficacy, actually life saving in many cases. The dose has to be at least 50 c.c. for children and 100 c.c. for adults. The injections have to be commenced before the fourth or fifth day to be promptly effectual. Ordiary serum sometimes produced the same effect as the convalescent serum, but this was not always the case, and hence it is not to be depended on. Normal horse serum seemed entirely impotent. They took the serum from the donors between the eighteenth and twenty-fourth days, after negative Wassermann tests and excluding tuberculosis and septic cases. About 100 c.c. of blood can be drawn for the purpose from older children and 200 c.c. from adults. The indications for this serotherapy are the severer toxic form of scarlet fever, the pulse small and irregular with cyanosis, delirium and restlessness. On the other hand, when the toxic condition is the result of secondary infection, this serotherapy is comparatively useless.

74. **Determination of Small Amounts of Mercury in the Urine.**—The test is based on precipitation of the mercury by means of basic iron acetate. The findings with this and other tests are tabulated for comparison in forty-two cases, all confirming the extreme delicacy of the test.

75. **Early Diagnosis of Tuberculosis of the Spine.**—Janssen comments on the fact that vertebral tuberculous lesions are so seldom recognized in an early stage. Irreparable damage is usually wrought before the disease process is suspected. Much is gained if the physician even thinks of the possibility of tuberculosis of the spine instead of ascribing the symptoms to rheumatism, neuralgia or lumbago. He relates two cases in which massage, etc., were applied for assumed lumbago with eventual disastrous results. In other cases a gravity abscess from a vertebral tuberculous process simulated appendicitis; appendectomy led to no relief, and not until several months later was the case explained by the manifest vertebral process. The tenderness in the cases of this kind was not at McBurney's point, but along the course of the ilio-inguinal nerve. On the basis of the mistaken diagnosis of sciatica, treatment was instituted in some by baths, electricity, etc., which directly aggravated the tuberculous process beyond repair. Pain in the back on long standing should suggest possible tuberculosis of the spine, or even slight discomfort in the back on standing quietly or sitting at table. This was the very earliest symptom in many cases, and suggested vertebral involvement when found in the afebrile tuberculous. When there is backache after a long walk the process is apt to be more advanced. The pain is felt at some point in the spine, with also discomfort at the upper and lower ends of the spine. These pains after walking may be referred to the region on each or one side of the spine, and they may be mistaken for pleurisy, or there may be a kind of girdle sensation; this strongly suggests vertebral disease. When it is located low down, there may be pains in the lower abdomen, predominantly in the ilio-inguinal region, which may also be tender.

Tenderness along the inner margin of the ilium and the farther course of the nerve is more characteristic than pain in the sciatic or other nerves. Pain and tenderness increase after long walking and, if the temperature rises, the picture of appendicitis may be deceptively simulated. He has only rarely encountered spasmodic contracture of the long muscles of the back in the early cases or pain in the spine when the head is struck. Roentgenoscopy is advisable in all cases, but is seldom very instructive in the early stages. Conservative measures are of little use unless supplemented by immobilization. He rarely uses a plaster cast in the early stages, preferring a sail-cloth stretcher and husk mattress, (*Hirsespreu*), moving the patient always on the stretcher. After an interval he has the patient lie prone, raising the upper part of the body a trifle to correct the tendency to gibbus. General heliotherapy is a useful adjuvant. A complete cure is usually realized in time in the majority of cases, and striking results have been obtained even in advanced cases with pronounced paralysis.

Wiener klinische Wochenschrift, Vienna

August 5, XXVIII, No. 31, pp. 829-852

85 Trophic Disturbances with Gunshot Wounds of Peripheral Nerves. F. Steinberg.
86 Diagnosis of Urethral Gonorrhea in Women and Girls. A. Gluck.
87 Plaster Casts That Repel Vermin. (Zur Frage der Läusebekämpfung.) N. Swoboda.
88 Prophylaxis of Venereal Disease After the War. B. Lipschutz.

August 12, No. 32, pp. 853-880

89 Immunization Against Dysentery with Toxin-Antitoxin Mixtures. B. Busson.
90 Typhus at Przemysl in the Spring of 1915. B. Lipschutz.
91 Symmetrical Gangrene of the Skin of the Face in Terminal Phase of Tuberculosis. H. Z. v. Zellenberg.
92 Bayonet Wounds of the Diaphragm. (Stichverletzungen des Zwerchfells durch das Seitengewehr.) H. Hinterstoisser.
93 Vaccinal Immunity. L. Unger. Commenced in No. 31.

Zentralblatt für Chirurgie, Leipzig

September 4, XLII, No. 36, pp. 649-672

94 *Air in the Skull After Shrapnel Wound. (Die intrazerebrale Pneumatokele.) L. Kredel.

94. **Air in the Skull.**—Kredel remarks that an accumulation of air in the skull after a gunshot or shell wound is one of the new clinical pictures encountered in this war. Duken has reported two such cases of intracranial pneumatocele, as he called them, and Kredel here reports another with the Roentgen findings before and after operative relief. In his case the term intracerebral pneumatocele is more appropriate. The symptoms were those of pressure on the frontal lobe. Nothing to suggest a valve action could be discovered.

Zentralblatt für Gynäkologie, Leipzig

September 4, XXXIX, No. 36, pp. 627-650

95 *Twenty-Eight Years of Experience with Uterine Cancers. (Behandlung und Statistik des Gebärmutterkrebses im Kleinbetrieb.) L. Prochownick.

95. **Uterine Cancer.**—Prochownick here reviews his life work in this line, recalling the various phases of treatment through which this led him in the course of his long practice, from almost absolute therapeutic nihilism through the radical operative era down to the conservative era ushered in by radiotherapy. Between 1882 and 1910 he performed 328 operations in 536 cases of uterine cancer, and at the very least he has permanently cured 8 per cent. of the women. Further improvement must be along the lines of radiotherapy, in particular for the uterine cancers which develop so slowly and without symptoms that they are already inoperable when first seen.

Zentralblatt für innere Medizin, Leipzig

September 4, XXXVI, No. 36, pp. 565-580

96 *Recurring Tetanus. H. Brandt.

96. **Recurring Tetanus.**—Sick reported once a case in which the patient had three separate attacks of tetanus at six weeks' intervals and recovered. Brandt here reports the case of a young officer who developed tetanus after a shrapnel wound of the foot, and recovered, but was still confined to bed for seven weeks when a new and more serious attack of tetanus developed. The incubation period was long, both times, and the man recovered.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 26, XXXVI, No. 58, pp. 897-912

97 Management and Treatment of the Insane. (La cura della pazzia.) P. Ercolani.
98 Serotherapy in Scarlet Fever. (Il siero Marpmann nella cura della scarlattina.) V. Russo.

September 1, No. 59, pp. 913-928

99 *Suprarenal Treatment in Nephritis. (Opoterapia surrenale e nefriti.) T. Silvestri.

99. **Suprarenal Treatment in Nephritis.**—Silvestri states that considerable work in the line of organotherapy in nephritis has been done in Italy. He here analyzes the results, especially with suprarenal treatment. Antonio gave small doses of epinephrin in thirty cases of scarlatinal nephritis in children, and with good results. Fede extols epinephrin by the mouth as a valuable aid in nephritis of any kind at any age, but says that the effect is more apparent in children, as the elasticity of the kidney tubules and glomeruli is greater, while the suprarenals are larger in proportion than in adults. All agree that the epinephrin makes up for the deficit from suprarenal insufficiency. Silvestri here reports some experimental research in this line and four clinical cases. His conclusions are that epinephrin is a most valuable aid in acute nephritis, but that it is of no use in chronic disease of the kidney, for reasons which he enumerates.

Pediatria, Naples

September, XXIII, No. 9, pp. 621-688

100 Lipase Content of the Organs. (Sul contenuto in lipasi degli organi.) A. Clerici.
101 *Treatment of Epidemic Meningitis. M. Ponticaccia.
102 Cyst in Mesocolon of Boy of 9. (Cisti linfatica multiloculare del mesocolon in un bambino.) U. de Conciliis.

101. **Epidemic Meningitis.**—Ponticaccia recently had seven cases of meningitis and in six no benefit from antimeningococcus serum was apparent. Two women died, as also a boy of 11, and a girl. The disease was mild in the fifth and sixth cases and the children recovered. The seventh patient was a boy of 10 with extremely severe meningitis and a germ resembling, but not identical with, the meningococcus was isolated from his spinal fluid. No benefit was apparent from serotherapy or other measures, but prompt and permanent improvement followed intraspinal injection of 1 c.c. of hydrogen peroxid in a 20 per cent. solution. After injection of 5 c.c. of this fluid, the boy fell at once into a calm sleep as if a narcotic had been given, and slept for six hours, while the temperature dropped from 40.8 C. to normal for two days, but then rose again. It subsided anew under repetition of the injection, and the third day he was given 5 c.c. of a mixture of equal parts of hydrogen peroxid and distilled water, thus 2.5 c.c. H_2O_2. Recovery was soon complete.

Policlinico, Rome

September 5, XXII, No. 36, pp. 1197-1228

103 Typhus. (Il tifo esantematico o tifo degli accampamenti.) P. Sabella. Commenced in No. 35.

Medical Section, No. 9, pp. 389-432

104 *Pathologic-Anatomic Studies of Hemolytic Jaundice. (Ittero emolitico.) P. Sisto.
105 Salvarsan in Treatment of Progressive Paralysis. V. Massarotti.

104. **Hemolytic Jaundice.**—Sisto's article is accompanied by a colored plate showing the findings in three typical cases. He discusses the necropsy findings in detail, especially in the bone marrow, spleen and biliary apparatus, and the evidences of destruction of the blood corpuscles in the spleen. He also reviews the history of hemolytic jaundice from Hayem-Minkowski-Chauffard to Widal, Gilbert and Banti. The results of splenectomy are throwing light on the pathogenesis of hemolytic icterus. Also the discovery that the disease may be installed and long under way before manifest jaundice appears.

Riforma Medica, Naples

September 4, XXX, No. 36, pp. 981-1008

106 Pathogenesis of Oxaluria. E. U. Fittipaldi.
107 Vaccination Against Typhoid. (Intorno alla clinica della vaccinazione antitifica.) G. Oliaro and A. Ceconi.
108 Arrest in Development in Consequence of Mitral Stenosis. (Sull' infantilismo mitralico.) L. Ferrannini. Commenced in No. 32.
109 Scientific Organization of Measures for Crippled Soldiers. L. Ferrannini.

Russkiy Vrach, Petrograd

XIV, No. 26, pp. 601-624

110 Rare Case of Splenic Infarct. E. N. Vinteler.
111 Case of Heart Block with Spasmodic Auricular Fibrillation. Y. S. Schwarzman.
112 Draining of Purulent Wounds. A. T. Berdiaeff.
113 *Honey in Diabetes Diet. A. Y. Davidoff.

No. 27, pp. 625-648

114 *Exophthalmic Goiter and Tuberculosis. F. P. Bialokur. Commenced in No. 26.
115 Cesarean Section in Eclampsia; Recovery. K. D. Vachnadze.
116 *Skin Tuberculin Test in Schoolchildren. M. N. Keifetz.

113. **Honey in Antidiabetic Diet.**—Davidoff found honey to be a good substitute for sugar and other sweet foodstuffs in diabetes. It prevents acetonemia and diminishes the amount of sugar in the urine in spite of the fact that honey contains 75 per cent. sugar. One patient used up within ten days 1 pound of honey without any increase of the sugar rate in the urine. When the honey was stopped for some time and the percentage of sugar rose, the patient was given four teaspoonfuls of honey daily, and the sugar rate again dropped. Instead of honey in substance a jelly was used made of honey. Davidoff here reports six further instances of the beneficial action of honey in diabetes.

114. **Exophthalmic Goiter and Tuberculosis.**—Bialokur thinks that there is a causal connection between tuberculosis and Basedow's disease. In 10 per cent. of his tuberculous patients he found symptoms of exophthalmic goiter; predominantly in women, one man to ten women. Symptoms of excessive thyroid functioning may occur in the very incipient stage of tuberculosis. They seem independent of the gravity of the case, the age, sex, etc. In fact, he thinks that symptoms of Basedow's disease may indicate the existence of a latent tuberculous infection. When tuberculous symptoms are pronounced, the symptoms of Basedow's disease change the clinical picture, producing a thyroid-tuberculosis combination. Successful treatment of the exophthalmic goiter symptoms may improve the pulmonary process.

116. **Skin Tuberculin Test in Schoolchildren.**—Keifetz examined 276 children of various ages, from 6 to 19, for the Pirquet reaction to tuberculin and found it positive in 53 per cent. Those children that live in favorable circumstances gave the positive reaction only half as often as schoolchildren living in poverty and unhygienic surroundings. The Pirquet test is specific for tuberculosis, and indicates a tuberculous infection. Especially common is the positive result in the presence of early physical signs of latent tuberculosis. It is therefore desirable, he reiterates, to examine all schoolchildren for tuberculosis with this simple and practically decisive method.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 28, II, No. 9, pp. 1239-1310

117 *Radiotherapy in Gynecologic Disease. (Stralen-behandeling bij ziekten der vrouwelijke geslachtsdeelen een gevaar.) B. J. Kouwer.
118 Diphtheria and Pseudodiphtheria Bacilli. M. van Riemsdijk.
119 Vaccine Therapy Effectual in Hay Fever; Two Cases. (Twee gevallen van hooikoorts, zeer belangrijk verbeterd door vaccinotherapie.) A. Kooijman.

September 4, No. 10, pp. 1311-1398

120 *Treatment of Pylorospasm in Infants. L. Delprat.
121 Should Persons with Tuberculous Antecedents Be Advised to Go to the Tropics (Dutch East Indies)? A. E. Sitsen.

117. **Radiotherapy of Gynecologic Disease.**—Kouwer lauds the efforts to cure malignant disease with radiant energy, as a new and promising field for effectual work. But he warns impressively against extending this treatment to the field of gynecology without full recognition of its dangers. Its efficacy rests on the basis of destruction of the essential elements of the ovaries; that is, it induces an artificial castration. Some claim that the amount of destruction can be graduated, and that it is possible to attain the desired end without actually killing the essential element of the ovary, but, he says, they do not know what they are talking about. Our knowledge of the structure and functioning of the ovary is still too rudimentary for a scientific basis for therapeutic action, and the history of operative gynecology has many records of serious mishaps from intentional or unintentional castration. But no one passes severe judgment on this, as all know that the mishaps occurred as surprises during an honest effort to improve conditions. But the castration induced by radiotherapy goes counter to the lessons of experience, and he denounces the whole system of radiotherapy of the internal female organs unless they have outlived all functional usefulness. He says that institutes for radiotherapy are springing up all over the land and the mails are flooded with prospectuses advocating radiant energy in treatment, in particular for gynecologic affections, without a hint of the inherent dangers.

120. **Pylorospasm in Infants.**—Delprat reports the details of twenty-one cases. Thirteen of the infants were dismissed in good condition; another died from intercurrent pneumonia; one was lost track of, and a third was practically moribund when brought in. Five others succumbed to the effects of the pylorospasm. The proportion of thirteen recoveries in twenty-one severe cases is sufficient to endorse the treatment applied, Delprat considers. The child is kept as quiet as possible. As needed, 50 or 100 gm. of physiologic salt solution are injected subcutaneously, and, generally, small amounts of food are given: from 10 to 15 gm. an hour. If the child is too weak to nurse the breast, it is fed breast milk by the spoon or tube. If breast milk is not available, then albumin milk, diluted cow's milk or buttermilk is used. The food can be individualized, as no special food seems to have a specific action on pylorospasm. Some infants do better with ten small feedings and others with the same total amount distributed in five feedings.

If the vomiting keeps up for several days, a sedative is given, papaverin hydrochlorate, beginning with a daily dose of 5 mg. half an hour before feeding. If little or no effect is apparent, the amount is increased to a daily dose of 15 mg. given in two injections. To date, no higher dosage than this has ever been required. The vomiting was generally arrested by this or else the child did not seem able to bear the papaverin and it was discontinued. Delprat quotes from the *American Journal of Diseases of Children* as well as extensive European literature, citing in particular Knöpfelmacher's favorable experiences with papaverin reported at Vienna in 1914 and Mayerhofer's in 1913. The latter was able to witness with the Roentgen rays the subsidence of the muscular spasm under the influence of the papaverin. Fodisch has reported similarly excellent results from another sedative, and Leiner has published a case refractory to papaverin. Januschke reported last year that he injected an infant subcutaneously with 100 mg. of papaverin during the day without untoward consequences. He also gave a child of 10 a dose of 200 mg. three or four times a day with good results. Encouraged by these reports, Delprat used papaverin in five of the twenty-one cases and the results were decidedly encouraging for this method of treatment.

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122 Diseases of Molds, Yeasts and Bacteria. (Mikrobernes sygdomme. Infektionsbegrepets utvidelse.) Sopp.
123 *Hypophysis Tumor. (Hypofysetumor, diabetes insipidus, let infantilisme og imbecilitet.) N. B. Grøndahl.
124 New Self-Registering Perimeter. H. Schiøtz.
125 *Color Test for Uric Acid in the Blood. (Kolorimetrisk bestemmelse av urinsyre i blod.) H. F. Høst.

123. **Diabetes Insipidus and Infantilism from Hypophysis Tumor.**—The patient was a youth of 16 with true diabetes insipidus, slight infantilism and he was somewhat backward in intelligence. Alimentary glucosuria was also pronounced. The assumption of a tumor in the hypophysis was confirmed by roentgenoscopy, and when seen a year later a tendency to acromegaly was unmistakable. Vision was not impaired, but the lad drank about six liters of water a day. The general health seemed good.

125. **Color Test for Uric Acid in Blood.**—Høst has modified the Folin-Denis method so that the test can be applied to as little as 5 c.c. of blood. He describes the technic in detail and the findings with comparative tests, all testifying, he declares, to the reliability of the modified method.

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126 Roentgen-Ray Findings in Normal Large Intestine. II. (Bidrag til den normale Tyktarms Röntgenologi.) T. E. H. Thaysen. Concluded in No. 36.
127 Fibrinous Bronchitis in Boy of 6. Israel-Rosenthal.

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THE EFFICIENCY OF VARIOUS ANTITYPHOID VACCINES *

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For over a year the California State Board of Health has been manufacturing at the hygienic laboratory the Gay-Claypole[1] sensitized antityphoid vaccine and distributing it free to physicians. Data cards are sent with the vaccine and physicians are requested to describe reactions and complications and to report any cases of typhoid fever in those who have been vaccinated. When the data cards are not returned, a follow-up postal card is sent. Under this system reports of several cases of typhoid fever in vaccinated persons were received soon after the beginning of the distribution. The investigation here reported was undertaken to determine whether these failures were peculiar to the type of vaccine distributed by the state board of health and also to arrive at a more accurate idea of the value of antityphoid vaccination in the civil population.

The literature on antityphoid vaccination gives little information regarding its value under the conditions of ordinary civil life. For armies there is a rapidly increasing mass of evidence. In five sets of statistics for antityphoid vaccination in the British army, both during the campaigns in South Africa and in selected test-groups of soldiers in India,[2] there were large numbers of unvaccinated men to serve as controls by indicating the extent of the exposure and the relative protection of the vaccinated men. Among the unvaccinated there were from two to seven times as many cases of typhoid fever as among the vaccinated.

Vincent[3] reports more remarkable results for various bodies of troops in the French army. The typhoid morbidity among those vaccinated with a polyvalent vaccine killed with ether varied from nothing to 0.18 per thousand men, while among the unvaccinated it ranged from 2.22 to 225.61 per thousand. In the German army in the Herero campaign in southern West Africa in 1904 to 1907 there were twice as many cases among the unvaccinated as among the vaccinated.[4]

Brilliant success with typhoid vaccination is shown in the experience of our own army,[5] the morbidity being reduced to 0.03 per thousand men with no deaths. An almost complete absence of unvaccinated men to serve as controls makes it impossible to state just how far this success is due to improvement in the vaccine and in the method of administration.

There are three important factors which determine how much vaccination will reduce typhoid fever in a community:

1. The efficiency of the vaccination, as shown by the degree of immunity produced in the individual.
2. The proportion of vaccinated individuals in the community.
3. The extent of the exposure to typhoid infection, especially of exposure other than simple contact with individuals within the community.

In analyzing the success of vaccination in our army we cannot give all the credit to the first factor, which depends largely on the kind of vaccine and the method of administration, and also on the power of the individual to respond, because like results are not being obtained by similar methods in the civil population in places where the other factors are unfavorable. In the army the second factor must play a large part, because almost all the men are vaccinated and most of the individuals with whom the soldier comes in daily contact are immune and therefore unlikely to develop typhoid fever and to expose him to contact infection. There is, therefore, little chance for typhoid fever to spread in the army through contact even if it should in rare instances gain entrance to a body of thoroughly vaccinated troops. In the civil population we find that most of our failures are in persons who have lived in the same household with typhoid patients, who have nursed typhoid patients, or who have been exposed to some heavily polluted common food or water supply. The third factor is favorable in the army, especially in time of peace, as heavy and wholesale exposure is being prevented by scientific control of food and water supplies and of the general sanitation of camps and barracks. It is obvious that we cannot expect results similar to those in our army among the civil population where the percentage of the population vaccinated is small, and the exposure to contact infection correspondingly increased, and where there is often serious neglect of the supervision of public water, milk, and food supplies.

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* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Gay, F. P., and Claypole, E. J.: An Experimental Study of Methods of Prophylactic Immunization Against Typhoid Fever, Arch. Int. Med., November, 1914, p. 671.

[2] McWeeney, E. J.: Immunity Against Infectious Disease, with Special Reference to Antityphoid Inoculation, Lancet, London, Feb. 6, 1915, clxxxviii, 265. Firth, R. H., quoted by Russell, F. F.: Results of Antityphoid Vaccination in the Army in 1911, and Its Suitability for Use in Civil Communities, The Journal A. M. A., May 4, 1912, p. 1331.

[3] Vincent, H.: La vaccination antityphoidique; résultats donnés par l'emploi du vaccin polyvalent, Jour. med. franç., 1913, vi, 417; Sur la vaccination antityphique, Jour. State Med., 1912, xx, 321.

[4] Russell, F. F.: Results of Antityphoid Vaccination in the Army in 1911, and Its Suitability for Use in Civil Communities, The Journal A. M. A., May 4, 1912, p. 1331.

[5] Russell, F. F.: Antityphoid Vaccination in the Army During 1913, The Journal A. M. A., May 2, 1914, p. 1371.

In the civil population, nurses have been more generally immunized than any other class. The exposure of nurses is much greater than that of the general population. Joslin and Overlander[6] have estimated that a hospital nurse is about eight times as liable to contract typhoid fever as the ordinary citizen. Various reports on the immunization of nurses give morbidities in the vaccinated ranging from nothing to 10.7 per cent. and corresponding morbidities in the unvaccinated varying from 11.4 to 35.8 per cent.[7, 8]

In epidemics, immunization of the general population has been resorted to frequently. Vincent[3] reports two epidemics, comprising a total of 712 vaccinated persons with no cases, and 2,793 unvaccinated with a morbidity of 44.4 per thousand. Townsend[7] reports an epidemic in Torrington, Conn., where there was one case of typhoid among 400 vaccinated persons. In the Sloane Hospital in New York, in a food-borne epidemic[9] due to a typhoid carrier, there were seven cases (15.9 per cent.) among 44 persons who had been vaccinated with various makes of typhoid vaccine at various lengths of time before exposure. Among 30 unvaccinated persons there were six cases (20 per cent.). Spooner[10] reports a water-borne epidemic in which sixty-five persons were exposed, of whom 29 were vaccinated during the outbreak. Among the vaccinated, one case occurred immediately after the first inoculation (3.4 per cent.). Of the unvaccinated 19 were still well at the time of the vaccinating, and five of these (26.3 per cent.) developed typhoid fever. Wade and McDaniel[11] report an epidemic in an institution, one month after the completion of vaccination of the inmates, wherein 1,396 vaccinated persons had 37 cases of typhoid (2.6 per cent.) with 3 deaths, and 304 unvaccinated had 16 cases (5.2 per cent.) with 2 deaths.

There are many reports of vaccination after epidemics, but in a considerable number of them judgment of the efficacy of vaccination is clouded by the fact that while the immunization was being performed other measures were taken to stop the epidemic, for example, the chlorination of a polluted water supply.

Statistics of vaccination among the general public, in the absence of epidemics, are meager. A total record of 26,376 such vaccinations was collected from the literature, with 9 subsequent cases, or 0.34 per 1,000. Most of these were reported in an incidental way that led to the conclusion that no special inquiry had been made to discover cases among the vaccinated.

In a small town in Kentucky[12] there were five cases of typhoid fever in persons who had, within eighteen months, been given vaccines made by at least four different commercial laboratories. About 1,000 persons in the town had been vaccinated. Russell[13] reports absence of cases in 359 vaccinated children. Among 11,772 vaccinated employees of the Canadian Pacific Railway on the western lines there were only four cases and one death.[14]

In the literature the results of vaccination, varying from apparently complete protection to almost none, bring home the fact that the immunity is relative, and that the severity of the exposure determines to a large degree whether the immunized person will escape. Vaccination seems to be more effective against infection from a slightly polluted water supply or the ordinary contacts of our daily life than against infection from a heavily infected milk or food supply or from continuous close contact with an acute case of typhoid fever.

THE CALIFORNIA STATISTICS

To obtain information regarding the results of antityphoid vaccination in the civil population of California, a questionnaire was sent to 2,400 physicians. Replies were received from 815, and 218 of these had administered antityphoid vaccine to 8,124 patients.

In Table 1 are given the statistics so collected regarding failures to prevent typhoid fever. They are classified according to the type of vaccine and the manufacturer. All cases reported as typhoid fever and occurring at least thirty days and not more than two and one-half years after the first dose of vaccine are recorded as true failures.

TABLE 1.—ANTITYPHOID VACCINATION IN CALIFORNIA UP TO APRIL 1, 1915

Manufacturer of Vaccine	Type	Number Vaccinated	Cases among Vaccinated	True Failures	Failures per 1,000 Vaccinations	Deaths, True Failures	Deaths per 1,000 Vaccinations
State Board of Health and University of Calif.	Gay - Claypole, sensitized	4,927	32	21	4.3	2	0.41
B....................	Sensitized...	22	0	0	...	0	
Make not stated....	Sensitized...	18	0	0	...	0	
United States Army	Unsensitized	88	1	1	...	0	
A....................	Unsensitized	2,024	24	15	7.4	2	0.99
B....................	Unsensitized	168	3	3	...	0	
C....................	Unsensitized	188	1	1	...	0	
D....................	Unsensitized	15	0	0	...	0	
E....................	Unsensitized	4	0	0	...	0	
F....................	Unsensitized	55	0	0	...	0	
Four private laboratories	Unsensitized	228	0	0	...	0	
Make not stated....	Unsensitized	136	0	0	...	0	
Make not stated....	Not stated..	251	0	0	...	0	
Total sensitized..................		4,967	32	21	4.3	2	0.41
Total unsensitized................		2,906	29	20	6.9	2	0.69
Unclassified......................		251	0	0	...	0	
Total.............................		8,124	61	41	5.0	4	0.49

In Table 1 the letters A to E represent well-known commercial biologic laboratories. The letter F represents a municipal laboratory. In the beginning of the table are shown the statistics for the Gay-Claypole vaccine[1] manufactured and distributed at first by the department of pathology of the University of California, but after April 1, 1914, by the hygienic laboratory of the state board of health. The vaccine was made from five virulent strains recently isolated in California, and was sensitized, killed with alcohol, dried, ground, and suspended in weighed amounts in physiologic salt solution. The water-soluble substances were then removed and the sediment was again dried, weighed, and suspended. In the earlier lots of vaccine this last step was not a part of the process of manufacture, and five of the persons who later developed typhoid fever received this earlier vaccine. One of these five persons received a vaccine made from a single strain instead of from the five used in the present method.

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[6] Joslin, E. P., and Overlander, C. L.: Separate Nursing and Isolation in Typhoid Fever, Boston Med. and Surg. Jour., 1907, clvii, 427.

[7] Townsend, J. H.: Antityphoid Vaccination, Am. Jour. Pub. Health, 1914, iv, 993.

[8] Ebersole, R. E.: The Value of Typhoid Vaccination in Civil Communities, Med. Rec., New York, 1913, lxxxiv, 894.

[9] Ogan, M. L.: Immunization in a Typhoid Outbreak in the Sloane Hospital for Women, New York Med. Jour., 1915, ci, 610.

[10] Spooner, L. H.: Antityphoid Inoculation, The Journal A. M. A., Oct. 12, 1912, p. 1359.

[11] Wade, E. M., and McDaniel, O.: Observations on the Widal Reaction Following the Administration of Typhoid Vaccine, Am. Jour. Pub. Health, 1915, v, 136.

[12] Gaither, J. G.: Antityphoid Inoculation, Correspondence, The Journal A. M. A., Oct. 10, 1914, p. 1314.

[13] Russell, F. F.: Antityphoid Vaccination in Children, The Journal A. M. A., Feb. 1, 1913, p. 344.

[14] Medical News, Canada, The Journal A. M. A., March 27, 1915, p. 1086.

The firm A which manufactured the greater part of the unsensitized vaccine used in the cases here reported on followed in essentials the United States Army method of manufacture and used the same typhoid culture (Rawlings).

In Table 2 are shown the intervals between the administration of the first dose of vaccine and the onset of typhoid fever in those vaccinated.

In using the table it must be kept in mind that the failures do not in all instances belong to the groups of vaccinations reported. All vaccinations reported, in answers to the questionnaire, as administered up to April 1, 1915, and all failures reported in these answers or afterward by letter up to June 21, 1915, are included in the tables without regard to whether the failures belonged strictly to the particular groups of vaccinations included in the answers to the questionnaire. In some cases the failures were reported by physicians other than those who did the vaccinating, and reports of all the corresponding vaccinations could not be obtained.

In determining whether cases were true failures the interval of time was counted from the date of the first dose of vaccine, because the methods of administration were not alike. The vaccine distributed by the state board of health was given at intervals of two or three days, while most of the other kinds were administered at intervals of ten days.

The basis for determining the diagnosis was in most cases not entirely satisfactory, especially as a positive Widal reaction is not proof of the diagnosis of typhoid fever in a vaccinated person. In all cases the symptoms were regarded by the attending physician as those of typhoid fever. In six of the patients who had received vaccine from the state board of health or the University of California a culture was obtained from the blood or at necropsy and in each case the organism obtained proved to be the typhoid bacillus. Blood cultures demonstrated the presence of the typhoid bacillus in the blood of three of the patients who had received the vaccine of Manufacturer A. In a few cases agglutination tests of the patient's serum were made with paratyphoid A and paratyphoid B bacilli, but with negative results. In a number of cases the diagnosis was strengthened by the fact that there were records of positive Widal reactions in unvaccinated patients in the same group of cases of typhoid fever.

TABLE 2.—INTERVALS BETWEEN THE FIRST DOSE OF VACCINE AND THE ONSET OF TYPHOID FEVER

Manufacturer	Interrupted Vaccinations, Two Doses Only	Early Cases, 1 to 30 Days	True Failures				
			30 to 60 Days	2 to 6 Mos.	6 to 12 Mos.	12 to 30 Mos.	Totals
State Board of Health and University of California	1 (17 mos.)	10	6	4*	4	7	32
United States Army	....	...	....	..	...	1	1
A................	1 (31 days)	8	4	3	5	3†	24
B................	....	...	....	1	1	1	3
C................	....	...	....	..	...	1	1
Total.........	2	18	10	8	10	13	61

* Includes one case completely vaccinated twice, once fourteen months, and again three months before the onset, and infected in a laboratory.

† One case, a nurse, vaccinated sixteen months before the onset, gave a history of having had typhoid fever twelve years before.

In Table 3 are shown estimates of the severity of the attacks of typhoid fever in the cases classed as true failures of the vaccination.

EXTENT OF EXPOSURE

The extent of exposure of the vaccinated persons was so very much greater than the average exposure of the citizens of the state, that in spite of the protection due to the vaccination, the typhoid death rate among vaccinated persons was considerably greater than the typhoid death rate for the state taken as a whole. This is due to the fact that most of the vaccine is sent to the parts of the state having the most typhoid fever and at the seasons of greatest exposure, when the appearance of cases warns the public of the danger of infection. The unusual extent of exposure is indicated by the fact that 824 of the vaccinated persons were nurses, most of them in charge of typhoid cases; 953 were vaccinated in the presence of typhoid fever epidemics; 28 were physicians; 15 were workers in bacteriologic laboratories; and 608 were members of households in which there were acute cases of typhoid fever. Among the 41 true failures, the vaccinated persons were exposed as follows: In 7 cases they received their infection from acute cases of typhoid fever in the same households; in 8 cases they were nurses in charge of cases of typhoid fever; in 2 cases they were bacteriologists working with virulent typhoid cultures; in 6 cases they were exposed to polluted water in water-borne outbreaks; in 5 cases they were exposed in a milk-borne epidemic; one case was that of a physician; and in 12 cases no special history of exposure was obtained. The exposures were similar in the cases of failure after the use of the sensitized and of the unsensitized vaccines. Unfortunately there is no way of estimating with any approach to exactness how many of the vaccinated persons would have developed typhoid fever if not vaccinated.

TABLE 3.—SEVERITY OF TYPHOID FEVER IN FORTY-ONE CASES CLASSED AS TRUE FAILURES

Manufacturer	Mild	Moderate	Severe	Hemorrhage	Perforation of Intestines	Death
State Board of Health and University of Calif.	12	3	6	2	2	2
United States Army	...	...	1			
A....................	4	4	7	1	0	2
B....................	...	3				
C....................	...	...	1			
Total............	16	10	15	3	2	4

The extent of the exposure seems to be one of the most important of the factors which determine whether or not a vaccinated person will develop typhoid fever. In a food-borne outbreak like that at the Sloane Hospital in New York[9] vaccination seems to give inadequate protection, while in the more usual exposures of less severity, we can expect a considerable degree of protection. An instance in which vaccination was apparently of little value is furnished by a recent milk-borne typhoid epidemic in California. On the milk-route under suspicion there were 643 persons, of whom 17 had previously received the antityphoid vaccine distributed by the state board of health. There were 23 cases in the outbreak, 5 in vaccinated persons (three in one family), and 19 in unvaccinated people. Considering the outbreak by families, we find that there were 76 nonvaccinated families, 17 of which had typhoid fever in at least one person, and 7 vaccinated families, two of which had typhoid fever.

In a recent outbreak due to the drinking of water from a polluted well, out of twelve cases there were two in vaccinated persons. One had received the state board of health vaccine and the other had been given the vaccine of Manufacturer B.

Under the heavy exposure to typhoid fever which occurs in the civil population in various parts of the United States such occurrences as the above will take place from time to time and give rise to a distrust of typhoid vaccination unless more exact information is furnished regarding typhoid immunization in the civil population.

COMPARISON OF THE EFFICIENCY OF THE VARIOUS VACCINES

From the table it would appear that the Gay-Claypole vaccine has greater efficiency, measured by the lower percentage of true failures, than the unsensitized vaccines considered as a group. This is not shown beyond question by the facts at hand because the two sets of figures are not exactly comparable. The methods of distributing the vaccines were different, with the result that more of the Gay-Claypole vaccine than of the unsensitized varieties was used in large groups of people, as in lumber camps and institutions. Another possible source of error is the fact that a large part of the Gay-Claypole vaccine was distributed as late as the summer of 1914 and a certain number of failures are still to be expected in the vaccinated persons reported in the questionnaire. A number of additional failures would also be expected in the persons reported as vaccinated with the other makes. It is, therefore, out of the question to draw any definite conclusions regarding the superiority of one vaccine over another, on the basis of the figures available, but the statistics seem to indicate that there is no great difference between the principal types, and that the reported failures of the vaccine manufactured and distributed by the state board of health were not due to inferiority of the vaccine issued, but rather to limitations common to the several types of vaccine administered to the American public.

REACTIONS AFTER ANTITYPHOID VACCINATION

The severity of the reaction, as valued by the physicians who returned the questionnaire, is shown in Table 4. Observations regarding 2,695 vaccinations of university students and inmates of institutions with the Gay-Claypole vaccine by two physicians were excluded so that the figures might fairly represent a composite of the opinions of a large number of physicians. The fourth column in the table shows how many persons had reactions sufficiently severe, in the opinion of their physicians, to warrant their staying in bed for at least half a day. The classification of reactions as slight, moderate, and severe was intentionally left entirely to the physicians making the reports in order to find out their opinions regarding the amount of annoyance caused by the combined local and general reactions rather than to obtain exact observations on the phenomena. The question of severity of reaction is important when it comes to persuading the public to submit to vaccination in large enough numbers to make an appreciable reduction in the morbidity from typhoid fever.

It will be seen that the estimates of the severity of the reactions are almost alike for the sensitized and unsensitized vaccines. It was expected that the sensitized vaccines would cause distinctly less discomfort. Similar results have been obtained by E. S. Kilgore, in a series of observations, as yet unpublished and referred to here through his courtesy. Observations were made by Kilgore on the reactions of eighty-five subjects, vaccinated in four nearly equal groups. Two groups received the United States Army vaccine, obtained through the courtesy of Captain Henry J. Nichols, and two groups received the Gay-Claypole vaccine manufactured by the hygienic laboratory of the state board of health.

Of each pair of groups receiving the same kind of vaccine, one received the vaccine at two-day intervals, and the other at ten-day intervals. The reactions were measured mathematically on the basis of temperatures and measurements of the size of the local reddened area and the slight increase in circumference of the inoculated arm. The vaccines were used in the dosages recommended by their manufacturers and these were not exactly alike. Within the limits of Kilgore's tests and our inquiry no definite diminution of reaction due to sensitization was determined, unless this is indicated by the smaller number of persons (Table 4) who were sick enough to go to bed after receiving the sensitized vaccine.

TABLE 4.—REPORTS OF REACTIONS IN 5,429 VACCINATIONS

Kind of Vaccine	Not Specified	Absent		Slight		Severe		Necessitating Stay in Bed	
		No.	%	No.	%	No.	%	No.	%
Gay-Claypole......	97	578	28.5	1,159	57.1	294	14.4	49	2.4
A....................	180	591	32.7	979	54.2	235	13.0	92	5.1
B unsensitized.....	0	61	38.1	98	61.3	1	0.6	4	2.5
B sensitized........	0	16	59.3	11	40.7	0	0	0	0
United States Army	1	43	50.0	38	44.2	5	5.8	4	4.7
C....................	0	87	48.1	93	51.3	1	0.6	2	1.1
D....................	0	1	6.7	9	60.0	5	33.3	3	20.0
E....................	0	0	0	3	75.0	1	25.0	1	25.0
F....................	0	23	43.4	27	50.9	3	5.7	3	5.7
Two private laboratories.........	0	122	59.5	82	40.0	1	0.5	1	0.5
Maker not specified	190	98	24.9	270	68.5	26	6.6	3	0.7
Total sensitized....	97	594	28.9	1,170	56.9	294	14.2	49	2.4
Total unsensitized.	181	928	37.0	1,329	53.0	252	10.0	110	4.4
Total unspecified..	190	98	24.9	270	68.5	26	6.6	3	0.7
Total..........	468	1,620	32.7	2,769	55.8	572	11.5	162	3.3

CONCLUSIONS

1. Antityphoid vaccination is meeting a severe test in the civil population because the vaccine is most used where the exposure is greatest, and because only a small proportion of the people are vaccinated.

2. In California an inquiry has shown that the true failures were 5.0 per thousand vaccinations reported, and the deaths from typhoid fever were 0.49 per thousand. The total number of vaccinations reported was 8,124.

3. The percentage of failures indicated a slight advantage for the Gay-Claypole sensitized vaccine over the unsensitized vaccines, but the superiority was not conclusively demonstrated as the different sets of statistics were not exactly comparable.

4. There is little difference between the vaccines, sensitized and unsensitized, in common use in California with regard to the severity of reactions after inoculation.

5. If widespread and severe exposures are prevented by better supervision over public water, milk, and food supplies, vaccination can be depended on to diminish greatly the residual typhoid fever, especially if a large enough proportion of the people are vaccinated to reduce contact infection to a minimum.

ABSTRACT OF DISCUSSION

Dr. George E. Ebright, San Francisco: The interesting part of Dr. Sawyer's paper consists in his comparison between the use of vaccine in the army and in the civil population. There are three things which we, as clinicians, always naturally bear in mind and consider in giving typhoid vaccine to a patient. First, there is the degree of immunity that will be accomplished. As Dr. Sawyer says, we are not able at present to establish a conclusion from that comparison. Second, is the duration of the time required for the patient to receive a complete vaccination. The sensitized serum has the advantage of requiring a shorter period of time for administration. Then there is the matter of suffering and reaction which the patient will have to undergo. There again we are not able to come to a conclusion. But there are a number of things that arise for comparison between the army and the civil population. There are in civil life a number of things that do not obtain in the army. The civil practitioner has to deal not with the healthy soldier, subject to repeated physical examination in addition to the examination which he undergoes before he joins the army, but persons as well who may be suffering from any of the chronic diseases, such as tuberculosis. From my own experience I am very loth to give antityphoid vaccine to a person with the least degree of active tuberculosis. I have seen three cases in which the reaction was unusually severe in comparison with nontuberculous people. It would be premature, however, to come to a conclusion at the present time regarding the relation of a vaccine reaction against typhoid and tuberculosis, but inasmuch as the question is still undecided, it is the part of wisdom to be conservative. Finally, it is desirable to be mindful in making comparisons between army vaccine and sensitized vaccine of the possibility of army encampments being under better general sanitary conditions and being less subject to the danger of infection than is the case in civil practice.

Dr. H. J. Nichols, San Francisco: Dr. Sawyer's paper gives just the sort of results that I personally expected to see in the army in the course of a year or so after vaccination was introduced. I hardly expected that our results would be as good as they have been, but they have continued to be remarkable. The most recent statistics are just as good as they have been for the last three or four years. In other words, up to 1910, since 1904, we had been having between 200 and 300 cases of typhoid a year. During the Spanish War our rate was very high, but it dropped to a minimum of the number stated. Then came the results of vaccination. It is often said that sanitation has had a great deal to do with our results. I beg to differ from that opinion. I am somewhat familiar with conditions in the army, and I can say emphatically that sanitation has made no unusual advance since 1910 in the army; there have been no radical changes. Since 1910 and 1911, when vaccination became compulsory, our rates have dropped remarkably. Last year (1914) we had seven cases of typhoid fever. Four of these were in recruits who were taken into the army during the incubation period of typhoid. Three had been vaccinated, one five years before the attack, one had two doses two years previously, and one, three doses two years previously; but the majority of our cases are now in recruits who are taken in during the period of incubation. In a week or two after they enlist some men develop typhoid fever. Sometimes they have had one inoculation.

The fact is that our results are just as good today as they were when typhoid vaccination was first impressed on the public as being of great value. We have had no such bad luck as Dr. Sawyer reports in California. I do not pretend to say what his results are due to, but I do feel like emphasizing the fact that our vaccine is made with great care. It is a very simple matter, but it is made according to definte principles and they are rigidly adhered to. It is not an experiment with us any more. It is too valuable to experiment with, and we do not allow any changes to be made.

Another thing, we do not allow any vaccine to be used after four months. A great many of the commercial houses are allowed by law to put a year's limit on the vaccine. I do not know what effect this may have had in Dr. Sawyer's results. Again some persons receive only one dose or two. Our men take three doses, or they hear from us. All these factors are to be considered. Of course we are all in the same boat and the same principles must hold inside or outside of the service. I do not feel, however, that the explanations which are given for our success, such as lack of exposure, etc., are at all conclusive. Our men certainly are subject to the same infection that anyone is. Our soldiers go down town and go into restaurants, and everywhere they are subject to the same contamination as any other citizen. I cannot help believing myself, personally, that our vaccine is somewhat superior to the vaccines in general use. At any rate, the fact is that we have not had any such setback as is mentioned by Dr. Sawyer.

Dr. E. S. Kilgore, San Francisco: It is unfortunate that it was not possible to obtain reliable returns from another 8,000 unvaccinated subjects living in the same communities and under the same conditions as those included in this analysis. They would be the only group with which it would be fair to compare these results, and for reasons given in the paper they would undoubtedly have shown a much greater morbidity than the population at large. As it stands, the sensational fact which will stick in the mind of the ordinary reader is that there is actually more typhoid fever among the civil population who have received antityphoid vaccination than among those who have not. This impression will be false and dangerous unless the reasons for it given in the paper are duly appreciated. A factor not mentioned by Dr. Sawyer which may account for some of the morbidity among vaccinated subjects is the feeling of security which they have and the consequent relaxation of hygienic measures they would otherwise employ. The feeling has been widespread that antityphoid inoculation is a sure preventive, and the individual who considers himself already safe will not take troublesome precautionary measures. Therefore, an important practical lesson to be taken from this paper is that whenever we immunize people against typhoid fever (or any other infection) particular pains should be taken to make them understand that the protection conferred is not absolute and does not remove the necessity for ordinary hygienic precautions. In view of the presumable necessity of vaccinating every two or three years in order to maintain protection against typhoid, the question of relative severity of reactions following subsequent vaccinations has some importance. Some have been restrained from revaccination on account of the prevalent idea that later vaccinations produce greater discomfort than initial ones. Our experience at the University of California Hospital is that this is not true about as often as it is true, and that the average reactions from first and from later inoculations is practically the same.

Dr. L. B. Wilson, Rochester, Minn.: At the meeting of the Colorado State Medical Society last September, Jolley reported the results obtained by the use of typhoid vaccine in the National Guard while encamped during a strike in immediate proximity to a village in which a large number of cases of typhoid were occurring among private citizens. I do not remember the exact figures, but my impression is that the results were excellent, though there was abundant opportunity for the vaccinated men to become infected.

Dr. W. A. Sawyer, Berkeley, Calif.: I believe with Dr. Nichols that antityphoid vaccination was a very important factor, perhaps the most important single factor, in the astonishing success in the reduction of typhoid fever in the army. If it is claimed that the vaccine used in the army is superior to the vaccines manufactured by commercial houses which follow in their way the methods of the army laboratories, I wish it could be arranged that a large amount of the army vaccine, say enough for 10,000 people, could be distributed for use in the civil population of California. Then we should soon know whether the vaccine of the army is more efficient than the material now in use. If it is, the fact should be ascertained as soon as possible, so that the public will receive the most efficient antityphoid vaccine which can be manufactured.

THE CHOICE AND TECHNIC OF THE ANESTHETIC

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It is the purpose of this paper to analyze the many existing methods of anesthesia with the object of determining if possible in a judicial way what anesthetics should be selected and what technic should be employed in a general surgical clinic. In making this analysis and in arriving at conclusions, we have been controlled by certain requirements: first, the safety of the patient; second, the comfort of the patient; third, the efficiency of the anesthetic agent; fourth, control, avoiding anesthetics which cannot be withdrawn with the first appearance of danger; fifth, the simplicity and general adaptability of the method; sixth, after-effects on blood tissues and viscera; seventh, complications, vomiting, etc., and eighth, effects on immunity against pus organisms, pneumococci, etc.

This study is based on the special interest devoted to this subject in my own clinic by myself and assistants, Drs. Isabella C. Herb, Hamburger and Ewing, Evarts Graham, B. F. Davis, and F. B. McCarty, on pieces of laboratory research which we have carried on, on observations made in the clinics of others both in this country and abroad, and from a study of the literature. The last ten years have been very active ones in the field of anesthesia. New and better means of local anesthesia have been introduced. The use of nitrous oxid has been gradually extended, especially in this country. Complicated apparatus, mixtures and sequences have been widely employed. The use of scopolamin and morphin and various substitutes for morphin, pantopon, narcophin, etc., have been given an extended trial. The intralaryngeal method has been developed by Meltzer and Auer. Spinal anesthesia, nerve blocking, and intravenous and rectal anesthesia have enthusiastic supporters, and have been employed in large series of cases. We have during this period seen in this country the gradual development of the trained anesthetist as a member of the surgical team. So much work has been done that it would seem that we have at hand enough evidence to determine what are the best and safest anesthetics, and in what particular fields each should be employed. Such an analysis would necessarily cover a very wide field, and in this brief paper it will be possible to present simply the essential facts of this study of each of the agents and the methods.

I began this study with the intention of securing for my own clinic methods of anesthesia which would cover fully the entire surgical field, which would be the safest, most efficient, the most satisfactory to both patient and surgeon, the simplest and least complicated. I desired also to find anesthetics which could be adopted and employed by medical men generally, as my clinic is a teaching clinic for medical students, and part of their instruction is the giving of anesthetics. From this standpoint I have analyzed the following:

1. Chloroform.
2. Ether.
3. Nitrous oxid gas.
4. Scopolamin and morphin.
5. Spinal anesthesia.
6. Blocking.
7. Infiltration.
8. Intravenous, general and local.
9. Intrarectal.
10. Intratracheal.
11. Intrapharyngeal.
12. Mixtures.
13. Sequences.
14. Anociassociation.

In each instance we have analyzed these agents and methods from the standpoint of:

1. Safety.
2. Comfort.
3. Efficiency.
4. Control.
5. Simplicity and general adaptability.
6. After-effects on blood and tissues and viscera.
7. Complications, vomiting, etc. Paresis of bladder and bowels.
8. Effect on immunity to pus organisms, pneumococcus, etc.

As a result of this study I submit the following brief summary:

CHLOROFORM BY INHALATION, OPEN DROP METHOD

1. Safety: The most dangerous of all inhalation anesthetics. Deaths from one in 1,000 to one in 3,000 on the operating table.

2. Comfort: A most agreeable anesthetic to the patient.

3. Efficiency: The most efficient anesthetic. Anesthesia and relaxation profound and complete.

4. Control: The anesthetic can at once be stopped on the appearance of danger signals, but the chloroform already in the system cannot be rapidly eliminated, and the effects persist for a considerable period. The margin between the required anesthetic dose and the toxic dose is too narrow for safety.

5. Simplicity and general adaptability: All that could be desired.

6. After-effects on blood tissues and viscera: Reduces hemoglobin. Produces often what is now generally recognized as late chloroform poisoning with fatty degeneration of liver, kidneys and muscle tissue which is usually fatal.

7. Complications: Vomiting in about one third of the cases. Lung complications and nephritis in a small percentage.

8. Effects on immunity: Reduces resistance against pus organisms, pneumococcus, etc.

Conclusion.—Because of its efficiency, comfort and simplicity it has probably been employed more generally the world over than any other anesthetic, possibly more than all other anesthetics combined. And yet the time has come when chloroform in spite of its many advantages should be absolutely and finally discarded because of the huge mortality attending its use both on the operating table and the late chloroform deaths, and because we have for all classes of surgical cases efficient and much safer agents. It is possible that in military surgery chloroform may still find a legitimate place.

ETHER BY INHALATION, OPEN DROP METHOD

1. Safety: The safest anesthetic agent known for prolonged anesthesia. Deaths from one in 5,000 to one in 10,000.

2. Comfort: Not an agreeable anesthetic to take, especially by the closed methods; much more agreeable in expert hands by the open drop methods.

3. Efficiency: Very efficient; complete anesthesia and relaxation can be obtained.

4. Control: The anesthetic can be stopped on danger signals, and the agent fairly rapidly eliminated if necessary under artificial respiration. The margin of safety between the anesthetic dose and the toxic dose is wide.

5. Simplicity and general adaptability by the open drop method is all that could be desired.

6. Reduces hemoglobin, slightly increases coagulability of the blood, and produces few if any cases of injury to liver, kidneys and muscle tissues such as occur from chloroform.

7. Vomiting in from 30 to 40 per cent. of cases. Lung complications and nephritis in a small percentage of cases.

8. Reduces slightly resistance against pus organisms and pneumococci, etc.

Conclusions.—Ether by the open drop method is the safest general anesthetic known for producing prolonged anesthesia. It should be today the standard anesthetic in the surgical clinic. The discomfort of ether anesthesia when properly given by the open drop method by an expert can usually be practically eliminated. In the few cases in which the repugnance to ether is great, the sequence of gas-ether can be employed.

The closed method of giving ether is not so satisfactory or so safe as the open drop method. Complicated apparatus to control the percentage of ether and to warm ether possess no advantages over the simple drop method, and should be discarded. The giving of ether by the drop method is an art which must be acquired under the instruction of an expert.

NITROUS OXID GAS

1. Safety: Gas for short anesthesias, such as pulling teeth, opening abscesses, etc., is the safest anesthetic known. In prolonged anesthesias, a half hour or more, gas is now known to be more dangerous than ether. I refer now to the use of gas and ether in the hands of experts. In nonexpert hands, gas in prolonged anesthesias is much more dangerous than ether.

2. Comfort: Gas is the most agreeable inhalation anesthesia.

3. Gas is not an efficient anesthetic, such as chloroform or ether. Complete anesthesia and complete relaxation for prolonged periods are difficult to maintain, and are not possible in a considerable percentage of cases.

4. Control: Gas can at once be stopped at danger signals, and the agent already in the system is rapidly eliminated more rapidly than any other agent.

5. Simplicity: The apparatus for giving gas is not very complicated, more so, however, than that used in giving ether and chloroform. It is not so widely adaptable as ether. The apparatus is heavy and cumbersome, and somewhat difficult to transport. This objection can usually be overcome.

6. After-effects on blood tissues and viscera, practically negative.

7. Vomiting occurs in but a small percentage of cases.

8. It has little or no influence on immunity.

Conclusions.—Gas should be one of the general anesthetics employed in the surgical clinic. Its place should be for short anesthesias in which unconsciousness is desired and local anesthesia is not applicable—in reducing fractures and dislocations, opening abscesses, and in some more prolonged operations in which for special reasons gas becomes safer than ether, such as operations on the urinary organs with kidney insufficiency. A surgical clinic which does not frequently employ gas anesthesia is, from the standpoint of anesthetics, a poorly conducted clinic.

SCOPOLAMIN AND MORPHIN AS AN ANESTHETIC

1. Safety: A very dangerous anesthetic, so dangerous that it has now been generally discarded by general surgeons, and is retained only by a few enthusiastic obstetricians, the Freiburg school, and has been exploited as the "twilight sleep." The exploitation has been not only in medical journals but also in the lay press. A very thorough research on scopolamin and morphin has recently been completed by the obstetric staff of the Michael Reese Hospital in Chicago and reported by Baer.[1] This investigation shows that scopolamin and morphin should be rejected absolutely and finally as too dangerous, not efficient and as complicating the process and as threatening the asepsis, in short, the same conclusion that was arrived at by general surgeons some time ago. After scopolamin and morphin had caused a good many deaths, scopolamin and pantopon was substituted, and for a time it was claimed that this combination eliminated the risks; very soon, however, fatalities began to be rapidly reported. Then scopolamin and narcophin were suggested as a safe combination. This has not been employed as yet in a large enough series to warrant final conclusions, but deaths are already being reported, and there is no strong reason to hope that this combination is safer than its predecessors.

2. Comfort: No discomfort beyond the giving of the hypodermic injection.

3. Efficiency: Not efficient. It must be followed by a general anesthetic in a large proportion of cases.

4. Control: After once injected, it is beyond the control of the surgeon, and if a dose has been given which is toxic to that particular patient, little can be done to eliminate it.

5. It is simple and could be generally adopted.

6. After-effects on blood tissues and viscera are slight.

7. Complications: Delirium sometimes of serious character is not uncommon. Patients are frequently so dopey and out of their heads that they cannot cooperate with the surgeon or obstetrician.

8. Reduces immunity to pus microbe organisms.

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[1] Baer, J. L.: Scopolamin-Morphin Treatment in Labor: A Critical Analysis of Sixty Cases, The Journal A. M. A., May 22, 1915, p. 1723. Baer says that the excessive thirst, headaches which are so distressing, the difficult control of patients, the risks of infection from soiling, the blurred vision, the ghastly deliriums constitute so severe an arraignment that "we feel compelled to condemn it."

SCOPOLAMIN AND MORPHIN PRELIMINARY TO ANESTHESIA

As a general anesthetic, scopolamin and morphin are to be absolutely and finally rejected both from general and obstetric practice. After it was generally agreed that scopolamin and morphin were too dangerous for use as an anesthetic, an extended trial of routine small doses of scopolamin and morphin preceding the general anesthetic were made, especially in Germany. The sequence has been responsible for many deaths. The evidence from the literature shows beyond question that even in small doses ¼ grain of morphin and 1/150 grain of scopolamin before chloroform, ether or gas adds distinctly to the risks of the patient. It complicates the giving of the general anesthetic. It masks danger signals. It adds to the percentage of vomiting and inability to void urine. It carries with it no advantage and many disadvantages and should be rejected. It is not a good thing, it is not a kindness to a patient to bring him to the anesthetizing room dopey and flighty. For some time after we had finally rejected scopolamin and morphin before a general anesthetic, we continued to employ it before using local anesthesia. We have now discontinued it even before local anesthesia, and find our results much more satisfactory and the local anesthesia quite as complete. In using local anesthesia, one must have the cooperation of the patient, and this one can have better with the patient in normal condition than when he is dopey. We have been pleased to find also that the occasional vomiting which occurred after our local anesthesias has practically ceased since discontinuing scopolamin and morphin, and that in our hernia operations the inability to void and the necessity to use a catheter does not occur. Preceding either the general or the local anesthesia, morphin and scopolamin should be rejected.

It is, of course, frequently necessary to use morphin on account of pain in surgical cases which later require operation under anesthetics, and where the indications are clear, morphin should not be withheld because the patient is to be given an anesthetic. The anesthetist should be informed of the fact that the patient has had morphin.

SPINAL ANESTHESIA

1. Safety: Very dangerous; more so than chloroform. Nine deaths occurred in the first 1,000 cases, and although it is difficult to give absolute statistics, there is probably more than one death in 500 cases.

2. Comfort: Not a comfortable thing, especially to an intelligent man who realizes what is being done. Few medical men with their knowledge of anatomy would choose spinal anesthesia in their own case.

3. Efficiency: The least efficient of the anesthetics except scopolamin and morphin. Necessary to supplement it with other means in from 5 to 10 per cent. of cases.

4. Control: When once injected, the agent is beyond control, and if the dose is a toxic one, the surgeon is helpless.

5. Simplicity: The method is not simple; it requires special technic and could not be generally adopted.

6. After-effects on blood tissue and viscera: These are largely expanded on the cord, and appear as cord injuries—the so-called aseptic meningitis.

7. Complications as above, and especially persistent and severe headaches lasting for days and weeks.

8. It has no effect on immunity.

That anesthesia can be produced by injecting cocain and its substitutes into the cerebrospinal fluid of the cord is an interesting fact. The method, however, has no place in surgical practice. It is too dangerous to warrant its employment, and for every surgical condition requiring an anesthetic, we have safer and more efficient methods at our disposal.

BLOCKING

By blocking I mean the attempt to anesthetize the field of operation by infiltrating the nerve supply of the part proximal to the site of operation, as blocking the gasserian ganglion, the brachial plexus, the great sciatic and anterior crural, the internal pudic, etc.

1. Safety: The method with good technic is fairly safe, except for such accidents as serious lesions from attempting to block the gasserian ganglion with resulting intracranial injury, injury to the vessels in blocking the brachial plexus, and more or less persistent paresis or paralysis of the nerve attacked from the direct trauma.

2. It is not a comfortable method. I have seen patients tortured in the attempt to block the gasserian ganglion, the brachial plexus and the internal pudic. The fact that the blocking of the nerve is often itself a surgical procedure is an objection to the method.

3. Efficiency: It is not always successful in producing anesthesia. Usually from fifteen to twenty minutes are required to produce full anesthesia, and in a considerable percentage of cases it is necessary to supplement it with other forms of either general or local anesthesia.

4. When once injected, the agent is beyond control; but inasmuch as the dose employed is or should be never toxic, this is not a serious objection.

5. Simplicity: The method is not simple; it requires often special training and technic, as in gasserian ganglion, brachial plexus, etc. It could not be generally adopted.

6. After-effects on blood tissues and viscera, nil.

7. Complications, vomiting, etc.: The method is free from them.

8. Effects on immunity, nil.

Blocking has but a limited field. Blocking of the gasserian ganglion, brachial plexus, etc., should be rejected. These are in themselves important surgical procedures, and cannot compete at all with the simpler and safer methods which we have at our disposal. In dental surgery the blocking of the inferior dental and branches of the superior dental nerves has a very useful field. As a rule, nerve blocking should be limited to the blocking of nerves which appear in a dissection made under local infiltration anesthesia, as blocking the ileo-inguinal nerve in a hernia operation done under local anesthesia.

LOCAL INFILTRATION ANESTHESIA

We have in infiltration anesthesia since the introduction of novocain and epinephrin a most important addition to our anesthetic agents.

1. Safety: Very safe when proper agents are employed and the technic is aseptic. Novocain in diluted doses of from 0.25 to 0.5 per cent. in normal salt with the addition of a proper amount of epinephrin seems to be very safe. From 6 to 8 ounces or even

more of this solution can be safely employed. In using small amounts of the solution, say, 1 or 2 ounces, 1 drop of 1 : 1,000 epinephrin should be added to each 200 drops of the 0.5 per cent. novocain in normal salt solution; in using larger amounts, from 6 to 8 ounces, not more than 20 drops of epinephrin should be used. I can find no report of a fatality from 0.25 or 0.5 per cent. of novocain. The addition of the epinephrin is most important. It produces a local anemia which prevents rapid absorption, and therefore makes the effect both safer and more prolonged. The epinephrin also reduces the bleeding to surprisingly small proportions.

A very definite warning should be given in regard to the use of epinephrin in too great concentration. Epinephrin in what is apparently a very weak solution is capable of producing necrosis of the tissues. I have seen this occur with the use of the tablets that are so frequently employed containing both novocain and epinephrin. It is not safe to use the tablets as ordinarily put up in any extensive operation, and these tablets should be very generally discarded and a definite warning sounded against them. I have seen no necrosis when the epinephrin has been 1 : 100,000, that is 1 drop to 100 drops of the novocain solution. I believe on the whole, however, that a safer rule would be 1 : 200,000, that would be 1 drop to each 200 drops of the novocain solution. This would be 10 drops in 4 ounces or 20 drops in 8 ounces, which might be regarded as the maximum amount to employ.

2. Comfort: If the technic is good, the anesthesia carries not more discomfort than the use of a hypodermic injection of morphin. In all cases one should inject first with a fine hypodermic needle 20 minims of the solution before using the larger needle and syringe. I tell a patient on whom I am doing an extensive lip carcinoma operation that I will promise him that he will have no more discomfort than from having a tooth filled.

3. Efficiency: With the large amounts of solution which can now be safely used, we can absolutely anesthetize the tissue infiltrated, and the anesthesia comes on at once and persists for from thirty to forty-five minutes.

4. Control: The agent after once being injected is no longer under complete control. Some control is retained, as operating on an extremity a rubber bandage is placed above the injection and free incisions would enable one to prevent rapid absorption and remove part of the fluid. I have, however, never seen any toxic symptoms or any necessity to resort to such methods.

5. Simplicity: The method is very simple and can be generally adopted.

6. After-effects on blood tissue and viscera, nil.

7. Complications, vomiting, etc.: Since we discontinued the scopolamin and morphin before our local operations, vomiting has practically disappeared. I have to report one incident which occurred in my series of cases. A week after operation for a benign breast tumor, a young girl had a thrombus of the axillary vein on the side opposite to operation. This cleared up in a few days, was painless and may or may not have been due to the local anesthesia.

8. Immunity not influenced.

Conclusions.—I believe that in local anesthesia with novocain and epinephrin we have a very safe and satisfactory method which should be employed in a large group of cases. Wilms is using it in a majority of his operations in the Heidelberg clinic. I am not prepared to go that far. I do not believe that the range of local anesthesia should be stretched too far. I am using it in about 30 per cent. of my cases.

INTRAVENOUS ANESTHESIA WITH ETHER

1. Safety: Both clinical and laboratory work shows that it is a dangerous method. Clairmont and Denk, after careful experiments on dogs, have concluded that it is too dangerous to employ in clinical work. Kuttner has two cases of lung embolism in twenty-three cases.

2. It is an agreeable anesthetic, as it does away with the disagreeable odor and irritation of inhalation of ether.

3. It is efficient, but the border line between anesthesia and a toxic dose is too narrow.

4. When once injected into the circulation, it is beyond immediate control.

5. The apparatus and technic are complicated and require special watchfulness. It could not be generally adopted.

6. After-effects are much the same as in the case of ether inhalation.

7. Complications are the same as with ether inhalation.

8. Effect on immunity is the same as with ether inhalation.

Conclusions.—Too dangerous, too complicated, no special advantages, should be rejected.

LOCAL INTRAVENOUS ANESTHESIA WITH COCAIN AND SUBSTITUTE FOR COCAIN

This was introduced by Bier and is an interesting piece of experimental work. It is a complicated method, however, requiring usually the exposure of a vein, and the distress of two tight rubber bandages above and below. It has no special advantages and should not be adopted as a practical method.

INTRARECTAL ANESTHESIA

This is an old method introduced as early as 1847 and revived from time to time.

1. Safety: It is not a safe anesthetic.

2. Comfort: It is not a comfortable method of taking ether.

3. Efficiency: It is not very efficient.

4. Control: Much the same as with intravenous anesthesia.

5. Simplicity: The method is complicated and cannot be generally adopted.

6. After-effects on blood and tissue same as inhalation anesthesia.

7. Complications: Distention of bowels, very severe local irritation of colon with colicky pains and bloody diarrhea often fatal.

8. Effect on immunity same as ether inhalation.

Conclusion.—Rectal anesthesia should be rejected.

INTRATRACHEAL ANESTHESIA

This interesting method, introduced by Meltzer and Auer, has not as yet been used in a very large series of cases.

1. Safety: Robinson collected 1,400 cases with seven deaths, one from lung rupture and one from emphysema.

2. Comfort: The same as drop ether which precedes the intubation.
3. Efficiency: It is an efficient method.
4. Control: The same as with drop ether.
5. Simplicity: It requires a complicated apparatus. It requires first anesthesia by drop ether and then a change to intubation. It could not be generally adopted.
6. After-effects same as drop ether.
7. Complications same as drop ether.
8. Effect on immunity same as drop ether.

Conclusions.—The method is dangerous. It is complicated and it possesses advantages in very few cases. When it was introduced it was welcomed as a simple method which had all the advantages of the complicated differential pressure methods which had been experimented with in thoracic surgery. As a matter of fact, both the complicated differential pressure and the intratracheal methods have practically been largely eliminated as a result of further investigations in thoracic surgery, which have demonstrated the fact that most of the operable cases in thoracic surgery can be done either under local anesthesia or drop ether or gas and oxygen; that the necessity of preventing collapse of the lung when but one pleural cavity is opened was theoretical and not real, and lastly, by the fact that the extensive work in which both pleural cavities are involved and such extensive work as attacking the thoracic part of the esophagus can not as yet be accepted as warrantable surgical procedures; furthermore, the introduction of the simpler method of intrapharyngeal anesthesia has eliminated the intratracheal method from the field of head surgery, in which for a time it seemed to have a place. On the whole, therefore, intratracheal anesthesia has little place in practical surgery.

INTRAPHARYNGEAL ANESTHESIA

This is an old method introduced years ago and reintroduced from time to time with changes in apparatus. Souchon developed a simple apparatus. A catheter was introduced through the nose or mouth into the pharynx, and with a hand bulb ether vapor was introduced. Potts, one of my assistants, invented a simple foot bellows to drive the ether vapor. Dr. Isabella Herb has made an apparatus in which the ether vapor is forced by a small air pump driven by an electric motor, taking its power from the ordinary electric light plug. The special advantage is that in mouth and jaw work after the patient has been anesthetized by drop ether, the mask can be removed, the catheter introduced into the pharynx through the nose or mouth and anesthesia continued without interfering with the operative field.

1. Safety: It is about as safe as drop ether.
2. Comfort: The same as drop ether, which it succeeds.
3. Efficiency: Not quite as efficient as drop ether but nearly so.
4. Control: Same as with drop ether.
5. Simplicity: It can be operated with a hand bellows, but better by an electric pump, if this is kept up in perfect working shape. It can be fairly generally adopted for use in mouth and jaw work.

6, 7 and 8. After-effects, complications and effect on immunity: Same as with drop ether.

MIXTURES AND SEQUENCES

There has been somewhat of a tendency, especially on the part of some professional anesthetists, to introduce in their work special mixtures and sequences, and complicated apparatus. I believe that, on the whole, anesthetic mixtures like the old shotgun prescriptions of the past should be avoided, and the patient's life should not be jeopardized by the administration of two or more powerful poisonous agents at the same time, one of which might intensify the action of the other or mask the ordinary danger signals. The sequences which I think should be accepted not as a routine but for special cases are the sequence of gas and ether, and local infiltrations supplemented with short gas anesthesia during some painful manipulation. The complicated apparatus to measure the percentage of ether and to warm ether possesses no advantages and should be relegated to the scrap heap. My assistants, B. F. Davis and F. B. McCarthy, who have gone into this matter fully and will shortly report on their work, summarize their results as follows:

WARMED ETHER IN ANESTHESIA

The amount of heat required to warm ordinary ether vapor as used in anesthesia by the open or closed methods by intrapharyngeal or intratracheal insufflation to body temperature is so small as to be a negligible factor in lowering body temperature and inducing shock in anesthetized patients. During an hour's anesthesia with the coldest ether vapor, one is likely to obtain, say, 8.5 C.; the heat used in warming the anesthetic is equal to that lost in climbing up 75 feet of stairs, and this spread over the entire hour. No more mucus and saliva is secreted when anesthesia is induced and maintained with cold than with warm ether. So-called cold ether vapor does not appear to be more irritating to mucous membranes than warmed ether. The quantity of ether required to produce and maintain anesthesia does not appear to be materially influenced by warming ether. The warming of ether vapor, however administered, is accomplished in the mouth, pharynx and trachea, and the anesthetic reaches the alveoli at body temperature.

It has been shown that with percentage-measuring machines there is danger of continuing too long the high percentage vapor, that is, the anesthetist watches the dial of his machine and not the patient. A jar which will allow air to be passed over the ether, through the ether, carried over the ether without coming into contact with it at all, or any combination of the foregoing routes is easily constructed, cheap and satisfactory. The rate of administration of the anesthetic may be governed by the same guides as in the drop method.

There appears to be no reason for the adoption of any of the expensive and more or less complicated ether-warming or percentage measuring machines which are offered for sale.

ANOCIASSOCIATION

We are all familiar with the interesting work which Crile has been doing under his so-called anociassociation method. When I heard Crile present the subject I was greatly interested. When I saw his brilliant work in his operating room I was delighted with his technic and his admirable surgical methods in general. No one can find fault with Crile's general statement that "the prevention of shock in operations under inhalation anesthesia is, as it seems to me, most effectively accomplished by the conservation of the energy of the patient, by the prevention of the loss of heat, loss of blood, the exclusion of psychic influences, a minimum trauma of sensitive tissue, by a feather-edge dissection," etc. But when he adds that he can wholly prevent shock by sequestering the brain from the field of operation by blocking the nerves with novocain, we cannot accept either his assertion or the experimental work on which this is based.

To begin with, none of us know what shock is. Physiologists who have devoted much time and study to the subject are not agreed among themselves as to just what shock is, and most of them admit that they do not know. Many of them have repeated Crile's experimental work, and practically none of them accept his theory or his results.

As examples I submit the following conclusion of experimenters who have investigated this subject:

Janeway and Ewing:[2] If trauma to the sensory nerves is a factor in production of shock in an unconscious animal, it is wholly subsidiary to other factors, and it is questionable whether it was apparent in our experiments even when these other factors had rendered the nerve centers more vulnerable by toxic influences, as ether, or by a fall in blood pressure.

Porter and Quinby:[3] The symptoms of shock are a clinical entity about which there can be little dispute. Shock, on the contrary, is a pathological state, the data of which are at present hypothetical. The hypothesis which constitutes the hitherto generally accepted definition of shock declares that the vasomotor cells are depressed, exhausted and inhibited by excessive stimulation of afferent nerves; the fall in blood pressure and the accompanying symptoms are the result of this depression. The experiments cited in this paper demonstrate that the vasomotor cells are not thus depressed or inhibited, and experiments published in the last number of this journal show that excessive stimulation of afferent nerves does not materially lessen the blood pressure. The present hypothetical basis of shock is thus removed.

Seelig and Lyon:[4] In conclusion, it is important again to emphasize the fact that the experimental work detailed in this paper is in no sense of the word to be taken as an explanation of the causative factor or factors of shock. Just as Porter claims to show explicitly that in shock the vasomotor center is not exhausted, and therefore implicitly that the peripheral vessels are not paralyzed, so we try to show explicitly that the peripheral vessels are contracted and implicitly that not all the vasomotor centers can be exhausted. The complexity of the vasomotor apparatus with its multiplicity of centers and the seemingly independent action of many of these centers, render it impossible to frame a satisfactory theory based on our results. This much may be said with assurance: If the work herein detailed stands the test of confirmation, then the doctrine that shock is due to vasomotor exhaustion must be revised.

Mann:[5] It is impossible to reduce the anesthetized animal to a state of shock by any degree of sensory stimulation, provided all hemorrhage is prevented and its abdomen is not opened.

After analyzing Crile's work and the work of competent physiologists, I have been forced to the conclusion that there is no scientific basis for Crile's statement that he can wholly prevent shock by sequestering the brain from the field of operation by blocking the nerves with novocain. Crile's excellent surgical work is done not because of anociassociation but in spite of it.

The complicated sequence of scopolamin and morphin, gas, oxygen, ether, novocain and quinin and urea hydrochlorid is a method open to many objections. The scopolamin and morphin, as I have attempted to show in this analysis, add distinctly to the risks of the patient and should be omitted. The gas-oxygen plus ether, if used alone, is an acceptable anesthetic sequence, but not so safe as a routine as drop ether and gas and oxygen used alone in properly selected cases. Novocain used alone in infiltration anesthesia is of great value and has a wide field of usefulness. Used in this sequence it has little value, certainly none in preventing shock. Quinin and urea hydrochlorid has no value in this sequence, and used alone as an anesthetic cannot compete with novocain and epinephrin. I believe, therefore, that we must reject both the theory and the practice of anociassociation.

CONCLUSIONS

The final results of my analysis of the anesthetic problem are as follows:

1. Drop ether should be today chosen as the standard general anesthetic when a prolonged anesthetic is desired with relaxation and unconsciousness.
2. Intrapharyngeal ether should be chosen in mouth and jaw cases when it is desirable to remove the anesthetist and the anesthetic apparatus out of the operative field.
3. Gas should be chosen in short anesthesias in which unconsciousness is desired, and in special cases, such as kidney insufficiency.
4. Local infiltration anesthesia should be chosen when the surgeon has the full cooperation of the patient and when the field of operation can be completely infiltrated and anesthetized by a safe amount of novocain and epinephrin.

These four simple and safe methods can be made to cover all surgical cases. This places anesthesia on a very unpretentious, simple basis, but here as in most fields of surgery, we finally learn that simplicity is near to truth.

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[2] Janeway and Ewing: Ann. Surg., 1914, lix, 158.
[3] Porter and Quinby: Condition of Vasomotor Neurons in Shock, Am. Jour. Physiol., 1907-1908, xx, 500.
[4] Seelig, M. G., and Lyon, E. P.: The Condition of the Peripheral Blood Vessels in Shock, The Journal A. M. A., Jan. 2, 1909, p. 45.
[5] Mann: Peripheral Origin of Surgical Shock, Bull. Johns Hopkins Hosp., 1914, xxv, 205.

The Control of Communicable Diseases.—The monthly *Bulletin* of the State Department of Health of New York makes this subject the chief feature of the September issue. It points out that the loss of life from typhoid fever, diphtheria and scarlet fever remains too high. These three infections, together with measles and whooping cough, were responsible for the deaths of over 5,000 people, mostly young children, in New York State last year. This issue of the *Health News* contains an account of four outbreaks of communicable disease. Septic sore throat in Westchester County was spread by contact and secondarily to a slight extent by milk; scarlet fever in Dutchess County was spread primarily by milk and secondarily by contact; diphtheria in Rockland County, by milk, and in Westchester County, by contact. Therefore, the remedies which would guard against such outbreaks are simple—pasteurization of milk and isolation of early cases of disease. These four epidemics included nearly 1,400 cases of disease. From this experience the following lesson is emphasized: 1. Unpasteurized milk is unsafe to consume. 2. Local health departments can prevent outbreaks of this kind by requiring the pasteurization of milk before delivery to consumers. 3. In the presence of scarlet fever all cases of sore throat should be treated as septic sore throat, which is reportable to the local health department.

PROJECTILE WOUNDS OF THE HEAD

EXPERIENCES DURING RECENT SERVICE IN AUSTRIA, WITH PARTICULAR REFERENCE TO WOUNDS OF THE EYES *

LLOYD MILLS, M.D.
LOS ANGELES

The material for this paper is drawn from over 300 cases in my own wards of the Vienna General Hospital, where, after serving for four months as voluntary assistant in the Fuchs clinic, I was given charge of two wards of this service, these wards being devoted to the care of the wounded and especially of eye and head injuries. I was further able to observe and to assist in the surgery of over 800 other wounded in the associated wards of Professor Büdinger's service, among whom were a number of face and head cases. From army surgeons among these patients, I was also fortunate in gleaning much interesting matter relative to the rapidly fatal wounds seen on the firing line.

In the first month of the war comparatively few head injuries were received, because the fighting was in the open; but with intrenchment operations on a large scale, the number rose rapidly.

Because of the position of the men in the trenches, wounds of the head are probably the most frequent of all injuries, their frequency being masked in the hospital lists of wounded by the fact that fully 95 per cent. of all short-range wounds of the head are immediately fatal because of the literal ruin which the modern sharp-nosed bullet makes of the cranium and its contents.

Facial wounds are very common and may be serious if the eyes are involved, or if the mastication is impaired through damage to the jaws or their articulations. The central part of the face, however, may be traversed in all directions by undeformed bullets, with the tissue destruction practically limited to the bullet's path because of the spongy nature of the bone, and this, apparently, without regard to the velocity of the missile. Infection of the sinuses is the rule when they are perforated, but when the splinters of bone are removed and free drainage provided, healing takes place with unusual rapidity. The lower jaw frequently suffers extensive comminution because of its compact structure, and the fragments of bone and the dislodged teeth often act as infecting secondary missiles or tear away considerable portions of the lower face.

Some idea of the terrific impact of the modern spitzer bullet may be gained, when it is understood that the 10-gram German bullet has a muzzle velocity of about 2,900 second-feet, and revolves on its long axis, its boring and chief pathologic motion, about 2,500 times per second. In terms of energy, this means that at 100 yards, the bullet has a working force capable of raising a weight of over three quarters of a ton to a height of one foot, and at 300 yards a half-ton would be raised an equal distance, while at 500 yards the force drops to about 600 foot-pounds. Consequently, it becomes obvious why so few of the short-range bullet wounds of the cranium figure in the lists of the base and reserve hospitals.

Reconstruction of skulls shattered by the modern pointed bullet shows that the undeformed bullet passes completely through the skull and emerges before the collapse of the cranium occurs. Until very recently this collapse was supposed to be due to a so-called "explosive action" of the missile, but careful reconstructions show that radial and circular fissures arise from both the wound of entrance and that of exit and so interlace that finally the cranial dome becomes converted into a myriad of fragments. These fragments tumble into the general ruin and are dissipated far and wide through the transmission of the energy of the bullet to the brain substance, which spreads and storms out through every fissure. When the missile is deformed, and the modern bullet seems to have the property of flowing out of shape with uncommon ease, the effect on the head is the same as on the rest of the body, tremendous laceration and loss of tissue.

At ranges above 500 yards, the lessening in the energic activity of the bullet is rapid, so that at 1,800 yards, which is somewhat less than half the range of the German arm, only two slightly splintered wounds may be made in the skull. At such a range, if the skull and brain have merely been guttered, the patient has some chance for his life, and this seems to be especially true when a lateral shot has grooved the surface or tip of the frontal convolution, a part of the brain comparatively tolerant to physical insult.

The importance of these frontal wounds to the eye surgeon lies in the comparative frequency of the accompanying fracture of the orbital plate, a fracture which was long offered as a typical example of the "contrecoup," but which we now know to be part of the system of radial fissures produced by the splitting lateral, rotary action of the bullet on bone, or of the system of circular fissures, which are chiefly bending and bursting fissures, produced where the lines of transmitted energy or stress meet and oppose. Probably careful examination would also disclose quantitative or qualitative olfactory changes in these cases, as it is not easy to conceive of the weak cribriform plate of the ethmoid escaping uninjured. The results of such fractures of the orbital plate vary from slight to severe degrees of bleeding into the orbital fat, the upper lid and the conjunctiva, with more or less *protrusio bulbi*, to cases as grave as the following, which is offered as an addition to the causes of pulsating exophthalmos:

Case 1.—F. W. was admitted, Oct. 28, 1914, with an oblique bullet wound of the right frontal region, which had ruined the right frontal boss, had opened the skull and the frontal sinus, had guttered the right frontal convolution and had produced three sagittal fissures in the right orbital vault, fissures radiating from the entrance wound. The margins of the wound were black from necrosis, and its depths were filled with pulsating, stinking fluid, and rotting cerebrum. The symptoms were severe headache and prostration and frequent vomiting. The lids of the right eye were pushed forward and everted by a markedly protruding and pulsating globe, which squeezed the conjunctiva forward in great, red chemotic folds. The sclera was deeply injected and the cornea was dulled by a beginning lagophthalmic ulcer. The anterior chamber, strangely enough, was of normal depth. The iris was discolored a dirty yellowish green, and the pupil was dilated and quite immobile. There was no red fundus reflex and the eye was amaurotic. The diagnosis lay between a pulsating exophthalmos, due to traumatic arteriovenous aneurysm from the laceration of the retrobulbar vessels by bone splinters, and a great orbital hematoma from the same cause. The wound was enlarged, cleansed of loose brain and bone fragments, and two long, loose anteroposterior fragments of the orbital plate were removed. Before this was completed, it had become evident that no extensive hematoma and no aneurysmal varix existed here. Instead, the lacerated frontal brain, with much accompanying serum and cerebral fluid, had poured through the widely spread breaches in the orbital plate, had driven the eye forward and had transmitted the cerebral impulse to the protruded ball. The final diagnosis was "pulsating exophthalmos from cerebral hernia into the orbit, after extensive fracture of the orbital plate." The patient died shortly after of a virulent dysentery of the Flexner type.

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One of my surgeon-patients told me that at the front it was by no means uncommon to observe distinct pulsating exophthalmos as an antemortem sign among the frequent cases of side-to-side perforation of the lower temporal region.

Of course every known variety of eye injury occurring in civil life has its duplicate in battle injuries. In a number of such cases, some types of injury, however, are likely to stand out by reason of their frequency, and this has been the basis of my rough grouping of the cases which fell to my care or came under my observation.

1. The most frequent type of bullet wound as well as the most disfiguring wound of the orbital region, was that in which the antero-external wall of the orbit was cleanly shot away, the bulb always being ruptured. The exposure resulting was so nearly identical with that given by the Krönlein operation that I called these cases "Krönlein shots." In our series the right eye was injured in this way about twice as frequently as the left.

2. In many cases in which bullets struck or perforated the orbital cone, without touching the globe, the globe was shattered by indirect violence; or if this was not great enough to produce a rupture, lesser expressions of force appeared as iridodialyses, dislocations of the lens or rupture of any of the tunics of the eye, alone or in any combination. Reports of four different cases of this type follow:

Case 2.—Lieut. F. was shot from the rear while leading a charge up a hillside during the first Serbian campaign. The bullet entered at about the middle of the scapular origin of the right trapezius, continued obliquely across the right neck to the lower jaw, comminuting part of its alveolar and all of its coronoid process, perforated the superior maxilla and malar bones and emerged from the external angular process of the right frontal bone. The orbit was not entered, yet the lower lid was torn away from the inner canthus, its conjunctiva lacerated horizontally in three places, and the cornea, iris and ciliary body were ruptured horizontally at about 190 degrees. Enucleation and a plastic operation on the lid were required. This case was of further interest in that the trismus, which followed the shattering of the coronoid process, simulated tetanus and rendered feeding so difficult that the question of ultimate starvation actually arose. This was overcome by gradual, forcible opening of the mouth and by the later removal of necrotic jaw-bone through the mouth.

Case 3.—A private was shot in the right cheek while sighting his rifle. The bullet entered just below the center of the attachment of lower lid to orbit, perforated the superior maxilla, crossed the antrum, leaving several large fragments of bone in its wake, and finally emerged from the mouth through the palate, which it fissured freely in the coronal plane. The orbit was not entered. The right eyelids were edematous, the conjunctivae injected and considerable ciliary injection was present. The cornea was normal and the anterior chamber of normal depth but with a slight hyphemia. The iris was clearly marked, but was discolored to a greenish blue.

No fundus examination was possible on admission because of hemophthalmos, but this lifted in about two weeks, revealing a ragged tear squarely through the macula and curving downward and inward for about 6 mm. The retina in this situation showed the characteristic changes of a retinitis proliferans.

The vision at the time of discharge was 6/3 with the left eye and finger counting at 2 cm. with the right. In this case, as in practically all cases in which bullets open the accessory sinuses, empyema resulted, but healed in about twenty days after the fragments of bone were removed through the canine fossa, and free drainage established.

Case 4.—The patient was struck squarely over the left frontomalar suture by a spent bullet from a machine gun. The missile had so little energy left that not only could it not penetrate the hard bone, but also it dropped back out of the wound. On admission, the iris was found to be torn radially down to its root at about axis 45, the lens was luxated downward and the black sickle of the ciliary body could be seen running from axis 20 nearly to axis 50. In this situation especially there was marked iridodonesis. The lens was gray-white and swollen forward into the pupil. Repeated Roentgen examinations detected no foreign body in eye or orbit, so the diagnosis of capsular rupture by indirect violence was made. Atropin was given, but the tension rose to the point where a linear extraction was made necessary.

Case 5.—J. K., sergeant, aged 28, and a lawyer in private life, was shot in Russia, October 23, and admitted, October 29. The left lower orbital margin was shot away from left to right, producing a large coloboma of the lower lid. The ball passed through the inner canthus and the nose and emerged 1 cm. below the inner canthus of the right eye. Neither eye suffered direct violence from the missile or from bone fragments. The attachments of the internal and inferior muscles of the left eye were torn away, its sclera was ruptured in several places in the lower inner quadrant, the cornea was wrinkled and the bulb collapsed. The shallow anterior chamber held blood.

The principal changes in the right eye consisted in a considerable hemophthalmos and a 6-mm. long circular rupture of the sclera, lying midway between limbus and fornix in the upper inner quadrant. Through this rupture the vitreous had flowed, to lift up the conjunctival covering in the form of a transparent semiovoid, through which came the dark shimmer of the uvea. The iris was pulled so strongly outward and upward that less than its lower half was visible. By November 18, the right eye was partly freed of blood and could perceive light at 3 meters. Temporal projection was false, but nasal projection was accurate. The conjunctivitis of both eyes, which had resulted from the large openings into the nose, was cleared up by this time and permitted the enucleation of the left eye, with a suture of the upper lid to the margin of the great coloboma of the lower lid, for the best cosmetic result. At the same sitting, three deep mattress sutures of silk closed the scleral rupture.

One of the most interesting facts which these cases of indirect violence have shown, and a fact which is of the greatest importance in any consideration of the mechanism of the production of bullet wounds, is that the injury to the bulb is seldom, if ever, in a direct line with the line of incidence of the blow, but is usually nearly at right angles to this line. This must be accepted as the effect of the rotary, boring motion of the bullet, produced by the rifling of the barrel and which, as demonstrated here, in shots of the brain and by its action on bone and on soft organs like the liver, is by far the most pathologic motion of the bullet. That this rotation of about 2,500 times per second, at the rifle muzzle, could have gone so long unconsidered as the source of most of the lateral trauma along the bullet path, seems strange, in view of the radial splits and fissures which stream out at, or nearly at right angles to the course of every bullet, in soft viscera, as well as in bone.

3. Probably shrapnel and other shell explosions are the most common cause of unilateral blindness, and

lead most frequently to enucleation, from direct perforation of and lodgment in the bulb, with or without infection, or from the frequency with which malignant serpent ulcers follow the not uncommon corneal abrasion. Curiously enough, small shrapnel fragments seem to be less often the corneal abraders than the particles of dirt which spurt to all sides in clouds when the shell explodes on or just above the ground. The high explosives with which shells are charged may break them into two or three thousand fragments, of sizes which vary from the great, irregular masses of metal which have all the terrible lacerating effect of solid shot, to the finest, dustlike particles whose presence in structures like the eye is often demonstrable only after repeated roentgenograms.

The smaller shrapnel fragments produce all the types of perforating injuries seen in civil life, traumatic cataract, iris prolapse and hemophthalmos being perhaps most often observed. Panophthalmitis is not uncommon, as might have been anticipated from the high percentage of infection following shell and shrapnel injuries of other parts of the body. As I have reported in a previous article,[1] this percentage reached over 85 in our general series of shrapnel and other shell wounds.

Our common rule in these cases of perforating wounds produced by shell fragments was prompt enucleation where there had been material damage and when fragments of any size were lodged in the globe and were not easily accessible. Local anesthesia could not be employed here because of the unusual tenderness and the frequency of an accompanying low-grade orbital cellulitis and of unusual bulbar and conjunctival adhesions. No enucleation was deferred because of a mild orbital cellulitis, nor was any change made in the usual method of operating, yet in no case was there the least sign of meningeal extension of the orbital inflammation. When very small and dust-form fragments were the offenders, expectant measures were used if the vision was not diminishing and if the eye was not tender or had no noticeable amount of reaction. Of course, such patients were kept under close observation and, when discharged, were cautioned to report themselves at the slightest sign of intolerance to the foreign body. The results following the removal of shrapnel and other shell fragments were much more unsatisfactory than those following the removal of similar metallic fragments in civil life. This was probably due to the much greater length of time ensuing between injury and operation and to the greater frequency of infection.

4. Our cases of war psychoses, among which hysterical amaurosis is included, were all the result of a shell of some sort bursting unexpectedly in their neighborhood.

The following case is fairly typical:

Case 6.—L. R., aged 29, a sergeant-major and in private life a bookkeeper, stated that a shrapnel struck the ground in front of him and burst at the very moment of striking. For a moment he was unconscious and thereafter saw everything so clouded and so imperfectly that, in trying to obey orders, he led his men in the wrong direction and commanded them to fire in the direction of his own main body of troops. Seven days after the battle, the movements and external appearance of the eye were found to be normal. Both pupils reacted briskly and the fundi were normal. Vision was reduced to the perception of hand movements. With a +10 sphere the right eye could count fingers at 5 cm., and with a + 8 sphere the left eye counted them at 3 cm. The fields of vision were shrunken to mere points. A nerve examination showed a right facial analgesia, but all other reflexes were normal. Treatment consisted of sweating and complete rest in bed for several weeks, together with the assurance of complete recovery. Later faradization and strychnin sulphate injections into the temporal regions aided in a very slow but constant improvement, which, in our belief, was retarded by the patient's unwillingness to face the prospect of a return to the front. Several of our patients who suffered from war psychoses declared that the air pressure produced by the explosion was the real causative factor in their conditions, as it had hurled them several meters high into the air, a seemingly obvious misstatement.

5. About a sixth of our eye cases were those in which the strain of hard campaigning on insufficient food, and with exposure to weather and to filth conditions, had produced the same ocular diseases or recrudescences which might be expected to follow similar strain or exposure in civil life. The most noticeable among these were recurrent cases of rheumatic iritis, keratitis eczematosa and parenchymatosa, chronic and acute conjunctivitis and serpent ulcer. One case of severe rheumatic iritis occurred in a Jewish private who had deserted and come to us after his regimental doctor had repeatedly refused him treatment on the ground that nothing was wrong with the eyes.

A rather frequent cause of corneal ulcer was from dirt thrown into the eyes in the strenuous digging of hurried intrenching or in the unexpected caving in of trench walls.

I am confident that one sequel of this war will be the extension of trachoma, which was being well limited in Austria and Germany, but which is now being freely introduced throughout both countries by the hordes of refugees from infected districts.

6. Another interesting group of cases was referred to us from all sides. These were cases in which the eye had been shattered at periods of from one to four weeks prior to admission. When the injury was not more than a week to ten days old, scleral and rarely corneal residues could be made out in the depths of the wound, but beyond that time the vigorous conjunctival growth almost invariably buried them beyond recognition, and an exploration was often necessary, when, as frequently happened, no history accompanied the patient.

In every case of this sort the residues were carefully removed as a prophylactic against later cystic or malignant growths, as well as for their possible influence on the sound eye. Without exception the conjunctiva was adherent in unusual situations, and the conjunctival sacs were so greatly shallowed that, even after free dissection of the unusual bands and adhesions, a good cosmetic result with regard to wearing artificial eyes was seldom obtained.

7. Several of the many irregular cases are worthy of record:

Case 7.—An infantry captain, who was wearing his pince nez into action, felt a sharp, stinging pain in his right eye, following the explosion of a shrapnel several meters in front of him. As his lenses were undamaged he supposed that flying dirt had hit his eye without injuring it. On testing the eye, however, he found that he could see nothing with it. Even then his regimental surgeon, who had made an external examination and had found no wound or obvious change, assured him that nothing was the matter, but his rank procured him attention, without the need of desertion, and he was referred to us about five days after the injury. No wound could be found in cornea, sclera or conjunctiva, but blood was present in the vitreous and prevented ophthalmoscopic examination. The roentgenogram revealed two fine shrapnel splinters in the posterior upper and inner quadrant of the vitreous, and as vision did not improve during the two weeks following and the eye became somewhat sensitive to pressure, I was obliged to enucleate. The main interest of this case is in the manner of injury. The only possible path for the shrapnel fragments to have taken without breaking the glass before the patient's eye was between bridge and lens, entering the tissues just at the inner canthus, passing behind the transitional fold in this situation and entering the sclera at or just behind the equator.

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[1] Mills, Lloyd: Wounds Received in Battle, The Journal A. M. A., April 10, 1915, p. 1224.

Case 8.—A private was shot in the right lower lid. The shot was supposed to have been merely a gutter shot of the lid, although the reason for a vision of 6/18 was unexplained. No limitation of motion was observed that could not be accounted for by local reaction to trauma. About three weeks after the injury the lower lid became inflamed, and on reopening of the wound an undeformed bullet was found lying snugly in the soft tissue beneath the bulb, slightly in front of the equator, its axis in the coronal plane. Vision returned to 6/6 almost immediately after the removal of the foreign body.

Case 9.—A shell burst just behind a young color-sergeant, and his right occiput was perforated by some of the fragments. He was transferred to our service about two weeks after his injury because of an increasing ulcer of the left cornea. The roentgenograms showed three jagged metal fragments, about the size of beans, lodged in the nuclear region of the upper cranial nerves in and slightly to the left of the middle line of the body. The whole right side of the trunk was paralyzed, apparently from pressure on or destruction of the left pyramidal tract before its decussation. There was complete paralysis of all intrinsic and extrinsic muscles of the left eye, representing lesions of the nucleus of the third left cranial nerve, of the fourth right nucleus and of the nuclei of the sixth nerves. The right external rectus and the superior oblique were paralyzed, and the right pupil was dilated and reacted feebly and sluggishly to strong light. A deep and widely infiltrated ulcer of the left cornea had resulted from the ptosis and combined sensory paralysis. The left side of the face was wholly paralyzed, the origin being a lesion of the seventh nuclei. This lesion was probably the initial cause of the corneal ulcer, for the left corneal reflex was lost. In such a case the distinction between neuroparalytic ulcer and lagophthalmic ulcer is rather fine. No accurate hearing tests were made, but hearing was greatly reduced in both ears. That the ninth nuclei were also involved was shown by difficulty in swallowing, thick speech and constant drooling. No attempt was made to remove the shell fragments, although such an attempt offered the only frail hope of betterment. The left eye atrophied after iridocyclitis.

8. The last prominent group of cases owes this prominence directly to the use of the modern sharp-pointed, high-powered projectile. These are the sad cases of bilateral blindness, due to destruction of, or vital injury to both bulbs, to both optic nerves, to the retrobulbar vessels, or to any combination of these injuries. While fragments of shells of all kinds are responsible for many of these cases, the modern bullet is the chief instrument in the production of these most terrible of battle-wounds. Victims of the short-range wounds of the regions involved, as has been shown, happily, rarely survive; but the penetration of the modern bullet, at ranges above 1,500 yards, is still so great that it can destroy the visual apparatus of both eyes and yet often allow the victim to live miserably on. Because of its far smaller power of penetration, the older arm at long range far more often led to lodgment of its coarser missile in the bone or brain, before both visual tracts were destroyed. If what I have witnessed in Austria and Germany is any criterion, then the frequency of this terrible injury should, alone, lead to the abandonment of the spitzer bullet, or at least to its modification.

Every clinic is furnishing its heavy quota of these pitiful cases, nearly all of them young, strong men and nearly all so overwhelmed by their terrible misfortune that they would and often do accept any means of suicide when the fact of their blindness finally becomes an assurance to them. When these brave men soberly and earnestly pray for death, it is a pity that any power, whose inhumanity is so wholly responsible for their grief and suffering, will not either make these men and their families quite independent for life, or else give this longed-for boon of euthanasia in slight return for all that has been sacrificed to the names of patriotism and of country.

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ABSTRACT OF DISCUSSION

Dr. Lloyd Mills, Los Angeles: In so far as I am aware, the production of a vacuum by a bullet has never been considered as a factor in the production of trauma. Until the experimental work of Victor Horsley on projectile wounds of the brain, the forward motion of the bullet was held to be its only pathologic one. When the eyeball is struck by the bullet, the principle of incompressibility of fluids comes into play and the globe is always completely shattered.

Dr. John A. 'Donovan, Butte, Mont.: In addition to the destructive action of the modern bullet, just explained, it has a suction or vacuum-creating action, which in my opinion explains one of its awful death dealing effects. On man this is hard to demonstrate, which accounts for its being so far overlooked, but on larger animals it is marked. I have repeatedly seen the stomach contents evacuated through a bullet exit hole out of all proportion to the size of the hole or any natural pressure effect; also long loops of intestine, apparently drawn through exit bullet holes. To my mind the suction evidence was most conclusive in shooting an elk. My bullet passed through the body, perforating intestines and stomach, broke a rib, was deflected, and broke the front shoulder. Between the ribs and skin, following its course, was fecal matter, completely filling a space about three-quarters inch in diameter, and over 10 inches long. My guide exclaimed in astonishment, "The elk has a gut going to its shoulder." This could occur only by a most powerful suction action, which is furthermore confirmed by the fact that a lung wound in a big animal with these bullets has almost no stopping effect. I refer to our own army 1906 sharp point 150 gr. bullet, turning once in 10 inches, and having a velocity of 2,700 feet per second. The enormous vacuum created can be more easily comprehended by stating that this initial velocity is practically 1,800 miles an hour.

Heart Block.—The prognosis and treatment in heart block depends largely on etiology. Where the block is due to overstimulation of the vagus nerve, such as is seen in digitalis poisoning, stopping the digitalis and paralyzing the vagus with atropin will usually bring about a return to normal. Where the block is complete, heretofore it was thought always to be due to some organic division of the conducting path. We now know that in some of these cases there is not a complete, permanent division of the bundle, but complete block may be due to more temporary causes, such as poisoning from infectious diseases or asphyxia. In this class of cases complete recovery sometimes occurs. Even in the cases of organic origin, after the symptoms of syncope have persisted for some time, a degree of toleration becomes established and circulation is carried on with the slow ventricular rate. Such patients, however, are never able to undertake any but the most restricted activities.—W. H. Lowman.

CHOLECYSTECTOMY AND CHOLECYSTIC TOXEMIA *

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According to the mode of invasion, gallbladder infections may be divided into four types:

1. Portal infection, in which bacteria entering the portal circulation, chiefly from the alimentary tract, escape the bactericidal action of the liver and passing out with the bile, colonize in the gallbladder. This method, described years ago by Adami, has been considered as quite common and is supposed to explain the relationship between appendicitis, intestinal ulceration and other inflammations of the alimentary tract and gallbladder disease.

2. Ascending biliary infection, in which bacteria ascend from the ampulla of Vater through the common and cystic ducts and enter the gallbladder. This process is aided by the reversed mucous currents described by Bond, who showed that carmine particles introduced even as low as the rectum would after a time pass upward against the normal peristaltic current, and be discharged on the surface of the skin through a cholecystostomy opening. Although probably less frequent than other methods, ascending biliary infection occurs in certain inflammations and new growths involving the duodenum.

3. Hematogenous infection, in which bacteria circulating in the general blood stream invade the gallbladder. Rosenow has shown the specific manner in which certain streptococci circulating in the blood, attack the gallbladder or produce gastric ulcer, and his experiments suggest that many causes of cholecystitis formerly considered of a portal or ascending biliary type are in reality focal hematogenous infections. The well-recognized metapneumonic cholecystitis of young children apparently occurs in this way, as does the infection of the gallbladder in typhoid fever.

4. Contiguity infection, in which the gallbladder is involved by the spread of infection from adjacent organs, as when an adjacent abscess perforates, or malignant or benign ulcer of the stomach or duodenum invades the gallbladder. This is a relatively rare form of cholecystic infection.

Frequence: Infections of the gallbladder are exceedingly common. Next to appendicitis, cholecystitis is the most frequent of all the chronic intra-abdominal infections. In some classes of people, notably obese, middle-aged multiparas, it is more frequent than appendicitis. It is the second great cause of chronic indigestion. Inflammation of the gallbladder often develops during the first and second decades, but as the local symptoms are unobtrusive, the condition usually escapes recognition. After middle age, as the local symptoms become more predominant, the diagnosis of gallbladder disease is made. Thus we have been accustomed to consider it a disease of middle or advanced life.

Persistence: Infections of the gallbladder are exceedingly chronic. It has long been known that typhoid bacilli may continue to multiply for thirty or forty years in the gallbladder. It is now recognized that other bacteria likewise may have persistent growth. The bacteria are found in the center of the gallstone, in the bile, and in the mucosa lining the gallbladder wall. Bacteria found in the center of gallstones and within the depths of the mucosa usually represent more or less remote infections and may be associated with bile that is practically sterile. At present, although most of the patients operated on for gallbladder disease have reached the fourth or fifth decade of life, a careful study of the history usually indicates that these same patients acquired their infection in the second or third decade. As yet we have not learned to sterilize the chronically infected gallbladder and the patient once infected may be continuously infected until the gallbladder is removed, or until a violent necrotic form of inflammation destroys the lining of the mucosa and leaves the gallbladder a shrunken, functionless mass of fibroconnective tissue. The temporary relief that follows medical treatment, or a Carlsbad course, prompts the patient and physician to defer operation until advanced pathologic changes have occurred. After a simple drainage operation, the bile clears and the patient is relieved, but the deep infection in the gallbladder wall persists and the symptoms of chronic cholecystitis may later recur. If the symptoms are not of the obstructive type, the patient will usually tolerate them, although not infrequently more radical treatment is demanded.

Symptoms of cholecystitis: Apart from a small area near the neck the gallbladder has no sensory nerves, and distention or inflammation produces no symptoms unless the irritation spreads to adjacent sensitive structures. In operating under local anesthesia, we have repeatedly incised, sutured and crushed the wall of the inflamed gallbladder without pain. Only when traction or pressure affects the ducts, other sensitive organs, or especially the parietal peritoneum, does the patient complain. One should not, therefore, expect local symptoms in inflammations that are limited to the gallbladder proper.

Symptomatically, we would divide chronic cholecystitis into three stages:

First, a stage marked by more or less remote reflex and toxic symptoms and by the absence of local symptoms. This is the stage of cholecystic indigestion and toxemia and represents a period in which the gallbladder factor is usually unrecognized. It usually continues from fifteen to twenty years before the development of the second stage. In this first stage the mortality under operative treatment should be under 1 per cent.

Second, a stage characterized by the movement of calculi, or by recurrent attacks of acute inflammation. Stones cause paroxysms of pain usually by obstructing the outlet of the gallbladder. The attacks are violent, often follow indiscretions in diet, usually require an opiate, frequently occur at night and last but a few hours. To be differentiated are the acute recurrent attacks of cholecystitis in which no calculi are present. The latter are less violent, usually do not require an opiate, last several days instead of a few hours, and have an onset and termination less abrupt than the colic produced by stone. On exposure, these gallbladders are often considered to be normal, the operator, finding no stones or marked evidences of inflammation, concludes he has made an error in diagnosis. The second stage, or stage of acute biliary

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paroxysms, is chiefly observed between the ages of 35 and 55 years. The mortality from operative treatment in this stage is from 3 to 5 per cent.

Third, a final stage characterized by acute and dangerous complications, such as empyema, or gangrene of the gallbladder, obstruction of the common bile duct, acute pancreatitis, rupture or perforation of the gallbladder, malignant disease, acute peritonitis, or intestinal obstruction from stone. These complications marking the third stage of cholecystitis are most frequently observed between the ages of 45 and 75. One of our patients was 80 years of age, seven were over 70. Unfortunately, a large proportion of patients reach the third and dangerous stage of cholecystic infection before coming to operation. That one fourth of all the operated patients of a well-known surgeon should have had associated disease of the pancreas is a sad commentary on medical delay. The occurrence of the third stage of cholecystitis is a reproach to our medical art, and indicates an average procrastination in the effective treatment of cholecystitis of about twenty years. Rather unusually, of course, we meet with exceptions. Thus during the past year I have seen one girl of 14 years with over three hundred gallstones, acute pancreatitis and fat necrosis; and a boy of 15 years with twenty-eight gallstones, localized peritonitis and a gangrenous gallbladder 7½ inches long. The mortality in this stage of cholecystitis probably averages over 20 per cent. The relief from many reflex and secondary symptoms of early biliary infection, the prophylaxis of gallstones and of the dangerous complications of cholecystitis lie in the effective treatment of the first stage of cholecystitis, and therefore the recognition of this stage deserves special consideration.

The evidence of cholecystitis of the first stage is not found in a physical examination of the upper right quadrant of the abdomen, but is to be determined by deductive reasoning. The history of the patient usually reveals a cause of infection which has a relationship to the development of certain reflex toxic, or secondary infectious processes that experience has shown frequently to express cholecystitis. These may be grouped as follows:

(*a*) Digestive: Most common are the reflex digestive symptoms. Fulness and distress after eating, with sour bitter eructations, belching, and more rarely vomiting are usual. There may be a constant foul taste in the mouth, which at once disappears when the gallbladder is drained or removed. The dyspepsia is of the "qualitative" type, rather than the "quantitative" dyspepsia of ulcer; that is, attacks of indigestion often follow certain articles of diet, such as shellfish, cheese, boiled dinners, fried foods, pastries, corn, and the like, and may not be influenced by the amount of food eaten. The patient will often mention an idiosyncrasy toward certain foods. The inability of a patient to handle certain staple articles of diet should suggest biliary disease. It is perhaps the most common condition that causes a patient to report periodically to a physician for relief from attacks of so-called biliousness or indigestion. The attacks are usually relieved temporarily by fasting, dieting, by alkalies, or by a saline or calomel course.

As to the differential diagnosis, transient, often nocturnal, attacks of indigestion in an obese, middle-aged woman precipitated by a dietetic indiscretion and requiring a hypodermic injection for relief, are rarely due to other causes than gallstones. With the history of such preceding attacks, a very violent and persistent attack suggests empyema, or gangrene of the gallbladder; while an attack of superlative severity with shock and epigastric distention and tenderness usually means a pancreatitis. As contrasted with gastric or duodenal ulcer an attack of gallstones lasts a few hours, is most abrupt and severe; an acute cholecystitis a few days and is less severe; while an ulcer attack usually lasts for several weeks and is the least severe. Between the paroxysms from stone or acute cholecystitis, which may be months or weeks apart, the patient usually has a greater degree of dyspepsia than is found between the exacerbations of ulcer. In ulcer, feeding may give temporary relief, "food ease"; while distress accompanies an empty stomach "hunger-pain." In cholecystitis and stone, food exacerbates and vomiting relieves the pain.

(*b*) Intestinal symptoms: The intestinal symptoms of cholecystitis are as yet not fully understood. The continuous discharge of bacteria laden bile into the intestinal tract may give rise to the so-called intestinal indigestion, and in some instances to the symptom of intestinal toxemia, so graphically described by Mr. Lane. It is possible that some of these patients have been given a measure of relief by the removal or elimination of the colon, not because the cause was removed, but because the absorptive surface of the intestine was reduced. There is an association between cholecystitis and appendicitis, the appendix either infecting the portal system and gallbladder, or being coincidentally infected by a common cause. Wohl has reported that in 50 per cent. of our cases in which the removed appendix was also studied, there was evidence of appendicitis.

(*c*) Peritoneal symptoms: Peritoneal symptoms result from acute inflammation or secondary adhesions. The forms of localized or diffused peritonitis that may result from the later stages of gallbladder infection require little special discussion. Attention should be directed, however, to the frequent error in mistaking cholecystitis for appendicitis. An enlarged inflamed gallbladder, with only a small area of the fundus projecting below a Reidel lobe of the liver, frequently produces recognizable peritoneal inflammation only when the exposed fundus comes in contact with the sensitive parietal peritoneum, and this frequently is directly under McBurney's point. In nearly every such instance which we have seen, the examiner, overlooking the less distinct and less sensitive area of resistance which spreads down from the right costal border, has concluded that acute appendicitis was present.

(*d*) Arthritic and muscular complications: Subacute or acute metastatic joint infections are frequently observed in chronic cholecystitis. Often these symptoms improve after cholecystectomy. Chronic joint changes of the type of arthritis deformans are also observed. Myalgic pains are exceedingly common.

(*e*) Cardiovascular symptoms: Few patients pass to the third stage of cholecystitis without some evidence of cardiovascular disease. Endocardial and particularly myocardial changes seriously increase the risk of anesthesia and of operation in long-standing gallbladder disease. To some degree pathologic changes of the arterial wall also have their origin in cholecystic infections. Cardiovascular symptoms may greatly improve after operations on the gallbladder.

(*f*) Respiratory symptoms: We have been impressed by the surprising relief from paroxysmal cough and asthma that may follow cholecystectomy, or cholecystostomy, and we have operated for these symptoms alone. Two of our patients who had been unable to sleep except in a sitting posture for five and seven years, respectively, found they could recline with comfort after the operation, and the asthma and cough disappeared. After a period of relief for some weeks, however, the symptoms recurred. It would seem that cholecystic toxemia is a factor in some of these cases.

(*g*) Cerebrospinal symptoms: In cephalalgia, neuritis and some of the neuroses relief may be obtained by operating on the gallbladder. In the so-called bilious sick headaches we have observed relief after cholecystectomy, and in one violent case we operated for this symptom alone, with relief. In this case the symptom was a sequence to typhoid fever. In certain of the prematurely worn women of middle age, who constantly complain of indigestion, bloating, constipation and a multitude of aches, pains and surface paresthesias, there has been something of a mental transformation after the removal of a chronically infected gallbladder.

(*h*) Fever: Fever without other symptoms may result from cholecystic infection. The bile may be free from pus, the gallbladder bluish and nearly normal in appearance. The fever disappears with the removal of the gallbladder. One of our patients with no local symptoms had been treated in hospitals for months for an apparently causeless continuous fever, that immediately subsided after the excision of what seemed like a normal gallbladder.

(*i*) Eye symptoms: Eye symptoms are not infrequent with biliary disease. At times we find the oculist promising relief from the digestive symptoms of cholecystitis by the application of glasses, or, again, vainly attempting to control a vacillating series of refractive or muscular abnormalities.

DIAGNOSIS

The diagnosis of cholecystitis after opening the abdomen is not always easy. We depend on one or more of the following abnormal conditions:

1. Alteration in the color, size or consistence of the walls of the gallbladder. A milky or whitish gallbladder is diseased, but many translucent, bluish gallbladders are also diseased.

2. Adhesions or other evidence of pericholecystitis. Often the liver adjacent to the gallbladder shows evidence of chronic perihepatitis by whitish plaques or connective tissue trabeculation.

3. Enlargement of tributary lymph nodes: Attention has been especially directed by W. J. Mayo to the lymph nodes. The palpating finger is introduced into the foramen of Winslow and the nodes near the junction of the cystic and common ducts examined. While such lymph-node enlargements usually indicate cholecystic infection, they may also occur from pancreatic or duodenal disease. Absence of enlargement unfortunately does not negative cholecystitis. At times we have observed the absence of adenopathy in purulent or gangrenous as well as in catarrhal cholecystitis.

4. Alterations in the bile contained within the gallbladder: Normal bile is of a clear golden yellow color; turbid, purulent, dark green, tarry bile, or bile containing crystals, sand or calculi, indicate cholecystitis. Colorless mucus indicates cystic-duct obstruction and a mucocele. For diagnostic aspiration, to avoid leakage, should the gallbladder not be removed, a fine needle should be introduced into the gallbladder through a thin layer of overlying liver substance.

5. Alterations in the mucosa: Papillary denudations producing the finely speckled or strawberry gallbladder, papillary outgrowths, infiltrations of the mucosa as well as the grayish, greenish or blackish wall, or sloughs seen in empyema or gangrene, indicate varying grades of gallbladder disease.

PROGNOSIS

Cholecystitis may be alleviated by dieting, alkalies, salicylates, vaccines or a saline or Carlsbad course. It is more surely curable by the operative removal or obliteration of the mucous lining of the gallbladder. Most patients who finally come to operation have had some degree of relief from dieting, or various medical measures. In a woman who, for six years, following typhoid fever, had suffered from indigestion, headaches, myalgia, bromidrosis and foul taste, the symptoms almost completely disappeared after a course of typhoid vaccines. Except in the third stage of cholecystitis which brings an immediate danger to life, operation is usually delayed or considered unnecessary. At present, surgery, which is about the only permanently effective therapeutic measure against cholecystitis, is about twenty or thirty years behind the pathology of the disease, usually ignoring the early stages of inflammation and cholecystic toxemia, permitting years of morbidity and crippling tissue changes to supervene, and only intervening when a violent local reaction drives the patient to the surgeon.

OPERATIVE TREATMENT

Anesthesia: An anesthetic may increase the danger of operation on the biliary tract by depressing the cardiac and respiratory systems, adding to the preexistent toxemia, inhibiting elimination, and by producing straining movement, violent respiratory action and rigidity of abdominal muscles, that so embarrass the surgeon as to invite dangerous technical errors. At the Samaritan Hospital during the past three years, one patient with a perforated gallbladder and an upper abdominal peritonitis, was asphyxiated by profuse, regurgitant vomiting, while under spinal and narcotic anesthesia. In a second patient with myocarditis, cholecystitis and acute peritonitis there was a fatal respiratory cardiac failure. A third similar fatality occurred under the administration of ether. We have been able to reduce the mortality by substituting local anesthesia for patients who are bad risks. The local anesthetic solution is used very freely, 1 per cent. of novocain being employed for the skin and subcutaneous tissues, and a 0.25 or 0.5 per cent. solution being employed for the muscular, fascial and peritoneal layers. A free injection of such weak anesthetic solutions seems not only harmless but often beneficial, acting like a hypodermoclysis in assisting elimination. If the patient's general condition permits, a moderate supplemental narcosis produced by morphin-scopolamin is used. Especially in the very old, the very toxic or asthenic with empyema or gangrene of the gallbladder, or perforation and peritonitis, do we prefer local anesthesia. For patients in better physical condition, we prefer spinal anesthesia because it does not interfere with elimination or increase preexisting toxemia, and at the same time gives far better relaxation than ether does. It is dangerous for operations on the gallbladder in obese elderly patients who are toxic and have serious myocardial change. Rectal anesthesia, from its especially intense action on the liver, should be avoided.

Incision: A simple transverse incision made along a line slightly below the level of the ninth rib is valuable when operating under local anesthesia, especially if the gallbladder is large and there is marked muscular rigidity. In such a case the gallbladder and liver margin may be made to protrude from the opening and retraction and the introduction of pads within the abdomen are unnecessary. It is especially adapted for cholecystostomy, although occasionally a cholecystectomy may very conveniently be done. For the former operation a shorter incision may be employed, the different layers being divided along the same line. To give a better exposure of the ducts, a triangular flap incision, as suggested by Perthes, may be used. A right transrectus incision is made from the ensiform directly downward for 3 or 4 inches, from the lower end of this vertical incision a transverse incision is made to the right to a point just below the right costal margin. The vertical part of the incision is carried through the rectus to the posterior sheath and guided by the finger introduced behind the rectus fibers; two or three sutures of catgut are placed above and below the line of the transverse incision in such a manner as to fix the rectus muscle to the overlying aponeurosis, so that the divided muscle will not retract. The muscular and aponeurotic layers are now divided along the line of the transverse incision and the triangular flap thus formed turned upward and outward over the chest wall. The peritoneum and preperitoneal fascia are now divided along a line parallel with the costal border and about one-half inch distant from it. To avoid the objectionable right-angle incision of the skin, I have modified Perthes operation by substituting a simple oblique skin incision which is made parallel with the costal border after the plan of Kocher.

Alexander Don, to obtain a greater exposure and to avoid injury to the intercostal nerves, extends the vertical portion of the incision down to the level of the navel, and curves the transverse portion of the incision upward and outward toward the right axilla. The rectus muscle is completely freed and divided below and the posterior sheath of the rectus and peritoneum divided along the same lines as is the skin.

In patients with relaxed or thin abdominal walls a simple vertical transrectus incision often serves very well.

Cholecystectomy: In the first stage of cholecystitis, cholecystectomy is the preferred operation. It is the most effective method of treating the protean manifestations of the disease. The patients are usually under middle age, are not very obese and come to the operating table in good physical condition. With a perfect technic the operation in this stage should be a safe and satisfactory one, but unfortunately there are serious technical dangers always present in doing a cholecystectomy; an unfortunate snip of the scissors, a careless needle puncture or an imperfect ligation, is all that is required to place the patient's life in jeopardy, and these accidents have caused many surgeons to resort to ostomy when an ectomy would be the better operation. Even so skilful an operator as Moynihan reports three cases in which an hepatic or common duct was wounded. In my first ectomy, a case in which there were extensive intra-abdominal adhesions, the divided cysticus was imperfectly occluded and a secondary fatal leakage of bile into the peritoneal cavity occurred. In a recent case the gallbladder was distorted and displaced by adhesions, and on closing the peritoneal edges over the gallbladder bed, biliary leakage, evidently from a punctured displaced hepatic duct, occurred. The stitches were removed and drainage was instituted, with recovery. We have had three other cases of accidental duct injury or imperfect ligation of the cystic duct during cholecystectomy. These accidents are less frequent when the operation is performed in the first stage of cholecystitis. Since the first case we have now had 114 ectomies during the first stage of cholecystitis without operative mortality. In this stage the gallbladder is usually best removed from within outward, after the method so well illustrated by the Mayos. The cystic duct should be doubly ligated, mass ligatures should be avoided, as should anything which may serve to distort or obstruct the ducts. The cystic artery should be individually tied. Wide flaps of peritoneum should be separated from the gallbladder to cover the denuded area left under the liver. If there is any question as to absolute hemostasis or duct occlusion adequate drainage should be employed, so arranged or anchored by fine catgut that it cannot be displaced. In most of our ectomies we have been able to avoid all drainage. In cases of the second or third stage when the gallbladder is distorted or imbedded in adhesions, it may be safer to remove the gallbladder from without inward. In this way, by hugging the gallbladder very closely, there is less danger of damaging the hepatic or common duct. In case the adhesions are very marked, the method of Kehr of first splitting down the interior surface of the gallbladder at least into the cystic duct, is an advantage in determining the relationships of the parts.

Cholecystostomy: External biliary drainage, considered by the late Dr. Maurice Richardson only ten years ago, the one established therapeutic fact in biliary surgery, has a progressively lessening sphere of usefulness. Its use should be largely restricted to the third stage of cholecystitis for cases of empyema, perforation, gangrene, pancreatitis, advanced peritonitis or duct involvement, associated with such grave systemic changes due to age, toxemia or exhaustion, that only the simplest of operative procedures are warranted. It also should be used when technical limitations indicate that an ectomy will be dangerous. Under certain favorable conditions by performing cholecystectomy, we have been able to avoid drainage even in cases of empyema, gangrene of the gallbladder and acute pancreatitis. As a rule, the virulence of the bacteria found in empyema or gangrene against the skin and subcutaneous tissues is less than that of the bacteria found in purulent forms of appendicitis.

As cholecystectomy is the great measure of prophylaxis, it should be performed more frequently and much earlier and should have a progressively lower mortality than cholecystostomy.

If reasonably safe and feasible the appendix should also be removed in operating for cholecystitis. Despite certain results of animal experimentation, clinical evidence indicates that a patient is better off without than with a chronically infected gallbladder.

MORTALITY

The mortality of cholecystectomy is due to: 1. Poor judgment in selecting patients with acute febrile and septic conditions, or patients greatly debilitated by age, chronic toxemia or complete and continued external drainage of bile. This latter class who have what we may term "cachexia-choleoprivia" bear operation very badly, readily falling into a condition of fatal shock irrespective of the operation or anesthetic employed. For them a simple Witzel enterostomy should first be done under local anesthesia and the bile shunted from the fistula into the bowel by a small rubber tube. The final operation should be delayed until the cachexia, due to the loss of bile, has been overcome.

2. Technical errors: Leakage of bile into the peritoneal cavity may result from the cystic duct having been imperfectly tied, or the common or hepatic duct torn, incised or punctured. In the case of bile leakage, if the general peritoneal cavity is not sufficiently protected by drainage and tamponade, a dangerous or fatal peritonitis may result. I have been impressed by the danger of (*a*) doing cholecystectomy in a private house where adequate light and sufficient exposure cannot be obtained; (*b*) separating the overhanging neck of the gallbladder without observing great care in hugging the gallbladder proper to avoid the adjacent communis; (*c*) puncturing the hepatic duct. The gallbladder may lie obliquely so that the hepatic duct is in the peritoneal fold to the side of the neck of the gallbladder, where it may be damaged in suturing over the gallbladder bed; (*d*) relying on insufficient tamponade for drainage in the presence of a biliary leak. In all cases, as an indicator, we place the end of a gauze sponge against the stump of the cystic duct, which is not removed until the end of the operation. Should this show staining by bile, we immediately reopen and control or isolate the area.

In a personal experience of 270 operations on the gallbladder and ducts, fifty-seven ectomies were done before 1912 with ten deaths, a mortality slightly over 17 per cent. In thirty-eight ostomies before 1912, there were three deaths, a mortality of 7.8 per cent. In 121 ectomies performed since 1912, there were two deaths, a mortality of 1.6 per cent. In forty-two ostomies since 1912 there were four deaths, or about 9 per cent. mortality. Before 1912, gangrenous and suppurating gallbladders were usually removed; now they are usually drained under local anesthesia. As having even a greater influence on the mortality is the stage in which the operation is done. In 114 cases of ectomy in the first stage of cholecystitis, irrespective of date or technic, the mortality was 0.88 per cent. In 101 operations in the second stage, sixty-seven being ostomies, there were four deaths, a mortality of 3.9 per cent.; while after fifty-four operations in the third stage of cholecystitis, there were eighteen deaths in which the operation or biliary condition was a factor, a mortality of about 32 per cent. Thirty of these patients had acute gangrenous or suppurative cholecystitis, seven an acute pancreatitis with fat necrosis. Twelve had primary or secondary operations for duct obstruction, fistula or duct or intestinal anastomosis. In only one patient was carcinoma observed, and this involved the ducts. In two cases, intestinal obstruction from gallstone existed. In another case an intestinal perforation had been produced. One death was from diabetic coma and one from pulmonary embolism. It is evident that the stage of the disease is more important than the type of operation in determining the mortality.

SUMMARY

We consider inflammations of the gallbladder as bacterial infections of childhood or early adult life, as progressing for years, during which time secondary metastatic, toxic or reflex symptoms only are observed; as later having a second stage in which there are attacks of colic due usually to the presence of gallstone; as having usually after twenty or thirty years a third stage of serious complications, such as duct obstruction, pancreatitis, perforation, abscess or gangrene. We consider surgery as working, for the most part, far behind the pathology of the disease, and believe there is wide need for earlier intervention, so that the patient who starts at the age 12 or 15 with cholecystitis and dyspepsia may not at 35 have gallstone colic, and may not at 65 succumb to cholecystic gangrene or pancreatitis. We consider external biliary drainage as a rule undesirable, except in the late or complicated cases, an early cholecystectomy the operation of choice. Unfortunately, technical dangers make uniform success after cholecystectomy uncertain in the hands of the average surgeon. Despite this, the mortality of cholecystectomy in the first stages of cholecystitis is much less than cholecystostomy in the last stages of this disease, so that the results of a surgeon may depend more on *when* he operates than *how* he operates. The morbidity depends on *how* he operates.

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ABSTRACT OF DISCUSSION

Dr. Robert C. Coffey, Portland, Ore.: In dealing with third stage, acute stage cases, in which there is an infected gallbladder, I wish to emphasize conservatism. It is often the case that these gallbladders may be enucleated by a simple incision of the peritoneum and peeled out practically without bleeding at all. There are some cases, however, in which this is not advisable. I refer to acute and violent septic cases. The point I wish to emphasize particularly is that this area must be quarantined properly. Expose the field thoroughly and place a large pack of gauze wicks laid straight down around the gallbladder, and around these wicks several layers of rubber tissue. Open the gallbladder, sponge out the fluid and insert a piece of gauze into the gallbladder. That is all that is necessary. It will take approximately five minutes. Many are gangrenous without widespread infection and it is quite safe, in these, to enucleate the gallbladder, which I say is easily done without hemorrhage at all. The gauze wicks of the pack are removed after six days and the rubber tissue in two weeks. In some instances it will be necessary to remove the gallbladder at a later operation.

Dr. W. Wayne Babcock, Philadelphia: In the young no drain may be required after ectomy. There is less danger of skin infection from removal of the gangrenous or suppurating gallbladder than from removal of a badly infected appendix, and therefore as far as wound infection goes, less need for wound drainage. When the patient is in good general condition, we may, therefore, in selected cases remove the badly infected gallbladder, close without drainage, obtain primary union, and a remarkably quick recovery. One patient went home a week after the removal of a gangrenous gallbladder. But as a rule, and especially if the patient has reached middle age and the gallbladder is gangrenous, ectomy is dangerous. In these cases we use local anesthesia, make a simple transverse slit, put in a drain, and sometimes even operate without removing the patient from the bed. The sloughs of the gangrenous gallbladder will be expelled with relative safety, while the removal of the gallbladder, by opening many lymph spaces, may be followed by rapid sepsis and overwhelming toxemia.

THE REFRACTOMETRIC DETERMINATION OF ALBUMIN, GLOBULIN, AND NONPROTEIN

IN NORMAL HUMAN BLOOD SERUM *

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The microrefractometric method recently described by T. Brailsford Robertson[1] has enabled us to determine the amount of albumin and globulin in normal human serum. The specimens of serum which we have employed for this purpose have been obtained from students, nurses and doctors working in the hospital, who are in good health. No serums of patients have been used to establish these normal valuations.

In brief, the method is as follows: Blood is drawn into centrifuge tubes, allowed to clot, and centrifugalized. A portion of the clear serum is treated with an equal volume of saturated ammonium sulphate to precipitate the globulins, and the precipitate removed by centrifugalizing. The clear fluid is diluted to one-half and read in the refractometer. This reading, corrected for ammonium sulphate, gives the total albumin plus the nonproteins. The nonprotein value is determined from the clear fluid remaining after the proteins have been removed from another portion of the serum by heat and acetic acid. The total globulins are obtained by subtracting the refractometric reading of the albumins from that of the whole serum, after deducting the value of the nonproteins.

Emil Reiss has carried out extensive refractometric determinations of the total proteins of serum in normal as well as in pathologic cases. A monograph[2] containing a full account of his entire work and references to a great number of articles by other writers appeared about two years ago, and recently he has published a brief review[3] of this work, including that of the last two years.

Reiss obtains only the value of the total proteins in his work. In estimating this single value, moreover, Reiss considers the nonproteins constant enough, even in pathologic cases such as nephritis and diabetes, to give them a set value having a refractive index of 0.00277. Robertson has always considered this value too high, and has assumed that a more accurate constant value is obtained from the reading of sixth-molecular sodium chlorid, thus placing it around 0.00157.

At the beginning of our work, we saw the necessity of the individual estimation of the nonproteins in each pathologic case to assure accuracy. We have, therefore, determined the nonproteins or normal serums, giving us an average value of 0.00175. This is considerably lower than the value of Reiss, and lies nearer that assumed originally by Robertson. If it is desired to express the concentration of the nonproteins in percentages, this may be done with sufficient accuracy by dividing their observed refractivity by the constant factor of 0.00160. Many observers in cases of nephritis have shown increased percentages of nonproteins as compared with the normal. Thus, even in normal cases, about 0.6 per cent. error occurs when the constant value of Reiss for nonproteins is used, and it is evident that when the pathologic cases are dealt with, the error would be considerably greater. It is true that the method of Reiss is much simpler than that of Robertson, and that his error is not excessive. Yet the data obtained by the latter method gives not only an accurate determination of the total proteins as well as of the nonprotein elements, but also the amounts of albumin and globulin which go to make up the total proteins.

In normal individuals we have found that:

1. The total proteins range between 6.7 and 8.7 per cent., which corresponds to the figures of Reiss, which, he says, lie "in round numbers between 7 and 9 per cent." The average value equals 7.94 per cent.

RESULTS IN NORMAL CASES

Name	Sex *	Age	Weight in Pounds	Total Protein	Total Albumin	Total Globulin	Nonproteins	Albumin per cent.	Globulin per cent.	Nonproteins per cent.
A. R.	♂	25	208	8.59	7.28	1.31	.00174	85	15	1.09
A. R.	♂	25	208	8.51	6.86	1.65	.00182	81	19	1.14
A. R. †.....	♂	25	208	8.45	7.79	.66	.00182	92	8	1.14
H. K.	♂	17	170	7.33	5.79	1.54	.00158	79	21	.98
H. K.	♂	17	170	7.90	5.86	2.04	.00172	74	26	1.075
A. S.	♂	46	180	7.23	5.71	1.52	.00172	79	21	1.075
A. S.	♂	46	180	6.70	5.21	1.49	.00190	78	22	1.19
F. K.	♂	32	155	8.17	6.21	1.96	.00172	76	24	1.075
W.	♂	29	160	7.77	6.32	1.45	.00172	81	19	1.075
D.	♂	20	145	7.98	6.71	1.27	.00172	84	16	1.075
Cal.	♂	22	150	8.16	7.	1.16	.00188	86	14	1.17
H. W.	♂	25	160	8.	6.50	1.50	.00172	81	19	1.075
A. K.	♂	30	165	8.02	6.89	1.13	.00172	86	14	1.075
F. B.	♂	27	150	8.08	6.52	1.76	.00172	78	22	1.075
Bes.	♂	31	140	7.81	6.30	1.51	.00172	81	19	1.075
S.	♂	24	160	8.24	6.71	1.53	.00172	81	19	1.075
G. ‡........	♂	38	175	7.85	5.31	2.54	.00172	68	32	1.075
T. D.	♂	20	165	7.53	5.94	1.59	.00172	79	21	1.075
Lin.	♂	24	150	7.78	6.44	1.34	.00188	83	17	1.175
Ow.	♂	24	165	8.35	6.23	2.12	.00188	75	25	1.17
Go.	♂	25	185	8.09	6.82	1.27	.00188	84	16	1.17
Wil.	♂	22	155	8.27	6.71	1.56	.00172	81	19	1.075
Fal.	♂	31	194	8.70	7.70	1.	.00172	89	11	1.075
FL.	♂	24	170	8.	6.12	1.88	.00172	77	23	1.075
Lib. §.......	♂	29	140	7.43	4.95	2.48	.00172	67	33	1.075
L.	♂	35	155	7.74	5.64	2.10	.00188	73	27	1.17
Miss M.	♀	25	160	7.91	6.12	1.79	.00172	77	23	1.075
Dr. W.	♀	28	160	7.56	5.71	1.85	.00172	76	24	1.075
Miss F.	♀	23	150	8.05	5.85	2.20	.00188	73	27	1.17
Miss L.	♀	22	140	7.91	5.74	2.17	.00172	73	27	1.075
Dr. M.	♀	32	150	7.87	5.74	2.13	.00172	73	27	1.075
Miss S.	♀	19	150	7.87	6.14	1.63	.00172	79	21	1.075
Miss Lom..	♀	26	160	8.28	5.74	2.54	.00172	69	31	1.075
Miss Seh. ..	♀	22	145	8.03	6.10	1.93	.00172	76	24	1.075
Averages...	...	27	163	7.94	6.20	1.74	.00175	78	22	1.09

* In this column, ♂ indicates male, and ♀ female.
† This serum is not used to get average values.
‡ This subject had boils six months ago, though physical examination is negative now.
§ This man had eaten very little for several days.

2. The total albumins lie between 4.95 and 7.7 per cent., with an average value of 6.20 per cent., or between 67 and 89 per cent. of the total proteins, with an average value of 78 per cent.

3. The globulins lie between 1 and 2.54 per cent., with an average value of 1.74 per cent., or between 11 and 33 per cent. of the total proteins, with an average value of 22 per cent.

4. The nonproteins lie between 0.98 and 1.19 per cent., with an average of 1.09 per cent., and have a refractivity varying from 0.00158 and 0.00190, with an average of 0.00175.

The first seven results in the table are of interest. The first three were taken from the same person on the same day, the first immediately on awakening, the second four hours after breakfast, and the third one hour after a hearty meal. The first two results are practically the same. The third result shows an increased proportion of albumin to globulin. Robertson[4] has observed that fasting in the rat produces an increase in the proportion of globulin in the blood serum, while our one observation gives an increase in the proportion of albumin soon after a hearty meal. This supplies an instance of the value of estimating the ratio of albumins to globulins. No peculiarity would have been discovered in this serum if Reiss' method had been used. The fourth and fifth serums and the sixth and seventh serums were taken from two subjects on different days at a time from three to four hours after breakfast, and no essential differences on different days were found. From this we conclude that, in order to obtain comparable results, blood should be taken from patients under comparable conditions. The specimens of blood used to establish our normal values have been taken either before breakfast, or from three to four hours after meals. (Serum 3 was not used in the calculation of the averages.) No appreciable amount of muscular work had been done immediately before the experiment by the subjects from whom we withdrew blood. We considered it unnecessary and unpractical to establish our normal from persons who had been in bed for twenty minutes before the withdrawal of the blood, as Reiss[3] advises.

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* From the Medical Division of the University of California Hospital, and the George Williams Hooper Foundation for Medical Research.

[1] Robertson, T. B.: Jour. Biol. Chem., 1915, xxii, 233

[2] Reiss: Ergebn. d. inn. Med. u. Kinderh., 1913, x, 531.

[3] Reiss: Deutsch. Arch. f. klin. Med., 1915, cxvii, 175.

No definite differences can be noticed in the results due to the age of the subjects. The percentage of globulin is consistently higher, however, in the women examined than in the men.

We have attempted in this series to give the mean values of the proteins in normal healthy subjects, and to indicate the normal variations above and below the mean. More observations are needed to bring out fluctuations due to such factors as diet, starvation and muscular effort.

Work in diseased conditions is to follow.

IMPORTANCE OF THOROUGH EXAMINATION IN UROLOGIC CASES *

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In presenting this paper, I desire to illustrate and emphasize the value of the use of every available aid at our command not only from a diagnostic but also from a therapeutic standpoint. For this purpose, I will briefly report a series of cases which lately came under my observation.

The first series is that of stone in the ureter and kidney; second, pyogenic infection; third, new growths, and fourth, tuberculosis.

It would be impossible to discuss any one of these conditions fully in the time allotted me, therefore these cases will be used only to illustrate and emphasize a few cardinal principles in the diagnosis and treatment of these cases.

Of the twelve cases of stone (nine ureteral and three kidney) I shall use for this purpose, five were reported negative from the Roentgen-ray department. These were in the ureters and were located by the use of the ureteral catheter. The first was lodged about 1 inch above the ureterovesical opening. Two unsuccessful efforts were made to dislodge it with the ureteral catheter and sterile oil. A suprapubic cystotomy was performed, the ureteral opening enlarged and the stone removed through it with some difficulty.

In the second case, in which the Roentgen ray was negative, the stone was twice located with the ureteral catheter about 3 inches below the kidney pelvis and two unsuccessful efforts were made to dislodge it. A left rectus incision was made and the peritoneum deflected from the left abdominal wall all the way from the anterior incision back to and over the ureter, and the stone was removed through a small ureteral incision. A cigaret drain was inserted through a stab wound in the back and the patient made a rapid and uneventful recovery.

The Roentgen ray was also negative in the third case, but the stone was located and dislodged by catheterization. The patient suffered several typical attacks of nephritic colic for six months before she was referred to us. In this case the left ureter was catheterized without difficulty and found to be functionating normally, but a decided obstruction was encountered in the right ureter 4 inches above the ureterovesical opening. This was finally passed and 8 ounces of urine were withdrawn from this kidney before it began functionating intermittently, which, of course, demonstrated a hydronephrosis. The catheter was then withdrawn below the point of obstruction and 2 c.c. of a 2 per cent. solution of cocain were injected. The latter was done with the hope that a relaxation of the muscular fibers of the ureter might be obtained and in this way the passage of the stone into the bladder secured. Relief followed, and on cystoscopy the second day thereafter, the stone was seen in the bladder.

There may yet be uric acid stones in this kidney, but the value of the ureteral catheter was forcibly demonstrated here, not only from a diagnostic, but also from a therapeutic standpoint, since we were enabled to dislodge the calculus and cause it to pass into the bladder.

The fourth case was that of ureteral stone producing the usual symptoms for two weeks previous to the time the patient came under my care. This we easily located with the Roentgen ray about 6 inches above the vesico-ureteral opening. The ureteral catheter was used here not only to verify the Roentgen-ray findings but to dislodge the stone if possible. Following the second ureteral catheterization, the injection of cocain and oil, the stone passed into the bladder and the patient, a physician, was spared an operation.

In the fifth case, the Roentgen-ray findings were negative. The symptoms were typical of nephritic colic. Firm percussion over the left kidney was unbearable. These symptoms had persisted for six days.

On ureteral catheterization, obstruction was encountered 9 inches above the ureterovesical opening. No urine was secured until this point had been passed, when 20 c.c. of a bloody urine were withdrawn.

The same procedure was followed in this as in the above-mentioned cases. The patient was prepared for operation the following day, but cystoscopy, before administering the anesthetic, enabled me to demonstrate to my associates the cause of the greatly improved condition of my patient. The bladder was dotted with fragments of stone—one yet remaining in the ureteral opening. This was removed with the beak of the cystoscope.

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[4] Robertson, T. B.: Jour. Biol. Chem., 1912, xi, 179; ibid., 1912, xiii, 325.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

In four other cases of ureteral stone—one of which was reported negative from the Roentgen-ray department—the patients were treated in the same way, but unsuccessfully with two. These stones had to be removed by operation.

The two cases in which this plan failed were not suitable for this procedure. The ureteral occlusion had persisted sufficiently long to inhibit the kidney function. This is very important, since the pressure behind the stone is kept up by kidney functional activity and forces the stone into the bladder while the muscular fibers of the ureters are under the influence of cocain.

Of these nine cases, the Roentgen-ray findings were negative in five and the diagnosis was made with the cystoscope, ureteral catheter and by means of the typical clinical symptoms. In the remaining four cases the Roentgen-ray findings were verified and five of the nine patients were spared operation.

Another valuable aid in diagnosing ureteral and occasionally pelvic stone is the wax-tipped ureteral catheter. Scratches in the wax made by them can easily be detected with a magnifying glass.

In all the cases of kidney stone in this series Dr. Squires was able to demonstrate them by roentgenography. In these, we found the ureteral catheter, in connection with the phenolsulphonephthalein test, of incalculable value in ascertaining the amount of kidney destruction produced by them and in determining the best surgical procedure to pursue. To illustrate, I will briefly report three cases of kidney stone which show the different degrees of destruction produced by them.

The first was a case in which there was a small stone in the kidney pelvis. Ureteral catheterization showed only a slight pyelitis and its functional activity normal. No kidney tissue had been destroyed. The stone was removed by pyelotomy. There was practically no leakage of urine following the operation.

In the second case the stone was much larger, extending considerably into the kidney parenchyma. Urine obtained by ureteral catheterization indicated only a moderate amount of pyogenic infection, but the phthalein test indicated considerable kidney destruction. In this case the stone was so large, though there was only a mild infection, that we decided nephrectomy advisable since it would be impossible to remove the stone without lacerating the kidney considerably in so doing. This would almost certainly be followed by a return of stone formation.

The third case was one in which we not only had to deal with a large stone, but active infection as well. The phenolsulphonephthalein output from this side was very poor. In this and the preceding case, the phenolsulphonephthalein output of the opposite kidney was good and we had no hesitancy in removing the stone-bearing kidney. These patients seemed to suffer no inconvenience following nephrectomy and made excellent recoveries.

Of the great number of cases of pyogenic infection which have fallen into our hands, I shall, instead of reporting individual cases, speak of the types of most importance and the means of arriving at a diagnosis and of ascertaining the plan of treatment that should be instituted. (Deviating a little, I will say that the channel through which infection takes place in these cases depends principally on their predisposing causes, that is, whether it occurs through the hemic or lymphatic circulations or by ureteral ascent. The majority of the parenchymatous infections, of course, is through one of these circulatory systems and the source of such infections may be in any part of the body. The predisposing causes of infection through the urinary bladder are stricture, hypertrophy of the prostate, or any condition or disease interfering with the normal elimination of the urine. To ascertain, then, just the nature and extent of these various infections, ureteral catheterization, functional activity tests and bacteriologic examination of urine thus obtained is absolutely necessary, not only from a diagnostic standpoint, but also for the purpose of securing bacteria for autogenous vaccination. An ascending infection with normal ureters practically never occurs, as the urine is constantly flushing the ureters from above downward. In this way nature protects herself. But with residual urine, infected bladder and dilated ureters, ascending infection is very common.)

An idea as to the location of pathologic conditions in the urinary tract may be obtained by the ordinary chemical and microscopic examinations of the bladder urine, but to ascertain definitely the location and extent of these, the ureteral catheter and functional tests are absolutely indispensable. Pus in urine thus obtained means infection and the extent of this infection, that is, whether it be limited to the pelvis or extend into the parenchyma of the kidney, may be ascertained by the quantity of pus thus secured and the functional activity ascertained by the phenolsulphonephthalein test. For instance, if we have a pyelitis, pus and blood are secured by ureteral catheterization, but the functional activity is normal. The exciting cause of this pyelitis may be ascertained by bacteriologic examination. If the secreting portion of the kidney is involved as well, then the functional test will be affected in proportion to the amount of kidney destruction.

An illustration of the value of ascertaining the phenolsulphonephthalein output is shown in the following case of tumor of the kidney.

Mr. B. H., aged 38, consulted me for intermittent painless hematuria. The ureters were cathetrized and I found that the blood was coming from the right kidney, but no pus was secured. The phenosulphonephthalein output was about normal and the two kidneys equal in their secretory power. The patient presented himself from time to time for examination extending over a period of eight or ten months. With each subsequent ureteral catheterization the output of the right kidney grew less and that of the left greater until it was more than double that of the opposite kidney. The diagnosis of hypernephroma was made. The kidney was finally removed and the diagnosis sustained by the pathologist.

Several cases of hypernephroma have fallen into my hands but none so early and in which the progress was watched so closely or the value of the phenolsulphonephthalein output so forcibly demonstrated as in this case, but in all of them it has been in proportion to the kidney parenchyma destruction.

Two cases of tuberculosis of the kidney illustrate, first, the importance of recognizing and properly interpreting its early symptoms; second, some simple methods of making accurate diagnosis, and third, points of value which will aid us in determining our plan of treatment.

The first case is that of early primary tuberculosis. This was referred to me as one of subacute cystitis, the symptoms probably being augmented by bladder stone. Urination was frequent both day and night, from the beginning. This, with only a small amount of pus and practically no blood, at once led us to suspect tuberculosis of the kidney. Cystoscopy showed marked congestion of the trigon with slight ulceration around the right ureteral opening. Urine obtained from this kidney showed the presence of a trace of albumin, a moderate amount of pus cells and an occasional blood corpuscle. A centrifugalized specimen was injected into the peritoneal cavity of a guinea-pig. A specimen was also stained and tubercle bacilli found. The patient could not be operated on at once but returned in five weeks for this purpose. At that time the pig was killed and the peritoneum, liver and kidneys were found to be filled with tubercles.

The patient's kidney was removed and the lower third found to be filled with small tubercles, but with no abscess formation. His urine, which had previously been filled with pus, immediately cleared up and the bladder symptoms subsided. The patient gained 25 pounds in weight in two months. At present, twelve months after, there is no evidence of tuberculosis anywhere in the body and the patient is in excellent health.

The second case was one of two years' standing. The patient suffered intensely with cystitis and lost 93 pounds in weight during this time. On account of extreme sensitiveness of the bladder and its decreased capacity, ureteral catheterization was accomplished with much difficulty. In fact, several efforts were made before we succeeded in catheterizing his left ureter. An ulcer, located at its opening, made it unusually difficult.

The urine secured from the right kidney was filled with pus and tubercle bacilli. The phenolsulphonephthalein output was very poor. No bacilli, pus or blood were found in the urine from the left kidney, but tuberculous peritonitis was produced in a guinea-pig with urine from this, as well as from the right. These bacilli probably came from the ulcer at the ureteral opening. With a negative urine, however, a 40 per cent. phenolsulphonephthalein output of the opposite kidney the first hour, and with the great probabilities of this kidney becoming involved, if it had not already become so, I had no hesitancy in removing the right kidney. This was done six months ago; the patient rapidly gained in weight and strength and his bladder symptoms wonderfully improved in a very short time and he is now free from suffering and apparently a well man.

In determining kidney functional activity we have found blood urea estimation in connection with the phenolsulphonephthalein test of incalculable value. It is of especial service following prostatectomy. In these cases, the urine cannot be accumulated to estimate the phenolsulphonephthalein output and the blood can always be obtained and the urea retention estimated.

Of all the functional tests we have used, we find ourselves relying more and more on these two and in our experience, as the phenolsulphonephthalein increases, the urea decreases and vice versa. The latter furnishes evidence of impending uremia but it should always be used as an adjunct, since the determination of the cumulative phenomena is of great prognostic value, although its absence may be misleading, which makes it necessary to ascertain the combined results of these tests.

CONCLUSIONS

1. Every available means should be employed for diagnosing and determining the best therapeutic measures to pursue in diseased conditions of the genito-urinary tract.

2. The majority of ureteral stones can be removed by the injection of cocain and oil, provided the ureters are normal and it is done soon after impaction.

3. The kidney functional tests, especially phenolsulphonephthalein and blood urea, are of the utmost importance in determining the condition of the kidneys before operation, and that after prostatectomy, the blood urea, which must then be used alone, is of the greatest value.

Realty Building.

THE MECHANISM OF URINATION *

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LOS ANGELES

The mechanism of urination has not been determined in all its detail, but a large amount of work has been done, and by correlating the work of the anatomist and the physiologist with that of the clinician, the physiology of urination can scarcely longer be regarded as problematic.

Enough has been determined to be of great assistance in the diagnosis of diseases of the urinary tract, and to establish definite principles of inestimable practical value in genito-urinary surgery.

It must be admitted that many of the unsatisfactory results following operations on the bladder neck and urethra have been due to a disregard for the underlying principles of the physiology of the mechanism of urination.

It is the purpose of this paper to present in a correlated form the present status of knowledge of the act of urination, together with some observations which I have carried out on the physiology of the bladder and urethra.

The nervous mechanism is especially complex and interesting. For a number of years it has been maintained that in animals, at least, there are centers of urination outside of the spinal cord. Experiments of Sokowin (1784), Nussbaum (1879), Nawroki and Skadichewaki (1891), and Justchenke (1897), have demonstrated that the inferior mesenteric ganglion contains a reflex center for vesical contraction.

Von Zeissl,[1] from his researches, concluded that there are centers for urination within the bladder wall itself. This observer divided all of the nerves to a dog's bladder, that is, completely isolated the bladder from the central nervous system, and the sympathetic ganglia of the pelvis, and in spite of this the animal retained urine and emptied the bladder in a normal manner.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Von Zeissl: Ueber die entnervente Blase, Wien. klin. Wchnschr., 1896, ix, 394.

Goltz and Ewald[2] removed the sacrolumbar cord and part of the dorsal cord in dogs and after a short time they found that the bladder emptied itself regularly at definite intervals.

In 1901, Muller,[3] from his observations and experiments, arrived at the conclusion that the reflex centers of urination are not situated in the spinal cord at all, but are exclusively placed in the sympathetic ganglia. Muller extirpated the cord in four dogs, and according to him, after a few weeks the bladder showed automatic functioning, without leakage in the interval between voidings. He ascribed to the spinal cord only trophic centers.

The new idea, as brought out by Muller, seemed to completely overthrow the classical views as to the physiology of the conus terminalis, and his views have been accepted by a large number of observers, while others, though admitting the existence of sympathetic centers, have superimposed on them the spinal center. It is still a difference of opinion, among this latter group, as to whether the sympathetic centers are capable of carrying on normal reflex vesical function after destruction of the conus terminalis or cauda equina.

Van Gehuchten considers that the sympathetic centers can functionate independently of the cerebrospinal centers.

Oppenheim, on the other hand, claims that the reestablishment of the vesical rectal function by the sympathetic centers takes place in a wholly imperfect manner.

The researches of Roussy and Rossi[4] on monkeys and dogs to determine the location of the bladder center and the effect of various lesions of the conus terminalis on the bladder function, are most interesting and convincing. In a certain number of animals they completely removed the conus terminalis or divided all the nerves of the cauda equina.

In another series they divided the spinal cord above the conus. In animals in which they destroyed the conus terminalis, or divided the cauda equina, there was complete paralysis of the bladder and its sphincters. Urine leaked from the bladder, drop by drop, as it entered it, or there were passages of small quantities coincident with movements of the animal, such as barking, etc. So that in these animals there was a picture of the atonic bladder, and this persisted during the life of the animals, many of which were kept alive for several months.

There was no such resuming of the bladder function as had been described by those who claimed the location of the bladder center to be outside of the spinal cord.

In those animals in which the cord was divided above the conus there was at first, for about three days, complete retention of urine. After this urination took place during the whole life of the animal in streams of urine with definite intervals without, as a rule, loss of urine in the interval.

The bladder resumed a reflex periodic emptying. They, therefore, concluded that the so-called sympathetic centers are utterly incapable of resuming, in anything like a normal manner, the function of the bladder when these centers are isolated from the spinal cord, and that the true center of urination lies within the conus terminalis.

They do not deny, however, the existence of extraspinal centers or the existence of centers within the bladder wall itself. But it would seem that they did definitely establish that these centers cannot carry on vesical function independent of the spinal cord.

The course of the peripheral nerves has been worked out by a large number of anatomists and physiologists, and the essential facts are now well established. In general, motor fibers are found in the second and third sacral roots and in the nervus erigens. The fibers of the sympathetic group are carried regularly in the third, fourth and fifth lumbar roots. These fibers pass through the sympathetic chain by a varying number of strands to the inferior mesenteric ganglion, and from this ganglion the hypogastric nerves arise.

The hypogastric nerves carry the impulse to the hypogastric plexus, which is formed by a union of the hypogastric nerves with branches of the nervus erigens.

From the hypogastric plexus terminal branches are distributed to the bladder.

It has been thought by certain observers that they had demonstrated vesicomotor fiber in the sympathetic other than those carried by the hypogastric nerves.

Stewart,[5] however, was unable to confirm their findings, in that when he sectioned the hypogastric nerves, leaving only the sacral paths open, and then subsequently cut the sacrospinal nerves, stimulation of the cord in every instance failed to produce bladder contraction.

The course of the sensory nerves has been somewhat more difficult to determine, inasmuch as stimulation of almost any sensory nerve of the body will produce a reflex contraction of the bladder.

Certain points, however, have been well established. It is definite that the sacral nerves contain sensory fibers from the bladder, which, when stimulated, produce a reflex through the cord and the sacral nerves.

These sacral nerve sensory fibers are part of an arc which is limited to the sacral nerve-cord reflex, inasmuch as they are not capable of exciting a reflex contraction of the bladder through the hypogastric nerves.

It has also been shown that the hypogastric nerves contain bladder sensory nerves. These fibers when stimulated produce a reflex contraction of the bladder, but this reflex is through the inferior mesenteric ganglion, for it takes place even though the ganglion be entirely isolated from the cord. This reflex, however, has been considered by Langley a pseudoreflex or axon reflex.

Griffiths[6] has described a third reflex occurring through the ganglion cells of the hypogastric plexus, and lastly, as pointed out above, some have maintained the existence of intravesical centers which functionate in spite of the isolation of the bladder from its spinal and sympathetic connections.

The exact function of the hypogastric nerves and of the sacral nerves is in doubt.

Von Zeissl,[7] from his investigations, concludes that the bladder conforms to the law of crossed innervation. The nervus erigens is motor for the body and inhibitory for the sphincter, while the hypogastric nerves are motor for the sphincter and inhibitory for the body, or as Strominger[8] puts it, the lumbar center retains the urine while the sacral center expels it. This view is not conformed to by all observers; thus, Louget considers that the sacral nerves control the sphincter while the sympathetic nerves control the body.

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[2] Goltz and Ewald: Arch. f. d. ges. Physiol., viii, ix, lxiii.

[3] Muller: Ztschr. f. Nervenh., xxi, Parts 1 and 2.

[4] Roussy and Rossi: Troubles de la miction, et de la défécation consécutifs aux lésions expérimentales du cone terminal ou de la queue du cheval. Cong. internat. de méd., Compt. rend., Budapest, (1909) 1910, Section xi, neuropatol., p. 438.

[5] Stewart: Am. Jour. Physiol., 1899, ii, 182.

[6] Griffiths: Jour. Anat. and Physiol., 1894-96, xxix, 61.

[7] Von Zeissl: Jour. d'urol. méd. et chir., 1893, p. 828; Arch. f. d. ges. Physiol., 1898, liii, 560.

Langley and Anderson[9] and Stewart[10] consider that stimulation of the hypogastric nerves differs only in degree from stimulation of the sacral nerves.

Langley[11] has more recently demonstrated the presence of inhibitory fibers in the sacral nerves.

Although stimulation of the hypogastric nerves will often produce contraction of the bladder, usually followed by a much greater dilatation, and stimulation of the sacral nerves usually produces a contraction of the bladder, stimulation of either nerve or of the cord will often produce a dilatation of a previously contracted bladder.

Two views have been held as to the manner in which the sensory nerves are stimulated to give a conscious sensation of the desire to urinate. According to Goltz[12] the distention of the bladder finally calls forth a reflex contraction which squeezes a few drops of urine into the posterior urethra, and the sensation of the desire to urinate arises from the stimulation of sensory nerves of the posterior urethra. A second theory is that the desire to urinate arises from stimulation of sensory nerves of the bladder itself from distention with urine. In support of Goltz's view has been set forth the fact that instrumental or chemical or inflammatory stimulation of the posterior urethra causes a desire to urinate. The fact, however, that this sensation may be thus produced is by no means proof that normally the desire to urinate arises from stimulation of nerves of the posterior urethra. This is perhaps a provision for the complete emptying of the urethra. Against Goltz's view and in favor of the view that the desire to urinate arises from stimulating of the sensory nerves of the bladder itself, is an overwhelming amount of evidence.

Thomson Walker[13] in observations on cases in which the whole posterior urethra had been removed by suprapubic prostatectomy found that there was no difference in these cases in the sensation of desire to urinate and concludes that the prostatic urethra is not concerned in, or is not necessary for, the initiation of natural urination. It might also be pointed out that in many cases after prostatectomy the posterior urethra becomes a part of the bladder and thus is almost constantly full of urine, and yet it is only when the bladder has reached a certain distention that the patient has a desire to urinate. This desire, so far as I have been able to make out, does not differ in any way from the normal sensation.

Mosso and Pellacani,[14] from experiments on women in measuring the volume of the bladder, came to the conclusion that the sensation of fulness and desire to urinate was caused by stimulation of the sensory nerves of the bladder.

Leedham-Green,[15] from roentgenograms of the bladder, failed to find evidence of the opaque medium in the posterior urethra.

It would seem, then, that Goltz's view is no longer tenable, and that the sensation of fulness of the bladder and the sensation of desire to urinate arises solely from stimulation of sensory nerves of the bladder itself and does not come about under normal conditions from stimulation of the nerves from the posterior urethra, although it is evident that stimulation of the posterior urethra does give the sensation of urinary pressure.

The question of the origin of the desire to urinate is closely allied with the function of the sphincter muscles of the bladder.

Henle, from his observations that fibers of the detrusor muscle were inserted between those of the internal sphincter, supposed that the internal sphincter was pulled open by a contraction of the detrusor muscle.

Zuckerkandl[16] has shown that most of the fibers of the detrusor muscle are inserted not between the fibers of the internal sphincter but are attached to the upper part of the prostate. Here, too, the internal sphincter would be regarded as a passive sphincter, as was regarded by Rosenthal[17] as far back as 1857, a view which has no support today.

As will be shown later, there can be no doubt that the external sphincter is capable of retaining urine in the bladder, not by an intrinsic elasticity, but by a tonic contraction, which is capable of being inhibited. There is no reason, therefore, to assume that the internal sphincter cannot and does not maintain bladder closure by tonic contraction.

The question of the function of the internal sphincter and of the sphincter urethrae has long been a debated one.

Guyon[18] and Finger[19] considered that the internal sphincter is too weak a muscle to play a great part at least in retaining urine in the bladder. They considered that when a moderate distention of the bladder had been reached, the internal sphincter is overcome and that a bladder neck is formed so that the prostatic urethra becomes part of the bladder cavity. Under moderate distention, then, the bladder is, according to this view, closed by the internal sphincter, but when fully distended the compressor urethrae muscle maintains bladder closure.

This view, then, necessarily maintains the existence of the formation of a bladder neck in a fully distended bladder; and Finger attempted to prove that such was the case by passing a catheter and noting the distance to which it had been introduced before urine began to flow. When the bladder was moderately full, but the patient had no desire to urinate, it was necessary to pass the catheter from 1 to 1.5 cm. farther than when the bladder was fully distended, and there was a marked desire to urinate; but as Leedham-Green[20] points out, if the posterior urethra had become a part of the bladder the difference should not be so slight, but should amount to the length of the entire posterior urethra or about 4 cm.

Volcker and Lichtenberg,[21] by filling the bladder with collargol, demonstrated that the internal vesical sphincter is the sphincter that prevents the escape of fluid from the fully distended bladder. They never observed the formation of a bladder neck.

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[8] Strominger: Rev. clin. d'Urol., 1914, p. 385.
[9] Langley and Anderson: Jour. Physiol., 1895-1896, xix, 71.
[10] Stewart: Am. Jour. Physiol., 1899.
[11] Langley: Jour. Physiol., 1910, xl.
[12] Goltz: Arch. f. d. ges. Physiol., 1874, viii, 478.
[13] Walker, Thomson: Clin. Jour., xl, No. 17, p. 261.
[14] Mosso and Pellacani: Arch. ital. de. biol., 1882, p. 1.
[15] Leedham-Green: Brit. Med. Jour., 1906, ii, 297.
[16] Zuckerkandl: Eulenburg's Realenzyklopädie, Ed. 3, 1894, iii, 331.
[17] Rosenthal: Diss. Konigsberg, 1857.
[18] Guyon: Gaz. hebd. de. méd., 1884; Leçons clinique sur les maladies des voies urinaires, 1896.
[19] Finger: Allg. Wien. med. Ztschr., 1893; Die Blenorrhöe des sexual Organe, 1905.
[20] Leedham-Green: Brit. Med. Jour., 1906, ii, 297.
[21] Volcker and Lichtenberg: Die Gestalt der menschlichen Harnblase in Röntgenbilde, Muenchen. med. Wchnschr., 1905. Cystographie und Pyelographie, Beitr. z. klin. Chir., 1906-1907, lii.

To determine this point Leedham-Green injected the bladder of men and youths with a suspension of bismuth and then roentgenographed the pelvis. The observer states, "In every case, I found that whether the bladder was fully distended or not the outline of the organ was oval and not pear shaped, and the urethra was sharply cut off from the bladder without a suggestion of a bladder neck."

Barringer and MacKee,[22] Uhl and MacKinney,[23] and A. Hyman,[24] using practically the same method of filling the bladder with an opaque medium, have all reached the same conclusion, that under normal conditions the internal vesical sphincter maintains bladder closure, and without exception they have failed to demonstrate the formation of a bladder neck.

Physiologists have been somewhat loath to accept the view that the internal sphincter maintains bladder closure, as it would seem to present an example of volitional control of unstriped muscle. There is, however, an example of this in the accommodation muscle of the eye, and the striking example of volitional control of unstriped muscle has been reported by Maxwell[25] in which a young man had the power of voluntary erection of the hair. Another explanation has been offered for the apparent volitional control of unstriped muscle and that is, that it is a reflex voluntarily initiated.

Rehfisch,[26] to prove that the internal sphincter muscle is capable of voluntary contraction, filled a man's bladder and then introduced a catheter so that its opening lay in the posterior urethra through the external sphincter muscle. The man could discharge and retain his urine at request.

From my own observation on cases in which I have performed Young's perineal prostatectomy I am convinced that not only is the internal sphincter muscle capable of maintaining bladder closure independently of the external sphincter muscle, but that it is to all intents and purposes under volitional control.

I am also convinced that the external sphincter muscle can maintain bladder closure independently of the internal sphincter muscle and do so in a reflex manner. This operation provides wonderful opportunity for determining just this point, inasmuch as the opening for drainage from the urethra is between the internal sphincter muscle and compressor urethrae muscle.

In this operation a small slit-like incision is made in the membranous urethra after the compressor urethrae muscle, triangular ligament and transverse perineal muscles have been retracted forward. Enucleation is then carried out subvesically. We have then an opening in the urethra between the external and internal sphincter muscles with, in many cases, a perfectly intact vesical neck.

It is not at all uncommon to see the internal sphincter muscle within a few days regain its function and the patient retain urine in the bladder and volitionally expel it from the perineal wound. It is also possible for him to close the bladder after part of the urine has been passed.

It is evident that in these cases the bladder closure is carried out entirely by the internal sphincter muscle and that this muscle will act volitionally. In further support of the theory that the internal muscle is capable of maintaining bladder closure and is under volitional control, is the fact that incontinence of urine very rarely follows external urethrotomy for stricture with section or destruction of the external sphincter muscle, and the cases in which it does follow might be explained by destruction of the internal sphincter muscle by long distention with urine.

A question of very great importance to the genito-urinary surgeon is whether the compressor urethrae muscle can act in a reflex manner and maintain closure of the bladder independently of the internal sphincter muscle.

As has been shown by Zuckerkandl in cases of prostatic enlargement, due to adenomatous growths, the internal sphincter muscle is sometimes enormously dilated by the growing of the adenoma through it.

Thomson Walker[27] was perhaps, the first to point out that in many cases the internal sphincter muscle is destroyed or rendered permanently useless by this distention. He noted that in necropsy on patients dying after prostatectomy there was frequently a large cavity of bladder neck remaining.

Hyman,[28] and Wallace and Page,[29] by making roentgenographic pictures of the bladder after prostatectomy, conclusively demonstrate that in many cases the internal sphincter muscle is not only functionally useless, but that the posterior urethra forms a bladder neck and that closure of the bladder is at the point of the compressor urethrae muscle.

Again, observations which I have carried out on cases following Young's perineal prostatectomy seem to definitely establish this point. In some of the cases in which a large adenoma has been removed, urine is frequently passed through the perineal wound without interruption until this wound closes, when the patient has perfect control of urination. It might be assumed that, in the cases of enlarged prostate, the external sphincter muscle had assumed a function which it does not normally possess, that with destruction of the internal sphincter muscle and a disturbance of its function by the growth of adenoma throughout it, the external sphincter muscle had gradually taken on itself a reflex ability to maintain constant bladder closure.

I believe that this possibility can be definitely ruled out and that the following clinical observation is of interest in this connection.

A patient, aged 83, consulted me on account of not being able to urinate, and having to use a catheter. Examination showed a small fibrous prostate and cystoscopic examination showed a well-defined posterior bar. A Young's perineal prostatectomy was done and after removing the fibrous prostatic tissue I found that there was an extremely contracted vesical neck, which I dilated with glove stretchers. Five days later it was found that the obstruction had not been relieved and that the patient had retention of urine. I immediately did a Young's punch operation, introducing the instrument through the perineal wound. The vesical neck was freely divided. Following this, urine

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22. Barringer and MacKee: Radiographs of the Bladder and Bladder Neck, Tr. Am. Urol. Assn., 1912, p. 408.
23. Uhl and MacKinney: Observations upon the Mechanism of Urination, Urol. and Cutan. Rev. (Tech. Sup.), July, 1913.
24. Hyman: The Normal Bladder and Its Sphincters and the Changes Following Prostatectomy, Ann. Surg., April, 1914, p. 544.
25. Maxwell: Am. Jour. Physiol., 1902, vii, 369.
26. Rehfisch: Virchows Arch. f. path. Anat., cl, 125
27. Walker, Thomson: Brit. Med. Jour., October, 1905, p. 865.
28. Hyman: Ann. Surg., lix.
29. Wallace and Page: Brit. Med. Jour., Nov. 25, 1911, p. 1405.

drained without interruption through the perineal wound for about three weeks, when a catheter was passed into the bladder through the urethra, and the perineal wound closed that day. Two days later the catheter was removed and urination was found to be normal in every respect as had been expected. It is evident that in this case there was what might be called an internal sphincter incontinence, but that when the perineal wound closed the external sphincter was brought into play, giving the patient perfect urinary control.

It is to be noted also that the external sphincter muscle assumed this control without having to be educated to new conditions. In this connection it is also worthy of note that in a large number of cases in which Young has performed his punch operation, not a single case of incontinence of urine, for even the shortest time, has followed.

Chetwood's galvanocautery operation for stricture of the vesical neck has occasionally, in some hands, resulted in incontinence of urine. This is no fault of the operation itself, in so far as dividing the internal vesical sphincter is concerned, but undoubtedly has resulted from division of the compressor urethrae muscle when incising in the perineum on a sound in the urethra for the purpose of introducing the galvanocautery.

It is believed that if the instrument was introduced as Young's tractor is introduced after the triangular ligament had been retracted forward, incontinence of urine would never follow.

From roentgenograms and from observations on operative cases in which the external sphincter muscle has been excluded, there can be but little doubt that the normal internal sphincter muscle is thoroughly capable of maintaining bladder closure and that to all intents and purposes it is under volitional control. It is also certain that the external sphincter muscle (compressor urethrae muscle) is alone capable of maintaining bladder closure and of acting in a reflex manner.

It would not seem that the subject had been covered without saying something in regard to incontinence of urine following prostatectomy.

The operation of median perineal prostatectomy entirely disregards the physiology of the mechanism of urination and it does not seem remarkable that many cases of incontinence of urine have followed prostatectomy by this method. The only thing that prevents incontinence of urine following this operation is that by chance the internal sphincter muscle might regain its function following the removal of an enlarged prostate through it; or that, by chance, the external sphincter muscle might heal and be restored to function. This operation must not be confused with Young's perineal prostatectomy, an operation after which incontinence of urine should never follow, inasmuch as not only is the internal sphincter muscle preserved for whatever value it may possess, after having been distended by the prostatic adenoma, but that by going in between the transversus perinei muscles and the levator ani, retracting the triangular ligament forward, the external sphincter muscle is preserved.

In one of Young's early series of 540 perineal prostatectomies, he had three cases of incontinence of urine, and frankly states that two of these were due to getting in anterior to the triangular ligament.

In conclusion it might be said:

1. The bladder center is situated in the conus terminalis of the spinal cord.
2. The so-called sympathetic centers are incapable of carrying on, in anything like a normal manner, the mechanism of urination.
3. The desire to urinate arises from stimulation of the sensory nerves of the bladder and not from stimulation of the sensory nerves of the posterior urethra.
4. The internal sphincter muscle normally maintains bladder closure.
5. Although the internal sphincter muscle is plain muscle it is to all purposes under volitional control.
6. The external sphincter muscle is capable of maintaining bladder closure and does not have to be educated to perform this task.
7. Either the external or internal sphincter muscle can, if necessary, be destroyed without interfering with the function of retention of urine, *providing the remaining muscle is in a normal condition.*
8. Median perineal prostatectomy, inasmuch as in this operation the external sphincter muscle is divided and the internal sphincter muscle is liable to be rendered useless by the prostatic growth, is likely to result in incontinence of urine.

Incontinence of urine does not follow Young's perineal prostatectomy, in that in this operation the external sphincter muscle is preserved.

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ABSTRACT OF DISCUSSION

Dr. Martin Krotoszyner, San Francisco: Dr. Cecil's paper calls to mind the not very rare occurrence of urinary disturbances that are apparently located in the prostatic urethra, but which in reality are due to some lesion of the urinary center in the lumbar spine. These cases are characterized by difficulties of micturition simulating involvement of the prostate gland, and, as a rule, also demonstrate cystoscopic changes, like trabeculosis, generally seen in prostatism.

Dr. Frank Hinman, San Francisco: The contribution of Dr. Cecil is important from a surgical standpoint, as it emphasizes the interrelationship of the two sphincters. It is important, before an external urethrotomy, for instance, to know that the internal sphincter is intact, and one would, therefore, hesitate to perform an external urethrotomy on one who had previously had his prostate removed. I can testify to the conservative character of Young's perineal operation in an experience of twenty cases without one death or one case of complete incontinence. In several of these cases the internal sphincter was unquestionably inactive, so that continence was due to the preservation of the external sphincter. Incontinence is of two kinds, false and true. False incontinence has been attributed to inaction of the internal sphincter in which the posterior urethra becomes a part of the bladder. The incontinence expresses itself in an imperative desire to void without the ability apparently of waiting when this desire comes. True incontinence is a condition in which both sphincters are inactive.

Dr. Granville MacGowan, Los Angeles: I wish to say that I have never seen any incontinence of urine following a properly performed suprapubic prostatectomy. I have seen a number of cases following Young's operation, when not performed in a proper manner. This is a thoroughly scientific operation, but one which the ordinary surgeon is incapable of performing. That is the reason why so many cases of incontinence of urine follow the operation.

Dr. A. B. Cecil, Los Angeles: In looking over the literature for the last four or five years on the question of urinary control, I found that the whole physiology of the mechanism of urination was considered more or less a mystery, that incontinence of urine was something that might or might not happen following prostatectomy, and that when it did there was no explanation for it.

I wondered why it was that some operators had reported numerous cases of incontinence of urine following perineal prostatectomy, because I really never have seen but one case of incontinence of urine following Young's operation. The whole reason of this discrepancy was because the mechanism of urination was by some operators disregarded. If one carries out the procedure as advised by Alexander to divide freely the external sphincter muscle, we would surely expect to get a certain number of cases of incontinence of urine. From the very first Dr. Young in perineal prostatectomy preserved that muscle, and if we preserve the external sphincter muscle in these operations, incontinence of urine will not follow. There is no mystery about it.

DIAGNOSES AND CERTIFICATES OF DEATH

WITH ESPECIAL REFERENCE TO CANCER [*]

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The life of a health officer is often spared by certain phases of human frailty with a humorous side. Among the complaints which come over the wire to the health department of Buffalo are such as these: "My husband is a pest and I want him removed." (A nuisance, evidently, to be abated.) "I want someone to do my washing, I can't get around to it." "Please send someone to kill off the cockroaches in my house. They are so thick that yesterday they stopped the clock." Such breezes serve to cool the fevered brow of the registrar of vital statistics while he wrestles with the problem of translating death certificates into figures qualifying and summarizing human mortality. When the registrar finds "asthenia," "neurasthenia," "Christian Science" or "climacteric," seriously certified as cause of death and ventures a mild protest, he is usually bidden to write a better one if he knows of one. How vital are vital statistics need not be urged here at length. Let any skeptical practitioner simply ask himself what would become of the science of preventive medicine without the knowledge of the whereabouts and extent of preventable disease, and the answer must solve his doubt as well as remind him of an important duty toward humanity. The importance of studying this question of the correctness of statistical diagnosis is less aid to the clinician who carries through his case conscientiously than for the sake of vital statistics. You may name a condition anything, or as many things as you please at the bedside, provided you treat your patient wisely, but for the Bureau of Census the diagnosis can be but one thing, and that as near as careful reflection can arrive at the truth. Nevertheless a preeminent clinician may be so far from connecting cause with effect as to quote with assurance death rates weakened by his own carelessness or impatience in writing out a death certificate.

For some time, in pursuit of the reason for the real or phantom increase in the death rate for cancer, I have been increasingly impressed with the importance of the question, "What of the diagnosis?" Death rates by cause depend largely for their accuracy on the accuracy of the individual physician both in determining and in recording the cause of death. It follows that the figures are certain when the physician is certain, and contrariwise.

In certain causes of death, doubt as to relative frequency is within limits so narrow as to be negligible, for example, in all deaths due to violence. Next to violence come the contagious diseases like smallpox, whooping cough or scarlet fever. Their universally recognizable signs and symptoms and their contagious nature make their diagnosis and reporting practically certain. All deaths followed by necropsy are likewise accurately reported, but in the absence of universally performed necropsy are of value only in proportion to their number. The value of such accurate data alone more than compensates for the labor and expense of gathering all. Of most doubtful value is the summary of causes that arise from conditions that remain hidden within the body cavities without clinical laboratory confirmation or necropsy. The sources of error which tend to vitiate accuracy in the latter class of certificates are many. The important ones are obscurity of the disease, lack of time and opportunity for study of its course, the lack of acumen of the physician, his unwillingness to take pains with the death certificate, and finally the interpretation by the registrar of the physician's interpretation of the signs and symptoms. The literature on the subject of diagnosis, as such, is scanty. How often is the diagnosis right? Do mistakes of omission and commission counterbalance and give approximately correct results, or are the figures subject to false inflation and deflation as the result of fads or educational propaganda?

Cabot[1] made a serious attempt to contribute something on this theme. From the printed discussion of his paper we deduce perfunctory commendation by some who heard the paper and a sweeping denunciation of the work, by Dr. A. C. Croftan of Chicago in subsequent letters to The Journal. Dr. Cabot's statements have received further confirmation in a report out of Bellevue Hospital.[2] Ash[3] contributes data concerning mistaken diagnoses in tuberculosis, and Bissell and LeCount[4] have discussed the diagnosis of coma. Greenwood and Wood[5] also present a significant discussion concerning the mortality from cancer. As physicians it is one of our most common weaknesses, arising from the patient's abhorrence of perplexity, that we fear to face our own diagnoses save in the dark. With a necropsy in prospect, few of us care to commit ourselves to a concise cause of death as we inevitably must, on a death certificate.

It was with the hope of throwing some light on this subject that I undertook a perusal of all death certificates issued in Buffalo for the year 1914, and by way of comparison, for the year 1894. It was a tedious work though punctuated with lighter moments as previously mentioned. A word as to the average physician's average opportunity (reference to ability is studiously avoided) to make use of all the helps that modern medicine has to offer, will not be out of place. In 1914, in Buffalo, an average American city, of about half a million inhabitants, the deaths were about seven thousand. The births for the same year were about twelve thousand. Now of these twelve thousand births, five thousand were attended by midwives. These five thousand midwifery cases called for at least five thousand out of twelve thousand families in which medical practice in serious cases is conducted under the following regulations. First, no physician to be called until the patient can bear it no longer, usually at night; second, the physician is not to come again until called for; third, the physician's pay is inadequate so that he must in such cases make too many calls a day, to give each case attention that will stand scientific criticism. In 1914, some four hundred certificates were made by the medical examiner or city diagnostician on evidence obtained after death without necropsy in nontraumatic cases in which criminality was not suspected. I think it fair to assume that most deaths certified to under such circumstances render diagnoses so subject to error as to be mere guesswork. The large majority of these deaths were, for adults, some disease of the heart or blood vessels, for infants, malnutrition or convulsions. I am of the opinion that guessing is by no means confined to the above kinds of certificates, but accompanies other sources of error mentioned above and now to be considered. Table 1 gives the gross results of the examination of death certificates at their face value, comparing the year 1914 with the year 1894, to show what progress, if any, has been made.

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[*] The term cancer as used in this article includes all varieties of malignant neoplasm.

[*] From the State Institute for the Study of Malignant Disease.

[1] Cabot, Richard C.: Diagnostic Pitfalls Identified During a Study of Three Thousand Autopsies, The Journal A. M. A., Dec. 28, 1912, p. 2295.

[2] Clinical Diagnoses and Necropsy Findings in Bellevue, Miscellany, The Journal A. M. A., April 18, 1914, p. 1279. For further confirmation as regards cancer see Rep. Imperial Cancer Research Fund, London, 1905, No. 2, Part 1.

[3] Ash, J. E.: The Pathology of the Mistaken Diagnoses in a Hospital for Advanced Tuberculosis, The Journal A. M. A., Jan. 2, 1915, p. 11.

[4] Bissell, Wayne W., and LeCount, E. R.: A Consideration of the Relative Frequency of the Various Forms of Coma, The Journal A. M. A., March 27, 1915, p. 1041. Also, Why Physicians Err in Diagnosis, editorial, ibid., p. 1076.

[5] Greenwood and Wood: On Changes in the Recorded Mortality from Cancer, Proc. Roy. Soc. Med., 1914, vii, 119.

TABLE 1.—PROGRESS SHOWN IN BETTER PREPARATION OF DEATH REPORTS IN 1914 AS COMPARED WITH 1894

	Total Deaths	Given Cause Doubtful	Improperly Arranged or Worded	Conflict of Two or More Given Causes
1894	5,280	501	274	170
1914	7,040	277	639	480

TABLE 2.—CONTRADICTIONS NOTED IN VARIOUS DEATH CERTIFICATES

Cause	Contributory Condition	Comment
Uremic poisoning (duration twenty days)	Albuminuria (duration three days)	
Pernicious anemia (duration, three months) laborer, 43 yrs. old	....	Physician attended one day
Dilatation of heart (duration, one year)	....	Physician attended one day
Acute yellow atrophy (adult)	....	Duration seven months
Acute nephritis	....	Duration one year
Chronic endocarditis...	....	Duration fifteen years
Gastro-enteric catarrh (duration two mos.)	Influenza (duration fifteen days)	Woman, aged 22
Graves' disease	Ptomain poisoning and valvular heart disease	Believe contributory, here were signs of cause
Asthma of lungs......	Laborious work	Emphysema?
Chronic bronchitis (duration one year)	Pulmonary hemorrhage	Tuberculosis?
Hypertrophic cirrhosis of the liver (man aged 56)	Valvular heart disease, mitral (duration onc year)	Chronic passive congestion?

Consideration in detail of the headings, with examples given, will make clear the kind of certification it is intended to criticize or question. Table 2 shows examples from certificates (year 1914) containing various contradictions. Duration is inconsistent with disease or patient with disease, and in some few cases I know that the cause of death as stated was probably incorrect. Statements not essential to the point are omitted.

Examples of certificates improperly made out, for example, with transposed or conflicting causes or with a multiplicity of nonessential causes are given in Table 3. Remember that the registrar can send to the census but one cause of death per death, and consider these causes. Some of these examples come from the best equipped men in the city and from hospitals. They were transcribed without alteration.

TABLE 3.—EXAMPLES OF IMPROPERLY GIVEN CAUSES OF DEATH

Primary or Statistical Cause	Contributory Conditions
Aortic stenosis, aortic insufficiency, mitral stenosis, nephritis, ulcerative colon.	Cardiac dilatation, uremia.
Bronchopneumonia. hcart disease — mitral, progressive muscular atrophy.	Hemiplegia.
Acute appendicitis, appendix abscess, subperitoneal abscess, volvulus.	Plastic peritonitis, acute suppurative peritonitis.
Alcohol poisoning and heart failure from overstimulation frcm alcohol. Patient had been drinking very heavily for last three weeks.	When not under alcohol patient was in good health.

A common practice is to transpose, that is, give the contributory condition for the primary cause of death, and vice versa. This error does not affect a diagnosis which in itself may be correct, but if, for instance, an adequate contributory condition is put down in place of an adequate primary cause and the two causes contributory and primary are transposed, the registrar may be justified in reporting for the census a contributory cause which is in fact erroneous. Many physicians are not yet clear on what is a primary and what a contributory cause. This is not always easy to state, but granted the distinction can be made, the primary is the statistical cause of death, namely, that which goes through to the census reports. With this in mind the diagnostician cannot write "starvation" in the space where "cancer of the esophagus" ought to be.

Words added to certificates which serve no useful purpose but only confuse are the usual terms deprecated in the physician's pocket reference of the international list of causes of death, such as: marasmus, exhaustion, asthenia, cachexia, inanition, general weakness, dentition, and so on. They usually signify uncertainty. Those certificates, otherwise correct, which use these terms of infants especially in prematurity, have not been considered, as they appear so frequently.

TABLE 4.—EXAMPLES OF TRANSPOSITION

Cause	Contributory Condition
Inanition-myocarditis	Cancer of the esophagus
Toxemia	Pulmonary tuberculosis
Edema of lungs	Cerebral syphilis
Bronchial pneumonia	Pertussis
Brain pressure	Cerebellar tumor

Examples of conflicting diagnoses may be given. When two or more separate adequate causes of death occur simultaneously in the same patient, as said before, only one may be chosen by the registrar. The insane asylums, for example, are a fruitful source of such conflict, for in most cases where insane patients die of a well-marked psychosis other important causes give way. The following examples were all taken from certificates.

Tuberculosis
Dementia praecox

Epilepsy
Nephritis

Scarlatina
Diphtheria

Cancer
General paresis

Nephritis
Diabetes
Syphilis

Intestinal obstruction
Pertussis

The overshadowing disease, usually that of longest duration, becomes the cause of death. The difficulty presents itself peculiarly well in the coincidence of intestinal obstruction and pertussis. Intestinal obstruction in this case considered clinically would, as the predominating cause of death, take precedence over pertussis. Statistically, however, it is vastly more important to the community to know that there has been another death from pertussis, and the case would probably be so recorded.

Now take the year 1894. Under doubtful causes, be it noted that many more certificates were doubted than in 1914, in the first place because certificates were accepted then that would now be sent back for correction. In most returned and corrected certificates of 1914 there is reason to presume that the diagnosis was not thereby rendered more correct, but simply more in outward conformity with the international list of causes. On the other hand, many oft-repeated diagnoses of 1894 reflect by contrast the advance in medical knowledge during twenty years. Typhoid pneumonia was still a common expression, usually meaning a rapidly fatal pneumonia accompanied by a condition of shock. Various "congestions" of brain, liver, lung, etc., were still in vogue. "Membranous croup" was accepted, though it was grouped with diphtheria in the final accounting; similarly "enteric fever" with typhoid. Some typical examples of doubtful diagnoses, written in 1894, may be noted.

TABLE 5.—EXAMPLES OF DOUBTFUL DIAGNOSES

Cause	Contributory Condition	Remarks
Typhoid fever (woman, aged 79)	....	Duration seven days
Typhoid fever (child, aged 5)	....	Duration two days
Apoplectic stroke......	Abscess of brain.....	Child 3 years old
Neuralgia of heart....	....	Child 6 years old
Chlorosis	....	Negress, aged 19
Severe nervous deviation due to changes of puberty	....	Girl, aged 14

An interesting example is the following diagnosis after necropsy in which the cause would today doubtless have been ascribed to a stone in the ampulla of Vater.

Cause	Contributory Condition	Remarks
Hepatitis, perihepatitis, cholecystitis, enteritis (small intestine) (localized peritonitis), pancreatitis, pancreatic hemorrhage	Gastralgia and vomiting, collapse from shock	Woman, aged 62. Necropsy performed

There were instances in both years when the physician expressed on the certificate doubt of his own diagnosis. And yet, perforce, no such doubt was expressed in the census unless the case was classified among the "doubtful causes," which was not done unless the cause given was in itself doubtful. As may be supposed, the average faulty diagnoses were much more obviously and frequently incorrect in 1894 than in 1914. Conflicting causes, on the other hand, were far less frequent in 1894. The reason for this is to be found in an off-hand certainty which pervaded these earlier documents. Usually no duration was given. A physician took his duty much more lightly and the certificates were generally made out with far less care. As to improper certificates, the great increase in their number in 1914 was due to the overanxiety to be correct. The certifying physician nowadays feels that one cause may not stand alone, it must be plentifully characterized and fortified with contributory features which would make the dénouement appear inevitable, in order to avoid any dispute with the registrar. It is now, therefore, more often than ever the task of the registrar to choose from a number of causes that which seems the most likely.

Now taking only such as show striking differences, let us compare some given diseases in frequency of diagnosis. This with the idea of gaining an impression, more cannot be proved, whether diagnosis is in all things vastly better or whether it is so of certain diseases only while other increases or losses come of insistence that the certificate shall look more truthful whether it be so or not.

TABLE 6.—INCREASED OCCURRENCE OF DISEASE AS SHOWN IN DIAGNOSIS

Syphilis	1894	1914
Adult	12	32
Congenital	14	88
Congenital (subdivided)		
In X, infant asylum..................	1	54
In rest of city......................	13	34

In Table 6 the first and last line of figures might represent the normal increase proportionate to population. The second and third lines, however, show an enormous increase, and this is found to be due to a great number of diagnoses coming from one institution, probably indicating better diagnoses in that institution, whereas much infantile syphilis occurring elsewhere is lost under other headings.

Table 7 indicates a striking increase in a more definite as against a sharp decrease in a less definite diagnosis of the same character. This change is presumably one of the effects of insistence on more definite terminology.

TABLE 7.—INCREASE DUE TO MORE DEFINITE DIAGNOSES

	1894	1914
Apoplexy	112	216
Paralyses (not paresis)................	57	21

A search was made for instances of an increase, due with the least possible doubt to improved knowledge. The first column in Table 8 gives the actual number of certified deaths of 1894 due to the disease chosen, then the number of cases interpreted from certificates of the same year as probably due to the disease, but otherwise stated. In the last column are the official totals for 1914. The "possibles" for 1914 were insignificant in number.

Note in Table 8 that in 1 and 2 the first two figures added give an approximately normal increase. In 3 the excess increase may be partly accounted for by postoperative deaths. In 4 the signs could not be read into a death certificate, being dependent on a blood count.

TABLE 8.—INCREASE DUE TO IMPROVED DIAGNOSES

	1894 Actual	1894 Possible	1914
1. Appendicitis	15	25	77
2. Prostatic disease (not cancer)	4	11	22
3. Exophthalmic goiter....	0	2	17
4. Leukemia	2	0	13

Table 9 gives a comparison showing changes due in part to suppression of the really justifiable diagnosis of "old age." This term may be a refuge of ignorance or one under which to group the aged dead when time or opportunity is lacking to make out more definitely the terminal disease. Many physicians who would formerly have written "old age," "heart failure," "gastritis," "exhaustion," "dropsy," or what not, will now write arteriosclerosis, myocarditis, or nephritis, either together or separately and probably in many cases by reason of circumstances previously enumerated get no nearer the truth.

Table 10 shows that the disproportionate increase in violent deaths was due to insistence on supervision by a medical examiner in all cases in which there was history of trauma leading to the terminal illness, whether or not death was the immediate outcome.

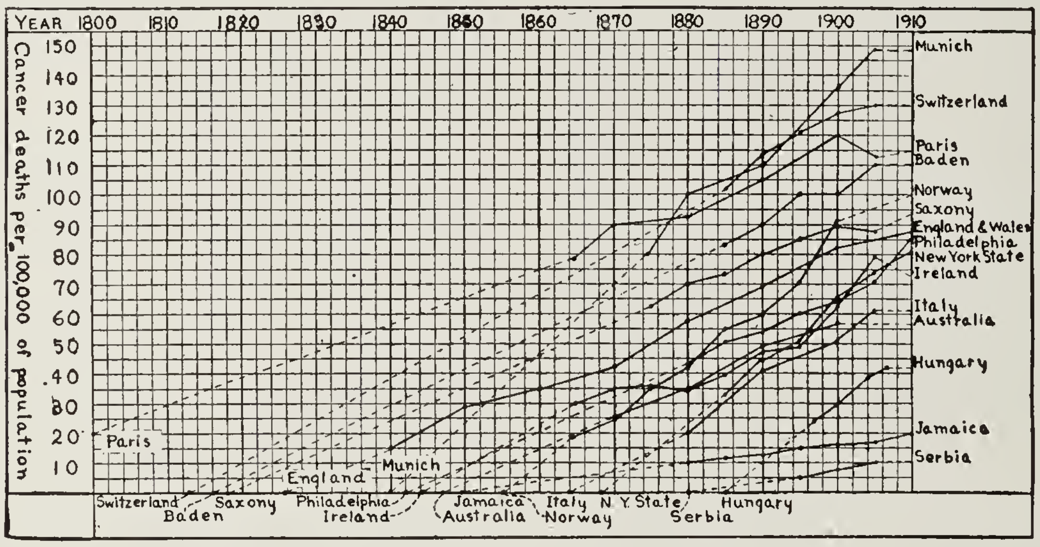

Fig. 1.—Cancer deaths per hundred thousand of population.

The diagnosis, chronic nephritis, as indicated in Table 11, is increased not alone by any marked change in prevalence of the disease, but partly by the fact that in a certain number of old people it constituted the "last straw" or terminal breakdown. To mix such deaths with those of children or adults taken out of vigorous life by Bright's disease is confusion. In the case of senile persons with a late nephritis, it had better have been set down that they died of senility than to have added the terminal disabling of any given organ to the category of important causes of death. Hence, to compare today's death rate for chronic nephritis with that of twenty years ago, without due regard for change in the character of certification, is fatuous.

TABLE 9.—COMPARISON SHOWING DROP IN REPORTED CAUSE OF DEATH AS DUE TO "OLD AGE"

	1894	1914
Arteriosclerosis	1	392
Old age..............................	189	44

It is therefore incorrect to expect from the decrease in the diagnosis "old age" the chief source for the increase in cancer.

A similar source of error exists at the other extreme of life. As in senility old age is the important factor, so here it is infancy itself. From the clinician's point of view it was all important that the dead infant was fed on pickles and coffee. From the statistician's point of view the important factor was the infancy, because later in life pickles and coffee have little or no particular etiologic significance. Wherefore infantile malnutrition and malassimilation, as the case may be, should have just the same repute in a statistical diagnosis as senility. In such cases the clinician should not be made to feel forced, in the face of a clinical uncertainty, to find a point in the respiratory, circulatory or gastro-intestinal tract on which to hang his diagnosis. For these reasons the mortality figures of forms of death common in infancy, save still birth and the contagious diseases, are of little value in establishing the death rate for any given disease.

TABLE 10.—INFLUENCE ON REPORTS OF SUPERVISION BY MEDICAL EXAMINER

	1894	1914
Certificates made by official diagnostician or medical examiner	140	1,111
Total violence	240	444
Trauma due to fall................	18	100

Now to my main purpose, namely, to consider the cancer diagnosis as a diagnosis, and how it may be affected by factors other than the true or actual death rate for cancer. To begin with, there is no doubt that, whatever the cause, the cancer death rate curve shows throughout the world a steadfast and rapid rise unlike that due to any other cause, save, in a minor degree, diabetes. Figure 1 will show this graphically. This chart will also indicate certain startling conclusions.

If the death curves run upward at the present rate, in a short time, say another generation, cancer will far outstrip other causes of death in persons of the cancer age. That this forecast is fallacious can be demonstrated with equal propriety by reversing the process, running the curve backward, as is done in the chart

TABLE 11.—APPARENT INCREASE IN DEATHS FROM NEPHRITIS AND DISEASES OF CIRCULATORY SYSTEM

	1894	1914
Arteriosclerosis	1	392
Myocarditis, fatty heart and cardiac paralysis (in persons over 60)	30	*
Nephritis, chronic (in persons over 60)..	45	250
Total circulatory	344	1,117

* Now included under organic diseases of heart.

by means of dotted lines. The cast backward at the same average rate will seem to show that previous to 1800 there was practically no cancer worthy of mention anywhere on earth, and that our own state of New York had less than 1 cancer death per 100,000 of population previous to 1865. This would give for that year about 40 deaths for the state, due to cancer! The only country showing a sharp deviation from this curiously steady upward slant is Ireland, which difference may be explained by the obvious reason of the unparalleled depletion in a short time of its adult population by emigration. Another striking diagram is that giving four causes of death for the state from 1885 to 1912, inclusive (Fig. 2).

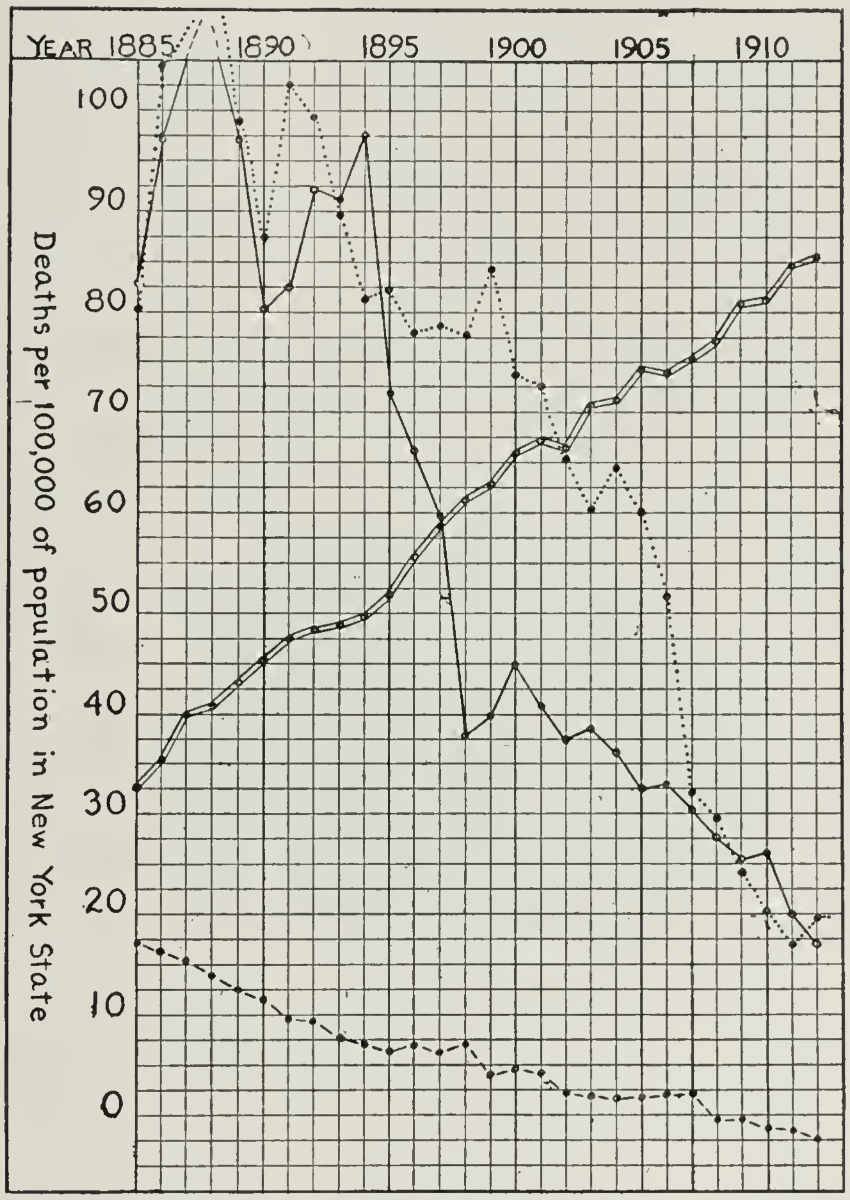

Fig. 2.—Deaths per hundred thousand of population in New York State: double line, cancer; dotted line, old age; solid line, diphtheria; line of dashes, malaria.

"Old age" is a diagnosis which has been during this given period sharply on the decline, not because of any sharp decrease in the relative incidence of old age, but almost wholly because of suppression of the term in the interest of supposedly greater accuracy of statistics.

"Diphtheria" is a diagnosis which has dropped *pari passu* with "old age," for an entirely different reason, namely, because of an actual decline in the number of deaths due to this disease in the face of methods of diagnosis which have shown it to be far more widespread than was formerly supposed. In 1894 there were made in the whole year at Buffalo 147 bacteriologic examinations for diphtheria; in 1914 as many every three days.

Diagnoses of malaria diminished, due both to improvement in diagnosis and in the incidence of the disease, certainly more by the first than by the second reason. In other words, examination of the blood has done more to diminish deaths due to this disease in New York by proving its rarity than has the extermination of the mosquito, though there was undoubtedly more of it in the state at one time than at present. So far as is known it was always the tertian form, a variety not serious in itself and most easily controlled by quinin. Fatal cases that occur in this state nowadays can be only in patients brought up from the tropics to die. Death due to locally acquired malaria belongs to the anomalies and curiosities of medicine.

Cancer is still in doubt.

It is a strange coincidence that the diphtheria and old age curves should be so alike, though produced by such fundamentally different causes. It appears, therefore, that two diseases may seem to diminish in a parallel from wholly different causes. It follows that the increasing curve of cancer may be due to any one or a variety of causes.

In general, cancer, as indicated by malaria, old age and diphtheria, may increase from four causes: (1) forcing the diagnosis to avoid controversy or as result of popular or professional cancer campaigns; (2) improved diagnosis and more frequent disclosure of the disease; (3) actual increase in the incidence of the disease; (4) age and sex constitution, reference to which is omitted as outside of the scope of this article. According to Table 12 let us consider what a comparison of cancer death certificates in Buffalo in 1894 and 1914 might indicate.

The cancer increase is certainly not due to an exchange with old age because, as shown previously, old age has become scattered under various headings, principally arteriosclerosis, organic heart disease, and nephritis. It is probably not due alone to forcing, because a doubtful condition in a person of the cancer age may be given any one of several names conforming with terminal symptoms. The figures, however, appear to countenance the idea that a considerable part of the increase is due to forced diagnosis. This is hinted at by the decided increase over the natural growth of population in the number of doubtful cancer certifi-

TABLE 12.—APPARENT INCREASE IN DEATHS FROM CANCER

	1894		1914	
	Total	Ratio	Total	Ratio
Population	300,000	1.	454,122	1.5
Total deaths	5,280	1.	7,040	1.25
Total cancer deaths	164	1.	428	2.6
External cancer	39	1.	82	2.1
Internal cancer	125	1.	346	2.77
Certified cancer, was probably not	13	1.	36	2.77
Certified something else; was probably cancer	40	1.	58	1.45

cates, that is as 13 : 36, or 1 : 2.77, which approximates the increase for internal cancer. Furthermore, certificates not for cancer, but which might on their face value have been cancer (1 : 1.45) take a place between the increase of population (1 : 1.5) and that of the total deaths (1 : 1.25). Examples of certificates giving cancer as cause of death which seemed likely not to have been cancer at all are given in Table 13.

TABLE 13.—EXAMPLES OF POSSIBLE ERRONEOUS DIAGNOSIS OF CANCER

	Cause	Contributory Condition	Remarks
1894	Intestinal cancer, woman aged 38		Duration four yrs. No hint of operation or necropsy*
	Cancer of stomach, man aged 64		Duration one and one-half yrs. No necropsy or operation. Attended for two weeks
1914	Cancer of intestines, boy aged 10		No operation or necropsy noted
	Infection of gallbladder, chronic ulceration of intestines, malignant degeneration head of colon with obstruction	Chronic malarial toxemia dysentery	Man, aged 36. No operation or necropsy recorded

* Death in a hospital was taken as presumptive evidence of a correct diagnosis.

In Table 14 are examples of certificates giving some cause of death not cancer, which it seemed might easily have been cancer.

TABLE 14.—PROBABLE DEATHS FROM CANCER NOT SO REPORTED

	Cause	Contributory Condition	Remarks
1894	Marasmus, malnutrition (duration four months)	Metritis, inflammation of stomach and esophagus	Woman, aged 44
	Inanition	Stricture of pylorus peptic ulcer	Man, aged 50
1914	Influenza, myocardial degeneration and dilation	Stricture of the esophagus, marasmus (two years' duration)	Man, aged 62
	Pernicious anemia (duration six months)	Rectal hemorrhage (duration one month)	Woman, aged 54

Improved diagnosis as a factor in the increase is indicated by a markedly greater increase under the head "internal" as opposed to "external" cancer. The dividing line between external and internal cancer was arbitrarily made, by including as external those cancers which might have been discovered by the patient as distinguished from those discoverable as a rule only by complex methods, operations or necropsy. The increase in the population is represented by the figures 1 : 1.5, the increase in external cancer by the figures 1 : 2.1, and the increase in internal cancer by the figures 1 : 2.77.

Actual increase in cancer, if any, must therefore share the statistical increase with the two other causes of increase. The numerical importance of these two other causes cannot be accurately determined by any such crude methods as the inspection of death certificates, but their influence is indicated not only by the figures quoted before, but also by impressions gathered from their perusal. These impressions cannot be set down in type, as they are derived from acquaintance with the certifying physician, or the death to which he has certified.

The studies of Cabot and others referred to in the beginning indicate substantial errors in general conclusions based on a large increase in cancer. However, they go no further than that we are not justified in taking the figures at their face value, but must allow for a margin of error of from 10 to 90 per cent. according to the difficulty of the case. This paper serves to emphasize that over and above diagnostic differences and errors, the limits of accuracy are still broader and more uncertain when the death certificate, even with due reference to age conditions, is called on to prove anything. These considerations led me to the following conclusions:

1. The majority of all deaths take place under circumstances that make accurate diagnosis improbable or impossible, wherefore death certificates are, in the majority, of doubtful accuracy. The sources of error are of a nature that tends to increase the apparent cancer death rate.

2. Deaths certified as due to (a) contagious or epidemic diseases, (b) violence, (c) causes verified by necropsy or operation, may be set down as the most comprehensive and accurate: all other causes are proportionately subject to inflation or diminution due to influences apart from the actual incidence of a given disease.

3. To give more accurate results within the limitations of error, the final classification of disease for the census should be modified by further study. To separate conclusive from fallacious causes there should be a large place (a) for deaths, of themselves uncertain in character, for example, nonviolent deaths certified by medical examiners without previous observation; (b) for all deaths of infants under 2 years of age and of old persons over 70 years of age in whom infantile debility or senility is a predominant condition; (c) all unknown causes should be frankly certified as unknown, for example, as cerebral, thoracic or abdominal unknown. Certificates of this kind would be naturally diminished in time by improved knowledge and should not be curtailed or abolished by arbitrary insistence on the giving of a "satisfactory" cause.

4. Death rates for disease can be made accurate only by universal necropsy. As a preliminary measure to introduce universal necropsy the law, as regards necropsy, should be made permissive, in order that a necropsy might be performed save when the deceased or nearest relative expressly prohibits it. This measure would tend gradually to break down useless prejudice partly sustained by the present law, which pro-

vides that the nearest of kin shall expressly and in writing consign the deceased to the diagnostic dissecting table. Necropsy should be a privilege of humanity for the living, not a penalty of the notable or notorious dead.[6]

5. If there is anything to be gained by the study of cancer statistics of this country in their present condition as regards cancer increase, it is rather in figures from small well-ordered communities over many years, where the figures may be controlled on the spot, than in taking broadly summarized figures of the general census for cities, counties and states.

113 High Street.

SUPERNUMERARY KIDNEY

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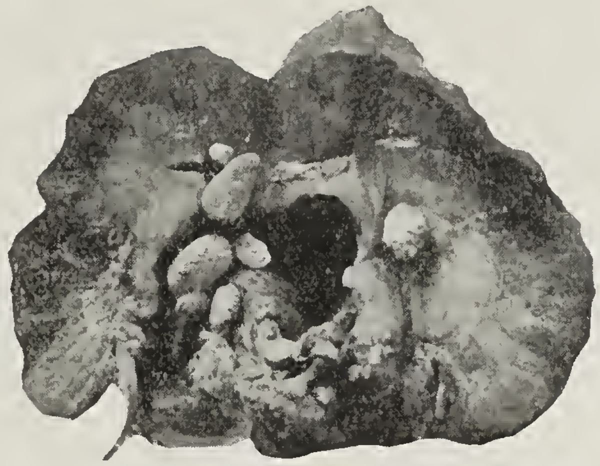
Cases of true supernumerary kidney may be considered one of the rarest of all pathologic renal conditions. A very interesting and brief reference to this subject was given by Voigtel[1] in 1805. He mentions cases reported by Blassius, Cruveilhier, Dupuytren, Eustachius, Gavard, Hyrtl and Haller. Voigtel, who reported the presence of four kidneys, also mentions a few writers, namely, Bottalus, Dellstang, Gemma and Schenk, who reported the presence of four kidneys.

The occurrence of accessory kidneys is not limited to man. Von Hansemann[2] found an accessory kidney in a pig, and Pieth[3] demonstrated the presence of a third kidney in a cow. This kidney was separate from the two ordinary kidneys, which were normal in position and structure.

Supernumerary kidney must be differentiated from cases of double kidneys. This form of anomaly is also very rare, but it is found more frequently than are cases of accessory kidneys, so that one may consider the latter as being relatively more common than the former. Failure clearly to differentiate between these two conditions is apt to occur when part of the double kidney has undergone some pathologic change. This oversight has occurred in some of the publications in which cases of undoubted double kidney are reported as supernumerary kidney. Suter,[4] in a recent article on this subject, tabulates nineteen cases. Several of these are not above reproach and undoubtedly should be reported as cases of double kidney. It may be questioned whether both of Suter's cases should be considered as true supernumerary kidneys.



Supernumerary kidney which contained thirteen stones. This kidney was not attached to either of the other two kidneys, and had its own blood supply.

I wish to report the following case:

Mrs. W., aged 27, complained of recurring attacks of kidney-stone colic. The present illness began two years ago, at which time the patient had her first seizure. This began very suddenly with a severe pain in the left kidney region, which lasted several hours, and was preceded by a chill and fever. Three weeks later she had another attack, and these have since recurred about every three weeks, usually persisting for a day; one lasted three days. During the first attacks she did not observe the urine, but later, after each attack, the patient always found stones, and the urine was tinged with blood.

During the last month or two, she states, her urine was very turbid. The attacks were always associated with nausea and vomiting. There was some frequency of urination, the patient being obliged to void every two hours during the day, and several times during the night. There was more or less pain and burning on urination. There is no history of previous illnesses. Menstruation is regular, of the twenty-four day type. The bowels show a tendency to constipation since the onset of her illness.

Physical Examination.—The patient is a well-developed, well-nourished woman. The pupils react to light and accommodation. The thyroid gland is enlarged, both lateral lobes and isthmus; there are no symptoms of Graves' disease.

The recti muscles are slightly separated. The left kidney is palpable. Deep pressure over the right kidney causes pain and muscular spasm, the tenderness being more marked posteriorly.

Examination of the thorax was negative as regards heart and lungs. The examination of the extremities was also negative in result.

Cystoscopic Examination.—June 8, 1914: Bladder negative except for the presence of small adherent whitish flakes of mucopus. A small polyp was seen on the internal urethral orifice. Double ureteral catheterization was easy.

URINARY ANALYSIS

Right Kidney

Appearance	Clear
Albumin	Trace
Sugar	0
Microscopic Examination	Negative
Cultures	Sterile

Left Kidney

Appearance	Turbid with flakes of pus
Albumin	+
Sugar	0
Microscopic examination	Pus in large amount
Cultures	Sterile

Result of Phenolsulphonephthalein Test, Intravenous Administration, Thirty Minutes' Collection

	Right Kidney	Left Kidney
First fifteen minutes	17.5 per cent.	11 per cent.
Second 15 minutes	9 per cent.	8 per cent.
	26.5 per cent.	19 per cent.

Total output for thirty minutes, 45.5 per cent.

The blood examination showed leukocytes 7,900; hemoglobin (Dare) 73 per cent.; blood pressure 146.

Roentgen-Ray Examination.—In the region of the left kidney there were seen many more or less indistinct shadows. These shadows were very faint. The roentgenogram did not resemble that usually seen in cases of kidney stone. Because of these peculiar findings a possible diagnosis of incrustations of the renal pelvis was made.

It was decided to perform a pyelotomy and to curet the areas of incrustations and remove any calculi that might be present.

Operation.—June 10, 1914: The usual oblique incision was made. The kidney was exposed without any difficulty but it could not be delivered because of the extremely short pedicle. Numerous stones were palpated in the pelvis. Small depressed scars were seen on the surface. Pyelotomy could not be carried out because it was impossible to bring the kidney up far enough to expose the pelvis. After careful deliberation it was decided to remove the kidney, which was full of stones. The kidney, except that it was small, did not differ in appearance from any other kidney.

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[6] Wilson, L. B.: The Necropsy as a Public Service, The Journal A. M. A., May 8, 1915, p. 1563.
[1] Voigtel: Handb. d. path. Anat., 1805, p. 169.
[2] Von Hansemann: Berl. klin. Wchnschr., 1897, p. 81.
[3] Pieth: Jahresb. f. Urol., 1909, p. 419.
[4] Suter: Folia urol., August, 1913.

The wound area was thoroughly exposed with retractors before closing and a dark mass was seen in the depths of the wound. I attempted to remove this with my finger, thinking it was a blood cot. This small mass had a pedicle which was clamped, tied and cut. It proved to be a supernumerary kidney, which also was full of stones. This kidney had its own pelvis and its own blood supply. (See illustration.)

Cystoscopic Examination.—July 6, 1914: The bladder still shows a slight degree of cystitis. Both right and left ureters were negative. Only one ureteral orifice was seen on the left side. Examination of the urine still showed the presence of pus. This postoperative cystoscopic examination was made especially to determine whether or not there were three ureteral openings in the bladder.

From a careful study of the recorded cases, it is quite apparent that one of the greatest difficulties arises in making an accurate preoperative diagnosis. Calabrese[5] made a probable preoperative diagnosis of supernumerary kidney in his case, by palpation. Palpation is necessarily of limited value; and a positive diagnosis made from this alone seems to be quite an assumption. The presence of three ureteral orifices in the bladder is only of partial help, as this is not pathognomonic. Three ureteral orifices may be seen cystoscopically in cases of double ureter and double pelvis. As a matter of fact this aid was absent in the cases of Rustschinski,[6] von Hansemann, the case mentioned in the U. S. Marine Hospital reports,[7] Calabrese, Tonkow, and Isaya,[8] in which only two ureteral orifices were found in the bladder, the two ureters of the same side having fused outside of the bladder. This was exactly the condition in my case, the ureter from the accessory kidney fused with the ureter of the normal kidney on the same side, outside the bladder (see postoperative cystoscopy). Barlett[9] reported three ureteral openings in the bladder and Wedensky's[10] case was unique in that the ureter of the accessory kidney terminated in the prostatic urethra. So far as I know this is the only case in which the ureter of a supernumerary kidney so terminated.

It seems as though the diagnosis might be made in suspected cases by means of pyelography. Inasmuch as we know of the tendency of these ureters to unite outside the bladder, the ureteral catheters might be inserted only a few inches into each ureter and then the solution be allowed to find its way into each renal pelvis. The presence of three separate and distinct pelves in the roentgenogram might aid in establishing the diagnosis. (?)

It is perfectly obvious that the shadowgraph catheter would be of doubtful value in establishing a diagnosis in this group of cases.

The rare occurrence of this condition, the scarcity of case reports, and the lack of detail in reporting the cases, leaves much to be desired in our knowledge on this subject.

There was nothing in the history, cystoscopic examination or Roentgen-ray findings in this case to cause us to suspect the presence of this rare anomaly.

Of interest is the fact that, in four cases, this condition was found on the right side (Watson Cheyne,[11] Isaya, Tonkow and Wedensky). In eleven cases the condition was found on the left side (Barlett, Cobb and Giddings,[12] Calabrese, von Hansemann, Hyrtl,[13] Munro and Goddard,[14] Mills,[15] Newman,[16] U. S. Marine Hospital Service Reports, Rustschinski, and my case).

The kidney, in Mills' case, was discovered in the dissecting room. The cases reported by Wedensky, Rustschinski, von Hansemann, Bartlett and Newman are given in necropsy reports. Clinical cases were reported by Cobb and Giddings, Calabrese, Depage,[17] Isaya, Munro and Goddard, and Watson Cheyne.

Many of the cases reported do not contain definite statements regarding the pathologic condition which existed in the supernumerary kidney; the statement is simply made that an accessory kidney was found. My case is the only one in which calculi were reported present. It is, furthermore, the only one in which two of the three kidneys were the seat of the disease.

In Rustschinski's case, all three kidneys were the seat of foci of suppuration, and it is apparently the only case in which all three kidneys were diseased. In the remaining cases the pathologic conditions mentioned as found in the supernumerary kidney were: cystic changes (Wedensky), rudimentary pelvis (Mills), papillary cystadenoma (Cobb and Giddings), movable kidney (Watson Cheyne), pyelonephrosis (Munro and Goddard).

122 South Michigan Boulevard.

ACUTE ASCENDING HEMORRHAGIC MYELITIS *

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The title of this article is descriptive of a rare pathologic condition which has comparatively recently come under my observation. Its rarity is attested by the fact that in the literature very few cases can be discovered of this combination of acute inflammation of the spinal cord with overwhelming diffuse hemorrhages into the gray matter, and to somewhat less extent into the white matter.

It seems important to draw an analogy between this case and two other cases of acute ascending paralysis, also recently under observation.

The evidence tends to show that there are three clinical as well as pathologic types of acute ascending paralysis. My conception of the differentiation of the three will follow later.

In order to have the material before us, I shall at once describe this case of acute hemorrhagic myelitis, and later briefly the other two cases.

Case 1.—E. W., a girl of 20, about to graduate from a private school, gave the following history: Her parents are living and well. There are two other children, one well and the other nervous. No family disease is known.

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[5] Calabrese: Ann. d. mal. d. org. génito-urin., 1908, ii, 1841.
[6] Rustschinski: Quoted by Suter, Folia urol., August, 1913.
[7] Rep. U. S. Marine Hosp. Service, 1885.
[8] Isaya: Ann. d. mal. d. org. génito-urin., 1911, p. 225.
[9] Barlett: Lancet, London, Jan. 9, 1904.
[10] Wedensky: Folia urol., October, 1911.
[11] Watson Cheyne: Lancet, London 1899, p. 218.

[12] Cobb and Giddings: Ann. Surg., 1911, liii, 367.
[13] Hyrtl: Quoted from Reinfelder, Inaug. Diss., Munich, 1905.
[14] Munro and Goddard: Am. Jour. Med. Sc., 1907, p. 398.
[15] Mills: Jour. Anat. and Physiol., 1911-1912, xlvi; ibid., xlvii, 313.
[16] Newman: Tr. Clin. Soc., 1898, xxxi, 131.
[17] Depage: Jour. de méd. et de chir. de Bruxelles, 1893.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

The patient was a "blue baby," and the blueness persisted throughout her life. She had been rather delicate, of a nervous type and had had to favor herself more than a normal child. She had done well in school, however, and up to five days ago appeared to be in her normal health. Five days ago she first noticed a numbness, accompanied by some weakness, in her left foot. The following day a similar condition arose in the right foot, and later this numbness and paralysis gradually crept up her body, so that on the third day the numbness extended as far as the chest and began to attack the left arm.

She was brought home at this time, and was attended by two physicians, who were undecided whether she was suffering from hysteria or from some spinal cord lesion.

On the next day she had for several hours very severe pains, starting apparently in the spinal region and extending down both legs, especially the left. About this time also, her right arm became involved, the neck became somewhat stiff and she was practically completely paralyzed, except for her head, though certain weak movements of the right hand were possible.

At this time, that is, on the fifth day, I saw her in consultation with Dr. Kendall Emerson, and made the diagnosis of acute ascending paralysis. The temperature at this time was 103. The whole body was a grayish blue. The finger tips were markedly clubbed. There was practically complete anesthesia and muscular paralysis below the neck. The patient was unable to control the bladder and rectum. On the left leg was a large burn, 6 inches across, of which she was not aware, produced the night before by a hot water bottle. The pupils were equal and reacted normally to light. The neck was only slightly rigid. The tongue was dry and coated. The heart was rapid, 120, but not markedly enlarged and no murmurs were heard. The patient was conscious and perfectly clear mentally. The speech was unaffected. The respiratory muscles were just becoming affected, deep respiration absent. No glands were palpable.

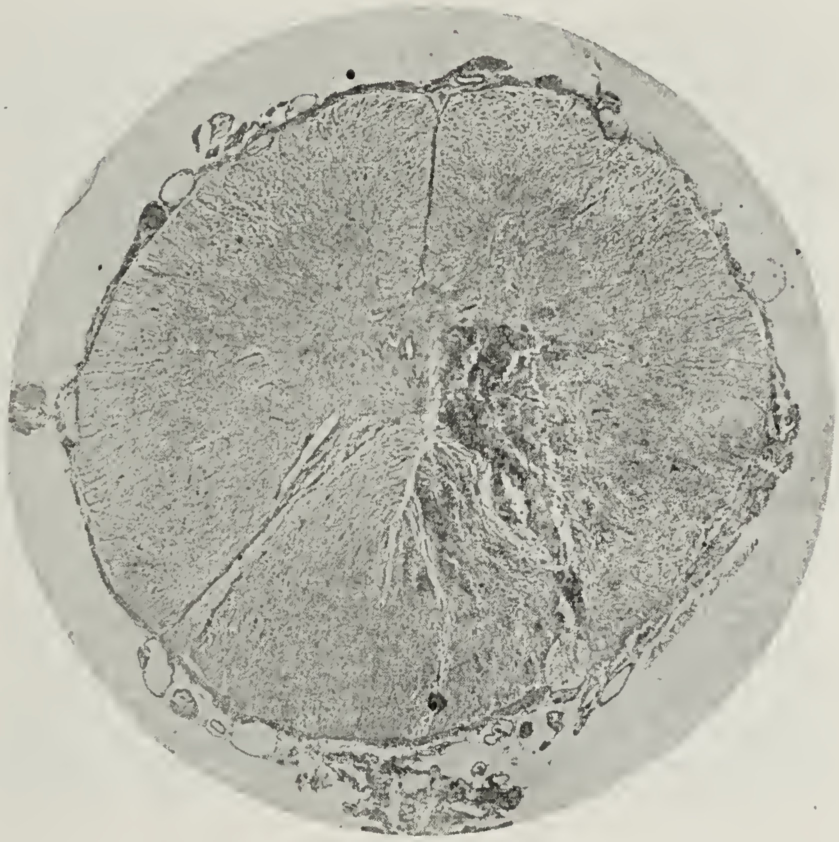

Fig. 1.—Case 1, E. W. Cord showing large area of hemorrhage in posterior horn.

I ordered immediate removal to Memorial Hospital, after first doing a lumbar puncture and withdrawing 15 c.c. of a somewhat turbid and markedly blood-stained fluid. The pressure of the fluid was somewhat above normal. The blood stain was evidently not due to trauma by the puncture, as all the fluid withdrawn was of the same nature. Subsequent examination of this fluid showed a marked excess of blood cells, an enormous excess of polynuclear white cells, some of them more or less disintegrated, and no bacteria. Cultures were taken from the fluid but no organisms could be grown. The globulin reaction was positive.

At the hospital the patient was made as comfortable as possible. She had no pain, but felt as if her body was heavy and she had an increasing sense of exhaustion. She was put on liquids and hexamethylenamin, 20 grains, every four hours.

Her entrance to the hospital was at 8 p. m., May 25, 1914. At that time her white blood count was 12,300; hemoglobin 80 per cent.

She did not sleep well that night on account of inability to move and a sense of weakness. Toward morning the respiration became more shallow and cyanosis increased. Suddenly at 9:45 a. m. respiration stopped practically without warning. A few moments later the heart beats ceased.

Permission was given for necropsy, which was performed by Dr. Kinnicutt at 1:30 p. m.

Anatomic Data.—Body of a well-developed young woman, markedly cyanosed.

Head: On section of the scalp there is a large amount of dark fluid blood. On removal of the skull-cap the longitudinal sinus is distended with dark fluid blood. The dura is not adherent, the meningeal vessels are injected, and the convolutions are somewhat flattened. On section of the brain: The ventricles contain no excess of fluid, but throughout the cerebral cortex are scattered numerous minute hemorrhagic areas.

Spinal Cord: The sections throughout its length show extensive areas of hemorrhage within the cord, especially into the gray matter, often entirely replacing the normal markings. There is no excess of spinal fluid and no evident induration around the meningeal covering.

Body: On section the subcutaneous fat is considerable in amount. The peritoneum is smooth and glistening. The appendix is normal. The lower border of the liver in the right mammary line is at the costal margin. The pleural cavities contain no free fluid. The lungs are salmon red in color and on section yield a large amount of pale, frothy fluid. The pericardium is normal. The heart is somewhat enlarged. On section the left ventricle wall is thickened. The papillary muscles are hypertrophied. The valves are normal. The foramen ovale is patent. The liver on section yields a large amount of dark fluid blood and shows "nutmeg" markings. The spleen is enlarged, firm, dark purple in color and on section yields a large amount of dark fluid blood. There is a small accessory spleen at its lower pole. The kidneys are enlarged. The capsules peel easily, leaving smooth surfaces. The abdominal organs otherwise are not remarkable.

Sections of the brain and spinal cord are placed in alcohol or 10 per cent. dilution of liquor formaldehydi for further examination. The bulk of the spinal cord is put into sterile glycerin for shipment to the Rockefeller Institute for Medical Research.

Microscopic Examination of the Brain and Cord: Paraffin Cresyl Violet Sections.—Cortex: Section 1: Precentral. The pia is of normal thickness. It contains small numbers of lymphocytes and numerous large endothelial cells, many of which are laden with blood pigment. Cortical lamination is normal and the nerve cells stain well. A mild satellite reaction is present in the deeper layers. Small amounts of green pigment are seen about some of the cortical capillaries, but otherwise the vessels are normal.

Cord: Section 1: About second segment (Fig. 1). Macroscopically, a large area of hemorrhage is seen, occupying the anterior and posterior horns of one side and extending anterolaterally to the periphery. Microscopically, there is found a disruption of the nerve tissue in the hemorrhagic area and a marked edema of that side of the cord. Smaller hemorrhages are scattered about the large focus. The reaction of the nerve cells varies. An occasional one is shrunken and angular, but the majority stain well, even those situated in the hemorrhagic area. There is no undue satellitosis. A heavy perivascular infiltrate of lymphocytes, together with a few polymorphonuclear leukocytes, is present. No plasma cells are seen. The vascular endothelium is not remarkable. Numerous glia cells with large vesicular nuclei and visible cytoplasm are present in both gray and white matter. In the central part of the hemorrhagic focus are large numbers of polymorphonuclear leukocytes and areas in which the tissue stains a dull, diffuse blue, suggesting necrosis. The opposite side of the cord shows a small area of hemorrhage, considerable edema of all the structures, and a mild lymphocytic perivascular exudate.

The pia is comparatively unaffected by the process, showing only occasional lymphocytes about the vessels.

Section 2: Lower cervical. Changes in the cord are similar to those in Section 1. There is a mild lymphocytic infiltration about the branch of the anterior spinal artery in the anterior fissure, and scattered lymphocytes among the anterior and posterior root bundles.

Section 3.—Lower dorsal. Very marked edema throughout the cord, which, with several large areas of hemorrhage, distorts the outline of the gray matter. Perivascular exudate, as in Section 1. There are collections of lymphocytes, polymorphonuclears and large mononuclear cells in the pia about the points of exit of the anterior roots. There is no exudate, however, among the nerve bundles themselves.

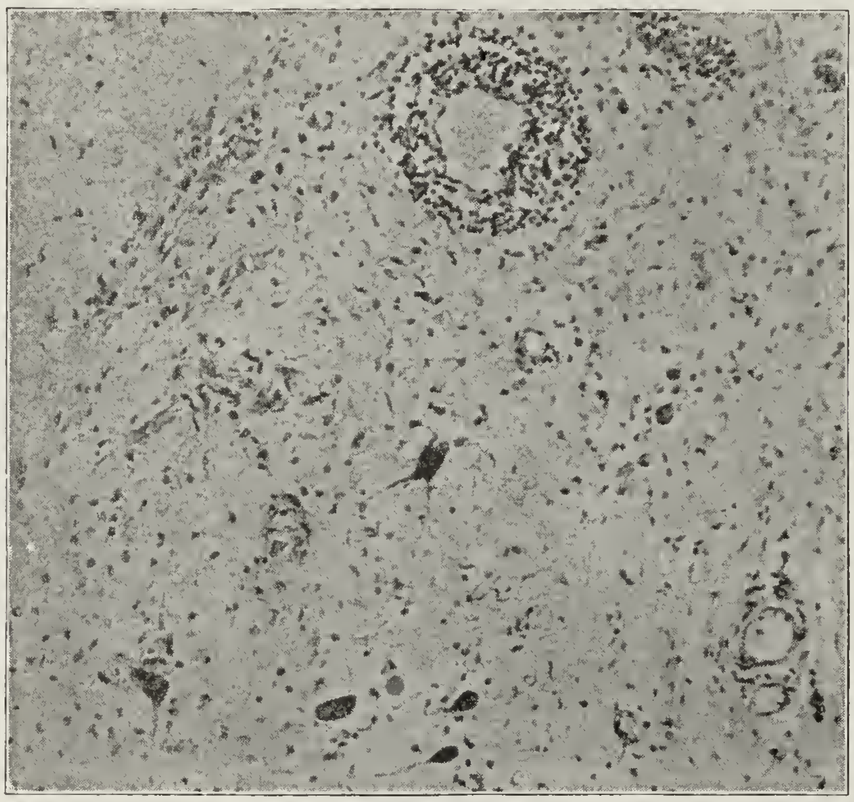

Fig. 2.—Case 1, E. W. Dorsal cord. An area from the anterior horn, showing lymphocytic perivascular infiltration. The nerve cells are intact.

Alzheimer's Lichtgrün Stain.—Cortex: Large granules staining with osmic acid are found rather abundantly in the cells in the perivascular spaces of the white matter, and to a small extent in the vascular endothelium of both cortex and white matter, and in a few nerve cells. No ameboid glia.

Lumbar Cord: Very heavy black deposits in the nerve sheaths everywhere in the white matter and in the nerve roots. Numerous glia cells with large vesicular nuclei and ameboid bodies are present in the white matter. These cells frequently contain vacuoles or black granules. The cord is infiltrated with hemorrhage.

Mallory's Phosphotungstic Acid Hematoxylin Stain. — No increase of fibrillar glia in cerebrum, cerebellum or cord. Examination of numerous cresyl-violet, thionin and Zenkcreosin-methylene blue sections reveals no bacteria.

Summary.—An acute diffuse inflammation of the cord, characterized by extensive hemorrhage, heavy perivascular infiltration of lymphocytes, combined with smaller numbers of polymorphonuclear leukocytes, ameboid glia and fatty degeneration of the fibers in the cord and nerve roots. The nerve cells are in general well preserved, and there is no neurophagic activity. The centers of the large hemorrhagic foci show beginning necrosis with large numbers of polymorphonuclears.

The cortex shows a mild meningeal lymphocytic reaction, small deposits of lipoid in nerve cells and vascular endothelium, occasional perivascular lymphocytes and phagocytes, and in one section a marked satellite reaction with slight degenerative changes in the nerve cells.

As I intimated in the beginning, little success has been met in the search for cases like the one just reported. Of course a number of cases of anterior poliomyelitis have been reported with more or less hemorrhage into the gray matter, also many cases of more or less diffused myelitis, with hemorrhage. None of these, however, seem to correspond exactly to my case.

Wyss reported before the International Congress in 1898 a case of hemorrhagic myelitis and phlebothrombosis of the spinal cord, in a girl of 12 years. This process, however, was found to be dependent on a tumor of the cervical cord, and pathologic lesions did not extend above this area.

Warrington and Owen have since reported a case somewhat similar. The history is as follows:

A man 41 years old. Illness began with chill, and three days later he had a temperature of 101. He then seemed to improve, but four days later he developed sensory and motor paralysis of both legs, with sphincter involvement. The paralysis ascended during the next four days until the respiratory center failed.

At necropsy the cord at various levels showed masses of intraspinal hemorrhage, more severe in the dorsal region, and corresponding chiefly to the anterior spinal system of arteries. A distinctive feature was the great dilatation of the small vessels, in both gray and white matter. The pia also showed greatly distended vessels and cell extravasation. Under high power the vessels showed wall thickening and neighboring necrosis of tissue. The cornual cells and nerve fibers exhibited all degrees of degeneration when near the vascular disturbance. Beyond these zones the nerve structures were intact. The brain above the medulla was normal. No micro-organisms could be detected.

This case, though dissimilar, is more like Case 1 than any other I have found. By way of comparison, let us now consider Case 2.

CASE 2.—E. C., a young man of 26, of previous good health, was occupied as a chemist in a rubber mill.

Three weeks before I saw him in consultation with Dr. Prouty of North Brookfield, he began to complain of headaches and feeling tired. No marked symptoms, however, developed until four days before, when the patient complained of slight numbness and weakness of both legs. This gradually became more marked, and three days later there was slight drooping of the left eyelid, with extension of the weakness to the thighs.

On physical examination, July 16, 1913, patient appeared fairly well nourished. Pupils reacted normally. There was slight impediment of speech and left facial paralysis. The knee jerks were absent, also the plantar and Achilles reflexes. Weakness of the legs was marked, but sensation was unimpaired except subjectively. Patient was sent to Memorial Hospital and lumbar puncture done at once.

Spinal fluid examination: Pressure normal, fluid clear, globulin positive, Fehling's reduced. Cell count 14, practically all lymphocytes.

The following day patient was unable to stand and paralysis was beginning to involve both arms. Two days later the muscles of the abdomen and chest as well became involved, causing more shallow respiration. The cranial nerves other than the seventh showed no definite involvement. The paralysis progressed, and the patient died of respiratory failure on July 26. The temperature had not reached 99 at any time and the pulse rate varied from 80 early in the illness to 120 toward the end. Urine was normal except for slightest traces of albumin.

Blood Examination: Hemoglobin, 90 per cent.; leukocytes, 11,100; erythrocytes, 5,628,000. Differential: Polymorphonuclears, 71 per cent.; lymphocytes, 21 per cent.; large mononuclears, 6 per cent.; mast cells, 1 per cent.; eosinophils, 1 per cent.

Necropsy.—By Dr. Hunt, three hours after patient's death. Nothing remarkable about the viscera of the chest and abdomen except that the distal part of the ileum was considerably injected and there appeared to be a general enlargement of the intestinal lymph nodes. Many of these nodes were the size of a cranberry bean and firm to pressure. The kidneys were slightly enlarged, but had normal markings and freely removable capsule.

The spleen was slightly enlarged and showed some signs of congestion. Cultures taken from the heart and subdural space failed to produce any organisms. On removal of the calvarium an excess of edema and considerable vascular congestion was noted in the meninges. The arachnoid was glistening and appeared somewhat less transparent than normal. The meninges of the cord likewise gave the appearance of congestion and edema.

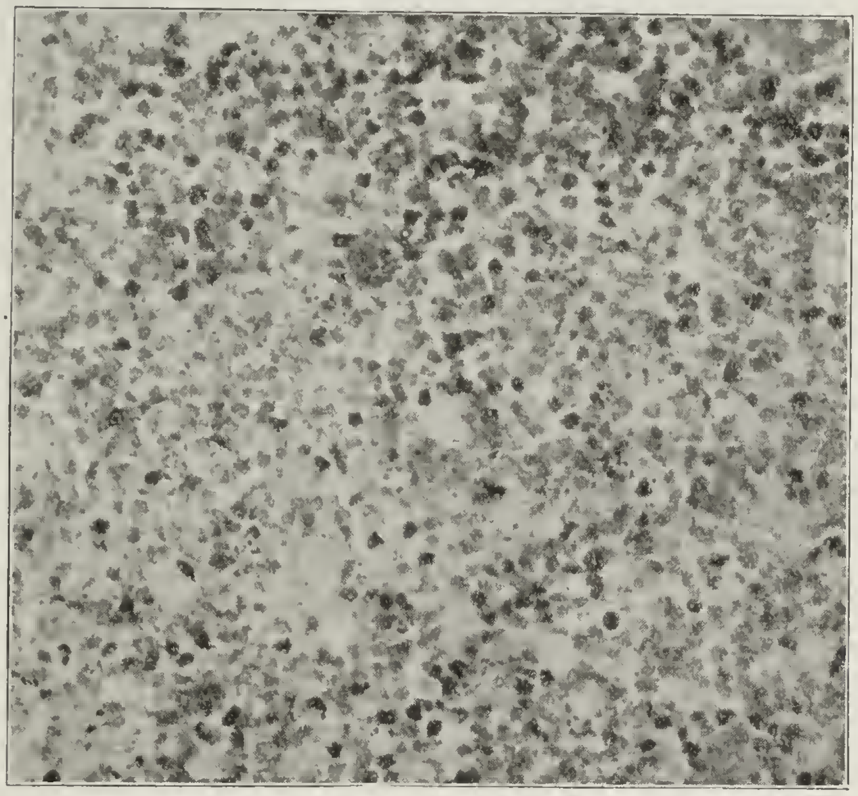
Fig. 3.—Case 1, E. W. Area of hemorrhage in the gray matter.

On fresh section of the cord and brain no gross pathologic lesions were evident.

It was planned to inject emulsions of spinal cord from this case into monkeys to help establish the etiology, but, on account of the absence of the laboratory staff from two hospitals, it failed of accomplishment.

For lack of space, the microscopic findings are only summarized in this report.

Summary.—A widespread degenerative process in the nerve cells of the cerebrum, cerebellum, medulla and cord. The affected cells are frequently surrounded by others which appear normal, and no particular groups can be said to be peculiarly involved. There is a moderate satellite reaction, moderate perivascular lipoid deposits, and slight perivascular lymphocytosis in both pia and nerve tissue. The nerve roots, both cranial and spinal, show small lymphocytic deposits.

The pathologic picture is one which has been frequently described in cases of Landry's paralysis, that is, a widespread degeneration of the nerve cells with scanty perivascular exudate. The process in the present case is one which strikes the nerve cells differentially. Some fade out with, others without satellitosis. The picture is compatible with a purely toxic condition.

Further discussion of this case is postponed until after a brief summary of the following case.

Case 3.—A boy, 14 years old, was always well until Sept. 13, 1913, except for an accident to his head a year previous, at which time he received tetanus antitoxin. Two weeks previous to September 13, he had returned from a vacation at the shore in excellent health.

The early symptoms noted were headache and fever, which, on the afternoon of the 13th, reached 102.5. The headache, fever and malaise continued the next day, and during the night of the 14th paralysis of both legs developed. This paralysis gradually ascended during the next thirty hours until the thighs, abdomen and arms and respiratory muscles became in sequence involved. No pain was complained of. There was some paresthesia, but no actual anesthesia of the limbs. The deep reflexes of both legs and arms were absent. The paralysis was flaccid. Lumbar puncture was done by me at this time, September 16, on being called in by the family physician.

The spinal fluid was under moderate pressure, but was not turbid. The cell count was 68. Globulin was positive with both ammonium sulphate and Noguchi. Differential count (Alzheimer method): Lymphocytes, 0.83; endothelial cells, 0.12; polymorphonuclears, 0.5; plasma cells, 0.

Though the patient did not rally under treatment, he lived until 6 a. m., September 20, when both heart and respiration failed.

This case would be difficult to differentiate from the other two, without the aid of a spinal fluid examination, but with the differential cell count it must be put down as an anterior poliomyelitis (acute ascending type).

I regret that the family physician did not heed my request for a necropsy in this case.

The pathology of acute poliomyelitis being familiar to you, I am offering the following schematic differentiation of three types of acute ascending paralysis, as exemplified by the three cases above reported.

RELATION TO HEMATOMYELIA AND HEMORRHAGIC ENCEPHALITIS

While there is little chance of confusing as striking a case of hemorrhagic myelitis as Case 1 with a typical case of spontaneous hematomyelia, the clinical and pathologic relation of the two should be mentioned, especially as there have been many cases reported in which the clinical symptoms would leave one in doubt whether the process was inflammatory, hemorrhagic or both. Important clinical points to differentiate hematomyelia from acute diffuse hemorrhagic myelitis are: the absence of fever, the suddenness of the onset without premonitory symptoms, often with acute pain, the rapid sequence of paralysis localized in the part corresponding to the hemorrhage, localized anesthesia, lack of progressive extension to new areas, normal white count and normal or nearly normal, spinal fluid constituents.

The pathologic lesions of hematomyelia may be distinguished by their circumscription, the absence of inflammatory products, the picture of blood extravasation transversely, with subsequent ascending and descending degeneration of the tracts, in some cases tubular hemorrhages in the gray matter, and, when not traumatic, intact meninges.

In comparing hemorrhagic myelitis to hemorrhagic encephalitis, or encephalomyelitis, as a pathologic process, certain resemblances appear. For instance, both have the ear marks of an infectious etiology, the hemorrhage being evidently secondary to an inflammatory process in which the meningeal vessels are involved. Strümpell's first case of acute hemorrhagic encephalitis, it will be recalled, followed a bronchopneumonia. An enlarged spleen and other signs of infection were noted. Cultures from the brain, however, were negative. He assumed a primary local infective agent with secondary hemorrhages.

D'Allocco, too, reported a case of acute polioencephalitis in a child, with sudden onset of inflammation symptoms. At necropsy there were vascular occlusions of the cortical vessels following an endophlebitis or endarteritis.

Langbein and Oeller discuss at length the pathology of a case of acute hemorrhagic encephalitis occurring in a woman of 35 years whose acute symptoms lasted only two days. Death occurred one-half hour after lumbar puncture. The spinal fluid was under some pressure and was blood stained. It showed a positive globulin and microscopically a great excess of polymorphonuclear leukocytes but very few lymphocytes. All cultures remained sterile. On section the brain showed areas of thrombosis and hemorrhagic transudation. These authors regarded it as difficult to determine whether the thrombosis was primary or secondary. Because of the infiltration extending to all the vessel coats and even to the connective tissue, and the presence of meningeal affection, an inflammatory origin would seem likely; the absence of encephalitic changes, however, led the authors to theorize that the extensive arterial oozing may have been due to the thrombotic plugging of the veins. An interesting feature of this case is that the patient had a patent foramen ovale, though no mention was made of clinical phenomena therefrom. The spinal fluid characteristics, with excess of blood and polymorphonuclear cells, are in striking accord with my Case 1.

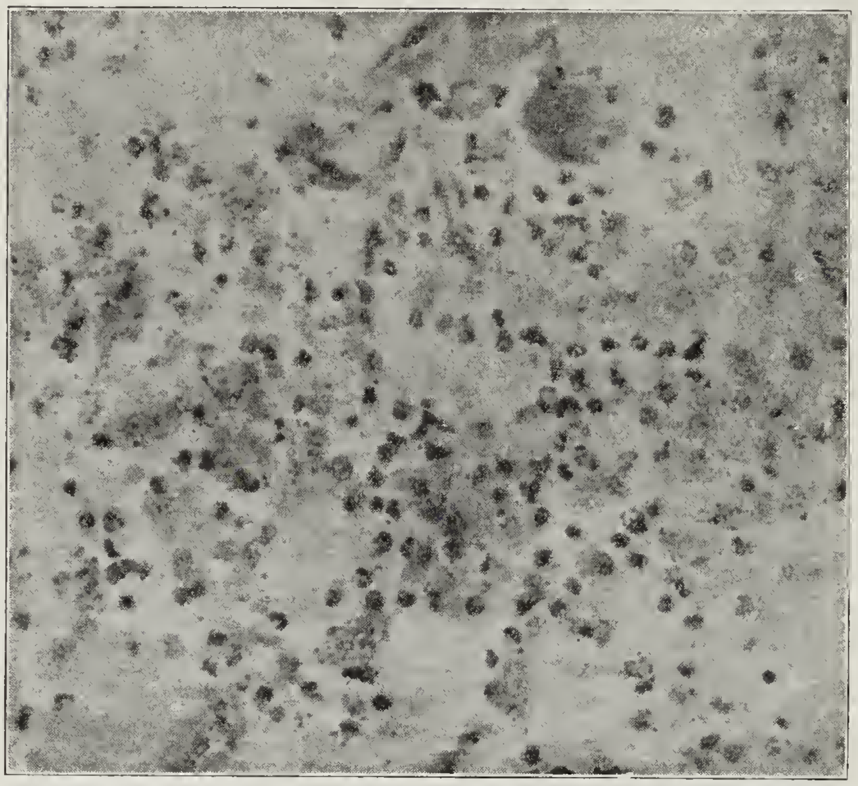
Fig. 4.—Case 1, E. W. Exudate, showing the large proportion of polymorphonuclear leukocytes, beginning necrosis and the presence of blood pigment.

ETIOLOGY

In the absence of positive proof of the presence of organisms in Case 1, all cultures being negative, and no bacteria found in tissues, we must resort to theoretical grounds for probable etiology.

Barlow, Schiff and several others have reported cases of myelitis consequent to measles, typhoid and other infectious diseases, and I now have under observation a case of localized myelitis following pneumonia. The primary symptoms in Case 1, however, were confined to the spinal cord.

Though this girl was generally fatigued, no evidence as to the point of entrance of an infective agent is at hand. That an infectious agent was at work, however, is suggested by the temperature, white count and prostration, which were in contrast with Case 2.

The pathologic findings, moreover, bear convincing evidence of an infectious as against a purely toxic reaction, as characterized in Case 2.

In spite of these appearances, it is safe to say that the ordinary infectious organisms are absent, as are, apparently, the ovoid bodies and toxic products of anterior poliomyelitis. At any rate, no characteristic reaction was produced in monkeys by injection of the glycerinated cord from Case 1.

The primary locus of the inflammation in myelitis has led to spirited discussion; whether in the circulatory apparatus as advocated by Mayer and Schmaus,

TABLE 1.—DIFFERENTIAL DIAGNOSIS

	Ascend. Hem. Myelitis	Landry's Paralysis	Poliomyelitis
Onset	Sudden constitutional symptoms. High fever. Severe pains in legs.	Mild prodromata. Paresthesias. Little or no fever. Pain absent.	Sudden constitutional symptoms. Fever early. Headaches, backaches.
Course	Short duration after hem. occurs. Continuous fever. Complete sensory and motor paralysis, ascending type. Peripheral nerves not involved. Cranial nerves not involved. Sphincters paralyzed. Respiratory failure.	Duration may be prolonged. Fever absent. Motor paralysis complete, only slight sensory. Asc. type. Peripheral nerves occasionally involved. Cranial nerves occasionally involved. Sphincters intact. Respiratory failure.	As paralysis appears, fever begins to subside. Motor paralysis of certain limbs. Mild sensory, or absent. Peripheral nerves seldom involved. Cranial nerves seldom involved. Sphincters occasionally involved. Resp. or heart fails.
Elec. React.	Course too short for abnormalities.	Normal faradic. Normal galvanic.	R. D. develops in paralyzed limbs.
Atrophy	None	None	In paralyzed limbs.
Recovery	Not in typical cases	Occasionally complete, even after nearly complete paralysis.	In most cases. Atrophy of paralyzed limbs with contractures.
White Count	High	Normal or slight	High early, slight later.
Spinal Fluid—			
Pressure	Plus	Normal	Plus.
Aspect	Bloody	Normal	Normal.
White Cells	100 +	Under 20	20—100.
Red Cells	Profuse	None	Occasional.
Lymphocytes	Moderate	Occasional	Profuse.
Endothelial Cells	Occasional	Rare	Occasional.
Polymorphonuclears	Profuse	Rare	Rare.
Plasma	Occasional	Rare	Occasional.
Disintegrated	Plus	None	Rare.
Globulin	2 plus	Plus or minus	Plus.

the ganglion cells (Charcot), or the glia tissue (Goldscheider, Marinesco). While the evidence in our case points to the primary involvement of the blood vessels, especially as the nerve elements are practically intact except where overwhelmed by the hemorrhage, it must be admitted that in those areas the destruction of all three tissues is fairly complete. Leyden observes that primary hemorrhages of the spinal cord are exceedingly rare, except those due to concussion, and concludes that, anatomically, a sharp separation between primary hemorrhage with subsequent myelitis from primary hemorrhagic myelitis is only possible in the rarest cases.

Circulatory factors affecting the occurrence or extent of hemorrhage must have some consideration. For instance, the permeability of the vessel coats must be dependent on the individual resistance of those coats to the disintegrating power of the toxic products. A factor that needs consideration is the liquefaction or noncoagulability of the toxic blood. Still another is forced on us by Case 1, namely, the open foramen ovale. We can little more than speculate as to the impaired resistance of the imperfectly oxygenated blood and the abnormal duties which fall on the capillaries thereby, but it cannot be disregarded as a factor, after its occurrence in this striking case and the case of Langbein and Oeller above referred to.

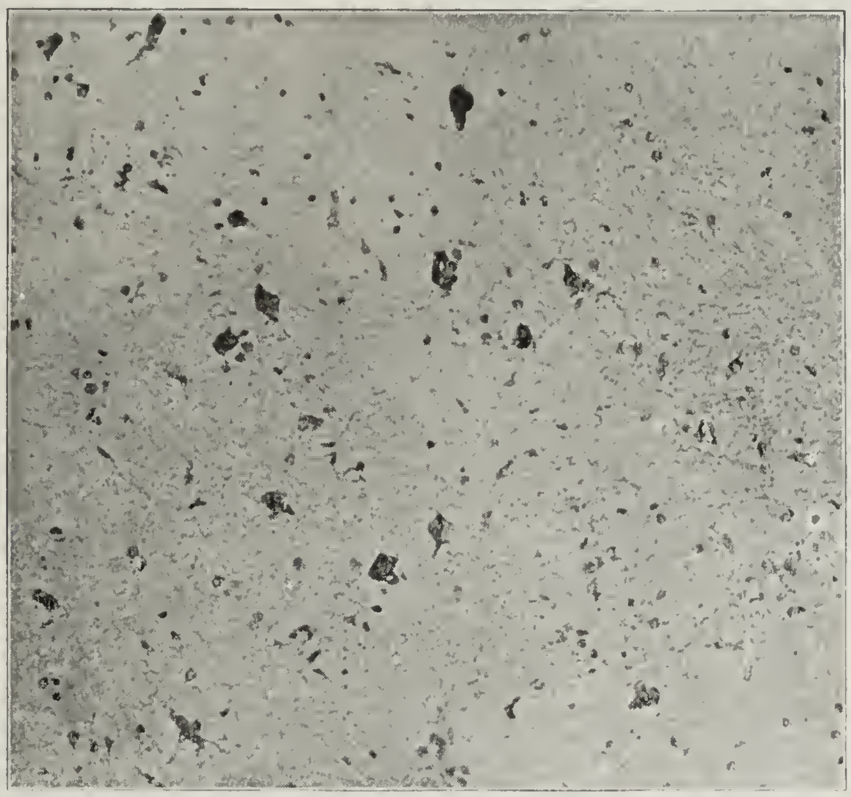

Fig. 5.—Case 2, E. C. Nucleus of VII, showing degeneration of the nerve cells and the presence of satellites.

Transmissibility.—It may seem unnecessary to discuss the transmissibility of hemorrhagic myelitis when the agent is unknown, but it may be helpful to draw a contrast on an etiologic basis between the three cases reported above. Assuming that Case 3 was a fulminating case of poliomyelitis, the success of Flexner, Noguchi and others in direct transmission of the disease to monkeys, would warrant the expectation of a similar result from this boy, had his spinal cord been obtainable. On the other hand, the glycerinated cord from Case 1 produced no lesion in monkeys, and, so far as this evidence goes, the condition is not similarly transmissible.

The foregoing data likewise are of some importance in making a differential diagnosis between the three types of ascending paralysis, since Case 1 has failed experimentally to produce symptoms of poliomyelitis in monkeys, while Case 2 is typical of ascending toxic paralysis (Landry) from no case of which, so far as I can ascertain, have the globoid bodies been developed or poliomyelitis caused in monkeys.

In this connection I might state that, in a recent personal communication, Dr. Flexner states that he is unaware that any positive infections of monkeys have occurred from cases of typical Landry's paralysis.

It may be remembered that Dr. Gordinier reported before the American Neurological Association last year a case of Landry's type; the spinal cord was then in the hands of Dr. Noguchi for inoculation. Evidently the inoculation in this case was unsuccessful, for a recent communication from Dr. Noguchi fails to throw any light on the transmissibility of this disease.

The procedure which to me appears to give the greatest aid in practical differentiation of the three types is the spinal fluid examination, especially the cell count by the Alzheimer method.

Of course, the mere appearance of a fluid which is sanguinolent, that is, uniformly mixed with blood and not coagulated, indicates the hemorrhagic type, but the presence of an enormous preponderance of polymorphonuclear leukocytes over lymphocytes is an effective differentiation from either the Landry's or the poliomyelitic type. The differential count is even more necessary as between Landry's and poliomyelitis,

TABLE 2.—PATHOLOGIC DIFFERENTIATION

	Ascend. Hem. Myelitis	Landry's Paralysis	Poliomyelitis
Spinal Cord—			
Cells	Not degenerated	Degenerated	Degenerated.
Reds	Profuse	None	Few.
Lymphocytes	Increased	Few	Many.
Leukocytes	Many	Absent	Few.
Ameboid glia	Present	Absent	Present.
Endothelial cells	Present	Absent	Present.
Vessels	Engorged and ruptured	Changes slight	Engorged at anterior horns.
White matter	Edematous, infiltrated with hemorrhage. Leukocytes, lymphocytes, etc.	No edema. No hemorrhage. Occasional lymphocytes	No edema. No hemorrhage. No lymphocytes.
Gray matter	Same as white, cells intact or disintegrated	Slight, injected with lymphocytes. Cells degenerated	Marked infiltration with lymphocytes. Cells degenerated.
Blood pigment	Marked	None	Slight.
Lipoid	Cortex	Cord and cortex	Rare.
Periph. Nerves	Normal	Normal, or occasional involvement	Secondary degen. (motor).
Pia—		Slight engorgement	Slight engorgement.
Vessels	Engorged. Edema	No edema	Slight edema.
Infilt. reds	Many	None	Few.
With lymphocytes	Few	Few	Many.
Polymorphonuclears	Many	None	Rare.

for the gross appearance may be identical and the globulin test is apt to be present in both, but any marked pleocytosis, especially of lymphocytes, with traces of blood or endothelial cells is a strong indication against Landry's type and in favor of acute poliomyelitis.

The comment of Dr. Flexner, who, with his staff, was good enough to examine pathologic specimens from this case as well as to inoculate monkeys with the glycerinated cord, was as follows:

"I have examined the specimens and find the lesions as described by your pathologist. They are not typical of poliomyelitis. The only feature in which they resemble poliomyelitis is the infiltration about the vessels in the pia and in the gray matter; but the infiltrations there are relatively slight for the degree of hemorrhage and the cells in some places are chiefly polymorphonuclear and not lymphocytic. On the other hand, the nerve cells do not show the usual necrosis with invasion of leukocytes — or neurophages.

"The inoculations of monkeys with the glycerinated cord were unsuccessful. This does not necessarily mean that the specimen was not derived from a case of poliomyelitis, since it is not possible to transfer all specimens of glycerinated cord from cases of poliomyelitis to monkeys; but taken together with the nontypical character of the lesions I am inclined to think that the case was probably not one of epidemic poliomyelitis."

While it was not my intention to enter the arena of discussion regarding the nosology of acute inflammatory conditions occurring to the spinal cord, I find myself interpreting the suggestions which the foregoing cases seem to bring.

On general principles I believe that names should be descriptive of pathologic processes, and this precept has evolved the somewhat unfamiliar title of my paper. No other designation seems fitting to describe Case 1.

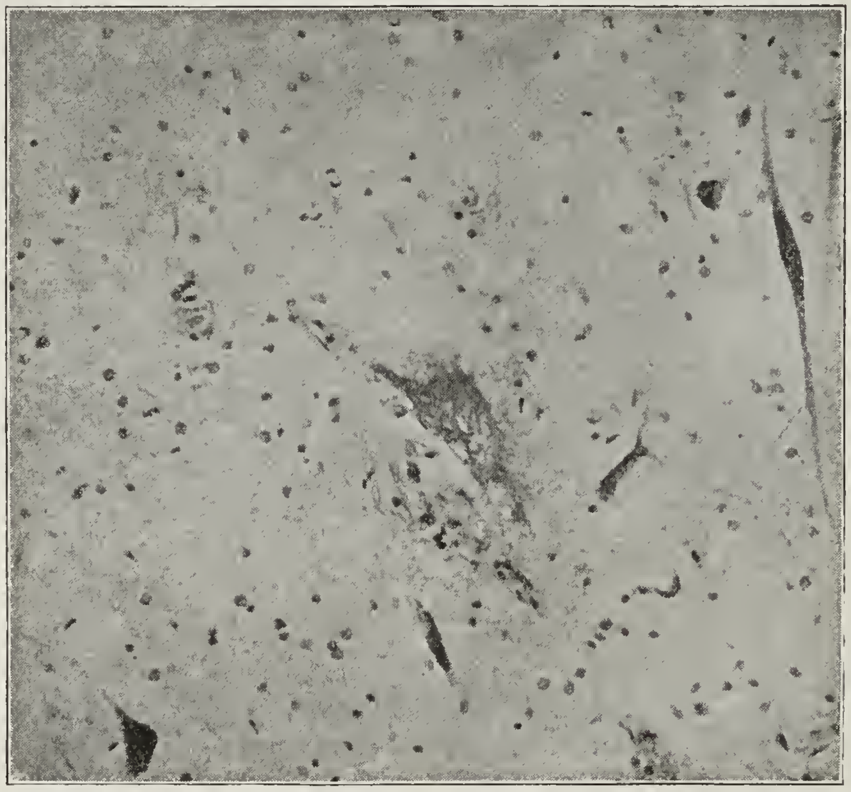

Fig. 6.—Case 2, E. C. Lumbar cord, showing cells of the anterior horn. Small numbers of lymphocytes and an area of fibrin network about a vessel. A degenerated cell on each side of the vessel.

When we come to Case 2, its striking resemblance to the original case reported by Landry in 1859 makes us confident that it belongs to this group, so peculiarly free from macroscopic lesions.

The view held by some authors that no case showing the slightest microscopic change from the normal can properly be called Landry's seems to me untenable. In the first place, it ignores the fact that modern laboratory methods and equipment bring to light lesions which would have been undiscovered not so many years ago. Further, it is reasonable to suppose that any etiologic factor virulent enough to cause death must be productive of pathologic changes, whether or not they escape the microscope. These changes naturally become more marked, too, according to the nonresistance of the victim's tissues.

It seems that we should rely more on the type of tissue changes which accompany the clinical data and determine whether they appear to be toxic or grossly inflammatory.

In going over the literature I am not unmindful of the confusion which seems to exist in the minds of many as to the meaning of Landry's paralysis, and, in a measure, I sympathize with the accumulated opinion of Wickman, Taylor, Schmaus and others that the advisability of retaining the title is questionable. Unless, however, these or other authors supply the proof that Landry's paralysis and anterior poliomyelitis are identical it seems our duty to remember the type even though we forget the title.

The suggestion of Taylor to include practically all inflammatory conditions of cord and brain in the term "poliencephalomyelitis" appeals through its convenience, even as the all-inclusive term "psychoneurosis" in functional disorders, but if we all gather under one roof let us erect partitions in their proper places lest we sleep in the kitchen.

By continued animal experimentation and toxicologic research these myelitic diseases must yield up their true etiology and take their corners. Our pride in the work of Flexner, Noguchi and others should make us bent on furnishing them glycerinated material especially from Landry's type of paralysis, at the earliest opportunity, that our knowledge may increase. Until the time, however, that our laboratories can pin a label on the factors responsible for the three types above reported, I trust it has not been amiss to call attention to their apparent differentiation.

SUMMARY

An acute ascending hemorrhagic myelitis, as exemplified by Case 1, seems to occupy a unique place allied to, but not identical with, either myelitis or hematomyelia. Its clinical resemblance to acute ascending paralysis, either of the poliomyelitic or Landry's type, is striking, though closer analysis of symptoms and pathologic findings points to the existence, by the clinical data before us, of three distinct types of acute ascending paralysis.

Further confirmation of these types must wait on definite laboratory differentiation, which seems every day to be nearer completion.

25 High Street.

ABSTRACT OF DISCUSSION

Dr. Charles R. Ball, St. Paul: In my own work I have been somewhat uncertain as to the etiology of the cases grouped under the heading Landry's paralysis. Whether there is an ascending paralysis of an entirely different origin than the one caused by an acute poliomyelitis seems not as yet to have been proved. In spinal fluid examinations it is very important to differentiate between hemorrhages due to perforations of the blood vessels made at the time of the puncture and hemorrhage from some other cause. Centrifuging the fluid is perhaps the best means of making this differentiation. In recent hemorrhage, after centrifuging, the spinal fluid becomes perfectly clear; in old hemorrhages, however, it always shows a yellow tinge due to the presence of the hematin in it. It seems to me that being absolutely certain as to whether the hemorrhage was caused by an accident in puncture, or by the disease itself was one of the most important points to be established in determining the diagnosis in Dr. Burley's cases.

Dr. Benjamin T. Burley, Worcester, Mass.: I quite agree with Dr. Ball that it is very important to get spinal fluid without traumatic blood. It is usually fairly readily told whether the blood is traumatic or not, because usually the traumatic puncture shows blood at first and becomes clearer later. There is a typical appearance to blood which is thoroughly mixed with a spinal fluid and with increase of cells, for which some one seems to have coined the word sanguinolent. Unless one gets a satisfactory puncture the first time, it is advisable to repeat the puncture later.

KNEE JOINT DISABILITY CAUSED BY HYPERTROPHY OF THE ALAR LIGAMENTS *

ROLAND O. MEISENBACH, M.D.
BUFFALO

Notwithstanding the well-defined surface anatomy of the knee joint, especially in its anterior portion, it is not always a simple matter to differentiate the actual condition within the joint in some of the disabled knees which come to us for relief. This statement is confirmed by many writers, and it appears several times in the literature. This is true especially in those cases which do not give classical symptoms of one or the other of the many conditions which are constantly being encountered in joint surgery.

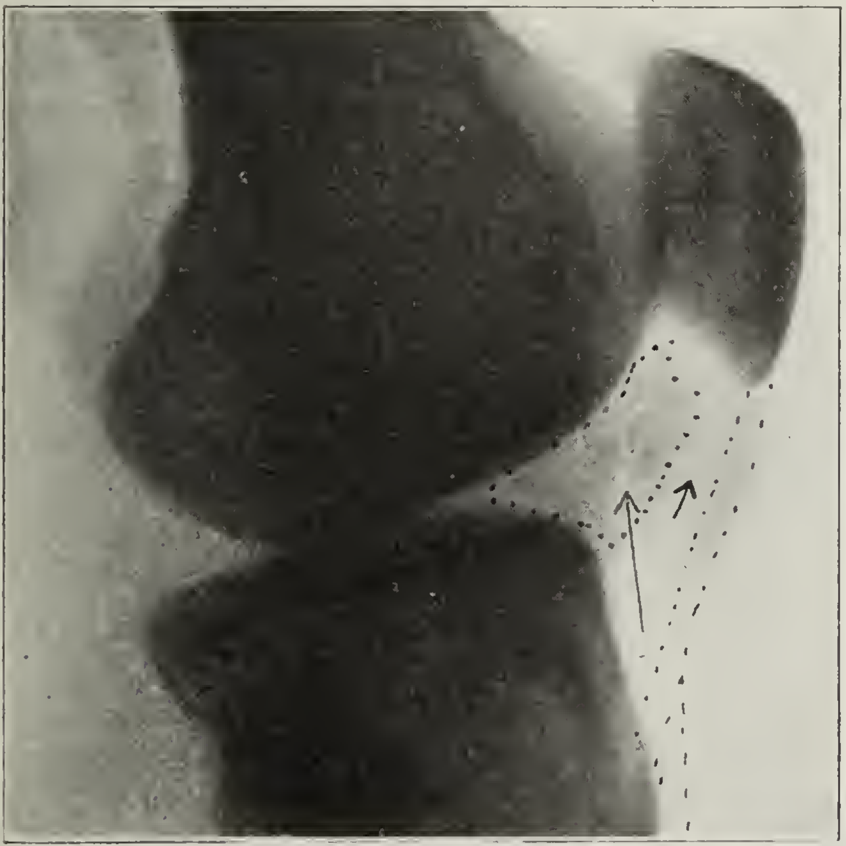
Fig. 1.—Patellar tendon, infrapatellar fat space and hypertrophied alar ligaments.

Not alone in the acute knee, but also in the chronic, do we frequently notice that definite subjective symptoms are absent. This, I believe, is one of the reasons for the frequency with which an acute disability of the knee joint is tolerated by the patient and terminates in a chronic disabled knee. Either the patient expects spontaneous relief, or the condition is deemed not direct enough for active interference.

The knee joint is constantly exposed to injury; this injury may be from external or from internal sources. The external sources comprise weak feet, irregular shoes, faulty alignment of limb following fracture of the leg or thigh, or both, besides the leverage twists, wrenches and actual direct violence.

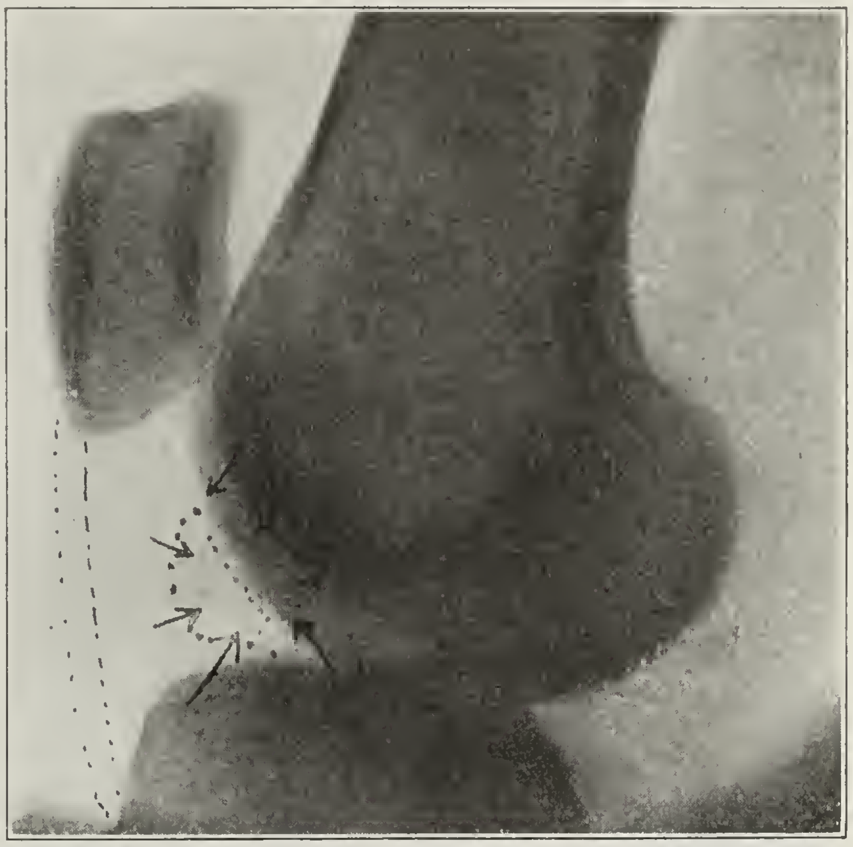
Fig. 2.—Dark mass, irregularly defined and mottled. Hypertrophied alar ligament. Note sessamoid bone in posterior part of joint.

The internal injuries may be induced by the knee joint's mechanism or a concomitant pathologic condition, or both.

THE KNEE JOINT

Considering the fact that the knee joint is one of the most important, largest and quickest joints to become injured, one would expect that its internal arrangement, as far as the anatomy and mechanism are concerned, would be well understood by all who have to do with this joint. Its mechanism is not stable, and its anatomy differs in many instances.

Perhaps the extreme range of motion which the knee joint exerts is the cause of the variation; at any rate, I believe that many of its soft parts, especially in the anterior portion and those which have to do with the lubrication, are constantly subjected to change.

The function of the synovial membrane and its different parts, namely, (*a*) ligamentum mucosum and (*b*) alar ligaments, is to lubricate the cartilaginous articular surfaces of the gliding parts.

The anatomy of the knee joint is described by Tenney in a most thorough manner. I wish here only to emphasize some facts and to describe that which pertains to this paper, namely, the alar ligaments.

ALAR LIGAMENTS OF THE KNEE JOINT

Normally, the alar ligaments are wing-shaped folds of synovial membrane extending from the mucosa, and are in my opinion part of the lubricating tissue.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

They are the moving parts and find their place along the condyles of the femur in the anterior portion of the knee joint.

Considering the mechanism of the knee and the function of the vascular alar ligaments, together with their close proximity to the moving parts, it is not difficult to imagine that they might become hypertrophied, consequently interfering with motion in the knee joint, and thereby giving rise to symptoms. The condition has occurred in young and old in acute and chronic knees to a lesser or greater extent.

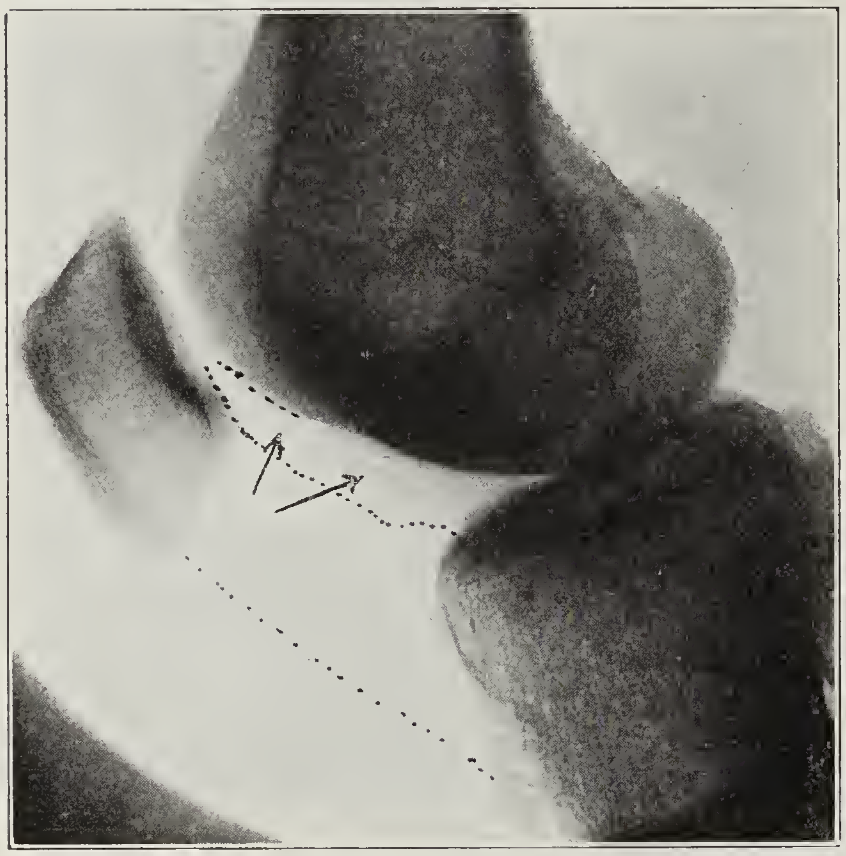

Fig. 3.—Note clear anterior portion of joint and the soft dark shadow which extends somewhat under the patella.

In those cases in which the diagnosis of hypertrophy of the alar ligaments had been made, there was either a history of a previous injury (as in Case 1) or a very active knee (traumatic functional) in an individual who had previously had an infection (Case 3).

Many other conditions (enumerated in the differential diagnosis below) were considered before making an absolute diagnosis. The roentgenogram was also used, and assisted materially. I mean that the hypertrophied alar ligaments and the mucosa can sometimes be seen and differentiated from other soft structures in the anterior part of the knee joint. The most important for diagnostic purposes is the infrapatellar fat pad in a well-prepared negative. The operative findings, together with the permanent relief given the patient, seem to confirm the diagnosis in some of the cases presented below.

Considerable has been written on derangements of the knee joint, which may cover many conditions causing disability. Hypertrophy of the alar ligaments may well nigh be included in it; however, I am not willing to accept derangements of the knee joint as a diagnosis for treatment, because in many instances by it relief cannot be given.

DIAGNOSIS

The histories of the cases which have been diagnosed as disability caused by the hypertrophy of the alar ligaments have been those of trauma or those of disease and trauma, as has been stated above. Therefore, it has been necessary to study cases carefully and attempt to separate those occurring from trauma only, that is, external trauma, and those which have had some infection in which the anterior portion of the knee joint was previously made pathologic, owing to a congestion or an actual infiltration. Also, the histories of many of the patients that come to us with knee joint trouble are indefinite. They are irregular, indeed, and on examination the knee is not necessarily swollen, but at times one can palpate, as in extreme cases of villous arthritis, the villi; the thickened ligamentum mucosum, if not the alar ligament, on either side of the patella. These cases do not always show the capsule distended or the patella floating; the pain is chiefly noted on extreme flexion and extension of the knee joint, and in the anterior portion, the patient usually pointing to the patella, so that in some cases at first one is almost in doubt whether we are not dealing with a bursitis. In some of the cases, and especially those which show that infectious arthritis has been a predisposing cause, there may be a marked distention on both sides of the patella, and the patella may float.

The roentgenographic finding is of great importance. If the technic of making the roentgenogram is carried out with a view to exposing the soft parts, many of the soft structures of the knee joint can be seen on the negative, if not on the printed reproduction. The negatives illustrating this are of the softest variety. Some of the soft structures which are at times discernible are the patella tendon, the anterior fat pads, the ligamentum mucosum and the alar ligaments in suitable cases.

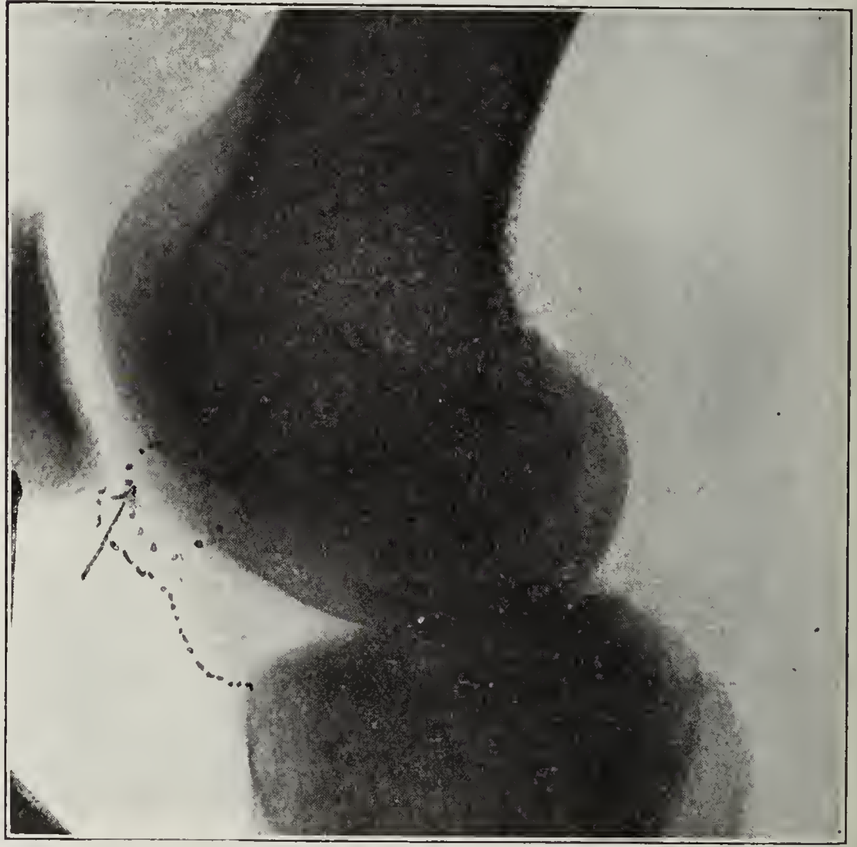

Fig. 4.—Note circumscribed dark area which proved to be thick alar ligament.

In one of the last cases with operation, in which a diagnosis of hypertrophy of the alar ligament was made, the internal alar ligament was elongated, very thick, deeply congested and actually adherent to the femur, so that every time the knee flexed, the synovial membrane was drawn inward. The joint had very little fluid within it.

Atrophy of the thigh and calf is frequently present, probably atrophy of disuse. Actual locking of the joint does not occur, but a sudden weakness of the knee may be complained of by the patient.

DIFFERENTIAL DIAGNOSIS

The conditions which are most apt to require differentiation from the hypertrophic alar ligaments are: villous arthritis, lipomas, loose semilunar cartilages, atrophic arthritis, knee joint strain, osteo-arthritis, infectious arthritis, loose bodies in the knee joint, and bursitis. As has been said before, any one of these conditions may also be associated with hypertrophy of the alar ligaments, and therefore they must necessarily be considered in dealing with the subject; but the cases herewith reported are chiefly those in which none of these conditions were marked, and in which apparently the hypertrophied alar ligaments were causing the actual disability, and after they had been removed the disability of the knee joint passed away, giving the patient a useful joint without symptoms.

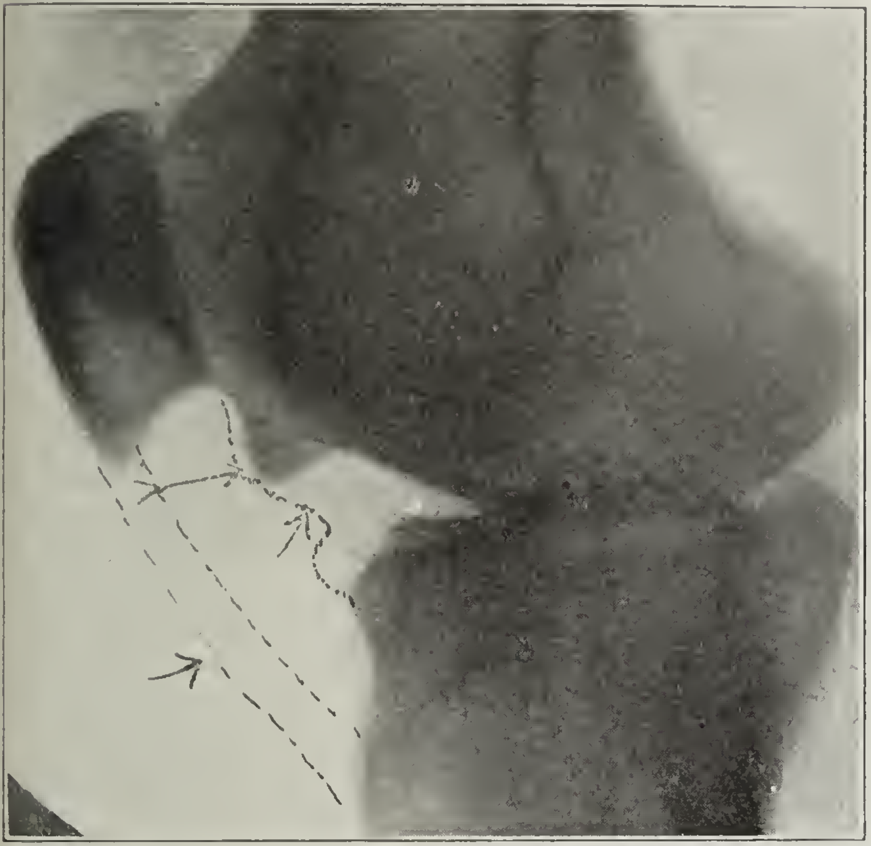

Fig. 5.—Note dark pronounced shadow. Operation proved it to be hypertrophied alar ligament.

1. Villous Arthritis.—In this we are more apt to have a history of infection. The knee joint swells more readily and the capsule is frequently distended and well defined, with the quadriceps pouches full. In palpating, one can frequently feel the fringes, or villi in the quadriceps pouch. On opening the knee joint, excessive straw-colored fluid may be seen, and everywhere elongated villi from the synovia are evident. The subjective symptoms are also irregular, but are more pronounced. Frequently, there is actual limitation of motion on flexion.

2. Lipomas of the Knee Joint.—These are usually found in lipomatous individuals. The same condition that is found in the knee is frequently found in the ankle. The patella, as a rule, does not float.

3. Semilunar Cartilages.—In loose semilunar cartilage we have many and varied symptoms, from the locking of the knee to a snapping on the internal or external aspect of the joint when motion is attempted or when weight is borne.

4. Atrophic Arthritis.—Here we have a glossy skin, the atrophied bone, with erosion of the cartilage, which may be noted from the roentgenogram, and perhaps the joint interspace diminished. Frequently, other joints besides the knee joint are involved and limitation of motion is present.

5. Knee Joint Strain.—This may simulate hypertrophy of the alar ligaments, but in the former the slightest motion of the knee laterally will bring on a severe attack of pain. Therapeutic measures directed toward the foot may be of great assistance in differentiating.

6. Hypertrophic Arthritis.—This is the easiest to differentiate because the Roentgen ray assists materially in showing the osteophytes and the roughened articular joint surfaces. Limitation of motion is frequently found, and there is a grating or creaking of the knee joint when active or passive motion is attempted over the joint. The skin is rough and dry, and other joints are involved, which show similar pathologic conditions.

7. Infectious Arthritis.—In this we frequently have other joints involved besides the knee, as, for instance, hands and wrists or perhaps the ankles. The knees may become swollen and remain so for a longer or shorter period, and after this swelling subsides there is still a disabled knee, or one which gives intermittent symptoms of disability, chiefly on extreme flexion or extension. It is in this type of case that we should look for hypertrophy of the alar ligaments, and if the danger of stirring up an infection is remote, the removal of the alar ligaments will allow the knee to be used normally.

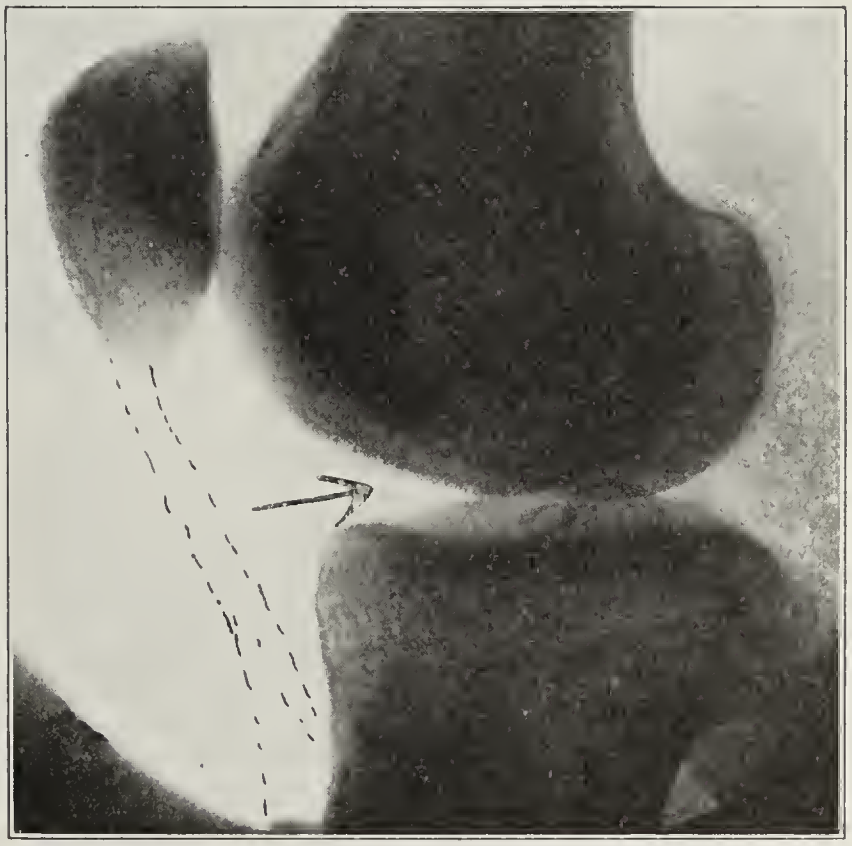

Fig. 6.—Normal knee. Note clear joint interspace.

8. Loose Bodies. — These are well shown in the stereoscopic roentgenogram, and if they have created a pocket, the surface of the tibia or the articular surface of the femur will show marks of destruction. Locking of the joint in these cases is classical of the condition.

9. Bursitis.—Palpation will often produce pain over the bursa, which is sometimes visible, although it may be at times confusing, especially when the patient gives a history of kneeling, or the bursitis is mild. The knee itself is not swollen, and on the lateral aspect of the patella in the joint line nothing abnormal is felt. However, if the bursitis is due to systemic infection, then again we may have it associated with hypertrophy of the alar ligaments.

TREATMENT

There is only one permanent treatment for knee joints with hypertrophied alar ligaments; that is, their removal. Temporary relief, or symptomatic relief, may be given in some cases without removal. Limiting the motion of the knee and strapping give relief to symptoms only, and should not be advised except in rare instances, as enumerated above. The operation of arthrotomy, advised by many, if done in conservative and skilful hands, offers very little danger, and the old idea that an operation on the knee joint means a stiff knee is, I am glad to say, past. Formerly, perhaps, this belief was well founded; but with improved operative technic in these cases the danger is at a minimum, both as to obtaining a stiff knee and as regards sepsis; it is, in fact, no greater than in some of the other surgical procedures of the day.

In the technic of arthrotomy for the purpose of removing alar ligaments, certain principles must necessarily be observed, the same as with any other arthrotomies of the knee joint. First, there should be perfect asepsis; second, the incision should be as small as possible; third, the knee joint should be in a position of semiflexion. All bleeding should be checked before the capsule is opened; the capsule should not be held with hemostats. The finger need not enter the knee joint.

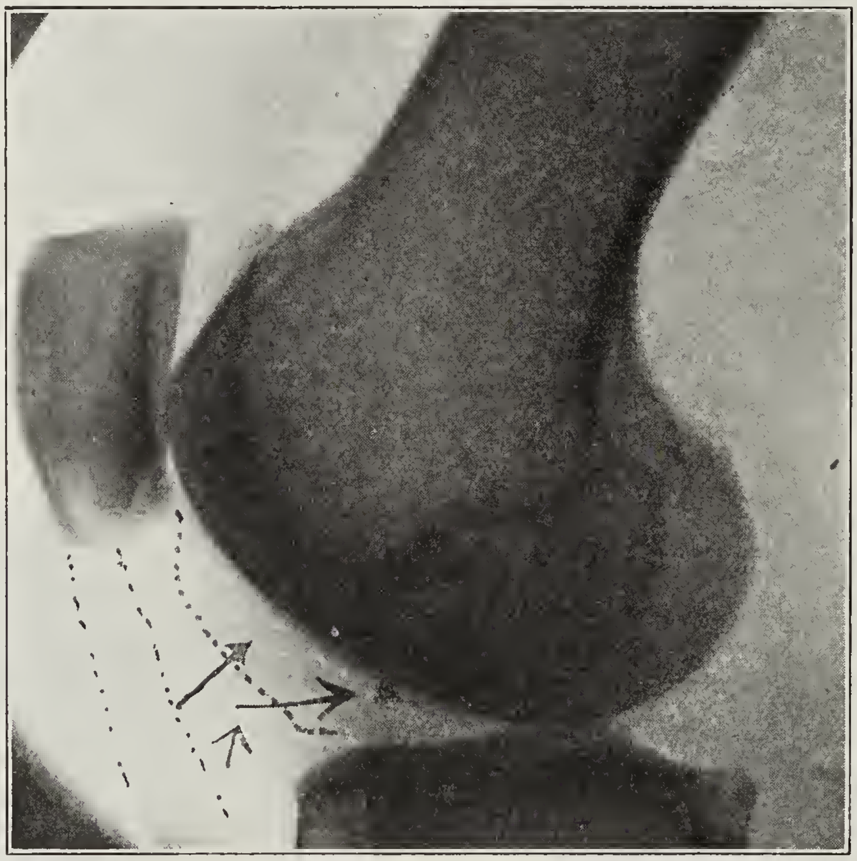

Fig. 7.—Note dark joint interspace.

In removing the alar ligaments, they should be clamped at their base with a very fine hemostat, removed above the hemostat with scissors so as to insure no hemorrhage within the joint. Rarely tying within the joint is necessary. The capsule should be closed with silk or chromic gut and the knee joint bottled tightly and not drained. Passive motion should be done early, and the patient may walk as soon as the incision is firm. A few cases cited below will serve as an illustration:

Case 1.—Mr. B., gardener, aged 22, operated on Nov. 3, 1911, gave the following history: Two months previously, while lifting sod, using his right knee joint to assist the spade, he found his knee going weak. He gave up work and found that whenever he bent his knee or attempted to get out of a chair, he had pain. After resting the knee joint it grew better; but as soon as he attempted to walk much or ride a bicycle, the knee became painful. The knee was not swollen, and no crepitation was felt, but patient complained of pain after the knee was bent in extreme extension and flexion. A roentgenogram was taken.

A diagnosis of hypertrophy of the alar ligaments was made. The knee joint was opened by an incision on the inner border of the patella. The capsule was noted to be drawn into the joint, and when the capsule was opened, the knee joint was held in position of semiflexion. After retracting, it was noticed that two or three tabs extended from the mucous membrane in the anterior portion. The fibrous band could be seen tensely stretched, apparently from the ligamentum mucosum down to the surface of the tibia, suggesting that synovial tabs had become adherent. These tabs (alar ligaments) were removed, and the joint closed tightly. There was very little bleeding during the entire operation. Motion of the knee joint was begun on the seventh day and convalescence was uneventful. Patient returned to work.

Case 2.—Mr. G., aged 19, athlete, seen Dec. 21, 1911, gave a history of suddenly having his right knee become weakened, and at times painful. He said that he had had the habit while walking of throwing his knees in strong extension. The knee occasionally became swollen, but did not lock. A roentgenogram was taken.

The anterior portion of the joint showed a slightly dense shadow in the region of the ligamentum mucosum. Examination of the knee showed that the surface anatomy was apparently normal; no crepitation was felt on motion, and no swelling. The right foot was considerably pronated; otherwise the patient was in excellent health. Blood count negative.

A diagnosis of hypertrophied alar ligaments was made. Operation, Jan. 5, 1912. Incision on inner aspect of patella. Knee joint opened according to special technic; synovial membrane relaxed; no fluid in joint; alar ligaments removed; no other tabs protruding from synovial membrane. Patient had an uneventful recovery. Symptoms disappeared. Patient seen three years after the operation; no recurrence.

Case 3.—Mr. J., chauffeur, aged 21, had niesserian infection one year ago. Previously had been treated for flatfoot. To all appearances perfectly well, but while driving his car noticed that his right knee was painful and slightly swollen. This swelling has persisted for several months. Slight thickening felt on the internal and external aspect of the patella. Roentgenoscopy revealed thickening in anterior portion of the joint, extending well into the joint.

A diagnosis of hypertrophy of alar ligaments was made. July 18, operation, arthrotomy of right knee joint. Incision of internal aspect of patella. On opening the capsule considerable fluid emitted from the joint. Synovial membrane injected and quite vascular. Ligamentum mucosum and alar ligaments thick and boggy. Alar ligaments removed, considerable hemorrhage, one squirter from each tied. Knee joint closed tightly, no drainage. Convalescence uneventful. Patient able to continue occupation as chauffeur up to the present writing.

Case 4.—Miss P., aged 33, occupation institutional work Has always been well, with the exception of her knees, which have been painful intermittently. Patient has been accustomed to kneel frequently, many times coming down firmly. Last several months has noticed when she attempts to get up there is sharp pain, which disappears after a while, but recurs. Examination of knee joint shows slight roughening of the skin over the patellar bursa of both knees. Knee joint not swollen and no crepitation. Extreme flexion elicits some pain. Roentgenogram taken and a rather diffused shadow of homogeneous consistency seen a short distance below patella.

Diagnosis after eliminating other conditions, hypertrophy of the alar ligaments. Operation, arthrotomy, May 14, 1915. After capsule incised, ligamentum mucosum and alar ligaments were seen to be congested and one internal alar ligament adherent to the femur. The alar ligaments were removed; knee joint closed. Recovery uneventful.

CONCLUSIONS

In presenting this paper, it was my object especially to call attention to the variety of conditions which may be found in disabled knees, all of which may present more or less some of the same symptoms, but if carefully studied, will be found to be distinct entities; but more than that, to attempt to call attention to the type of knee joint which is so frequently seen, in which the symptoms are so irregular that only by a thorough search, and in some cases by means of eliminating the other conditions, the patient will obtain relief.

140 Allen Street.

ABSTRACT OF DISCUSSION

Dr. Fred. J. Fassett, Seattle: Dr. Meisenbach asked me to participate in this discussion, and I promised to look up my anatomy on alar ligaments and where they are to be found. In doing so I was quite impressed with the exact spot, because they lie just where I have found symptoms of a very definite nature that I have heretofore been unable to call by any name. I have been content with the general sweeping diagnosis of an internal derangement of the knee joint. The definite symptoms I speak of are these: Not the grating that accompanies damage to the bones, but a creepy feeling and soft crack which occur when you move the patella, as if it were rubbing over some pulpy substance. I should like to ask Dr. Meisenbach, in closing the discussion, to say a word about his method of approach to this region.

Dr. J. T. Rugh, Philadelphia: It has been my privilege to operate in about a dozen of these cases. To me the symptomatology is rather clearly defined, and it constitutes in my experience a distinct condition which in the vast majority of cases requires surgical interference for its correction. These cases, as I find them, usually present an intermittent hydrops; that is, there will be an injury to the joint from overuse of the part or from a blow or a fall, and this will be followed by an effusion into the joint, which subsides after a few days. After the subsidence of this joint swelling, examination of each side of the ligamentum patella will give a sensation as of a substance rolling away from the thumb. One can feel the mass slipping under the thumb. My plan has always been to make a lateral incision, either internal or external or both, according to the conditions present, and through that incision remove this ligament. It is very easily done with a pair of scissors. The result has been functionally perfect.

Dr. Roland Meisenbach, Buffalo: In answer to Dr. Fassett's question, I might say that the lateral incision has the advantage that in most knee joints by this route the alar ligaments are immediately exposed and are easily reached without exposing very much of the knee joint itself. It also has the advantage that in many of the knee joints there is very little hemorrhage by this incision. It is essential to take further precaution to prevent hemorrhage within the joint, also to prevent hemorrhage before opening the capsule. I would like to emphasize the fact that the capsule should not be clamped with hemostats, but should be held apart with silk retractors. I have always felt that the alar ligaments have been very much neglected, and I was glad to hear Dr. Rugh confirm this belief. I think that in many of our knee joints we obtain a history of intermittent symptoms, but these intermittent symptoms do not necessarily extend over regular times, as in intermittent hydrops. In my earlier cases I believed that the hypertrophy of the alar ligaments explained intermittent hydrops, but later experience has taught me differently. I wish also to emphasize the fact that patients suffering with hypertrophy of the alar ligaments assume a peculiar gait with a view of protecting their joint on all occasions. I believe this is partly psychologic, and partly due to the fact that the pain comes on suddenly and they expect it, but are unable to know exactly what motion of the knee joint brings it on. In some of the cases one should be conservative enough also to have the different laboratory tests made, and one should be on the lookout for other conditions, in which the hypertrophy of the alar ligaments may be a residual hypertrophy due to a general diathesis.

ROENTGENOGRAPHIC BONE CHANGES IN A CASE OF POLIOMYELITIS

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CHRISTINE LUKAS, M.D.

AND

R. O. BROWN, M.D.

CHICAGO

That the bones undergo atrophic changes in the course of poliomyelitis is a well-known fact, and the following case illustrates the extent such a bone atrophy may attain:

History.—Man, aged 39, entered the Cook County Hospital with a complete paralysis of the lower limbs. The patient states that he has been unable to use his legs since the age of 2 years, when he sustained a fall, following which he was confined to bed for about two years. Until the age of 10 he lived at home, then for five years at an orphan asylum, and then was an inmate at the Dunning asylum up to the age of 34, whence he was transferred to the Oak Forest infirmary. Here, he states, the inmates began to accuse him of various things. He could hear them "talking" about him, "sneering" at him, and thinks it quite possible that "they have formed a conspiracy against" him. Any other diseases, including venereal diseases, he denies.

His mother died at Dunning insane asylum when the patient was about 5 years old. The cause was some form of insanity. The father died from an unknown cause when the patient was 12 years old.

Examination.—The patient is a rather poorly nourished middle-aged man, somewhat apathetic, but oriented as to time, place and persons. He answers questions intelligently, but is emotional when, with tears in his eyes, he complains of "charges" preferred against him and of the hospital not being "a safe place" for him. He cannot walk, and keeps the lower limbs flexed in the hip and knee joints, while the feet are drooping (Fig. 1). The legs cannot be extended beyond 135 degrees. There is some movement in the toes, which are irregular in their shape and growth. The second toe of the right foot is of the same length as the great toe, and the fourth is of the same size as the fifth. The left fourth toe is much smaller than the fifth. The size of the lower limbs is greatly diminished, entirely out of proportion to that of the upper half of the body, resembling the extremities of a boy. Thus, the length of the lower limbs is 21 inches, measured from the popliteal fold to the postero-inferior border of the os calcaneum, as against 31 inches, which is about the average normal length for his age. The length of the feet, measured from the postero-inferior border of the os calcaneum to the extremity of the third toe, is 7 inches for the right, and 6¾ inches for the left (normal about 9½ inches). The circumference of the lower limbs, at the level of 10 cm. above the external malleolus, is 5¼ inches on either side (instead of 8 inches); 12 cm. below the knee joint it is 6¼ inches on either side (the normal average is about 11¼ inches). At the level of 15 cm. above the knee it is 9¾ inches, against 15 inches, which is the average normal. All the muscles of the lower limbs appear greatly reduced in volume, especially the extensors of the legs and feet, where fibrillary twitchings are marked. The movements, as abduction, adduction of the legs, flexion and extension, are possible, but greatly limited, and the muscle power in the atrophied limbs is almost entirely absent.

The electric examination reveals a complete reaction of degeneration in the muscles and nerves of the legs.

The tendon reflexes, as knee jerk and achilles, are absent on both sides, the plantar, cremasteric and abdominal present. The pupillary reflex and eye grounds are normal. Sensory disturbances, as well as those of the bladder and rectum, are absent.

Of other anomalies we should point out the small size of the head (microcephalous), and a marked lumbar lordosis and, at the level of about the second sacral vertebra, a dimple in the skin with a lipomatous nodule below it.

Thus, the examination shows a great decrease in size, or atrophy, of the lower limbs, which are diminished both in length and in width. The cause of this atrophy is undoubtedly an old poliomyelitis, in the form of a flaccid paraplegia, combined with a paralytic lordosis, secondary contractures in the knee joints and some signs of degeneration, as evidenced by the disfiguration of the toes, and small-sized head. The mental condition of the patient speaks for dementia praecox.

The paralysis and the atrophies are perfectly symmetrical in character, the shortened lower limbs resembling, when compared with the rest of the body, those of a 10 or 12 year old boy. The undersized condition of the lower limbs is to be ascribed to the atrophy of the muscles and bones. The muscular atrophy can be determined by means of the electric current, or palpation, and direct measurements, while that of the bones can be determined by means of roentgenoscopy. This shows (Fig. 2) that the femur and both bones of the leg are greatly reduced in size. The bones are thin, appear smooth, polished as it were, and deprived of their usual characteristics. The bone seems to be somewhat transparent, the thickness of the solid bone substance being greatly reduced. These changes are confined to the diaphysis only, and do not involve the epiphysis. All these changes, so well to be seen on the roentgenogram, were pointed out long ago by Joffroy and Achard[1] before the discovery of the Roentgen rays. They explained the changes by the lack of muscular activity, which is mainly responsible for the shape and irregularities of the bones. These, of course, must disappear or undergo some transformations in old cases of poliomyelitis, like ours, in which muscular contractions are absent.

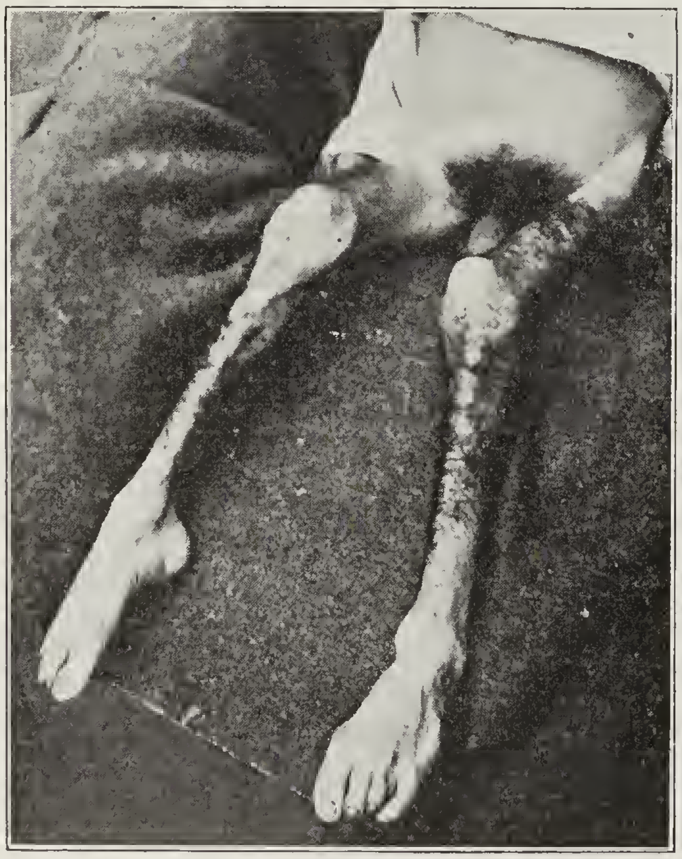

Fig. 1.—Lower limbs of patient.

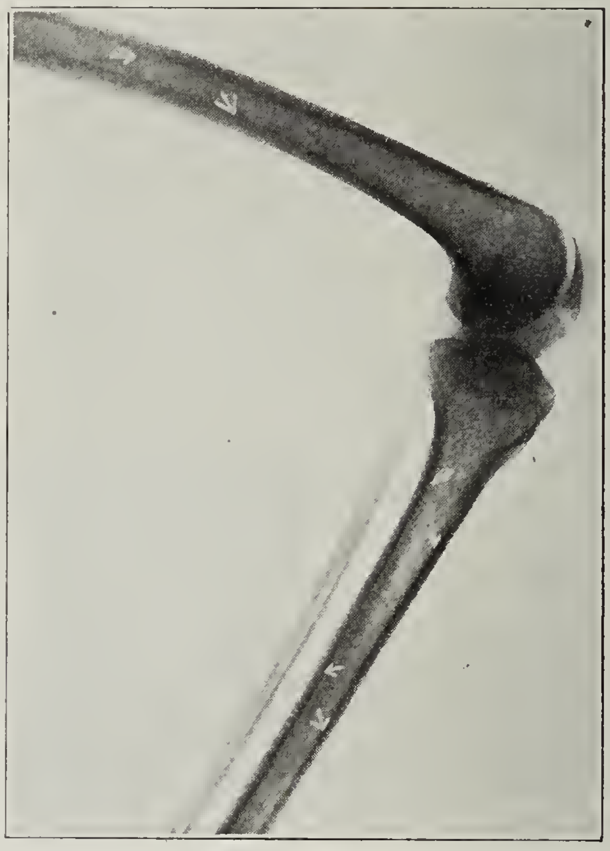

Fig. 2.—Roentgenogram showing reduced size of bones.

These findings were afterward fully confirmed by Archard and Levy[2] through roentgenoscopy, and also by Oppenheim[3] and Bruns.[4]

31 North State Street—Cook County Hospital.

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[1] Joffroy and Achard: Paralysie spinale aigue de l'enfauce, Arch. de méd. expér. et d'anat. path., 1889, i, 57.

[2] Achard and Levy: Radiographie des os dans la paralysie infantile, Nouv. iconog. de la Salpêtrière, 1897, p. 324.

[3] Oppenheim: Lehrbuch der Nervenkrankheiten, Berlin, 1908, i, 234.

[4] Bruns, in Bruns, Cramer and Ziehen: Handbuch der Nervenkrankheiten im Kindesalter, Berlin, 1912, p. 327.

Mental Defectives.—We have come to realize that our moral judgments are inextricably mixed up with social judgments; that general intelligence, learning, experience, etc., are brought into play in the exercise of every moral judgment; that millions of brain processes are involved in every thought and act, and conduct is an expression of the whole machinery at work; that there is no ground for the presupposition of a separate sense that sits in judgment, approving or disapproving of our actions. In short, a mentality incapable of forming moral judgments is likewise incapable of forming normal judgments along other lines, and is (*ipso facto*) a defective mentality, and is demonstrable by a thorough examination of general intelligence, judgment, reasoning capacity, etc. These are mental defectives, and not moral imbeciles.—V. V. Anderson, *Boston Med. and Surg. Jour.*, Sept. 23, 1915.

Therapeutics

PNEUMONIA

As the season approaches when pneumonia begins to be more frequent, until, in February or March, it generally reaches its highest death rate, it is well to reconsider some of the fundamentals in its treatment.

In many cities and in most states pneumonia has become the chief cause of death, tuberculosis having given way to this infection. The pneumococcus is ever ready to attack any debilitated individual, and especially to add its attack to that of the influenza bacillus. The very fact that the death rate from pneumonia is increasing shows that the prognosis is not good. If the disease tends to recovery like most acute infections, it certainly needs a great deal of aid. A fatal issue can readily be hastened, if not precipitated, by misdirected efforts and by neglect. The great seriousness of this disease is due to its effect on the heart; consequently the care of the heart is of paramount importance.

The treatment may be discussed under various heads, as follows:

1. *Rest.*—This must be as near perfect as possible. Not only should the room be situated for the best possible fresh air, but it also should be as quiet as possible. Friends and relatives should not disturb the patient. The more he talks and the more he thinks, the more rapidly will his heart pulsate, the more rapidly will he breathe, and the more mentally restless and consequently sleepless will he be. Sleep and a quiet heart are more essential in pneumonia than in almost any other disease. Perfect rest does not mean that the patient should not be turned frequently, or that he should not have at times several pillows; in fact, it has lately been advocated for a patient with pneumonia to sit up once or twice a day for a short time, even in a chair. This is perhaps a little too radical, but the point should be emphasized that the circulation in the lungs should be changed by alterations in position. A patient with pneumonia should not lie flat all the time. Hypostatic congestions readily occur with pneumonia, especially if the heart's action is impaired.

2. *Fresh Air.*—It has now long been demonstrated that a pneumonia patient has less fever, a slower pulse, a better blood-pressure, and breathes less frequently in cool, clean air than in close house air, and this whatever the season. Wards on the roof are very valuable for hospitals in the treatment of pneumonia as well as tuberculosis. The balcony, veranda, or even tent treatment of pneumonia is advisable at certain seasons of the year with certain types of patients, when such facilities are obtainable. It is always essential that the room of a pneumonia patient should have more than one window — the more the better — and that these windows should be widely open, except when the patient is being bathed or his clothing is being changed. Under any circumstances it is not necessary to have a draft of cool or damp air blowing directly over the patient's face, but screens can modify the direction of the wind or brisk air. Very young children and old people should not be subjected to severe cold atmosphere, while older children and strong adults may not only endure cold, but may even thrive in it. The fresh air or outside air treatment of pneumonia is subject to the modification of common sense. If a patient's body and extremities become cold or chilled when properly covered, the fresh air treatment is too severe.

3. *Diet.*—The food of the patient should represent something of all the elements required for nutrition. This means protein in the form of eggs, meat juices, properly made meat broths, and milk. The eggs may be in any form desired, except fried. The milk should never be sufficient in amount to cause intestinal gas, or gastric indigestion.

The next very necessary element for nutrition is starch, and it should not be forgotten that many a seriously ill patient finally dies really of acidemia from carbohydrate starvation. Egg albumin and milk do not represent the proper food for patients who are ill more than a few days. The starches can be presented in cereal gruels, rice, oatmeal, malted milk, toast, crackers, and even by potato soup. Ice cream, custard, chocolate, and a small amount of cane sugar or milk sugar are all of value.

The patient should be allowed plenty of water, as, however valuable a deprivation of water may be in aborting an acute cold or acute bronchitis, it is not advisable to withhold water in pneumonia. Unless there are edemas from a failing heart or from kidney insufficiency, plenty of water will increase the amount of urine and therefore remove more products of waste metabolism from the blood, thus tending to prevent the toxemia from the disease which is to be feared. It promotes the secretion of the skin, which is desirable, and also renders the exudate in the lungs less tenacious and more easy of expectoration.

Elements of nutrition which must not be forgotten are: sodium chlorid, iron when meat juices are not given, and lime when little milk is given, and especially if there is much blood in the expectoration. The sodium chlorid can be given by properly salting the patient's food, especially his gruels, and even at times his milk. The iron may be given as a saccharated oxid of iron (*Eisenzucker*) 3-grain tablet, crushed at the time of taking, or crushed by the patient's teeth, and administered twice a day. The lime may be given as lime water in tablespoonful doses in milk or in water, three or four times in twenty-four hours; or it may be given in a capsule as calcium glycerophosphate, in 0.30 gm. doses.

The whole question of the diet is also subject to common-sense modification to fit the patient. There are enough suggestions in the foregoing to furnish sufficient nutrition while meeting almost any patient's desires. The main object is (1) to avoid starving the patient on any element that he requires to promote his metabolism and keep up his nutrition; and (2) to avoid gastric and intestinal indigestion. If the tongue is heavily coated and the patient is so seriously ill that he does not digest properly, 5 drops of dilute hydrochloric acid in water, directly after his protein meals, will aid the stomach digestion and often clean the tongue. It may also stimulate intestinal digestion. If there is much intestinal gas the diet should be closely studied by the physician to ascertain which food is causing it. Provided that the blood-pressure is not too high, that the heart is not too irritable, and that the patient is not too nervous and restless, coffee morning and noon, or coffee in the morning and tea at noon, or tea both times if the patient prefers, is advisable and often beneficial. Tea and coffee should be considered as representing caffein, and if the action of caffein is desirable, these beverages may be given. They should not be given in the late afternoon or evening, as they tend to prevent much needed sleep.

(To be continued)

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OBESITY AND STARVATION

The essence of the successful method for reducing weight in those suffering from obesity lies in keeping the intake of energy below that of the output. Theoretically, complete fasting constitutes the most prompt method of accomplishing the end sought. It is a well-recognized fact, however, that starvation prolonged over a period of more than a few days, either voluntarily or as an incident of disease, may lead to unpleasant symptoms. Headache, nausea and dizziness portend the existence of conditions that are not exactly normal, and frequently they can be made to disappear promptly by the ingestion of even a little food. Most modern "treatments" for obesity, therefore, consist in underfeeding rather than complete fasting, particular care being directed to conserving the protein of the body so that the reduction in weight shall represent essentially a loss of body fat oxidized to furnish energy to the underfed individual.

In the course of observations on the voluntary fasting of two exceptionally obese patients of the Massachusetts General Hospital in Boston, Folin and Denis[1] noted the usual development of the indications of "acidosis," that is, an increased elimination of acetone, aceto-acetic acid, and particularly of beta-oxybutyric acid and ammonia in the urine. In one of the subjects the figures were exceptionally high, amounting to over 18 grams of beta-oxybutyric acid and no less than 2.5 grams of ammonia-nitrogen during the fourth day of starvation. The appearance of such products in these amounts is in accord with the widespread scientific belief that the "acetone bodies" are derived chiefly from incompletely oxidized fat. When the obese are compelled to depend on their store of fat for maintenance, one might reasonably expect these intermediary products to "crop out."

In order to relieve the subjective symptoms associated with this fasting acidosis, Folin and Denis interrupted the period of complete starvation by a period of very moderate diet just sufficient to cause the disappearance of the "acetone bodies" from the urine. Thereupon a second fast was begun. Here the striking observation was made that the acidosis did not manifest itself anew until the third day of this fast, and the patient felt well until the fourth day. After an interspersed repetition of "low" diet a third fast was begun five days later. Here again the onset of acidosis was even slower than during the second period. These facts, supported by confirmatory evidence in a similar case, have suggested to the observers that with regard to the complete oxidation of body fat in starvation, the human organism is capable of at least a certain amount of adaptation, and that it is this individual factor rather than the tendency to obesity or the extent of the fat deposits in the body which chiefly determine the onset and the degree of acidosis. Folin and Denis conclude that one of the effects of repeated fastings is habituation to the complete oxidation of mobilized body fat, and a consequent retardation of the development of acidosis.

These results suggest, in the words of their discoverers, that one perfectly safe, rapid and effective method of reducing the weight of very obese persons is by a series of repeated fasts of increasing duration, the ammonia or beta-oxybutyric acid determination being used as a guide to the length of each fast.

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[1] Folin, Otto, and Denis, Willey: On Starvation and Obesity, with Special Reference to Obesity, Jour. Biol. Chem., 1915, xxi, 183.

THE RHYTHM OF THE HEART

During recent years there has been such extraordinary progress in our knowledge of the rhythm of the heart and its disturbances in disease and under the influence of drugs that probably many physicians have rather hazy ideas as to the present status of knowledge on these subjects. Progress in this field has resulted from the development of methods which have enabled clinicians to apply to the human heart some of the knowledge already available in regard to the heart of the lower animals. On the other hand, the clinical application of these methods has revealed many hitherto unsuspected conditions and raised new questions in physiology, pathology and anatomy; this has greatly stimulated further investigation along these lines. The result has been greater progress within the last few years than in as many decades previously. In this work anatomists, physiologists, pathologists, pharmacologists and clinicians have all had a part. Nor has the work been confined to one country: the Dutch (notably Einthoven), the English (Mackenzie, Keith, Lewis and Cushny for example), the Germans and Austrians (His, Hering, Wenckebach, Rothberger and Winterberg and others), Americans (Erlanger, Cohn, Eyster and Meek, to mention only a few) as well as representatives of many other nationalities have made important contributions.

The two methods which have contributed most t the solution of problems concerning the disturbance of rhythm in the human heart have been the use o venous tracings and of the electrocardiograph.[1] Both of these methods show whether or not each beat of the ventricle is preceded by one of the auricle; they show accurately the interval of time elapsing between the auricular and the ventricular contractions; in cases of abnormal or disturbed rhythms they throw much light on the point of origin of such rhythms.

Among the numerous points established by these investigations (combined with and controlled by experiments on the hearts of the lower animals) the following may be mentioned: Normally each heart beat begins in a small area of the right auricle beginning between the opening of the superior vena cava and the auricular appendix and extending toward the inferior vena cava; that is, in, or in the region of the specialized tissue known as the sinus or sino-auricular node. From this point the wave of excitation passes over the auricles causing the auricular contractions; it passes through the auriculoventricular bundle of specialized tissue (the bundle of His) to the ventricles, which contract at a definite and measurable interval after the auricular contraction. This constitutes the normal or sinus rhythm of the heart. If, however, for some reason this sinus region ceases to inaugurate impulses, or if the impulses are comparatively weak, or if they fail to reach other parts of the heart, then one or more of the latter may assume this function of "pace maker." One of the most important of the regions which may inaugurate a rhythm for the heart is the auriculoventricular node, which lies in the interauricular septum at the beginning of the auriculoventricular bundle. Impulses arising in this region reach the auricles and ventricles simultaneously or almost simultaneously, and the chambers of the heart contract at the same time; in other words, an auriculoventricular rhythm replaces the normal sinus rhythm. Or the impulse may arise still lower in the auriculoventricular bundle; thus, apparently, it may arise now in the branch passing to the right, now in that passing to the left ventricle. Many other forms of irregular rhythm, which it is impossible to consider here, have been described.

Other disturbances of rhythm result when some or all of the auricular beats fail to reach the ventricle; in other words, when there is a partial or complete "heart block." Heart block, as is now quite generally known, may result from an anatomic interruption of the connection between the auricles and ventricles, as is often the case in the Adams-Stokes syndrome; or the interruption may be only functional. In either case the ventricles develop a rhythm of their own more or less independent of that of the auricles. Functional heart block may result from increased activity of the vagi. It has long been known from experiments with animals that one effect of stimulation of the vagi is a lowering of the ability of the tissue connecting auricles and ventricles to conduct impulses from the former to the latter. Similar results may be obtained in man by pressure on one vagus, or the vagus may be thrown into increased activity reflexly, by pressure on the eyeball for example.[2] Digitalis increases the activity of the vagus center; one of the consequences is impaired conduction of impulses from auricle to ventricle and the well known condition of heart block so often occurring in the use of this drug. In auricular fibrillation, a condition which occurs in very many cases of valvular heart disease and in which the normal auricular beat is replaced by a condition of fibrillation in which many hundreds of impulses per minute endeavor to reach the ventricle, digitalis, by increasing the resistance of the auriculoventricular bundle, and so reducing the number of impulses reaching the ventricles, protects and slows the latter. This is the generally accepted view of the action of digitalis in this condition, although some details of this explanation have been questioned. Or digitalis may, apparently, cause a condition of block in lower portions of the auriculoventricular bundle leading to marked changes in the character of the beat of one or other of the ventricles.[3]

Perhaps the foregoing comments will suffice to show that, although this recent work may at first thought appear to add to the complexity of an already complex subject, it in reality tends to simplify the entire subject by bringing various phenomena under a common viewpoint. It represents the stage of synthesis which always follows a more thorough study of natural phenomena.

DIETOTHERAPY IN DIABETES

It must be frankly admitted that the underlying nature of diabetes is still veiled in deep mystery. The number of individual important facts now known in regard to the disease is large. The earliest knowledge of the attending glucosuria has been supplemented by information about the condition of the blood — the hyperglycemia of diabetes — and by such investigations as have demonstrated beyond question that the capacity of the organism to destroy sugar is impaired.[4] Other details of the perversions of metabolism, such as the acidosis and ketonuria, have been brought to light. Drug therapy has largely been abandoned, and dietotherapy substituted for it. One who has followed the progress in the study of diabetes can understand the occasions for the successive changes in the proposed dietetic measures, which include all gradations of regimen from starvation or strictly carbohydrate-free dietaries, on the one hand, to the oatmeal or potato "treatments" at the other extreme. As an expert in this field recently remarked, physicians may well come to the conclusion, after reading some of the latest literature in this field, that all of our earlier views have been turned topsyturvy.

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[1] Electrocardiography, Miscellany, The Journal A. M. A., Oct. 2, 1915, p. 1208.

[2] See, for example, Levine, S. A.: The Oculocardiac Reflex, Arch. Int. Med., May, 1915, p. 758.

[3] Cases apparently of this character were reported, and the literature reviewed, by H. A. Christian (Arch. Int. Med., Sept. 15, 1915, p. 341).

[4] The Changing Theories of Diabetes, editorial, The Journal A. M. A., Aug. 2, 1913, p. 348; Two Theories of Diabetes, March 28, 1914, p. 1023.

An intelligent appreciation of the situation calls for a brief historical survey. The earliest attempts of the more modern procedure in the dietary management of diabetes aimed at overcoming the excretion of sugar, or reducing it to a minimum by restricting the intake of carbohydrate and, if need be, likewise that of protein, which was recognized as an added source of sugar in severe cases. This method of treatment met its difficulties in the appearance of ketonuria, with the attendant dangers of acidosis, leading to the dreaded coma. Nothing short of the administration of some carbohydrate seemed to avert this incidental feature of the severer types of the disease. It was at this period that certain special dietary schemes were attempted, such as the milk, rice and potato diets, respectively. Levulose was recommended as a carbohydrate toward which the diabetic shows special tolerance. None of these proposed devices for furnishing carbohydrate in some way more acceptable to the diabetic organism gained more than passing consideration. As a rule, they offered no advantage in treatment.

Through chance observations, von Noorden hit on the routine oatmeal treatment. In certain cases in which the patients were put on an exclusive diet of oatmeal, owing to digestive disturbances which they were subject to, von Noorden noticed that instead of an expected increase in sugar output, this actually decreased. Repeated similar favorable increases of tolerance led to the publication of the facts. The new mode of dietetic management, in which the administration of large quantities of oatmeal and butter for a few days is made to follow a few days of "strict" diet or so-called "vegetable" diet familiar to all dietotherapeutists, promptly called forth protest. Prominent investigators like Naunyn and Pavy denied the possibility of cure by feeding starchy cereals. Naunyn and his pupils attempted to explain the utilization data of the oatmeal administrations by the contention that the cereal carbohydrate becomes peculiarly prone to fermentative decomposition in the alimentary tract. It is destroyed without significant utilization, we were assured.

Despite its theoretical incompatibility and the outspoken criticism of well-known writers, the oatmeal treatment for certain types of diabetics has not been abandoned. From time to time, groups of successful cases have been reported by competent, unbiased clinicians. Every one who has achieved any success with the procedure has emphasized that a suitable preliminary strict regimen is indispensable to success, and also that the scheme fails in many instances. The striking character of some of the statistics, which show greatly improved tolerance after a few days of the oatmeal diet, as well as the character of the names attached to the reports, leaves the impression that some element of merit is hidden in the observations. The attempts at explanation have not been fortunate. At first it was believed that some specific chemical constituent of oatmeal other than starch is responsible for the increased carbohydrate tolerance and the amelioration of the ketonuria. This now seems unlikely. It was believed that oatmeal components might either act on the ductless gland mechanism in some undiscovered way, or render the kidneys less permeable to sugar. The more recent analyses of the blood-sugar content have withdrawn any probability of the latter explanation. Additional explanations need not be advanced here.

The supposed specificity of oatmeal in its favorable effect on the diabetic was gradually dispelled by the demonstrations, not very convincing at first, but more emphatic as the technic became more consistent, that other cereal products could be substituted with success. Blum, Petersen, Lampé, Klemperer and others have reported the occasional favorable use of a variety of natural products other than those derived from the oat seed. The list is not inconsiderable. In every case, however, emphasis appears to have been put on the necessity of restricting the carbohydrate intake to a single plant source, whether it be oat, wheat, buckwheat or a legume.

Falta[5] of Vienna now assures us that "mixed" carbohydrate treatment may equal the older procedures in its favorable influence on glucosuria and ketonuria. This extends the palatability of the diet in those cases in which this form of diabetic regimen is to be tried. As a rule it seems to be best to use the cereals in the form of gruels or porridges — not in a baked product — the reason presumably being connected with the different alimentary behavior of the two types of food product. Like the advocates of the oatmeal treatment, Falta insists that meat and protein from animal sources should be excluded, and plant protein substituted. The explanation for this is not clear. The contention is made that meat in largest degree interferes with the glucogenesis of the diabetic organism.

It should be borne in mind that these "cereal treatments" are not in the nature of permanent diets, but are merely interspersed in the midst of a fairly strict routine of carbohydrate-free living. This fact has not always been understood by practitioners. Highly advocated tentative dietary methods, whether they involve starvation and alcohol or mixed cereals, deserve intelligent consideration and trial under appropriate conditions. They must not, however, be allowed to overshadow the success of the current methods of diabetic dietotherapy, particularly in cases of only moderate severity; nor should they be permitted to furnish an argument for the unscrupulous vender of diabetic foods which are rich in starch, even though the label may be "within the law."

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[5] Falta, W.: Zur Theorie und Behandlung des Diabetes mellitus, Med. Klinik, 1914, No. 1; Ueber die gemischte Amylazeenkur bei Diabetes mellitus, München. med. Wchnschr., 1914, No. 22, p. 1218.

GOOD HEALTH COMMERCIALLY CONSIDERED

The final report of the Commission on Industrial Relations, created by act of Congress in 1912, has just been issued. While the findings and recommendations of this commission on labor conditions, industrial unrest, workmen's compensation, hours of labor, trade unions and other subjects connected with industrial conditions are of interest, the most important section of the report, from the standpoint of the physician and the sanitarian, is Section 16 on Industrial Conditions and the Public Health. Condensed into six pages are a number of startling statements for the first time given the authority and endorsement of a government commission. Under the direction of an officer of the Public Health Service, investigations were conducted by the commission which revealed the fact that while much attention has been given of late to accident prevention, yet accidents caused only one seventh as much destitution as does sickness. Each of the thirty-odd million wage earners in the United States loses an average of nine days a year through sickness, at an average cost of two dollars a day. The wage loss from this source is over five hundred million, while the added cost of medical care of at least $180,000,000 increases the total sick bill of the wage earners of the United States to $680,000,000 a year. From 30 to 40 per cent. of cases requiring charitable relief are due to sickness, while sickness among wage earners is primarily the result of poverty, causing insufficient diet, bad housing, inadequate clothing and unfavorable surroundings in the home. According to the commission, the surroundings and place of work and the personal habits of the worker are important but secondary factors. This means that while there should be no diminution in our efforts to secure better conditions in the factory, the office and the workship, the real solution of the public health problem lies in the improvement of the home.

Quite as important is the classification made by the commission of disease-causing conditions into three general groups: those for which the employer and the character of the occupation are responsible; those for which the public is responsible, and those for which the individual worker and his family are responsible. It has become a truism in public health work that fixing the responsibility definitely and beyond question is half of the battle for better conditions. The commission regards the employer as responsible for occupational diseases, low wages, excessive hours, work methods causing nervous strain and general insanitary conditions. The public is responsible for housing, water supply, food, drugs and community sanitation. The greatest share of responsibility, however, rests on the individual and, under present conditions, in the opinion of the commission, he is unable to meet this responsibility. The majority of wage earners do not receive sufficient wages to provide for proper living conditions. The present methods of disease prevention and cure are expensive, and sickness is most prevalent among those who are least able to purchase health. The commission does not anticipate any such rapid increase in the wages of all classes of workers as would permit proper living conditions and adequate medical attention, and therefore concludes that new methods of dealing with existing conditions must be adopted, based on the cooperative action of those responsible for these conditions. A system of sickness insurance is proposed as the most feasible single remedy. The right of the federal government to tax industries in a sickness insurance system has been recognized since 1798, when the law taxing registered vessels for the support of the Marine Hospital Service was passed.

An extensive scheme for a federal system of sickness insurance is outlined by the commission providing for a national sickness insurance commission composed of representatives of employers and employees in equal ratio, with the federal commissioner of labor statistics and the surgeon-general of the Public Health Service as ex officio members. It is interesting and encouraging to note, among the most important recommendations of the commission in this direction, that "correlation of the insurance system with the medical profession, the lack of which has been a serious defect in German and British systems, is absolutely necessary." Any one who has followed the development of industrial insurance abroad will admit that the opposition or at least the half-hearted cooperation of the medical profession, owing to the inequitable system of compensation and to the fact that no consideration was given to the medical profession in framing the various insurance schemes, has been a most important factor in the partial failure of these insurance systems. A trained medical profession is absolutely essential for the successful operation of any industrial insurance plan. The terms on which physicians are asked to assist in the operation of such a system should be fair and such as will enable them to do justice to their responsibilities. This has not been true either in England or in Germany. More than this the physician does not ask. Less than this he should not be expected to accept. The recommendations of the commission on sickness insurance and on the improvement of health conditions among wage earners are worthy of the most careful consideration both by employers and by labor unions.

THE OCCURRENCE OF CREATININ IN PLANT PRODUCTS

Physiologists ordinarily associate creatin and creatinin with animal products. Among animal tissues and organs, there is a marked inequality in the distribution of these specific compounds. They preponderate in the muscles to an extent which makes the other sources seem quite inconsiderable. For example, recent analyses by Janney and Blatherwick[1] give comparative figures in one species as follows, in terms of milligrams per hundred grams of organ: muscle, 470; brain, 114; testes, 181; pancreas, 18; liver, 20; kidney, 14; spleen, 30. Even among animal species, the occurrence of creatin in muscle is not an invariable feature, for it is entirely wanting in the contractile tissues of invertebrates, such as the shellfish which we eat.

For some time the creatinin output in the urine has been looked on as an index, in some degree, of the endogenous metabolism of vertebrates, and of man in particular. In order to estimate this factor, it is, of course, essential that the diet shall be free from creatin and creatinin, which may reappear in the kidney output as products of exogenous origin. Accordingly, it has been customary to secure the appropriate dietary for estimations of endogenous creatinin output by excluding meat and other animal tissues from the ration. Vegetarianism has been assumed to furnish the appropriate diet here required.

Though much has been written on the relations of creatin and its derivatives or precursors to animal tissues and processes in biochemistry, the possibility of its occurrence outside of the animal kingdom has not been considered to any great extent until recently. Shorey[2] found creatinin in extracts of soils. The interpretation of this discovery was not easy, owing to the fact that the formation of creatinin in bacterial cultures in peptone mediums had previously been reported. It might, therefore, owe its origin to the agency of soil bacteria acting on nutrient products in the earth used. Sullivan[3] has called attention to the fact that most commercial nutrient "peptone" is of animal origin and may contain antecedent products which readily yield creatinin. He has, however, demonstrated that a trace of soil added to protein-free synthetic culture mediums may still give evidence of the formation of creatinin by micro-organisms.

The possibility that plants may furnish the creatinin found in soils was realized by Sullivan,[4] who found it in the vegetable kingdom for the first time in 1911. He detected it in wheat seeds and seedlings, in rye, clover and alfalfa seeds, in mature cowpea plants and in potato tubers. From the fact that creatinin was present in larger proportions in recently cropped soils, it was assumed that the presence of creatinin there is associated in some way with plant growth.

Quantitative data have recently been furnished by Sullivan.[5] Only a few parts of creatinin per million were found in the ungerminated seed of wheat and soy bean; but during germination the quantity may increase up to 65 parts per million. Japanese investigators have reported the presence of creatinin likewise in the seeds of the Adzuki bean, the kidney bean, the horse bean and green peas, and have identified the product by dependable isolation methods.[6] As has happened before in physiology, these facts serve to indicate that the relationships between animals and plants in respect to fundamental biochemical processes are closer than it was customary to believe before the advent of modern chemical investigations. From the standpoint of their bearing on diet problems, the quantities of creatinin in plants are probably far too small to command much attention. A growing knowledge of how it arises and what becomes of it in the plant economy may nevertheless help in the future to throw light on the still vexed questions of creatin-creatinin metabolism in man.

Current Comment

A THERAPEUTIC ABSURDITY

In the Propaganda department of this issue is another report of the Council on Pharmacy and Chemistry on the widely advertised products—"Lactopeptine" and "Elixir Lactopeptine." These preparations are supposed to contain, as their two main ingredients, pepsin and pancreatin and this, in the light of present-day knowledge, brands these products — especially the elixir — as therapeutic absurdities. It is axiomatic that pepsin and pancreatin are never indicated at one and the same time and it is practically impossible for the two substances to act together; in fact, in a liquid medium the ingredients are mutually destructive. Eight years ago The Journal published the results of an investigation showing that Lactopeptine contained "but small amounts of pepsin," and "neither diastase nor pancreatin"; two years ago another report was published confirming the earlier one. The present report still further clinches the previous findings. It is worthy of note that the manufacturers in protesting against this report have uttered not a word in defense of the "Elixir Lactopeptine," although, in probably nine out of ten prescriptions for Lactopeptine, it is the elixir that is called for. The reason for ignoring their most widely used product is evident—Elixir Lactopeptine is an indefensible therapeutic and pharmacologic absurdity. The company in its protest, however, does claim that tryptic activity can be found in fresh specimens of Lactopeptine powder and Lactopeptine tablets. Further investigation, made after this protest was received, showed that while a few specimens of Lactopeptine in the dry form possessed some—therapeutically negligible—tryptic activity, there was no activity whatever in most of the specimens examined. Briefly, the facts regarding this "ethical proprietary" may be summed up thus: (1) Lactopeptine, whether in the form of an elixir, powder or tablets, is a therapeutic absurdity. (2) Lactopeptine in the dry form (powder or tablets) may, when strictly fresh, possess some slight—although therapeutically negligible—tryptic activity, a fact that is of merely academic interest because pepsin and pancreatin are never indicated at the same time. (3) Even if fresh specimens have any advantage over the old, there is no way of telling which the patient is likely to get, as the trade packages of Lactopeptine are undated. (4) The form in which Lactopeptine is usually prescribed is the "Elixir," a liquid preparation in which the pancreatin and pepsin destroy each other. (5) Lactopeptine has not the composition claimed for it and if it did have, it would still be of no value.

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[1] Janney, N. W., and Blatherwick, N. R.: The Quantitative Determination of Creatine in Muscle and Other Organs, Jour. Biol. Chem., 1915, xxi, 567.

[2] Shorey, E. C.: Science, 1911, xxxiii, 340.

[3] Sullivan, M. X.: The Formation of Creatinine by Bacteria, Science, 1915, xlii, 69.

[4] Sullivan, M. X.: Jour. Am. Chem. Soc., 1911, xxxiii, 2035.

[5] Sullivan, M. X.: The Amount of Creatinine in Plants, Science, 1915, xlii, 69.

[6] Oshima, K., and Ariizumi, M.: On the Occurrence of Creatinin in Leguminous Seeds, Jour. Coll. Agric., Sapporo, 1914, vi, 17.

THE N. F. IMITATION OF ELIXIR LACTOPEPTINE

Nearly forty years ago — to be exact, in 1876 — the essential worthlessness of Lactopeptine was brought to the attention of the pharmaceutical profession. This was done in a paper, contributed to the American Pharmaceutical Association by Prof. Emil Scheffer, reporting some experiments made with Lactopeptine and proving that it had no greater digestive value than the saccharated pepsin then in vogue. This paper, which appeared in the Proceedings of the American Pharmaceutical Association, was called to the attention of The Journal's readers by the president of the American Pharmaceutical Association[1] soon after the appearance of the Council's first report on Lactopeptine.[2] When scientific fact runs counter to popular fancy, and especially when popular fancy is supported by heavy advertising, science inevitably gets the worst of it. This is what occurred in the Lactopeptine matter, for Professor Scheffer's paper was ignored by pharmacists and was not brought to the attention of physicians. Not only did an extensive advertising campaign force Lactopeptine and Elixir Lactopeptine into popular favor, but the very demand thus created was an inducement for druggists to imitate the products. As a result, we find the Compound Powder of Pepsin and also Compound Digestive Elixir in the National Formulary. Compound Digestive Elixir, as manifestly worthless as its prototype, Elixir Lactopeptine, has, like its prototype, proved to be a "good seller." It is not surprising to find a journal devoted to the business rather than the professional side of pharmacy (*N. A. R. D. Journal*) earnestly defending the Compound Digestive Elixir on the ground that "physicians keep right on prescribing it, and they say they get the results they are looking for, and what more does any one want?" Even more naively the *N. A. R. D. Journal* goes on to argue that "while the action of one or more of the ingredients in the N. F. formula may be 'killed,' as some writers have expressed it, and that, therefore, the presence of such is superfluous, it has never been mentioned what the resulting compound will be, nor what its therapeutic action." Thus the druggist is invited to emulate the followers of Mrs. Eddy in substituting for inconvenient knowledge a cheerful faith which seeks not to dissolve a profitable mystery. Pharmacists should not be too severely blamed, however, for adopting such an attitude; manufacturers and dealers in drugs are, after all, merchants, whose profits are in a general way directly proportionate to the amount of goods they sell. The pharmaceutical profession, however, will do well to remember that pharmacists themselves will suffer in the end from the reaction in the minds of the medical profession and the public if they persist in disregarding what they know to be true for the sake of what they find to be profitable.

ALABAMA OPTOMETRY BILL VETOED

During its recent session, the Alabama legislature passed a law providing for a board of optometry examiners. The opposition was largely disarmed, owing to the fact that, at the last meeting of the medical society of the state of Alabama, through a general misunderstanding, this bill was recorded as receiving the endorsement of the state association. When it went to Governor Henderson, the facts regarding the measure and its dangers to the public were placed before him, and in spite of considerable pressure he wisely refused to permit it to become a law. Usually the advocates of these measures are able to secure a considerable amount of political backing and influence. The endorsement of the state association, however secured or through whatever misunderstanding it may have occurred, only increased the difficulty of the governor's position. Probably most state executives under these circumstances would have felt fully justified in signing the bill. These facts only increase the appreciation of Governor Henderson's independence and courage in refusing to allow this measure to become a law. In the ten years in which this question has been before legislatures, some definite principles thereon have been evolved. Beyond question, the public is in danger of being imposed on and injured by dishonest or incompetent spectacle fitters. Unquestionably, if in the opinion of the legislature this is a question of sufficient importance to demand regulation, there should be adequate regulation of those who follow this business. It is true that too little time is given to the instruction of medical students on this subject, and that to become a competent oculist or ophthalmologist requires postgraduate instruction. These facts have all been taken advantage of in promoting the passage of optometry bills in the various states. But it does not follow that the only remedy or best remedy is the creation of a separate, independent board of "optometrists" and the legal recognition of a pseudoscientific sect, which, by its incompetent encroachment on the field of medical practice, will do quite as much, if not more, harm to the public than the unregulated spectacle fitter. Each of our states has a state board for the examination and licensing of physicians. A bill extending the powers of the medical examining board, authorizing it to examine, either directly or through an appropriately constituted examining committee, those desiring to fit glasses, to issue to them a proper license to do so and to prevent all unlicensed persons from preying on the public, would meet all the indications as far as public safety is concerned, and would avoid the evils and dangers of a separate board.

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[1] The Journal A. M. A., April 6, 1907, p. 1198.
[2] The Journal A. M. A., March 16, 1907, p. 959.

"CARDUI: THE STORY OF A NOSTRUM"

Those who have followed The Journal's articles on "Wine of Cardui" and are conversant with the fact that the suits resulting from the exposures have resolved themselves into a fight by the combined "patent medicine" interests of the country against the American Medical Association will read with interest an article that appears in the current (October 23) issue of *Harper's Weekly*. This article, under the title quoted above, is announced as the first of three to appear in *Harper's* on the subject of "Wine of Cardui" and "Black Draught," two nostrums put out by the Chattanooga Medicine Company. These articles are written by a Dr. Bicknell, who is said to have been in the employ of the Chattanooga Medicine Company for some years as their chemist. Certainly the details he gives indicate a familiarity with the business that could be expected only from one who had been employed in some such capacity. The current article traces the growth of the Wine of Cardui business, and illustrations are used to show the evolution of the nostrum label from "Nature's Great Emmenagogue" to "20 Per Cent. Alcohol." While the author denies that the Chattanooga Medicine Company's nostrum will perform the many wonders claimed for it by its manufacturers, he says "there is one miracle that Cardui can perform—a miracle quite as wonderful, perhaps, as the regulation of the menstrual function; it can make money." According to Bicknell, Wine of Cardui contains blessed thistle and an insignificant amount of black haw. These herbs, says the author, "whatever their life-giving potentialities, are at least conveniently inexpensive." Then follows a computation of the cost of making and marketing a gallon of Wine of Cardui. This shows that the contents of each bottle "cost a trifle over 4 cents." For the bottle, corks, labels, carton, packing case, etc., he computes an amount that makes the cost of a bottle of Wine of Cardui, packed ready for shipment, total a little less than eleven cents. To this he adds the "patent medicine" maker's largest item of expense, advertising, bringing up the total gross cost of the nostrum to a trifle under 26 cents a bottle. It sells for $1.00 a bottle. These statements prepare one for the claim made by Dr. Bicknell that during the past year "the *net profit* of the year's sale of Cardui amounted to $949,200.00!" These figures are enlightening. They help one to understand the lavish expenditure of money that followed the filing of the suits by the Chattanooga Medicine Company against The Journal and its editor. Those engaged in a business whose *net* profits were even one-half million dollars annually are not likely to be over particular in the methods of defending the business. The fact that the two and a half million dollars, representing the gross sales, based on the Bicknell figures, comes out of the pockets of those who can least afford it, is but an incident in a sordid business.

THE DEATH OF A GREAT NATURALIST

Henri Fabre has just died at his home in France. Only toward the close of his long, laborious life had the careless world begun to realize that in this unpretentious son of peasants, waging a heartbreaking struggle against grinding poverty and humiliating neglect, it had been ignoring a unique genius. For this long failure to obtain fitting recognition there were many reasons. Fabre possessed none of the arts of the self-advertiser. Entomology, when he embraced it as a career, was a neglected science, and the phase of it to which he intuitively turned, the study of instinct, was especially neglected. Then, too, though versed in several sciences, Fabre was impatient of booklore in his own field and refused to bow to the theories of the day, preferring to interrogate Nature alone. Finally, it may be that even his delightful prose, with flashes of fancy and quaint humor, inspired in the Gradgrinds of science a certain distrust. This distrust, if it existed, Fabre was at no pains to allay, for he declared that he hated the barbarous jargon which made science so thorny and repellant to the young. In his youth Fabre felt a strong inclination toward medicine. Had he followed that inclination, he surely would have made notable contributions to medical science. As Legros says, he had in high degree "that gift, properly speaking poetic, which is known as the clinical eye, which at the first glance perceives and confirms the diagnosis in all its detail." He also had the gift of untiring observation, the thirst for knowledge, the capacity for unlimited work and the illuminating imagination which mark the scientific discoverer. Yet we can scarcely reproach the fate which gave his faculties their own peculiar trend. Darwin styled him "the inimitable observer"; Maeterlinck called him "one of the most profound and inventive scholars . . . one of the purest writers, and . . . one of the finest poets of the century that is just past"; Edmond Rostand characterized him as "this great scientist, who thinks as a philosopher, sees as an artist, and feels and expresses himself as a poet."

A JOURNAL OF LABORATORY MEDICINE

The *Journal of Laboratory and Clinical Medicine* is a new venture in the field of medical journalism. As the title indicates, the journal is to be devoted to the laboratory in its relation to medicine and surgery. Its object is to publish reports of recent discoveries made in research institutions, and to suggest to the practitioner how he may apply these discoveries in his daily work. The first function is to be fulfilled by original contributions, the second by editorials contributed by the editorial staff; several pages are also to be devoted to laboratory methods. Dr. Victor C.

Vaughan is the editor-in-chief, and the associate editors are: Drs. Dennis E. Jackson, St. Louis; Frederick P. Gay, San Francisco; Hans Zinsser, New York; Paul G. Woolley, Cincinnati; J. J. R. MacLeod, Cleveland; Roy G. Pearce, Chicago, and Roger S. Morris, Cincinnati. The journal takes advertising, but makes the following announcement: "The advertising policy of the journal will conform to the standard set by the Council on Pharmacy and Chemistry of the American Medical Association." Among the contributors to the first number are: Drs. Dennis E. Jackson, St. Louis; Frederick P. Gay, San Francisco; George Dock, St. Louis; Roger S. Morris, Cincinnati; Martin E. Engman, St. Louis; Louis B. Wilson, Rochester, Minn., and Paul G. Woolley, Cincinnati. The first number is creditable to all concerned.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Staff Physicians Appointed.—The boards of control of the state charitable institutions, on September 23, elected Dr. William T. McCurry, Little Rock, oculist for the Arkansas Deaf Institute and the Arkansas School for the Blind, Little Rock; Dr. Luther D. Reagan, physician for the School for the Blind, and Dr. Sherman B. Hickman, physician for the Deaf Mutes Institute.

Free Treatment.—The Pope County Medical Society at its meeting in Russellville, October 6, held a series of free clinics.——Plans are under way for the three-story hospital and clinic building to be erected in the rear of the Medical College, Little Rock. The hospital is being constructed with the $20,000 and interest of the Dr. Isaac Folsom Free Clinic Fund founded about fifteen years ago.

CALIFORNIA

State Medical Society Meeting.—It is announced that the Medical Society of the State of California will hold its annual meeting in Fresno, in April of next year.

Quack Indicted.—"Dr." S. R. Chamley, the "Cancer Specialist," is reported to have been indicted by the grand jury in San Francisco, recently, but had disappeared when detectives were sent to arrest him. He is said to have charged a patient $2,300 for an operation for cancer when, as testified by witnesses, he knew the patient had no cancer "but meant to get all the money he could."

Going After the Irregulars.—The State Board of Medical Examiners announces that it will start an aggressive campaign in southern California directed particularly against the advertising "quacks" and other individuals who prey on the credulous public. It is intended to eradicate from the southern section of California the flagrant violators of the medical practice act who have heretofore openly defied regulation.

COLORADO

Medical Reserve Corps Officers Meet.—A meeting of all Denver physicians who are on the inactive list of the Medical Reserve Corps of the Army was held October 11 in the office of Dr. William W. Grant, for organization and to study the correspondence courses which have recently been authorized by the war department.

Personal.—Dr. William A. Jolley, Boulder, formerly major in the Medical Corps of the Colorado National Guard, who has been in service with the American Red Cross in Belgrade, returns home this month.——The resignation of Dr. William P. Harlow, dean of the medical school of the University of Colorado, Boulder, has been presented to the board of regents.——Dr. Samuel R. McKelvey, Denver, has been appointed secretary and executive officer of the State Board of Health.——Dr. James W. Purcell, Denver, who has been seriously ill for ten months, is reported to be convalescent.

New State Society Officers.—At the annual meeting of the Colorado State Medical Society held in Denver, October 5 to 7, under the presidency of Dr. George B. Packard, Denver, the following officers were elected: president, Dr. John R. Espey, Trinidad; vice presidents, Drs. Chauncey E. Tennant, Denver; Jesse U. Sickenberger, Grand Junction; William A. Kickland, Fort Collins, and Henry W. Averill, Evans; councilors, Drs. Will H. Swan, Colorado Springs, second district, and Hampton S. Henderson, Grand Junction, fourth district; delegate to the American Medical Association, Dr. Lewis H. McKinnie, Colorado Springs; and alternate, Dr. George A. Moleen, Denver. Glenwood Springs was selected as the next place of meeting.

GEORGIA

Dinner to Dr. Murray.—In honor of Dr. George S. Murray, Columbus, who left September 23 to serve in the Medical Corps of the British Army at the front, the Muscogee Medical Society gave a dinner, September 21.

Battey Bust Presented.—A marble bust to the late Dr. Robert Battey, Rome, was presented to the Wesley Memorial Building of Emory University by Mrs. Martha Smith Battey. The ceremony took place October 15. Dr. George H. Noble, Atlanta, presented the bust on behalf of the family and Bishop Warren A. Candler, chancellor of the university, made the address of acceptance.

ILLINOIS

State Antituberculosis Meeting.—The seventh annual meeting of the Illinois Association for the Prevention of Tuberculosis will be held in Danville, October 23, in conjunction with the meeting of the state conference of charities.

Personal.—Dr. William Jayne, Springfield, who is still prominent in business life and is a director in the First National Bank, recently celebrated his eighty-ninth birthday anniversary.——Dr. J. H. Riley, DeKalb, is reported to be seriously ill.

Chicago

Needs of Psychopathic Hospital.—The advisory attending staff of the Psychopathic Hospital, after an investigation of the needs of the institution, recommend that more beds are needed and that the hospital shall be so arranged that patients can be segregated according to their diseases.

Tuberculosis Expert Gives Clinic.—Dr. Francis M. Pottenger, Monrovia, Calif., gave a clinic and demonstration in the amphitheater of Rush Medical College, October 16, on "Tuberculosis," under the auspices of the Rush Medical College Ambulatorium of the Chicago Municipal Tuberculosis Sanatorium.

INDIANA

Disease Prevention Day.—The second annual observance of Disease Prevention Day in Indiana, October 1, was a marked success.

Test Case.—O. L. Burgener, a chiropractor, is being tried in Indiana for practicing medicine, surgery and obstetrics without a license. The charge was filed by Dr. William T. Gott, Crawfordsville, secretary of the Indiana State Board of Medical Examiners.

Personal.—Dr. William N. Wishard, Indianapolis, is reported to be seriously ill with septicemia.——Dr. Edwin W. Poinier, Andrews, has been appointed physician of Huntington County, succeeding Dr. William R. Beck.——Dr. George H. Hockett, Anderson, is recovering after a tonsillectomy.——Dr. David L. Kahn, Indianapolis, has been appointed local surgeon for the Lake Erie and Western Railway, succeeding Dr. Paul F. Robinson, Indianapolis, resigned.——Dr. J. McLean Moulder, Indianapolis, has accepted the superintendency of the new Methodist Hospital, Kansas City, Kan.——Dr. John P. Franz, Indianapolis, was painfully injured in a collision between his automobile and a street car, recently.

KENTUCKY

Personal.—Dr. Granville S. Hanes, Louisville, is seriously ill with septicemia as the result of an infection of the finger. The axillary glands became infected and were removed, October 11.

Dinner to Dr. Vance.—A dinner was given to Dr. Ap Morgan Vance by the Medico-Chirurgical Society of Louisville, October 14, at the Tavern Club, to celebrate the election of Dr. Vance to the presidency of the Kentucky State Medical Association.

MAINE

Personal.—Dr. Theodore E. Hardy, Waterville, has had conferred on him the honorary degree of A.M. by Colby University, Waterville.

New Sanatoriums.—An order was passed by the governor, September 1, providing for the purchase of the Hebron Sanatorium for Tuberculosis at a cost of $15,000 and for the purchase of the Fairfield Institution, at the same figure. The former institution will be known as the Western Maine Sanatorium, and the latter as the General Maine Sanatorium. ——Dr. Theodore E. Hardy, Waterville, has been elected president of the board of trustees of the state sanatoriums and Dr. Olin S. Pettingil, Wallum Lake, R. I., assistant superintendent of the Rhode Island Sanatorium, has been offered the position of superintendent of the Hebron Institution.

MARYLAND

Typhoid in Maryland.—During the month of September, 609 cases of typhoid fever occurred in Maryland, according to reports made to the State Department of Health. Of these, 186 were reported in Baltimore, the remainder being distributed throughout the counties. Baltimore County leads the list, 68 cases having been reported from there. Of the towns outside of Baltimore, Cumberland had the largest number of cases, 13 being reported. There were 6 cases in Annapolis.

Surgeons Tell of War Abroad.—War experiences of Baltimore surgeons in German, French and English hospitals were related recently at the regular meeting of the Baltimore City Medical Society. The subject of the evening was "Medical Lessons of the War." Dr. Henry N. Shaw, Baltimore, stationed in England; Dr. Robert H. Crawford, stationed at the American Red Cross Hospital at Glerwitz, Galicia, and Dr. John A. C. Colston, recently from Pau, France, were among the speakers.

Cost of Mosquito War.—The campaign against mosquitoes closed recently. It cost the city of Baltimore about $25,000, and is said to have been successful. William D. Wrightson of the Public Health Service said that the inspecorts had found two kinds of malarial fever mosquitoes in Baltimore, in addition to the ordinary culex, or domestic insect. It is thought that the campaign will be made a part of the work of the health department, which may have a sanitary engineer added to its staff.

Personal.—The State Board of Health has appointed Dr. C. Hampson Jones, assistant commissioner of health of Baltimore for nearly twenty years, chief of the bureau of communicable diseases in the State Health Department. Dr. Jones will take charge of the bureau November 1.——Dr. Frank J. Powers, Baltimore, has been appointed by the mayor physician to the city jail, to succeed Dr. George L. Wilkins, who for fifteen years had held this position.——Dr. Nathaniel G. Keirle, chief of the Pasteur department of Mercy Hospital and city medical examiner, passed his eighty-second birthday, October 10.

Hopkins Extends Work.—An important branch of the department of pathology in the Johns Hopkins University, to be devoted entirely to research work, will be opened within the next six weeks in the pathologic building, after Dr. William H. Welch returns from China. Dr. Welch is chief pathologist of the university and is now in the Far East on work for the Rockefeller Foundation. The rooms to be occupied in the new work have been equipped with scientific appliances and instruments costing several thousand dollars. A fund aggregating $22,000 has been raised for supporting the work for three years. At the end of this time a larger endowment will be necessary. In the absence of Dr. Welch, Dr. Milton C. Winternitz, his first assistant, has been directing the work. Dr. Welch will probably name the director soon after his return. It is probable that the director of the laboratory will have two assistants. All branches of research work in pathology will be followed. This includes bacteriology, immunology, and problems arising from postmortem examinations.

MISSOURI

Personal.—Dr. William P. Camp, Springfield, is reported to be critically ill at his home.——Dr. D. R. McCue, Trenton, a member of the State Board of Pardons and Paroles, has resigned.——Dr. Leroi Beck, South St. Joseph, was seriously injured by the overturning of his automobile while making an emergency call, September 4.

Chiropractors Barred.—The Missouri State Board of Health has ruled that chiropractors have no legal standing and are open to prosecution for practicing as physicians without a license.

Health Lectures of State Fair.—At the State Fair, Sedalia, September 25 to October 2, a program of lectures on public health topics was aranged under the auspices of the Missouri State Medical Association and the state commissioner of food and drugs. The program included addresses by Dr. Robert M. Funkhouser, St. Louis, on eugenics; Mr. F. H. Fricke, state pure food and drug commission, on food and drugs; Dr. Robert E. Schlueter, St. Louis, on cancer; Mr. H. E. Wiedeman, state chemist, household tests; Dr. Frank G. Nifong, Columbia, on the economic value of medical science and its service to the world today; Dr. Mazyck P. Ravenel, Columbia, on "Every Man His Own Life Insurance Agent"; Dr. Francis H. Matthews, Liberty, on contagious diseases; Dr. Guy Titsworth, Sedalia, on how to keep the eyes well. Motion pictures on health protection were shown after each lecture.

St. Louis

Bartlett's Guests.—Dr. William J. Mayo, Rochester, Minn.; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Richard H. Harte, Philadelphia, and Dr. Donald C. Balfour, Rochester, Minn., were guests of Dr. Willard Bartlett on October 11. The visitors were making a trip down the Mississippi River in Dr. Mayo's yacht.

Biologic Research.—Note has previously been made of the expedition undertaken under the auspices of St. Louis University for the purpose of establishing a biologic research station in British Honduras. The preliminary survey which was made by Dr. Edward N. Tobey, Dr. John P. Coony and Mr. Alphonse M. Schwitalla was unfortunately saddened by the tragic loss of the United Fruit Company's steamer *Marowijne* with Dr. Tobey on board as has been already reported. As for the results of the expedition, Mr. Schwitalla reports that a detailed program can now be submitted to the university for the prosecution of research in those regions. It is clear that a great abundance of material can be found for studying some of the outstanding problems connected with malaria and uncinariasis. A large amount of material can also be obtained for studying pinta, sprue, climatic bubo, and the so-called "tropical ulcers." In several cases it was suspected that fevers of hitherto undescribed character have been encountered. During this year's trip only the coast towns were visited. The villages of the interior are sure to yield even richer results. Altogether it may be considered as certain that a further study of this promising field will yield results that will be beneficial not only to the people of those regions but will also prove a distinct advance in tropical medicine.

NEW HAMPSHIRE

New Officers for State Surgeons.—At the annual meeting of the New Hampshire Surgical Club, held in Hanover, October 8, Dr. William H. A. Lyons, Manchester, was elected president; Dr. George C. Wilkins, Manchester, vice president, and Dr. Charles E. Congdon, Nashua, secretary-treasurer.

Dartmouth Alumni Elect.—At the annual meeting of the Dartmouth Medical Alumni Association held in Hanover, October 8, under the presidency of Dr. Elmer H. Carleton, Hanover, the following officers were elected: president, Dr. Elmer H. Carleton, Hanover (reelected); vice presidents, Drs. Alexander A. Beaton, Franklin, and Walter A. Bartlett, Manchester; and secretary-treasurer, Dr. Howard N. Kingsford, Hanover.

NEW JERSEY

Medical Talks to Pupils.—Arrangements have been made by the board of education of Montclair to have lectures to be given to the pupils of the evening schools of the city on hygiene, first aid, etc.

State Board Sustained.—The Supreme Court of New Jersey in a decision rendered Oct. 6, 1915, partially sustained the State Board of Medical Examiners in refusing to license "graduates" of the New Jersey College of Osteopathy in regard to which it was charged that diplomas had been sold at from $25 to $300 each.

Personal.—Dr. Edward Guion, for twelve years chief of the Bureau of Health of Atlantic City, has resigned to enter private practice.——Dr. John C. Felty, first assistant to the medical superintendent of the New Jersey State Hospital for the Insane, Trenton, who has been a member of the medical staff of the hospital for twenty-five years, resigned and relinquished his duties, October 4, and will make his home in Gettysburg, Pa. A dinner was given in honor of Dr. Felty, at the Country Club, October 4, at which he was presented with a clock.——Dr. Edgar B. Funkhouser has succeeded Dr. Felty.

NEW YORK

Psychopathic Ward.—The finance committee of the Buffalo Common Council has recommended that Health Commissioner Francis E. Fronczak be authorized to spend $2,000 in fitting out a ward in the East Ferry Street Hospital, Buffalo, for alcoholics and persons suspected of being of unsound mind.

Sanatorium Opened.—The J. N. Adam Memorial Hospital, Perrysburg, was formally opened October 9. This institution has been erected at a cost of $120,000 and is under the charge of the Buffalo Association for the Relief and Control of Tuberculosis. At the opening exercises the work of the schoolchildren of Buffalo, who raised $10,000 for the institution, will be commemorated by the unveiling of tablets.

New York City

Correction.—In the personal items of the issue of October 9, it was stated that Dr. and Mrs. H. Holbrook Curtis had sailed for Europe. Dr. Curtis telegraphs that it is a misstatement.

"Safety First" Shows Results.—A report compiled by the Safety First Society states that during September, 1915, there were only twenty-eight deaths from accidents involving vehicles in Manhattan as against forty-nine for the same month of 1914. Motor vehicles of all types killed eighteen persons last month, as against thirty in September, 1914.

Four Anthrax Cases.—During the past three weeks there have been four deaths from anthrax in this vicinity. The most recent, that of Mr. Stackpole, has excited much public interest because he was treated with the new serum prepared by A. Eichhorn of the Bureau of Animal Industry and lived for about a week after the disease manifested itself.

Changes in the Medical Faculty at Columbia.—Dr. Francis R. Fraser has been granted leave of absence while rendering service with the French army. Dr. Francis Carter Wood has been elected by the medical faculty to be delegate to the university council for the unexpired term of Dr. M. Allen Starr, retired. It is announced by the trustees of the university that the registration in the medical department is 345 as against 323 last year.

Many Shops Still Sell Wood Alcohol.—An investigation by the health department of 2,400 places in which it was suspected that wood alcohol was being sold has brought to light the fact that 764 shops were selling wood alcohol not properly labeled. Of these places, 466 were drug stores and saloons and the others were paint shops. The result of the discovery that so many shops were using and selling wood alcohol illegally has caused the health department to issue a warning to citizens against the use of any alcohol that is not properly labeled.

Health Department Encourages Use of Schick Test.—The bureau of laboratories of the health department announces that it is prepared to supply an outfit for applying the Schick test which will make the application of the test a simple procedure for the general practitioner. This outfit consists of a capillary tube and a small rubber bulb, such as is employed in the distribution of vaccine virus, and a bottle containing 10 c.c. of sterile physiologic saline solution to which 0.025 per cent. phenol has been added. The capillary tube contains one minimum lethal dose (for the guinea-pig) of undiluted diphtheria toxin. The outfit is accompanied by directions for its use and the health department believes that it will be found both convenient and reliable.

NORTH CAROLINA

Dairy Inspection Inaugurated.—Greensboro is inaugurating a system of dairy inspection including the publication from month to month of the standing of the respective dairies which supply milk to the city.

Personal.—Dr. Samuel Westray Battle, Asheville, sailed for England, October 4.——Dr. John Thames, Wilmington, assistant county health officer of New Hanover County, has been completely exonerated on the charge of official negligence, recently preferred against him.

The Murphy Memorial.—The P. L. Murphy Memorial Association, of which Colonel P. M. Pearsall, Newbern, is secretary, has issued in book form the addresses made on the occasion of the presentation of the portrait of the late Dr. Patrick Livingston Murphy to the state library, Raleigh, and on the dedication of the bronze memorial tablet to Dr. Murphy at the State Hospital for the Insane, Morganton.

Deaver in Charlotte.—Dr. John B. Deaver, Philadelphia, was entertained at luncheon at the Charlotte Sanitarium by Dr. Edward C. Register, September 22, and at dinner by the Mecklenburg County Medical Society at the Country Club in the evening. During the day Dr. Deaver gave clinics at the Charlotte Sanitarium and the Presbyterian and other hospitals of the city. In the evening he delivered a lecture on "Symptoms of Disease in the Upper Abdomen."

Health Officers Confer.—The four recently installed whole-time county health officers, Drs. Darius C. Absher of Henderson, Vance County; Milton T. Edgerton of Greenville, Pitt County; James C. Braswell of Nash County and Eugene R. Hardin of Clinton, Sampson County, met at Raleigh, September 18, at the office of the State Board of Health, to arrange uniformity of system and method in the control of infectious diseases in their respective counties.

Hospital Notes.—Dr. Addison G. Brenizer, Jr., has leased the old Brenizer Home in Charlotte and will establish a private hospital in the building.——Contracts have been let at Tarboro for the Edgecombe County General Hospital.——Drs. William P. and Charles R. Reaves, Greensboro, are building a three-story and basement building which will be ready in a short time. The basement will be given over to the treatment of colored patients; the first floor will be used for offices and the third floor as an infirmary for white patients.——Miss Lorene Johnson, Statesville, has leased the Billingsley Hospital and will conduct it for the benefit of patients of all physicians of the city and county.

PENNSYLVANIA

Personal.—Dr. Walter J. Cathrall, South Bethlehem, after an illness of eleven months contracted in the United States government service in the Far East, is again able to resume his practice.

Dedication of Hospital.—The dedication of the Elizabeth Steel Magee Hospital and the conferring of honorary degrees by the University of Pittsburgh will take place in Memorial Hall, that city, October 27. There will be a number of addresses relating to the hospital and its founder, Christopher Lyman Magee, and an address on "The Teacher's Inheritance" by Dr. William Walter Chipman of Montreal, after which the degrees will be conferred. The new hospital, located at Forbes and Halket streets, will be inspected in the afternoon and there will be a dinner at the Hotel Schenley in the evening.

Optometrists to Fight.—The institution of mandamus proceedings to test the legality of Governor Brumbaugh's veto of the house bill creating a separate board for licensing optometrists, was the principal topic of discussion before the annual convention of the optical society of Pennsylvania, which opened its meetings at the Hotel Adelphia, Philadelphia, October 12. Although their reason for fighting the veto is to escape the domination of the state medical board of optometrists, they base their fight on a technicality. It is their contention that the governor vetoed the bill after the ten day limit allowed for vetoes and that the bill, therefore, became law automatically.

Philadelphia

Personal.—Dr. John B. Carnett, who has been seriously ill for four months, is convalescing.——Dr. Malcolm C. Grow is now en route to Archangel to serve in a Russian military hospital.——Dr. Luther C. Peter has been made associate professor of diseases of the eye in the Philadelphia Polyclinic.——Dr. William B. Swartley has just gone on service for three months at the American Ambulance Hospital at Paris.——Dr. Charles H. Frazier was elected president of the Mask and Wig Club of the University of Pennsylvania, October 13.——Dr. Daniel J. McCarthy, professor of medical jurisprudence in the University of Pennsylvania, has returned from the American Ambulance Hospital in Paris and will make a report on the influence of the war on the nervous system and mental future of the soldiers, the result of high explosives and other problems of scientific interest to the medical profession.

WISCONSIN

New State Officers.—At the annual meeting of the State Medical Society of Wisconsin, held in Milwaukee, October 5 to 7, under the presidency of Dr. Theodore J. Readelings, Marinette, the following officers were elected: president, Dr. Louis F. Jermain, Milwaukee; vice presidents, Drs. Michael R. Filkinson, Oconomowoc; Mathew S. Hosmer, Ashland, and Robert W. Blumenthal, Milwaukee; secretary, Dr. L. Rock Sleyster, Waupun (reelected); treasurer, Dr. Sidney S. Hall, Ripon; delegate to the American Medical Association, Dr. Thomas H. Hay, Stevens Point; alternate, Dr. L. Rock Sleyster, Waupun; delegate to the National Legislative Council, Dr. Gustave Windesheim, Kenosha; delegate to the council on medical education, Dr. Arthur J. Patek, Milwaukee.

CANADA

Personal.—Lieut.-Col. Henry R. Casgrain, Windsor, Ont., in command of one of the stationary hospitals in Egypt or the Dardanelles, is seriously ill at Alexandria.——Dr. Henry J. Stephens, London, Ont., has been appointed medical officer of the Seventieth Overseas Battalion.——Drs. Jim B. Jupp and Samuel M. McLay, Woodstock, Ont., have joined the Royal Army Medical Corps.——Surg.-Gen. George A. S. Ryerson was the guest of honor at the first regular monthly dinner of The Aesculapian Club, Toronto, the evening of October 14. Dr. Ryerson was the founder of the society. He gave a very interesting address on his recent trip to northern France, recounting many striking incidents.——The American consul in Toronto, Dr. Julius D. Dreber, was recently banqueted by members of the American colony in that city at the American Club.

Ontario Medical Inquiry Under Way.—The preliminary hearing of the government commission relative to medical education and practice in Ontario was held in Toronto, October 16, but after a half hour's session adjourned until Thursday, Friday and Saturday, October 21, 22 and 23. The chiropractors will be heard at the Thursday session. There were about 200 medical men at the session. The Academy of Medicine, Toronto, was represented by the president, Dr. William H. B. Aikins, and treasurer, Dr. William A. Young. The academy will act with the Ontario Medical Council whose solicitor is Mr. H. S. Osler, K. C. The Ontario Medical Association is represented by Dr. Richard A. Reeve. The University of Toronto was represented by President Falconer and Mr. J. B. Clark, K. C. It is understood that the university will take the stand that all shall take a prescribed course of four years and practice whatsoever method of therapeutics they may choose.

Hospital News.—Official word has been received by Dean Charles K. Clarke of the medical faculty of the University of Toronto that No. 4 Base Hospital, under command of Lieut.-Col. James A. Roberts, has departed for the Mediterranean. The hospital was organized by the University of Toronto in March and April last, and left for England early in May. Since that time it has been doing work in England. It is composed of forty-four medical men, many prominent in practice in Toronto, and seventy-three nurses. Miss Beatrice Bartlett, an Anglican Sister of the Church of England, lectured recently in Montreal on the need of help for the hospitals in France. She has organized several hospitals for the French government. She spoke of thousands of men blinded by gas fumes, thousands made insane. She has made fifty-two trips across the English Channel since the beginning of the war. At one time she saw 10,000 wounded around one base hospital and 40,000 refugees. She took a munition worker on one occasion to France to show him the war conditions, and had showed him tables whereon 9,000 amputations had been performed. His report to 140,000 of his mates had made them all workers for the cause.——McGill's Tent Town Hospital at the front is said to be a model hospital. It is under command of Lieut.-Col. Herbert S. Birkett, Montreal.

GENERAL

Ohio Valley Meeting.—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, November 3 and 4.

Tuberculosis Examination.—An announcement has been made by the National Association for the Study and Prevention of Tuberculosis, that a national medical examination day is to be made a part of the plans for Tuberculosis Week, December 6 to 12. December 8 is set for medical examination day and this is the first step toward the securing of an annual physical examination for every one in the United States. Children's Health Crusade Day is planned for December 10.

Health Education.—The United States Public Health Service, believing that "education is the road to sanitary progress," has establish a loan library with stereopticon slides which it sends out on request of sanitarians, educators, and others interested in the promulgation of the doctrines of hygiene and public sanitation. There are special sets of slides on diseases of children, hookworm, leprosy, malaria, milk production, mouth hygiene, pellagra, bubonic plague, rural schools, smallpox, tropical diseases, tuberculosis and typhoid fever.

Prevention of Infant Mortality.—The sixth annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held in Philadelphia, November 12 to 15. The subjects to be taken up at the meeting include eugenics, effect of the economic standing of the family on infant mortality; infant welfare nursing in small cities, towns and rural districts; institutional mortality; midwifery conditions and prevention of respiratory diseases. The topic of "Economic Aspects of Infant Welfare" will be discussed at a joint session with the Philadelphia County Medical Society at the Philadelphia College of Physicians. Other sessions will take place at the Bellevue-Stratford.

Bequests and Donations.—The following bequests and donations have recently been announced:

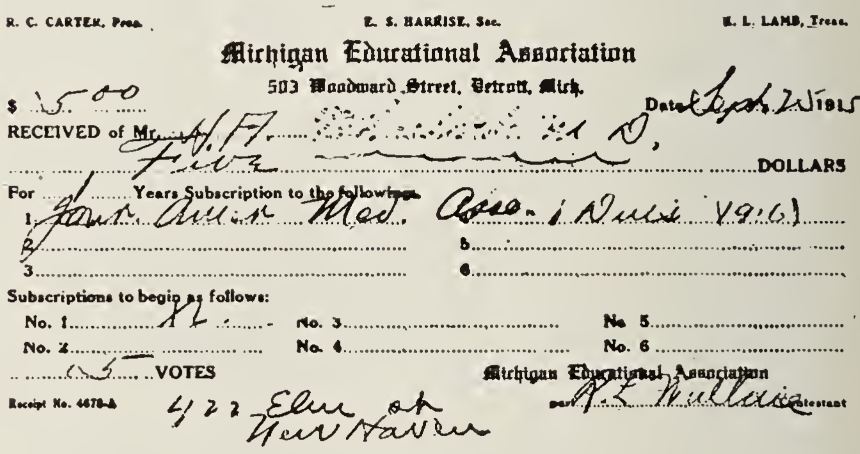
St. Joseph's Hospital, Alton, Ill., $3,000, as the result of a bazaar recently held.

Michael Reese Hospital, Chicago, $25,000; Chicago-Winfield Tuberculosis Sanatorium, Winfield, Ill., $5,000, by the will of Edwin G. Foreman.

Methodist Hospital, Philadelphia, a contingent bequest of $3,600 or more, dependent on the death of direct beneficiaries by a codicil to the will of Charles Fox.

St. Vincent's Charity Hospital, Cleveland, $25,000, for the equipment of the operating department of a new wing to the hospital, by the will of Dr. Dudley Peter Allen, Cleveland.

Subscription Swindlers Still at Work.—Every few months we are compelled to warn our readers against fraudulent canvassers and collectors. Seven weeks ago we referred specifically to a scheme operated under the title of the "Cornell Educational Association." In this an individual presents himself as a contestant for a prize in the form of a scholarship awarded by Cornell Educational Association to the one sending the most business in a certain length of time. The scheme is a successful one because it appeals to the sympathies of the good nature of the average man—to the one who wants to help the student get an education.



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Michigan Educational Association

per R. L. Wallace Contestant

Hence it is worked under different names. One to which we have already called attention is the National Educational Association; the latest is the Michigan Educational Association. In spite of our repeated warnings, evidence is received every day or two that some of our readers are being caught. To distinctly emphasize this warning, we are reproducing in a reduced form a blank that caught some of our readers within the last two or three weeks. The same names appear as officers on the various blanks—the name of the alleged institution and the canvasser changes.

FOREIGN

Control of Vaccination at Vienna.—The Vienna authorities are utilizing the opportunity afforded by distribution of the bread and flour tickets to householders to gather data in regard to vaccination. Question blanks regarding vaccination are given out with the tickets and they are required to be filled in for each inmate of the building.

Nipiology—the Science of Infant Welfare.—Prof. E. Cacace of the University of Naples has coined this term, "nipiology," to express that branch of pediatrics dealing with young infants. The term is from the Greek "nepios," and he has organized a Nipiologic Society in connection with the Instituto Nipioigienico, of which he is director. The scope of the institute and society is the study of early infancy from the biologic, psychologic and clinical standpoints, and for records and welfare work of all kinds for infants, and for training mothers and prospective mothers. The society in question accepts lay members on payment of small annual dues, and both local and national women's organizations are taking an active interest in the work of the new Societa di nipiologia.

Scarcity of Physicians in Galicia.—The Austrian department of the interior has ordered all physicians who have occupied official positions in Galicia to return to their posts at once, regardless of what they may be doing at the time. If serving in hospitals or prisoners' camps they must be relieved of their duties at once and all proceed to Galicia without delay to aid in combating epidemic diseases. All the medical men of Galicia, general practitioners, hospital physicians and surgeons and others who have left Galicia since the war began are urged to return to aid in the pressing work in Galicia unless they are serving now in hospitals or other branches of the sanitary service and the local political authorities certify that their services are indispensable. The word indispensable must be used in its strictest sense. Women physicians are exempted from these orders to return to Galicia. The journey back to Galicia being in the interests of the public safety, the authorities along the way are required to facilitate the journey in every way. Official records are to be kept of the medical men of Galicia and those still missing from their posts may be appealed to through the daily papers. The official decree concludes with provisions to insure registration and a more equable supply of physicians throughout the country, combating the tendency for medical men to gravitate to the cities and leave large areas with inadequate medical attendance. The Runderlass is addressed to all the "district captains" throughout lower Austria; it is published in full in the *Klinisch-therapeutische Wochenschrift* just received.

PARIS LETTER

Paris, Sept. 30, 1915.

The War

EARLY DISINFECTION OF WOUNDS OF WAR

At a recent session of the Académie de médecine, Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, read a paper in which he particularly emphasized the importance of complete and early disinfection of wounds of war, since infections constitute for the wounded a considerable aggravation of their condition, producing a mortality which may run from 6.1 per cent., which is that of wounds in general in the first twelve hours, to 32.1 per cent. if the treatment begins after twelve hours. To be efficacious, disinfection should be early. It should therefore be performed by experienced surgeons at the first-aid posts (which, being too much neglected, have need of improvement) and in the ambulances of the first line.

According to Tuffier, there are three zones in the medical organizations: the first where life is saved; the second where limbs are saved, and the third where they are repaired. If the first of these zones operates well, the other two are relieved of much of their burdens. In the first-aid posts, the skin of the wounded patients should be disinfected by tincture of iodin; then visible foreign bodies should be removed from the wound, the flow of blood checked, a compress moistened with Dakin's fluid [see The Journal, editorial, Sept. 4, 1915, p. 880; Correspondence, Sept. 18, 1915, p. 1048; Queries and Minor Notes, Sept. 25, 1915, p. 1130.—Ed.] placed on the wound, the whole covered with a layer of absorbent cotton held in place by a nonconstricting bandage, and the limb immobilized in a splint. As an antiseptic, Tuffier prefers sodium hypochlorite.

NECESSITY OF REPEATED INJECTIONS OF ANTITETANIC SERUM

At a recent session of the Société de médecine de Paris, Dr. Maurice reported five cases of delayed tetanus, one of which was fatal, which occurred in spite of one injection of antitetanic serum, or even two given eight days apart. Maurice emphasizes the necessity of making systematically a second injection of 10 c.c., eight days after the first, and a third eight days after the second, as Dr. Roux has always recommended, if the wound has not yet cicatrized. No report of any case appears to have been published in which three successive injections of serum were given at eight-day intervals. The production of antitetanic serum is at present sufficient to make it possible to apply rigorously this method of repeated injections. The demands for serum for hospital services should therefore receive more liberal response, and it should not be forbidden to give injections to patients who are reported, very often without any indication of the dose employed, as having already received a preventive injection in the first-line treatment.

Dr. Péraire thinks that it is the fear of anaphylaxis which has prevented the employment of repeated injections of antitetanic serum. To avoid such complications, the employment of very small doses should be recommended, for example, 10 c.c. injected repeatedly every two or three days.

THE GAIT OF PATIENTS WHO HAVE LOST LIMBS

A patient provided with an artificial leg has a peculiar gait which should be well studied for the sake of remedying as far as possible the defects in such apparatus. Dr. Ducroquet. licencié ès sciences, who read a paper on this subject before the Académie de médecine, thinks that the cinematograph gives the best conditions for such study. He has drawn from such a study technical conclusions of great interest with regard to the rôle played by the length of the stump, the more or less perfect adaptation of the apparatus, etc. He was also enabled thus to compare the two types of artificial legs, the French and the American. The American apparatus permits free flexion of the knee. The gait with such an apparatus is better but more fatiguing; it should be used on comparatively level ground, and it requires constant attention. This apparatus should be reserved for city dwellers. In cases of amputation of the lower leg, whether the apparatus be French or American, the gait, though different in the two cases, is often so perfect that the amputation is not suspected. The patient furnished with French apparatus utilizes the movements of articulation of the foot; furnished with American apparatus, he utilizes only a portion of these movements, and bears his weight chiefly on the fore part of the foot.

COMPULSORY REVACCINATION

A law has just been promulgated which in case of war, public calamity, epidemic or threatened epidemic makes vaccination or revaccination against smallpox compulsory for all persons, no matter what their age, who cannot prove a successful vaccination within less than five years.

ANOTHER EXCHANGE OF SERIOUSLY WOUNDED FRENCH AND GERMAN PRISONERS

I mentioned in a previous letter (The Journal, Aug. 7. 1915, p. 545) the first exchange of seriously wounded French and German prisoners of war. Another exchange of the same kind is at present in process. Two convoys of seriously wounded prisoners, returning from Germany by way of Switzerland, have already been received at Lyons.

CIDER FOR THE ARMIES

The senatorial army commission has recently adopted the conclusions of an interesting report by M. André Lebert on the utilization of cider by the armies in the field. According to the statistics of the agricultural department, forty-seven out of the eighty-six departments produce cider. Cider, like wine, may be called a national drink, and it will be favorably received by our armies, no matter from what part of the country they come. Moreover, cider supplies enough energy so that it may without danger replace the wine ration. Half a liter (about a pint) of wine furnishes 300 calories (this is the soldier's ration, which has been reduced for some time); a liter (about a quart) of pure cider will furnish the same number of calories. In order to supply the same amount of energy in the liquid nourishment given to our soldiers, a ration of double volume must be supplied. It should be added that the harvest of cider fruit has been exceptional in 1915, and that from 32,000,000 to 35,000,000 hectoliters of cider will be manufactured in France, while the average production of the last ten years is only 18,000,000. On the other hand, our vineyards have this year yielded a very scanty harvest. One consideration which guided the senatorial commission is the fact that a hectoliter (about 26 gallons) of cider costs from 10 to 12 francs (from about $2 to $2.40); a hectoliter of wine at present costs 40 francs (about $8), and the price will probably rise.

TRAINING OF DOGS FOR THE MEDICAL SERVICE

The Société nationale du chien sanitaire has just made some interesting experiments on the immense grounds of the chateau of Maisons-Laffitte in the outskirts of Paris. Ten dogs, held in leash by their trainers, were loosed in turn to seek for soldiers, hidden in the shrubbery, representing wounded patients. Thanks to their marvelously developed sense of smell, very skilfully trained, the animals discovered the soldiers without difficulty, then returned to seek their masters in order to lead them to the place where the wounded had fallen.

One of the founders and first trainers of the society, M. Leroy, read an interesting report on the present employment of dogs in the armies. It was in 1895 that Captain Tolat first undertook to train dogs. In 1908, M. Lepel-Cointet founded the society, which in August, 1914, at the declaration of war, had as yet only 140 dogs. The members of the society made a great effort, and today more than 700 dogs are at the front. About 100 are being trained in the kennels, previous to being sent to the front.

THE HOSPITAL OF FRENCH CITIES AT MILAN

At the congress held at Cernobbio by the France-Italie and Italia-Francia committees, the French committee took measures to hasten the installation of the hospital of the French cities offered to the Italian Red Cross, section of Milan, with the proceeds of the subscription of the French municipalities. As I mentioned about two weeks ago, the municipal council of Paris recently voted 20,000 francs (about $4,000) for the purpose; many other cities have made similar subscriptions. The hospital will be established in the buildings of the Ricordi workshops, an immense establishment which will permit a model organization. The formal opening of the hospital will be held during November.

MENTION OF A CIVILIAN PHYSICIAN FOR GALLANT CONDUCT

Dr. Sarrazin, mayor of la Couture, department of Pas-de-Calais, has been mentioned for gallant conduct, "never having ceased, under continual bombardment, to traverse the country in order to visit the sick; during the German occupation, the firmness and dignity of his attitude contributed to safeguard the interest of the commune, giving to his fellow citizens a fine example of civic coolness and courage."

Death of Prof. Marcel Oui

Dr. Marcel Oui, professor of the obstetrical clinic at the Faculté de médecine de Lille, has just died in his forty-eighth year at Bordeaux, where he was fulfilling his military duties as head of the first surgical sector of the eighteenth region. He had been a corresponding member of the Académie de médecine since 1910.

LONDON LETTER

London, Oct. 1, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The problem of supplying the new armies with a sufficient number of surgeons still remains a difficulty, although every means is being taken both by the profession and by the military authorities to deal with it. The country is divided into districts in each of which has been constituted a war emergency committee. From the central committee the local organizations are informed of the numbers which each district is estimated to produce, and the answer to this intimation is given by the physicians in the district concerned. Local meetings of the profession have been called, and some of these have been addressed by representatives of the War Office or by prominent members of the profession. Thus all the physicians of the country are impressed by the urgency of the emergency. So far the results are encouraging, but whether they are sufficient remains to be seen. The depletion of hospital staffs for military purposes is causing serious trouble and anxiety, which is well illustrated by the statement of a deputation from Manchester to the executive subcommittee of the war emergency committee. The committee recently issued a circular urging physicians of military age to place their services at the disposal of the War Office. It was pointed out by the chairman of the board of management of the Manchester Royal Infirmary (one of the greatest of the provincial hospitals of England) that in normal times they had 530 beds, 240 had now been added for military purposes, a central branch contained 60 more, and 135 extra beds had also been provided at the relief hospital, making a total of nearly 1,000 beds, over 300 of which were at the disposal of the army. The range of the work is indicated by the following figures: In 1914, 28,000 outpatients and 13,000 inpatients were treated. In a normal year over 20,000 cases of accident come to this hospital and about 7,000 operations are performed. The work is carried on by an honorary staff of 33 and a resident staff of 23 at the infirmary, 2 at the relief hospital. Of the honorary staff, 27 are engaged in the central branch, and 2 at the relief hospital. Of the honorary staff, 27 are engaged in military work, some being wholly absent on such duty, while others doing part work are able to give only partial attention to hospital patients. The resident staff is now reduced to 8 at the infirmary and 1 at each of the auxiliary branches. The work is being done by senior students, but the number of these is limited. The work of the hospital in these circumstances is largely supervised by the resident medical officer, the resident surgical officer, and the accident house surgeon, to whom also much of the clinical education of the students falls. These posts are held by highly tried and competent men; their tenure is often three years, and the occupants are next in succession to vacancies on the permanent honorary staff. If the circular of the war emergency committee deprived the Manchester Royal Infirmary of their services at this juncture the difficulties of carrying on the work would be insuperable. The deputation asked that these men might receive an intimation that their services in their present positions are so valuable that they would not be called on; at any rate that they should receive a notice of one or two months so that the hospital could make some arrangement. The committee replied to the deputation by saying that the difficulty with regard to residents would have to be met in some places by the honorary staff becoming resident, in some by the employment of outside physicians as half timers, and in some by the principle of employing in succession recently qualified physicians who had already taken commissions in the army, though this could obtain only at hospitals to which a teaching school was attached.

WOMEN PHYSICIANS AND THE WAR

The shortage of physicians has given a great impetus to the employment of women physicians, who are now sought for posts which were not previously open to them. At the beginning of the war they organized and ran entirely Red Cross hospitals in Belgium, France and Serbia. One of their units on the way to Serbia was stopped at Malta to attend to the British wounded. When one of their earliest hospitals under the French Red Cross, stationed first in Paris and later at Wimereux, was no longer needed it was taken over by our own War Office and is now doing excellent work. But it is in civil life that the greatest demand for women physicians has arisen—to take the place of men in all sorts of capacities, public and private. The medical journals are full of advertisements offering posts to women, who before the war were practically never mentioned, and though not formally were tacitly excluded from the posts advertised. Now the position has become so acute that a large hospital sent an application to the secretary of the Women's Medical School, "Send us *any* women at *any* salary." However, it must be borne in mind that the large proportion of the posts now offered are for newly qualified and junior physicians. Practically none are offered to older and more experienced women. Many of the women at home on furlough from India and other parts are filling the posts of men who have undertaken military service. Even women who have never practiced before, or who have retired, are giving their services. An impetus has been given to the enlargement of the largest medical school for women in the country, the London School of Medicine for Women, to train more students, and a fund of $150,000 is being raised for the purpose of enlarging the school.

MAIMED SAILORS AND SOLDIERS

One of the ghastly results of the war, the sailor or soldier who has lost a limb, is everywhere in evidence. Needless to say, everything possible has been done to show the gratitude of the country to these valiant men. A special hospital has been erected at Roehampton where they are provided at the expense of the state with artificial limbs and taught how to use them. Their numbers are so great that 800 are at the present moment awaiting admission, although the hospital has been considerably enlarged. With a view to their future employment and also to provide useful occupation for the men while in hospital, workshops fitted with model motor chassis, electrical appliances, lathes, etc., are being organized with competent instructors. A man who has lost his right hand is taught to write with the left, and classes for other industries will be arranged. An employment bureau working in conjunction with existing societies and employers of labor has also been established, and already a number of men have been placed in good situations.

BERLIN LETTER

Berlin, Sept. 21, 1915.

Death of Professor Ewald

Prof. C. A. Ewald died in Berlin yesterday. Had he lived until October 30, he would have been 70 years of age. Two months ago he developed a fever, which, although of an indefinite nature, later was assumed to be a symptom of leukemia. This diagnosis was not confirmed by a necropsy, and it is probable that another diagnosis might have been made on the basis of the postmortem report, because leukemia occurs but rarely at so advanced an age as 70. Next to Kussmaul and Leube, Ewald was most responsible for the founding of the clinic for stomach diseases. Although an associate of the men mentioned, he always worked independently, contributing many original observations of the diseases of the gastro-intestinal tract. Ewald was born in Berlin, and his medical studies were made here as well as in Heidelberg and in Bonn. His doctorate thesis, published in 1870, was entitled "The Histology of the Salivary Glands," showing that his interest in the gastro-intestinal tract was already developed at the time of his graduation. In 1871 he was appointed an assistant by Frerichs in the first medical clinic. He began to lecture in 1874; in 1882 he was made extraordinary professor, and a few years ago was advanced to a regular professorship. In 1876 he was appointed director of the city gynecologic institute, and in 1886 he was appointed Senator's successor in the direction of the medical division of the Augusta Hospital.

Well worthy of mention is his long term of service as editor of the *Berliner klinische Wochenschrift,* in which position he succeeded Professor Waldenburg in 1881. He was sole editor until 1907, when he associated Professor Posner (son of the founder of the *Wochenschrift*) with himself. Until a few years ago he remained in active service as editor. The most notable of his many contributions to medical literature are his lectures on digestion and his book on diseases of the stomach. Among his other literary efforts are a handbook of therapeutics; the articles on diseases of the thyroid, myxedema and cretinism in Nothnagel's "Special Pathology and Therapeutics," and a book on diseases of the liver. He contributed to many compilations and sets of books. Of these should be mentioned Eulenburg's Real-Encyclopedia. An enormous number of clinical articles were contributed by him to the literature, covering all phases of internal medicine, and all of his illustrations were drawn by himself, both black and colored. His mentality was unclouded until the end. He occupied himself continuously with literary work, and even in his last days attempted to complete his share of the manuscript for a collaborated work.

Ewald's influence on the development of his specialty is well shown in the work done by his pupils. Nearly all the prominent younger men who are devoting their time to the study of the diseases of the gastro-intestinal tract have been pupils of Ewald, especially Boas, Rosenheim, Strauss and L. Kuttner. In spite of his activities in the field of medicine, Ewald found time to devote himself to other things, such as the building and maintenance of hospitals for children on the seacoast. For more than thirty years he was secretary of the society for "Seehospize" (seaside sanatoriums). For twenty-five years he was librarian of the Berlin Medical Society, rendering splendid and worthy service. He felt deeply the action taken by this society not long ago when it failed to reelect him to his position because of a misunderstanding of the attitude taken by him in the matter of the Russian consultations scandal, as I mentioned at the time. He never forgot this action while he lived. Science and literature in general also commanded his lively interest. As a relative of Du Bois-Reymond he soon became a valuable member of the more cultured Berlin society and, together with his popular wife, he succeeded in making his home the gathering place for the devotees of art and science. He also had many international relationships, especially with England. Personally, he was a little hard, and his rather extraordinary lack of feeling for his associates and colleagues often aroused ill feeling against him, and probably had much to do with the action taken by the Berlin Medical Society, mentioned above. His death certainly will leave a great void in the medical circles of Berlin as well as in those of the world in general.

American Red Cross for Russia

By an agreement between Germany and Austria-Hungary on the one hand, and Russia on the other, brought about through the agency of the American ambassador at Berlin, physicians and nurses of the American Red Cross will be sent to the prison camps and hospitals in Russia and Siberia to render professional service. The members of this group have been in Germany and Austria-Hungary for the past year giving service in Gleiwitz, Kosel, Vienna and Budapest. The physicians and nurses of the American Red Cross in Serbia have offered their services in the work. About twenty-five American physicians and fifty nurses will be engaged in this work, the expenses being paid by Germany and Austria-Hungary. The American Red Cross will contribute the medicines and bandages.

Injuries in Aviation Accidents

The surgeon of an aviation corps, Dr. Schöppler, has noticed that the injuries sustained by falling from a great height present a typical picture if the motor of the aeroplane does not fall on the aviator's body. As a rule there are found fractures of the base of the skull, tearing of the lung tissues, and typical fractures of the upper and lower extremities, no matter how far the body has fallen. Fracture of the sternal end of the clavicle, of the forearm, of the lower leg above the epiphyseal line, and in the middle of the femur in the upper third, and complete comminution of the tarsus are present in nearly every case. Injuries of the spinal column are seen but rarely, whereas the viscera frequently burst or are torn to pieces; especially is this true of the heart, liver, lungs and the large blood vessels.

Personal

September 21, Professor Eberth, formerly professor of pathologic anatomy in Halle, celebrated his eightieth birthday. His claim to fame is the discovery of the typhoid bacillus. Since 1911 he has been living in a suburb of Berlin.

Marriages

Horace Hutchins Le Seur, M.D., Niagara Falls, N. Y., to Miss Helen Minerva Crossett of Cortland, Ill., at Batavia, N. Y., September 29.

Clarence Flack Graham, M.D., Albany, N. Y., to Miss Mary Jarvis Fish of Brookline, Mass., at Rye Beach, N. H., October 6.

Charles Percy Noble, M.D., Boise, Idaho, to Miss Elizabeth M. Scanlan of St. David's, Pa., at Towson, Md., October 7.

Henry C. Walbeck, Jr., M.D., Stroud, Okla., to Miss Amelia Bedwell of Louisville, Ky., in Sapulpa, Okla., recently.

Eugene Bascom Wright, M.D., Richmond, W. Va., to Miss Elsie E. Daub of Baltimore, in Philadelphia, September 11.

Clara Amelia Hale, M.D., to George Groot Gregory, both of Syracuse, N. Y., at Fayetteville, N. Y., September 15.

Harry Edwin Kleinschmidt, M.D., St. Louis, to Miss Anna Josephine McNabney of Sparta, Ill., October 7.

Edward Joseph O'Brien, Jr., M.D., Brighton, Boston, to Miss Isabel Roche of Medford, Mass., September 29.

Alexander Hamilton Rice, M.D., Boston, to Mrs. Eleanor Elkins Widener of Philadelphia, in Boston, October 6.

Thomas N. Fleming, M.D., Cold Spring, Minn., to Miss Rose Bingenheim of Creighton, Neb., September 17.

Matthew Lincoln Turner, M.D. Griswold, Iowa, to Miss Loretta E. Brown of Des Moines, Iowa, October 2.

Martin Heydemann, M.D., Boston, to Miss Lillian Adelaide Pelonsky of Roxbury, Boston, October 6.

Edward Lingan Bowlus, M.D., Middletown, Md., to Miss Georgia Martin Potter, in Baltimore, October 6.

Willis Guy Mudd, M.D., to Miss Ruth Faustina Acorn, both of Denver, in San Francisco, August 4.

James Bray Bradley, M.D., Eaton Rapids, Mich., to Miss Pearl Parsall of Howell, Mich., October 12.

James P. H. Ruddy, M.D., Scranton, Pa., to Miss Mary Kilpatrick of Carbondale, Pa., October 12.

Virgil E. Robbins, M.D., to Miss Ruby Lee Thomas, both of Quitman, Texas, in Dallas, June 20.

Hugh M. Mulliken, M.D., Terre Haute, Ind., to Miss Laura Fisher of Philadelphia, recently.

Vernon C. David, M.D., Chicago, to Miss Marguerite Record of Minneapolis, October 16.

Deaths

Alice Bellvadore Sams-Turner, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1884; aged 56; an honorary member of the Jasper County (Iowa) Medical Society and of the State Society of Iowa Medical Women; health officer of Colfax, Iowa, during 1886 and 1887; one of the founders, a trustee and for twelve years president of the Colfax Free Public Library; died at her home in that city, July 10, from carcinoma of the breast.

William Merrill McCoy, M.D. College of Physicians and Surgeons, Chicago, 1901; aged 39; a Fellow of the American Medical Association and a well-known surgeon of north central Washington; formerly of Clinton, Iowa, but for the last ten years a practitioner of Wenatchee, Wash.; died in the Deaconess Hospital in that city, October 1, from intestinal obstruction following an operation for appendicitis, eleven days before.

Robert Benjamin Barron, M.D. Bellevue Hospital Medical School, 1883; aged 55; a member of the Medical Association of Georgia; formerly chairman of the Board of Health of Macon; and a member of the board of medical directors of and visiting physician to the Macon Hospital; for twenty years a resident of Macon; died at his home in Gray, Jones County, Ga., October 2, from heart disease.

James Water McLean, M.D. Rush Medical College, 1869; aged 72; a Fellow of the American Medical Association and Chicago, Milwaukee and St. Paul Railway Surgeons' Association; local surgeon of that road at Fayette, Iowa; died at his home in that city, October 4, from bronchopneumonia.

Walker W. McConnell, M.D. Western Reserve University, Cleveland, 1888; Jefferson Medical College, Philadelphia, 1898; a member of the Medical Society of the State of Pennsylvania; director of the First National Bank of Harrisville; died at his home in that city, July 2, from nephritis.

Stephen Garland Sharp, Jr., M.D. Medical College of Ohio, Cincinnati, 1905; aged 32; surgeon for the Braden Copper Company and in charge of the company's hospital at Rancagua, Chile, South America; died in Valparaiso, Chile, about September 28, from spinal meningitis.

Cameron Chamberlin, M.D. Medical College of Indiana, Indianapolis, 1902; aged 36; a Fellow of the American Medical Association; a well-known practitioner of Indianapolis; died in the Presbyterian Hospital, Chicago, October 4, from spinal meningitis.

James C. Word, M.D. Jefferson Medical College, 1860; aged 81; surgeon in the Confederate service throughout the Civil War and since that time a practitioner of Monroe County, Miss.; died at the home of his daughter in Aberdeen, Miss., October 3.

Theodore St. John, M.D. New York Homeopathic Medical College, New York City, 1881; aged 83; a pioneer of Nevada, but since 1878 a resident of Connecticut; died at his home in Thomaston, Conn., September 11, from cerebral hemorrhage.

Charles Hamilton Browning, M.D. Western Reserve University, Cleveland, 1897; aged 44; a Fellow of the American Medical Association, and a prominent practitioner of Oberlin, Ohio; died at his home, September 28, from cerebral hemorrhage.

Edward Osband Sutton, M.D. University of Michigan, Ann Arbor, 1903; aged 40; of Tacoma, Wash.; a Fellow of the American Medical Association; died in the Seattle General Hospital, October 1, a week after a surgical operation.

John Prentiss Walker, M.D. Washington University, St. Louis, 1875; aged 68; of Lamonte, Mo.; a Confederate veteran; died in the University Hospital, Kansas City, October 5, a week after a surgical operation for carcinoma.

Leonidas Mason, M.D. Medical College of Ohio, Cincinnati, 1872; aged 78; a veteran of the Civil War; formerly a member of the Indiana State Medical Association; died at his home in Bluffton, Ind., October 5, from pneumonia.

Frank Lewis Peiro, M.D. University of Vermont, Burlington, 1866; aged 76; for more than forty years a practitioner of Chicago; a veteran of the Civil War; died at the home of his daughter in Evanston, Ill., October 12.

Jacob A. Grove, M.D. Eclectic Medical Institute, Cincinnati, 1869; aged 82; a veteran of the Civil War; died at his home in Kenton, Ohio, October 4.

Samuel Stein, M.D. University of the South, Sewanee, Tenn., 1908; aged 32; a member of the Mississippi State Medical Association; of Greenville, Miss.; died in the King's Daughters' Hospital in that place, October 3.

Date Kimball Thyng, M.D. University of Minnesota, Minneapolis, 1896; aged 41; of Tacoma, Wash.; a member of the Washington State Medical Association; died in Rochester, Minn., October 2, from leukemia.

Edmund R. Bolding, M.D. College of Physicians and Surgeons, Kansas City, Kan., 1898; aged 44; of Eldurg, Kan.; was found dead in his room in the Savoy Hotel, Kansas City, Mo., October 9, from disease of the kidney.

Hiram Garrett Miller, M.D. Eclectic Medical Institute, Cincinnati, 1869; aged 90; for many years a practitioner of La Crosse, Wis., and a Forty-Niner; died at his home in Charlottesville, W. Va., October 6.

Robert J. Roach (license, Wisconsin, 1899), a practitioner for twenty-two years; died at his home in Cobb, Wis., September 28, from the effects of carbolic acid, self-administered, it is believed, with suicidal intent.

James D. Brooks, M.D. Jenner Medical College, Chicago, 1899; aged 43; a member of the State Medical Association of Texas; died at his home in San Angelo, Texas, July 2, from gangrene of the lungs.

Stephen Marcus Cook, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1878; aged 82; for nearly fifty years a practitioner of Belle Plaine, Iowa; died at his home in that city, September 30.

George W. Combs, M.D. Cincinnati College of Medicine and Surgery, 1879; aged 77; a member of the Illinois State Medical Society; died at his home in Ridgway, Ill., July 2, from endocarditis.

Absalom S. Walsh, M.D. Missouri Medical College, St. Louis, 1876; formerly of St. Louis; for many years a surgical instrument dealer of London, England; died recently in that city.

Henry W. Rihl, M.D. Jefferson Medical College, 1849; aged 92; for nearly sixty years a practitioner of Germantown, Philadelphia; died at his home in that place, October 11.

Harry Oliver Lightner, M.D. Baltimore Medical College, 1896; aged 43; also a druggist; died at his home in Marysville, Pa., October 5, as the result of a nervous breakdown.

Edwin S. Kellogg, M.D. Hahnemann Medical College, Philadelphia, 1878; aged 64; died at his sanatorium in Helena, Mont., October 9, from valvular heart disease.

Floyd M. Young, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1887; aged 50; died suddenly in his office in Atlanta, October 6, from acute gastritis.

Abraham H. Parker, M.D. Pulte Medical College, Cincinnati, 1889; aged 75; of Macon, Ga.; died in the Macon City Hospital, September 22, from chronic nephritis.

Charles Wallace Stiles, M.D. Boston University School of Medicine, 1878; aged 65; died at his home in Somerville, Mass., September 9, from nervous breakdown.

Thomas M. Bulick, M.D. Hahnemann Medical College, Philadelphia, 1882; aged 75; died at his home in Harrisburg, Pa., August 9, from acute nephritis.

John H. Cameron, M.D. Medical College of Virginia, Richmond, 1860; aged 79; died at his home in Goshen, Va., July 16, from heart disease.

James D. Bragg, M.D. Albany (N. Y.) Medical College, 1867; aged 69; died at his home in Bridgeport, Conn., July 23, from acute gastritis.

George W. Prugh, M.D. Medical College of Ohio, Cincinnati, 1875; aged 65; died at his home in Cincinnati, October 12.

E. B. Willan, M.D. Medical College of Indiana, Indianapolis, 1881; aged 82; died at his home in Trafalgar, Ind., October 5.

James W. Mitchell, M.D. Southern Medical College, Atlanta, Ga., 1880; aged 54; died at his home in Atlanta, October 1.

Madison Bayard Morris, M.D. Hahnemann Medical College, Philadelphia, 1871; aged 88; died in Edina, Mo., October 2.

Edward P. Harrison (license, Indiana, 1897), aged 70; died at his home in Rockport, Ind., July 31, from enterocolitis.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

LACTOPEPTINE AND ELIXIR LACTOPEPTINE

Report of the Council on Pharmacy and Chemistry

Mixtures of pepsin and pancreatin are therapeutically irrational; the two substances are not indicated in the same conditions, nor can they act together. Under physiologic conditions, such mixtures are chemically impossible: in a liquid medium the ingredients destroy each other.

Lactopeptine is manufactured by the New York Pharmacal Association, Yonkers, N. Y. It is sold under the claim that it contains pepsin, diastase, pancreatin, lactic acid and hydrochloric acid. This product was among the first proprietary preparations examined by the Council on Pharmacy and Chemistry. The report of the investigation was published in The Journal, March 16, 1907, p. 959. The preparation was found to be practically inert—"essentially a weak saccharated pepsin," devoid of tryptic activity.

Six years later it was still widely advertised with the same irrational claims. A referee (A) therefore examined Lactopeptine (powdered) for the Council in 1913, and confirmed the previous findings. The referee's report was published in The Journal, Aug. 2, 1913, p. 358.

Nearly four months after this publication, the manufacturers protested against the report, maintaining, contrary to the findings of the Council, that Lactopeptine possesses pancreatic activity and contains "loosely combined" hydrochloric acid. Referee A therefore repeated his examination, and a second referee (B), independently, examined specimens of Lactopeptine (powder) purchased on the open market for the purpose shortly before.

A few specimens examined by these two referees showed a slight tryptic activity; most of them showed none. The amount of hydrochloric acid present was insignificant.

The reports of the two referees were referred to the manufacturers, who again protested vehemently against these findings, this time on the ground that the specimens were old. The manufacturers also cited the work of three chemists to disprove the findings of the referees, and demanded that the Council reexamine Lactopeptine, making use of fresh specimens. The Council refused for the following reasons:

1. So long as the packages of Lactopeptine are not dated, the activity of specimens known to be fresh is of no practical importance. The activity of the actual market supply is the only question of interest to the profession. The only fair test is that made on specimens representative of the product sold to the ultimate consumer.

2. The evidence presented by the manufacturers did not warrant a reexamination, since the work of two of the chemists cited substantially corroborates the results obtained by the Council's referees from the fresher specimens. The figures for tryptic activity obtained by the third chemist cited by the manufacturers could not be accepted by the Council, since it was at variance with all other known results of investigations of Lactopeptine.

3. As stated at the outset, whatever the tryptic activity of the mixture, it is therapeutically useless. A demonstration of tryptic activity in a mixture containing both pepsin and pancreatin is of merely theoretical interest.

Such activity, of course, cannot be expected, even on theoretical grounds, in liquid mixtures like Elixir Lactopeptine.

The Council therefore again declared Lactopeptine (powder and tablets) and Elixir Lactopeptine ineligible for New and Nonofficial Remedies and authorized publication of the following statement.

W. A. Puckner, Secretary.

THE COUNCIL'S REPORT *

Lactopeptine powder (New York Pharmacal Association, Yonkers, N. Y.) was examined by the Council in 1907. At that time it was claimed to contain

> ". . . the five active agents of digestion—pepsin, diastase (veg. ptyalin), pancreatin, lactic acid and hydrochloric acid—combined in the proper proportion to insure the best results."

The examination showed that the preparation was essentially "a weak saccharated pepsin," containing but small amounts of pepsin, no hydrochloric acid, or mere traces only, and no diastase or pancreatin (The Journal, March 16, 1907).

In 1913, the product was reexamined, because the claims, as to both composition and therapeutic value, were still being made. Samples were tested both of the American product, and of a British product from John Morgan Richards and Sons, London. The original findings were confirmed and the results were published in The Journal, Aug. 2, 1913, p. 358. Nearly four months later (November 24) the New York Pharmacal Association wrote to the Council, objecting to the findings and maintaining that Lactopeptine possesses pancreatic activity and contains ("in loose chemical combination") hydrochloric acid. In accordance with the custom of the Council, the work was sent back for review to the referee (A), whose conclusions were then tested by a second referee (B), a physiologic chemist, not a member of the Council, selected because of his special knowledge of the subject.

In December, 1913, Referee A made a large number of new tests to determine proteolytic and amylolytic power. His results show that the ferment activity of the preparation is so low as to merit no recognition in practical use. The tests also show that the amount of lactic acid or "loosely combined HCl" (or both) present is too small to have any appreciable physiologic activity and therefore to be of any therapeutic value.

Nine samples of Lactopeptine purchased in the open market in December, 1913, and January, 1914, were examined be Referee B early in 1914. His studies show absence of amylase in all samples; presence of pepsin, giving weak reactions even when compared with those of old pepsin preparations; complete absence of trypsin in seven out of nine samples, tryptic reaction being obtained in two samples, in one of which the reaction, "slight at best and of no practical import," was obtained only after treatment for twelve hours or more.

The presence of tryptic activity in two out of the nine samples may be due to the fresher condition of these specimens, as indicated by the serial numbers. The evidence shows that it is a commercial impossibility to market mixtures of pepsin, pancreatin and lactic acid so that they can display any material tryptic activity.

It should be reaffirmed that mixtures combining peptic and pancreatic activities are not feasible, because pepsin cannot act except in the presence of acid, and pancreatin is destroyed by acid and by peptic activity. Furthermore, in conditions in which pancreatin is called for, pepsin is not, and vice versa; therefore the administration of mixtures of pepsin and pancreatin would be unjustified, even if both constituents could be expected to exert activity.

The foregoing observations apply to Lactopeptine in powder and tablet form.

While mixtures of pepsin and pancreatin are unscientific and unjustified, theoretically the two substances may coexist in a solid preparation, and the activity of such a preparation is consequently a proper subject of investigation. Theoretically as well as practically, however, pepsin and pancreatin cannot exist together in solution. The claims made for Elixir Lactopeptine and all other liquid preparations sold as mixtures of pepsin and pancreatin are therefore impossible. The Council has previously taken action (The Journal, Feb. 2, 1907, p. 434) refusing to approve for inclusion with New and Nonofficial Remedies such preparations, calling the attention of the medical profession and of manufacturers to their worthlessness, and requesting the American Pharmaceutical Association to instruct its committee on the National Formulary to omit from the next edition of that work a liquid preparation of pepsin and pancreatin recognized under the title of "elixir digestivum compositum."

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* Owing to lack of space, the referee's reports are here omitted. They will be given in full in the Annual Reports of the Council.

It is recommended that the Council reaffirm this previous action, and that Lactopeptine and Elixir Lactopeptine be declared ineligible for New and Nonofficial Remedies because of conflict with Rule 10 ("No article will be admitted which, because of its unscientific composition, is useless or inimical to the best interests of the public or of the medical profession").

Manufacturers' Protest and Council's Answer

The foregoing was submitted, together with the findings of the two referees, to the manufacturers. They protested again, alleging that:

AGE OF SPECIMENS

First.—The specimens of Lactopeptine examined by the second referee were old. The dates of manufacture corresponding to the several batch numbers are supplied by the manufacturers as follows:

2275	(Powder)	September, 1908
2301	(Powder)	June, 1909
2312	(Powder)	December, 1909
2348	(Powder)	October, 1911
2352	(Powder)	December, 1911
2364	(Powder)	July, 1912
2374	(Powder)	March, 1913
2383	(Powder)	October, 1913
1638	(Tablets)	October, 1911

The manufacturers assert that they do not understand how specimens of these ages could have been purchased on the open market in 1913 and 1914, inasmuch as their agents are and long have been instructed to take up from the druggist all lots of Lactopeptine which, as indicated by the batch numbers, have attained "any appreciable age." The age of the specimens, the manufacturers declare, deprives the table in the second referee's report of "all significance or interest."

As previously stated, however, the specimens of Lactopeptine examined were purchased on the open market in various localities in unbroken packages, in December, 1913, and January, 1914. They thus represent stock used in filling physicians' prescriptions or sold to the public. Neither the referees nor any one connected with the Council had any means of knowing the age of the specimens until the dates of manufacture were furnished by the New York Pharmacal Association. The first tests of the second referee were made in February, 1914, on Specimens 2374 and 2383, which were then, it would appear, about one year old and four months old, respectively. The Council has repeatedly urged that pharmaceutical substances which are subject to deterioration should be dated by the manufacturer, and a similar suggestion has been made by the Bureau of Chemistry of the U. S. Department of Agriculture concerning mixtures containing enzymes. Nothwithstanding the instructions which the New York Pharmacal Association claims to have given its agents, the market supply of Lactopeptine in December, 1913, and January, 1914, was not composed of new stock, and until the manufacturers adopt the practice of dating packages, there can be no assurance that it will be fresh. In this connection it is of interest to note that the Bureau of Chemistry of the U. S. Department of Agriculaure has issued a warning that it will judge such products by the degree of their activity when they reach the consumer, i. e., as they are found on the market.

REPORTS OF OTHER CHEMISTS

Second.—The New York Pharmacal Association cites the work of several chemists, who have examined Lactopeptine and report the presence of tryptic activity. Dr. S. R. Benedict in December, 1913, reported to the Council "distinct" tryptic activity (digestion in twelve hours by Lactopeptine of 4.2 times its weight of fibrin containing 50 per cent. moisture) in specimens examined by him. These specimens were numbered 2382, and were therefore probably manufactured in October, 1913; compare the dates furnished by the manufacturer for the specimens used by the second referee. No tests against other preparations possessing tryptic activity are reported, and Dr. Benedict expressly disclaims any opinion as to the therapeutic value of the preparation.[1] Dr. P. B. Hawk, whose report was submitted by the manufacturers, found in Lactopeptine by Fermi's method one-fifth the tryptic activity of that of Merck's pancreatin, and by Grützner's method an activity of 18 per cent. of the pancreatin. A test for the production of tryptophan was reported positive. The New York Pharmacal Association also submitted a report from Dr. A. W. Balch, who found pepsin, rennin, trypsin, steapsin, amylopsin and lactic acid present in Lactopeptine; also an amount of combined hydrochloric acid in 1 gm. the equivalent of 1.05 c.c. tenth normal solution or 0.00383 gm. hydrochloric acid. (He reports digestion in twenty-four hours by Lactopeptine of 25 times its own weight of fibrin. "An active extract of pancreas reacted exactly like the Lactopeptine solution.") The serial numbers of the specimens tested by Hawk and Balch are not given, but no doubt they were fresh.

CONCLUSIONS

The New York Pharmacal Association demanded that the referee reexamine Lactopeptine, making use of fresh specimens. The Council held that this was unnecessary, for the following reasons:

1. The previous finding of the Council, that specimens of Lactopeptine found on the open market are essentially weak saccharated pepsins, is not to be refuted by examination of fresh specimens. Even if it be assumed that all old specimens of Lactopeptine have been withdrawn from the market since the last purchase of specimens for the use of the Council's referee, there can be no assurance that the stock will be constantly kept fresh. Unless the manufacturers date their product, physicians cannot know that their pre-

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[1] Dr. Benedict's personal communication to a member of the Council is as follows:

"In the report of the Council upon Lactopeptine which you sent to me, I find the following statement: 'Careful examination failed to show the presence of either diastase or pancreatin.' In this connection I will cite to you the following experiment, carried out by myself: A package containing a 1-ounce bottle of Lactopeptine (powder) with seal unbroken was purchased in the open market and opened in this laboratory. The label bore the special Number 6 2382. Two hundred milligrams of this product was dissolved in 50 c.c. of a 0.25 per cent. solution of sodium carbonate in water. This solution was divided into two portions of 25 c.c. each. One of these portions was boiled at once, and after cooling was added to 1 gm. of moist fibrin contained in a flask. The other portion (unboiled) was also added to 1 gm. of moist fibrin contained in a flask. Both flasks (after addition of 5 c.c. of toluene to each) were stoppered and placed in an incubator at 37 degrees, and left there for twelve hours. Examination of the two flasks at the end of this period showed that the one to which the unboiled solution of Lactopeptine [powder] had been added contained much less solid protein than did the other. Although this fact was obvious to the naked eye, the exact extent of digestion in the two flasks was determined by heating both to boiling, acidifying with acetic acid, diluting to definite volume, filtering and determining the nitrogen in the filtrate by Kjeldahl's method. Subtracting the trace of nitrogen contained in the filtrate of the control flask, the results showed that 42 per cent. of the original fibrin present had been dissolved by the unboiled Lactopeptine solution. This can be ascribed only to tryptic activity under the conditions of this experiment. Furthermore, this is not simply a 'trace' of activity, but is at least sufficiently marked to warrant a statement that this sample showed a distinct tryptic activity. Inasmuch as I have obtained exactly similar results with two other samples of Lactopeptine (powder) (these being the only ones I have examined), I am inclined to question the correctness of the Council's statement regarding the absence of trypsin from this preparation. [As noted above, a fresh preparation was used.—Ed.]

"May I again add that I am making no statement regarding therapeutic value of preparation, and that I have no opinion upon that matter one way or the other. My work was undertaken solely out of interest to see whether trypsin could exist in the powder (which gives a markedly acid solution when dissolved in water). The Elixir Lactopeptine could theoretically show no tryptic activity, nor have I found any trace of such activity in one sample of the Elixir examined.

"In making use of any of the contents of my letters kindly include the statement that my work upon Lactopeptine was done without remuneration of any kind, and was done only for the scientific interest attached to the question."

scriptions are filled with fresh material. Nor is it reasonable to ask that the Council examine the market supply of any given proprietary at a time selected by the manufacturers.

2. Without entering into all questions of detail in the analyses, the Council is willing to accept the reports of Drs. Benedict and Hawk as representative of fresh Lactopeptine powder. It is therefore unnecessary for the Council to make further experiments along this line. The results of these two chemists in no wise contradict the conclusions of the Council's referees, being comparable with those obtained by the referee on the fresher specimens used by them. The experiments of Drs. Hawk and Benedict show a degree of tryptic activity which, though chemically not negligible, is quite without significance practically, even if it could be assumed that the trypsin in the fresh Lactopeptine escaped destruction in the stomach. The figures for tryptic activity given by Dr. Benedict do not differ materially from those of the first referee. Those of Professor Hawk show a tryptic activity of from 18 to 20 per cent. of that of commercial pancreatin—and commercial pancreatins ordinarily are of low tryptic activity, if not inert (see Long and Muhleman: *Arch. Int. Med.,* February, 1914, p. 314.) The reports of these chemists present no reason for changing the conclusion that "it is a commercial impossibility to market mixtures of pepsin, pancreatin and lactic acid so that they can display any material tryptic activity."

The results which Dr. Balch obtained in a test for tryptic activity show a marked discrepancy with those obtained by Drs. Hawk and Benedict, not to mention the Council's referees, and also with the fact that only about 11 per cent. of "pancreatin" is claimed in the published formula of Lactopeptine. The Council is unable to accept Dr. Balch's results for trypsin or rennin as reliable. His other results are without significance and call for no special comment.

3. Even if tryptic activity were conceded to Lactopeptine, the preparation, like all preparations containing pepsin and pancreatin, would still be, as previously stated, therapeutically irrational.

The Council approved the report.

Correspondence

The So-Called "New" Anthrax Serum

To the Editor:—A recent case of anthrax in man in a New York hospital was given unusual publicity by the daily press. This was primarily due to the great respect which the patient enjoyed in his community, and also to the extraordinary courage he manifested during the course of his horrible affliction.

My stenographer happened to be in New York at the time, and reading of the case, he lost no time in communicating with the attending physicians, calling to their attention an anthrax serum which has been prepared by me and which has been extensively tested, both for its prophylactic and its curative value.

The stenographer had this information from taking dictation from me while I was preparing a paper on the subject for the American Veterinary Medical Association's meeting at Oakland, and also from notes which he transcribed for me in connection with the work during the progress of the experiments.

On telegraphic request the serum was forwarded to New York, and was repeatedly administered to the patient with apparently good results. From the reports of the attending physicians the infection had subsided, but as a result of extreme heart weakness he succumbed quite suddenly, his recovery from anthrax being announced in the bulletins sent out by the physicians.

In the meanwhile the daily press heralded the serum as a wonderful discovery, and made many misstatements as to its preparation, application, origin, etc. It is needless for me to explain the difficulty of having scientific matters correctly quoted in the daily press. It was a useless task to have correct data published as to the serum and its preparation. I was placed as a central light in many newspaper dispatches, which was rather an embarrassing position, realizing the undeserved credit given to me.

I have undertaken the experimental work in immunization against anthrax with a view of establishing a more satisfactory method of immunization than those which are now employed in this country. The simultaneous method—consisting of an injection of a potent anthrax serum and a carefully standardized spore vaccine—proved very promising and to my mind superior to the Pasteur method. The results of these experiments were embodied in my paper read before the American Veterinary Medical Association, in which have also been included the results of field experiments.

During the progress of the work we had occasion to treat a considerable number of affected animals with our serum, and obtained remarkable recoveries in a very high percentage of cases, including some of the most severe types. The stenographer, knowing of these results, praised the curative qualities of the serum somewhat beyond its known value, which naturally was interpreted by the newspapers as something wonderful.

It is needless for me to state that anthrax serum has been prepared in Europe by many institutions, and that this phase of immunization has been practiced for several years. We have, however, succeeded in concentrating the serum by a method of precipitation and are now endeavoring to prepare the specific proteins of the immune serum in a dry form to insure its keeping qualities and to prevent contamination. Furthermore, the vaccine which is being used in connection with the serum is an accurately standardized spore vaccine, by which it is possible to establish accurately the number of spores given to an animal.

Although I am satisfied that members of the medical and veterinary professions are familiar with the work which has been carried on in the immunization against anthrax, nevertheless I deem it advisable to state my position in the case in order that I may not be misjudged as attempting to claim priority for something which should and is known by all professional men to belong to others.

It might be of interest, however, to state that in the course of the experiments it was necessary for us to obtain anthrax serum for comparative tests, and to our surprise we found that it was not obtainable in this country. We therefore imported a quantity of such serum, and to our further surprise the comparative test revealed our serum to be at least twice as potent as the one of foreign make, and this may explain the splendid curative value of our anthrax serum.

A. Eichhorn, Washington, D. C.
Chief, Pathological Division, Bureau of Animal Industry,
U. S. Department of Agriculture.

Statistics Regarding Motor Accidents

To the Editor:—Your editorial on the safe and sane Fourth (The Journal, Aug. 28, 1915, p. 803), is of especial interest to me, for I have followed closely the campaign begun by you in 1903. Your success has suggested that I urge you to begin another campaign which, prosecuted with the same zeal as the other, will result in saving many lives, physical suffering and property each year. I refer to automobile accidents. If you will follow the same plan, you will not be compelled to go far in gathering statistics to get appalling figures—figures that will surely arouse the public press to assist you.

W. S. Clark, M.D., Los Angeles.

Rightly Objects to "Guards"

To the Editor:—When I saw in a daily paper the statement that the "guards" at the Springfield State Hospital, Sykesville, Md., had asked an opportunity to form an organization for military drill, I was inclined to make another attempt to dissuade newspaper writers from using the phraseology of medieval times in the care of the insane. But the constant use of the terms "keepers," "guard," "cell," "maniac" and the like, in reference to hospitals for the insane has discouraged me. When, however, a medical journal prints information from Maryland, presumably furnished by a medical man, in which the word "guard" is used, a term alike offensive to patients and friends of patients in hospitals, and to those who have labored for real hospital methods in our institutions for the insane, a feeling of discouragement if not something worse results.

Edward N. Brush, M.D., Towson, Md.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

S. WEIR MITCHELL — RELATIONS BETWEEN ANESTHETIST AND SURGEON

To the Editor:—Please give me: 1. (*a*) The first name of S. Weir Mitchell. (*b*) The year of his birth and death.

2. Has the operator any legal right to dictate to the anesthetist as to what anesthetic shall or shall not be given?

3. Has the anesthetist the legal right to stop the operation at any point if he considers the patient at the time too weak to sustain further manipulation?

A. S. McCormick, M.D., Akron, Ohio.

Answer.—1. (*a*) Silas. (*b*) Born Feb. 15, 1829; died Jan. 4, 1914. The death notice of Dr. Mitchell appeared in The Journal, Jan. 10, 1914.

2. The anesthetist is usually selected by the surgeon. It is customary, as a matter of professional courtesy, for the anesthetist to be governed by the wishes of the surgeon in charge of the case. There is no question of "legal right" involved as there are no laws on this subject. If the anesthetist and the surgeon are unable to agree as to the anesthetic to be used, the anesthetist should withdraw and permit the surgeon to select an anesthetist whose views are in harmony with his own. The responsibility for the result of the operation rests on the surgeon.

3. Here again no "legal right" is involved. It is customary for the anesthetist to call the attention of the surgeon to the patient's condition should dangerous symptoms appear, but it is entirely at the discretion of the surgeon whether or not the operative manipulations should be continued. A few court decisions in malpractice cases touch on the question indirectly, the general principle upheld being that where two or more physicians are jointly in attendance on a patient, each is responsible for the result of his own acts, but not for the results of the acts of the others.

ANAPHYLAXIS FROM DIPHTHERIA ANTITOXIN IN PERSONS PREVIOUSLY INJECTED

To the Editor:—Is it contraindicated to give diphtheria antitoxin to a patient having diphtheria if the patient had diphtheria antitoxin injected either for immunizing or curative purposes at some time previous, say from six months to several years?

In what percentage of cases do we get anaphylactic reactions? Are these very dangerous conditions?

Four days ago I gave a child aged 3 years 5,000 units; one and one half years ago I gave the same child 5,000 units. So far I have had none but gratifying results.

P. N. Wentz, M.D., York, Pa.

Answer.—The possibility of an anaphylactic reaction should not prevent the use of antitoxin in a patient with diphtheria, even though he has previously received antitoxin for immunologic or curative purposes. In such persons it is advised to give a small amount (from 0.1 to 1 c.c.) subcutaneously; if no severe symptoms appear after one or two hours, the full dose may be given.

Several considerations make it difficult to state the probability of appearance of anaphylactic phenomena in any given case. In addition to individual peculiarities which no doubt play a part, the volume of serum injected and the method of preparation of the serum are important factors. Weaver (*Arch. Int. Med.*, June, 1909, p. 485) found that when the volume of serum was small (from 1 to 9 c.c.), serum disease (urticaria, erythema, arthritis, etc.) appeared in 10.9 per cent.; with increasing volumes of serum, the percentage of reactions progressively increased so that in those cases receiving from 80 to 280 c.c., serum disease was noted in 61 per cent. The more recently developed methods of concentrating and refining antitoxin yield serums of high potency, so that the necessary amount of antitoxin units is available in small volume of serum, and the probability of serum disease is accordingly decreased. The removal by the refining process of certain albumin fractions of the serum decreases the incidence of serum disease. The older statistics, therefore, probably show a higher incidence of reactions than are being obtained at present with concentrated serum.

In persons receiving serum for the first time, serum disease appears in the majority of cases from the seventh to the tenth day, but sometimes earlier or much later, and rarely need cause alarm. Of 200,000 persons injected with serum, there was but one death from anaphylactic shock (Kolle).

The reactions which follow reinjections of serum (that is, in persons previously injected) may be immediate, and in any case are likely to occur earlier than those after first injections (accelerated reactions). The immediate reactions usually present, in addition to urticaria and other symptoms of serum disease, are symptoms of respiratory disturbance, cyanosis, rapid pulse, etc., and correspond to the anaphylactic shock seen after reinjection of experimentally sensitized animals. Epinephrin and atropin have been used with benefit. Even these severe reactions are very rarely fatal. About 50 per cent. of fatal instances of anaphylaxis have occurred in asthmatics, and in some of the latter the fatality followed the first injection of serum. When the reinjection is made within six days after the first injection in man there is practically no danger of anaphylaxis; reinjection in from three to eight weeks after the first injection is followed by some degree of anaphylaxis in about 90 per cent. of cases; reinjection after six to nine months is followed by reaction in about 50 per cent. of cases (Seidel: *München. med. Wchnschr.*, 1915, lxii, 1210). With the lapse of years the percentage of reaction on reinjection is further decreased, and usually appears as an accelerated reaction.

The danger of serum reactions even in previously injected persons is so much more remote than the danger from diphtheria that the physician should not hesitate to avail himself of so potent a remedy as antidiphtheric serum.

ARTICLES ON ARNETH FORMULA

To the Editor:—Please furnish me a reference to the original article and subsequent literature on the Arneth formula.

P. L. Querens, M.D., New Orleans.

Answer.—The following is a list of references on this subject:

Arneth, Die neutrophilen weissen Blutkörperchen bei Infektionskrankheiten, Jena, G. Fischer, 1904; *Folia haemat.*, 1904, i, 492.
Briggs, L. H.: Clinical Value of Arneth Method of Blood Examination, *California State Jour. Med.*, August, 1912; abstr., The Journal, Aug. 24, 1912, p. 674.
Ringer, P. H.: Prognostic Value of Arneth's Leukocytic Blood Picture in Pulmonary Tuberculosis, *Am. Jour. Med. Sc.*, October, 1912.
Hultgen, J. F.: Arneth's Nucleo-Analytic Method as Applied to Eosinophils, *New York Med. Jour.*, Jan. 27, 1912; abst., The Journal, Feb. 10, 1913, p. 439.
Holyroyd, J. B. H.: Prognosis in Pulmonary Tuberculosis: Results Obtained by Arneth's Method, *Brit. Med. Jour.*, May 3, 1913.
Kramer, J.: Prognostic Value of Arneth Blood Count in Pulmonary Tuberculosis, *New York Med. Jour.*, June 14, 1913.
Cummings, R. S.: Arneth Blood Count in Pulmonary Tuberculosis, Report of Eighty Cases, *California State Jour. Med.*, July, 1913; abst., The Journal, Aug. 2, 1913, p. 365.
Schottstaedt, W. E. R.: Arneth Leukocytic Picture, Its Value in Prognosis of Tuberculosis, *Ohio State Med. Jour.*, February, 1914.
Henson, G. E.: Study of the Arneth Formula, The Journal, Sept. 12, 1914, p. 922.
The Arneth Formula, Queries and Minor Notes, The Journal, Oct. 31, 1914, p. 1597.
Cooke, W. E.: Arneth Count in Pulmonary Tuberculosis, *Brit. Jour. Tuberc.*, October, 1914; abstr., The Journal, Nov. 7, 1914, p. 1699.

CZAPLEWSKI'S CARBOLFUCHSIN STAIN

To the Editor:—1. Please give the formula for Czaplewski's carbolfuchsin stain, and state where it can be obtained.

2. Will Ziehl's carbolfuchsin stain the *Endameba buccalis* properly?

C. A. Sellers, M.D., Hartford City, Ind.

Answer.—1. Czaplewski's stain is prepared as follows: One gm. of fuchsin in 5 c.c. of phenol are placed in a dish; 50 c.c. of glycerin are added, with constant stirring, and then diluted with 100 c.c. of water. The constituents of the stain can be purchased from any medical supply house. We do not know where the stain may be purchased already mixed.

2. The following directions are given by Bass and Johns for staining *Endameba buccalis* properly: Spread pus on slide; fix with heat; pour on carbolfuchsin; wash off at once; stain with Loeffler's methylene blue from one-fourth to one-half minute; wash, dry and examine with oil-immersion lens.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Higher Preliminary Standard

An official communication from the secretary of the Virginia State Board of Medical Examiners states that the requirements of preliminary education by that board, according to the provisions of the medical practice act, will be automatically changed as the requirements of the University of Virginia, department of medicine, are increased. The latter has adopted, in addition to a four-year high school education, the requirement of two years of collegiate work, to become effective for all students entering in the session of 1917-1918 and thereafter. The licensing board of Virginia, therefore, will hold a similar standard as the minimum requirement of preliminary education for all graduates of 1921 and thereafter who seek licenses to practice medicine in that state.

Rules Governing Reciprocity in New Hampshire

All applicants for registration by reciprocity must appear in person before the board at Concord, N. H., and bring with them a certificate as to moral character, also documentary proofs that their preliminary education is up to the standard required by the laws of this state, and that they graduated from a Class A medical school according to the classification of the Council on Medical Education of the American Medical Association. They must also present documentary evidence that they have passed some state board examination. If the applicant's qualifications are satisfactory, on payment of the fee of $20, he will be granted a license to practice medicine in New Hampshire.

All graduates of medicine prior to the year 1907 must bring proofs of their education, both preliminary and professional, and proof that they hold a state license. Each case will be considered on its merits and, if satisfactory to the board, a license will be granted.

No person who has failed to pass the New Hampshire state examination will be considered as a candidate.

Wyoming March Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, March 10-12, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 5 passed; 1 osteopath did not complete the examination. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Georgetown University	(1904)	83.2
University of Louisville	(1911)	*
College of Physicians and Surgeons, Boston	(1912)	76
College of Physicians and Surgeons, Dallas	(1905)	80.4†
Medical School of Osaka	(1899)	80.4

* No grade given.
† Graduation of this applicant not confirmed by official information.

Wyoming June Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, June 28-30, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 3, all of whom passed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
University of Colorado	(1911)	79.1
Missouri Medical College	(1899)	76.4
Syracuse University	(1903)	84.5

Book Notices

The American Encyclopedia and Dictionary of Ophthalmology. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology, College of Medicine, University of Illinois. Volumes IV-VII. Cloth. Price, $6 per volume. Chicago: Cleveland Press, 1915.

Volumes IV, V, VI and VII of this monumental work have come from the press in rapid succession. They uphold the high standard of the early volumes both in manner of treatment of the subjects covered and in material characters. Many of the articles are by the same authors as articles found in the first three volumes. The book has now reached the end of the letter G, and of course has covered many important subjects in ophthalmology. In Volume IV, among the extended and leading articles are those on color blindness, comparative ophthalmology and congenital anomalies of the eye. Volume V contains a complete review of the subject of conservation of vision, an extremely interesting article on Jacques Daviel and the extraction of cataract, and a practical study of the cornea and its diseases. Volume VI includes articles on electricity in ophthalmology, electric magnets, exophthalmic goiter with especial relation to its ocular aspects, and a complete and helpful article on examination of the eye. Volume VII, the last of the series here considered, discusses eye glasses, the eyes of soldiers and sailors, and the use of color signals on railroads, in harbors, at sea, etc. It makes a most interesting and practical discussion of the subject. Glaucoma is given much space in the volume, and the scientific information developed to date concerning it is well and completely set forth. Much biography is scattered throughout the volumes, with portraits, in many instances, of the past masters in ancient and modern ophthalmology. Good illustrations abound throughout.

The reader is continually impressed with the fact that a vast amount of time and energy and an excellent sense of discrimination and selection have accompanied the preparation of this monumental work. It is time and energy well spent, for the value of such a series is not for a day or a year, but for generations to come.

Cancer. Its Study and Prevention. By Howard Canning Taylor, M.D., Gynecologist to the Roosevelt Hospital, New York. Cloth. Price, $2.50 net. Pp. 330. Philadelphia: Lea and Febiger, 1915.

This is a concise yet complete presentation of our knowledge of the various forms of cancer (and sarcoma). The subject is treated from historical and statistical points of view and as to etiology, clinical pathology, diagnosis and treatment. The study and prevention of cancer constitute one of the most important and at present most discussed problems confronting either laity or profession. The value of the book is enhanced by its reiteration of the necessity for early treatment. This can be brought about only through recognition of the earliest symptoms of cancer, and these the author constantly emphasizes throughout.

Medicolegal

Risk Assumed by Those Undertaking Work they Know they are Not Physically Fitted for

(Tennessee Coal, Iron & Railroad Co. vs. Moody (Ala.), 68 So. R. 274)

The Supreme Court of Alabama reverses a judgment obtained against the complainant by plaintiff Moody, an epileptic, who sued for damages for personal injuries sustained by him by falling into a pit and being burned, while in the company's employ. It appeared that he had been employed by the company at its furnaces for about nineteen years, when he began to have epileptic fits, and was laid off from work for two or three months. He was then employed to break the runway of molten cinders, or "to work the cinder fall," as he stated it. This he was accustomed to do, with or without direct orders, and was doing when he fell into the pit. He had been ordered by the superintendent thirty to forty-five minutes before, but there was no evidence of any indication then that he was going to have a seizure, although it was said that his spells gave visible indications in conduct or appearance from fifteen to forty minutes before an actual seizure. The plaintiff knew and understood his infirmity, but it did not appear that the superintendent had any knowledge of it, unless it was inferable from notoriety about the plant. The court holds that the order in question was not negligent under the circumstances, and that the plaintiff assumed the risk of injury when he undertook to do the work in which he was engaged.

The court says that the reported cases present only a few instances in which a servant has sought to recover from a master for injuries which resulted primarily from the physical unfitness of the servant for the work which he had undertaken to do. In this case it might perhaps be justly affirmed, on the plaintiff's own showing, that, with or without the order complained of, he would equally have undertaken his regular work on this occasion, with the same result, and hence that the order was not the proximate cause of his injury. But conceding that it was, the company could not be held responsible for that result.

So far as their own safety is concerned, persons not under contractual disability should be, and are allowed to determine for themselves, whether their physical infirmities, known to themselves, shall debar them from any particular employment. According to the nature and degree of their infirmities, they must be more or less exposed to dangers, naturally resulting from their attempt to serve, in almost any of the modern industries. It is no doubt a hard choice, but such persons must estimate for themselves the chances of injury, and it would be unjust as well as illogical to visit the consequences of their choice on their employers. It may be a matter of delicacy as well as difficulty for the employer to undertake in each case to determine the nature and extent of the malady or infirmity of one who offers to work, or the likelihood of injury resulting thereform; and the court thinks the employer may, without liability, legal or moral, accept the judgment of a would-be servant who knows his own condition.

Nor would the imposition of liability on the master in such cases be either politic or humane, even from the servant's point of view, since it would inevitably result in depriving of a livelihood many afflicted persons who have no choice but to labor, and who are impelled by experience or necessity to choose the more lucrative, if more dangerous, employment.

Cleanliness Now Cheaper Than Chemicals.—The European war sent the prices of benzoates from about 18 cents per pound to $2.00 per pound and then food manufacturers who claim we could not get along without benzoates, at once seem to have made a new discovery that after all benzoates are not necessary—sterilization is a cheaper food preservative than benzoate at $2.00 per pound.—*N. Dak. Agric. Experiment Station Bull.*, September, 1915.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Virginia State Medical Society, Richmond, Oct. 26-28.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

(Continued from page 1401)

Treatment of Empyema

Dr. Edward Martin, Philadelphia: In order to avoid infection from the skin, a puncture is made through the skin, deep fascia and into the muscle by means of a cataract knife. The trocar is pushed into the pleural cavity, and stopped when the resistance of the chest wall is no longer felt. The location of the pus thus having been determined, an incision 1½ inches long is made through the skin and a large trocar thrust into the pus cavity. The stylet is removed and a silver tube is passed through the cannula. The cannula is then withdrawn and the flanges of a tube are stitched to the skin by means of silver wire. The silver is not irritating to the tissues, and provides against compression or kinking, as is the case with a rubber tube. If necessary, a cupping glass or suction apparatus can be applied intermittently to produce negative pressure. Pulmonary exercises are to be instituted early. A dressing dampened with mild antiseptic solution is applied over the tube. If there is much adhesion between the pleural layers, these should be freed through a large incision in the intercostal space.

DISCUSSION

Dr. John H. Jopson, Philadelphia: My own practice has been in favor of the ordinary methods of drainage and the following of Richardson's advice to make large holes. We can do this operation early and painlessly on a child if we will carefully and systematically anesthetize everything down to the pleura. I believe we should do this under general anesthesia, local anesthesia being used only if the patient is in bad condition. I like to get a look in the chest and free light adhesions in the lungs in the early stage and remove large loose masses of lymph which will clog any tube and will probably break down and disintegrate. If one can do that and introduce the tube Dr. Martin advises, we are making a great advance.

Dr. John D. Singley, Pittsburgh: As regards breathing exercises in these cases of empyema, it has been my custom for years to have the patients use an ordinary football to blow into. The amount of pressure is limited only by the will of the patient, and it can be carried outdoors, where we like to keep these patients most of the time.

Treatment of Puerperal Infection and Septic Abortion

Dr. John M. Fisher, Philadelphia: In cases of puerperal sepsis, the severity of the infection with the same microorganism, even, varies in type from the most malignant, fatal in a few hours, to a type with symptoms so mild that in the absence of extraordinary precautions it may escape detection. I still believe alcohol to be of service in the treatment of profound toxemia characterized by feebleness of heart action, depression of the nervous centers, and the so-called typhoid states with either high or low temperature. The importance of eliminating toxic products through the excretory canals cannot be too strongly emphasized. The influence that the ingestion of water exercises on the skin and kidney is well understood. By whatever method administered it adds to the volume of the circulation, raises blood pressure, improves the quality of the heart's action, promotes nutritive changes incident to constructive and destructive metamorphosis, dilutes toxic products and promotes their elimination by its stimulating action on the kidney structure. The profession has been slow in estimating the value of outdoor life in tents or porches in the care of patients suffering from puerperal and other forms of sepsis. By the open-air treatment is meant the actual outdoor exposure of the patient and not merely her removal to a sun parlor or veranda with closed sides.

Treatment of Cancer by the Use of Radium in Conjunction with Surgery

Dr. Guy C. Boughton, Erie: Most of the cases of cancer in which radium treatment has been used have been inoperable cases; many of the patients have been almost moribund, and in this type of cases radium treatment has achieved what no other treatment could do. We would not replace surgery by radium therapy, but rather, by combination with radium therapy, make surgery more effective. The surgeon can remove the greater part of the malignant tissue, but the radium rays in suitable cases can go in and destroy all of the remaining malignant cells. In the treatment of even inoperable superficial cancers, carcinoma of the uterus, the prostate, the rectum and the breast, and in spindle-cell round-cell sarcoma, lymphosarcoma and rodent ulcers, radium has been shown to be of definite value.

Surgical Treatment for Absent Vagina

Dr. E. E. Montgomery, Philadelphia: I advise such patients not to have the operation but to accept the situation and give up the idea of marriage. Where conditions seem to make it desirable that a vagina should be constructed, it is important that it should have a lining of mucous membrane. The best plan is to line the constructed canal with a section of the intestine, utilizing a portion of either the ileum or the rectum. I prefer the latter. The lower end of the rectum above the sphincter is utilized for the vagina, and the rectal canal is reconstructed by loosening the rectum and bringing it down and making an anastomosis at the anus.

Treatment of Undescended Testes

Dr. John H. Gibbon, Philadelphia: In the early months and years of life, the mother or nurse should be instructed to draw down gently and push the testicle toward the bottom of the scrotum. If this fails by the third or fourth year, the Bevan operation should be performed. I have done this operation twenty-two times and have been surprised at the facility with which the organ can be carried into the scrotum. Eight of my patients were over 18 years of age.

DISCUSSION

Dr. R. G. Le Conte, Philadelphia: I am entirely in accord with the views expressed by Dr. Gibbon, but the manipulations for relief of the condition in infancy should be carried out very gently, or more harm than good may be done.

Free Transplantation of Fascia Lata in the Treatment of Inguinal Hernia

Dr. Francis T. Stewart, Philadelphia: The free transplantation of fascia has proved to be almost uniformly successful, and for the very reasons that were thought to render fascia unsuitable for transplantation: its poor nourishment and its lowly situation in the scale of organized tissues. This method is especially called for when the hernia is large, recurrent, sliding or direct. The best place from which to obtain the fascia is from the region just below the outer portion of Poupart's ligament. After undermining the lower edge of the skin incision for exposing the inguinal canal, the transplant is immediately sutured with catgut to the under surface of the everted margins of the transversalis fascia. The edges of this fascia are then united over the transplant.

DISCUSSION

Dr. J. S. Rodman, Philadelphia: The recurrent cases of inguinal hernia are the most troublesome, and it is here especially that the use of some material to strengthen the abdominal wall would seem to be called for. I believe that Dr. Stewart has chosen the best material of all to transplant. In operating for recurrence, the most difficult problem is to restore the anatomy to something approximating the normal. This can usually be done with the Bassini technic, and, if transplantation is added to this, it will suffice to cure the majority of such patients.

Preliminary Report of a New Method of Treating Gonococcic Virulent Conjunctivitis by Iced Normal Salt Solution

Dr. Edward B. Heckel, Pittsburgh: Ice pads have long been used in treating this malady on the theory that cold would inhibit the bacterial growth. In view of this and the assumption that gonococci are found only in superficial tissues, I have used iced normal salt solution in a few cases, and firmly believe that we have in it a specific in the treatment of gonococcal conjunctivitis. It is a harmless, effective germicide, easily applied, and well borne by the patients.

Pregnancy and Tuberculosis

Dr. Charles C. Norris, Philadelphia: Two years ago Dr. C. S. Bacon of Chicago estimated that there were in the United States alone 32,000 tuberculous women who became pregnant annually. Whether or not the normal pregnant woman is more susceptible to infection by the tubercle bacilli than her nonpregnant sister is still an undetermined point. The combined statistics of Fishberg, Funk, Jacob, Panwitz and a number of other observers in more than 1,100 cases give the proportion of women believing their infections to have originated during pregnancy or the puerperium as 39 per cent. While it is admitted that pregnancy exerts an unfavorable influence on tuberculosis, no hard and fast rule can be made, but each case must be individualized. Marriage should be advised against in the presence of an active lesion. A hard and fast rule that a tuberculous woman should not marry is too sweeping, although as a general principle this advice is correct. In cases in which conception has been countenanced, especial hygienic surroundings must be enforced, and frequent examinations should be made by an internist. In the cases of pregnancy in the presence of an extensive tuberculous lesion, even in the quiescent stage or small active lesion prior to the fifth month, the uterus should be emptied at once. This applies also when laryngeal or other secondary lesions are present. During the first six or seven weeks of pregnancy, dilatation and curettage is the operation of choice; beyond this period, vaginal hysterotomy. Practically all authorities agree that nothing is to be gained by operative intervention during the last four or five months of pregnancy. The indications, which are for treatment along general lines, should in cases of advanced tuberculosis be directed especially to obtaining a living child. A much more difficult problem is presented by the woman with a quiescent lesion of moderate extent. While it is accepted that continuance of the pregnancy is an added risk, abortion is not justifiable in every case. The patient should be studied closely and a guarded prognosis given.

DISCUSSION

Dr. H. R. M. Landis, Philadelphia: While a very considerable number of tuberculous women state that the first manifestation of the disease has occurred during pregnancy, I doubt whether any such instance is one of primary infection, but one rather of quiescent tuberculosis in which the added stress of pregnancy has lighted up the process. I have known of instances in which women after six or seven years of sterility have become pregnant, after recovery from an attack of incipient tuberculosis, without recurrence of the disease. I am opposed to the legislation advised by eugenists against the marriage of all infected persons.

Dr. Alexander Armstrong, White Haven: It is my custom to advise against the tuberculous woman bearing children until after at least five years of health. This opinion applies also to the question of marriage.

Dr. Elmer H. Funk, Philadelphia: In a series of 100 tuberculous women studied at the Jefferson Hospital, forty-three showed definite lesions dating from the beginning of pregnancy and during the puerperium. Termination of pregnancy in the earlier months gave better results than when gestation was allowed to proceed.

An Unappreciated Form of Pneumothorax

Dr. Charles Rea, York: By the "unappreciated form of pneumothorax" is meant that form coming on suddenly without obvious evidence of illness. The condition is regarded as due to rupture of air vesicles from a tearing of the pleura, probably always due to a previous pleurisy resulting in an adherence of the two surfaces. Its frequency is greater than is generally supposed. Differential diagnosis is of interest so far as extreme emphysema is concerned. General care is practically all the treatment required. Unnecessary muscular effort should be avoided until absorption of the air and obliteration of the rent have taken place. While in the majority of cases prognosis is excellent, cases have been reported in which absorption of the air had not taken place for many years. Pulmonary tuberculosis has occurred in several instances.

Therapeutic Pneumothorax in Pulmonary Tuberculosis

Dr. Alexander Armstrong, White Haven: This method of treatment has been used at White Haven for three years. The procedure consists in the introduction of gas, preferably nitrogen, into the pleural sac, compressing and eventually collapsing the affected lobe or lung. Strict asepsis is to be enjoined throughout the operation. While the lung is usually kept under compression for six months, in some cases a much longer time is essential. The rationale of the measure is to lessen expansion of the alveolar tissue and to encourage drainage of septic matter. Three indications for the treatment are: (1) progressive softening in one or more lobes of one lung, the other lung being normal; (2) relief of hemorrhage; (3) pleurisy, either dry or with effusion. A careful selection of cases is advisable, but it is not essential that treatment be restricted to those in which the disease is unilateral. In view of our results, we believe that therapeutic pneumothorax has a fixed place in the treatment of pulmonary tuberculosis.

DISCUSSION

Dr. Charles M. Montgomery, Philadelphia: I believe the cases referred to by Dr. Rea as "unappreciated pneumothorax" are not recognized as promptly as they should be, although the physical signs are sufficiently plain to be known. A number of cases have been recognized only by the Roentgen ray. Regarding pneumothorax, I know of no more encouraging report in literature. My only fear is that the impression may be received that the procedure is a simple one. It should be emphasized that its employment should be limited to experts in the work.

Dr. Isadore Kaufman, Philadelphia: A very large percentage of the cases mentioned by Dr. Rea develop in only phthisical subjects. As to therapeutic pneumothorax, I would emphasize the employment of the procedure in the earlier cases.

Case of Cholesteatoma of the Spinal Cord

Dr. William Egbert Robertson and Dr. Samuel D. Ingham, Philadelphia: A girl was taken from school when 15 years of age because of increasing languor and anemia. She was first seen, Dec. 28, 1914. There were progressive loss of flesh, intermittent insomnia, motor and sensory disturbance of the left leg, later of the right, variable in character, obstinate constipation and involvement of the bladder, with marked cystitis and a mixed spastic and steppage gait. At operation, a tumor 5½ inches long was removed, which on microscopic examination, proved to be a cholesteatoma. The patient has gained 25 pounds in weight. There is still moderate foot drop in the left leg with a little anesthesia and loss of muscle sense. There is, however, considerable gain in power, with increased size of the left leg, and the gait is almost normal.

Value of the Psychopathic Hospital

Dr. Daniel J. McCarthy, Philadelphia: Within recent years the psychiatrist and neurologist have felt the necessity of a fuller and better equipment for the care, study and prevention of mental diseases. There probably has been no greater blot on the art of medicine than the care and treatment of the insane during a period when in every other direction medicine was advancing. Effort has been directed largely to administration and custodial care of the patient rather than to the scientific study of the cause of mental diseases. Two problems facing the state are the immediate care of large numbers of insane, and the ever-increasing number of those requiring such provision. Insanity is a problem not only of the brain tissues but also of the entire economy. The psychopathic hospital should not, therefore, differ from the most advanced hospital connected with medical schools, and should be divided into the clearing house type for (1) the reception and distribution of cases; (2) the investigation of cases, and (3) the cure of borderline cases. There should be facilities in every general hospital for the temporary care of all mental cases. We should have institutions receiving not only wards of the state but also patients able to pay partial or full fees.

DISCUSSION

Dr. James Hendrie Lloyd, Philadelphia: The term "psychopathic hospital" has come to be a favorite one at the present time and one much used by persons of an optimistic turn of mind. It is meant to note progress, and is used to signify an institution different and theoretically better than that which is meant by the old-fashioned term "insane asylum." So far as the term means progress it is commendable. Progress does not, however, depend on mere words. A psychopathic hospital is, after all, nothing but a hospital for the study and treatment of the insane; one should not be deceived by a name. The treatment of the insane should be practically the same in all hospitals. I believe that a large municipal hospital offers the equipment and facilities desirable for mental cases.

Dr. George E. Price, Philadelphia: I do not entirely agree with Dr. Lloyd that the psychopathic hospital should be entirely under the care of the municipality. The great difficulty in the present situation is that people of moderate means have no hospital to which they can go, but to the municipal hospital at Blockley. Every large hospital, particularly those connected with the teaching institutions, should make provision for the mentally sick, just as they would for the man with an acute pneumonia or nephritis.

Dr. Alfred Gordon, Philadelphia: There should be a place for those persons, not insane in the true sense of the word, yet not normal mentally. Such persons, though free from delusions and capable of reasoning, are in a state of mental disquietude and cause much anxiety to their friends. For these I feel very strongly that there should be a place between the general hospital and the hospital for the truly insane. In spite of the later teaching, a stigma attaches to the placing of a patient in an insane asylum.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fifth Annual Meeting, held at Louisville, Sept. 21-23, 1915

(Concluded from page 1398)

Diagnosis and Treatment of Gastric and Duodenal Ulcers

Dr. J. G. McClymonds, Lexington: The decision to operate more frequently rests with the internist and with the surgeon. As a rule, there should be no disagreement. Those cases with organic pyloric stenosis, hour-glass contractions, or perforations come definitely under surgical treatment. To these we must add cases in which repeated hemorrhages occur or relapses after apparent cure persist. Again, in those cases in which improvement is slow or arrested from inability to take sufficient nourishment, surgical intervention should be considered before the patient has reached a stage of exhaustion in which surgery would be a last resort.

Digitalis: Its Indication and Manner of Use

Dr. W. W. Anderson, Newport: Next to auricular fibrillation and flutter, the occasion of highest usefulness for digitalis is in acute cardiac dilatation. This occurs whenever the heart is subjected to a too great strain without time for hypertrophy. Thus it may result from a wrestling match, a marathon race, or pumping the blood against the constriction of asthma, emphysema or pneumonia. In the last instance dilatation is favored by the toxic degeneration of the myocardium. The effect of digitalis in these cases is most satisfactory. Too many of us have been giving digitalis in every case in which a heart murmur could be detected. The drug is worse than useless in true valve disease unless compensation is broken. Digitalis in therapeutic doses has no effect on the normal heart. A heart fully compensating for an impaired valve is a normal heart for present purposes of circulation, and needs no medicine. The tincture and fluidextract are not to be compared with like preparations of other drugs for stability. If fairly fresh they represent the whole drug. The fresh infusion represents all the nastiness and most of the virtues of digitalis, but is worthless in two days. Not one of the so-called active principles, even at its best, represents the whole drug. Most of them as found in the shops are worthless. They have only the advantage of fitness for hypodermic use even when right. All active preparations of the drug tend to disturb digestion. I cannot agree with those distinguished authorities who assert that this disturbance all comes through the vomiting center, some even adding that it proves overdosing and that digitalis is not a local irritant to the stomach. If their contention were true, there would be no advantage in giving the drug by the rectum. By giving from one third to one half more by rectum, digestion is often spared and full therapeutic effect obtained. The approach of toxic symptoms may be noted in gastric irritation (hunger, pain, weight and pressure soreness) and in slow pulse. Both these effects are in part overcome by combining the drug with atropin, but this combination is liable greatly to increase blood pressure. Coupled rhythm or bigeminal pulse is the danger signal that should mean instant discontinuance of digitalis.

Gastric and Duodenal Ulcer; Surgical

Dr. Michael Casper, Louisville: The chief danger of gastric ulcers are: first, hemorrhage; second, perforation; third, cancer formation; fourth, stenosis, if in the pyloric region. Other dangers exist, such as malnutrition and chronic invalidism, which naturally predispose to other intercurrent diseases. Gastrojejunostomy is the recognized operation for gastric ulcer with excision of the ulcer. Recently Balfour's method of cautery puncture has met warm approval. All gastric ulcers should be excised or destroyed by cautery, because of cancer menace. This disputed point is about settled now, and the only question that remains is what proportion of cancers of the stomach are preceded by ulcer period. Gastrojejunostomy does most good, of course, in ulcer of the pyloric region on account of improved drainage. The causes of failure in gastrojejunostomy are: first, vicious circle; second, narrowing or closing of anastomotic opening; third, jejunal ulcer; fourth, persisting irritation of nonabsorbable inner suture; fifth, jejunal or gastrojejunal ulcer. Nearly all of these are obviated by the more improved technic of posterior, no-loop gastrojejunostomy, absorbable inner through-and-through suture being used and otherwise careful manipulation of anastomotic structures. The final results of operative procedure in gastric and duodenal ulcers compare favorably with operation on the gallbladder and appendix. The mortality is likewise reasonably low, and is being constantly lowered. We cannot too strongly emphasize the hearty cooperation of the internist and the surgeon in this class of work, not only prior to but after operation as well.

Verumontanum with Reference to Referred Symptoms

Dr. George H. Day, Louisville: The etiology of these conditions discloses some very interesting information. In our series of nearly 200 cases, only about 80 per cent. gave the history of a preceding gonorrhea; 20 per cent. were found in men with a negative venereal history. In the gonorrheal type, a large majority had a complicating infection of the prostate and seminal vesicles, some singly and some both. Again, quite a number were observed with a history of an infection years previously and absolutely clear urine, normal vesicle and prostate, with an enormous tender verumontanum, together with resulting neurotic symptoms. In the acute or subacute infectious types the verumontanum takes a many-sided picture of pathologic changes. The sinus pocularis in these cases is usually widely gaping, simulating closely the existing anatomic changes, as attends the urethral orifices in a kidney infection. The causes of these conditions are divided naturally into those giving a history of a previous infection and those with a negative venereal history. It is in the cases with a negative venereal history that the best results are noted. The open air endoscope offers a useful place in the treatment of these disorders, and, while a great many drugs have been suggested, in my hands silver nitrate in varying solutions has been the agent *par excellence*. It has been my habit after thoroughly drying the verumontanum and adjacent tissues with dry applicators to apply varying strengths of silver, either 10, 20, 30 or 50 per cent., as is tolerated by the patient. It is necessarily wise to suggest that the treatment is rather painful and the reaction from the silver at times rather severe, but with a proper selection of cases and the solutions discriminately applied, amazing results are usually obtained. It is my habit to apply them at weekly intervals over a period of more or less length of time. It is wise after the application of the silver to allow it to dry thoroughly. The excess is always to be removed, before the endoscope is withdrawn.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

October, X, No. 4, pp. 229-312

1 *Chemical Study of Woman's Milk, Especially Its Inorganic Constituents. L. E. Holt, A. M. Courtney and H. L. Fales, New York.
2 *Studies in Adaptation of Artificial Food to Human Milk. H. J. Gerstenberger, H. D. Haskins, H. H. McGregor and H. O. Ruh, Cleveland.
3 *Extensive Purpuric Eruptions in Epidemic Meningitis. E. A. Morgan, New York.
4 *Tonsillar Manifestations in Early Diagnosis of Measles. C. Herrman, New York.
5 Total Nonprotein Nitrogen and Urea of Blood and Phenolsulphonephthalein Excretion in Children. W. Tileston and C. W. Comfort, New Haven, Conn.
6 *Atropin Treatment for Exudative Diathesis in Infancy. J. S. Leopold, New York.

1. Study of Woman's Milk.—In the colostrum period woman's milk, according to the authors, has high protein and high ash with rather low fat; in the transition period the protein and ash are lower while the fat is higher; in the mature period (after one month) the composition of normal milk does not vary in any essential or constant way quite up to the end of lactation. The only striking feature of late milk is a decline in quantity, though there is noted a slight fall in all the solid constituents except the sugar. Of the different constituents of milk the least variation both in individuals and in periods is seen in the sugar. The proportion of this is somewhat higher than the generally accepted 7 per cent.; 7.5 per cent. is nearer the correct figure. The greatest individual variations are seen in the fat, though the period variations in fat are not marked. The protein is highest in the colostrum period and falls to a little over half the proportion in mature milk, during which period it is seldom over 1.25 per cent.; of this about one-third is casein, and two-thirds lactalbumin.

The high ash of the colostrum period is chiefly due to the amount of Na_2O and K_2O. Of the salts which make up the ash, the greatest individual, as well as the greatest period, variations are seen in the Na_2O; the least individual and period variations are seen in the CaO, the proportion of which is nearly constant throughout the period of lactation. The largest constituent of the ash of woman's milk is K_2O; this with the CaO together make up more than half the total ash.

Although in amount the total ash of cow's milk is about three and one-half times as great as that of woman's milk, the proportion of different salts which make up the ash is nearly the same, the only exceptions being that cow's milk has more P_2O_5 and less iron.

2. **Artificial Milk.**—By mixing varying proportions of different animal and vegetable fats Gerstenberger and his associates found that it is possible to get a fat that in its Reichert-Meissl number (small per cent. of low volatile fatty acid glycerids), saponification number, iodin number, and other characters, is nearly identical with the fat of human milk, as has previously been shown by Arnold. By replacing in an artificial milk cow's-milk fat with the fat of the above description in an emulsified state (homogenized), a distinct step in advance toward the more complete adaptation of an artificial food to breast milk is made. It is also possible to take into consideration the "growth factors," "vitamine factors," and the like, in choosing the individual fats for an acceptable mixture. This represents a further step in the more complete adaptation of an artificial milk to human milk. The homogenizer represents the important means by which the mixing and emulsification of the fat in the artificial milk is possible. The homogenizer also changes the physical condition of the fat (smaller globules, brownian movement), which may be of advantage.

The meager clinical data suffice to show that the infants fed with Friedenthal's milk in which the cow's-milk fat has been replaced by a fat with a low volatile fatty acid glycerid content, similar to that of human milk fat, vomit less and have more normal stools than the children reported by Bahrdt, and fed with Friedenthal's milk containing unchanged cow's-milk fat. Washing butter with cold or hot water does not remove the low volatile fatty acids from butter, except in an insignificant degree. Washing butter with hot alcohol does remove the low fatty acid glycerids to a decided degree. The manufacture of a food like G-R milk can be arranged to give a very low bacteriologic count. The production of milk like G-R milk can be made at a reasonable cost.

3. **Purpura in Meningitis.**—The unusual features of the two cases cited by Morgan were: 1. The character and distribution of the eruption, which was unlike the usual purpura hemorrhagica and which though differing greatly in degree was almost identical in both patients. 2. Paucity of other meningeal signs, such as opisthotonos and other manifestations of increased muscle spasm. 3. Demonstration of the specific organism in the blood of both patients, though attempts to grow the same organism from the skin lesions were unsuccessful. 4. Refutation of the old theory that the extent and color of the eruption was of prognostic aid. In both the above cases the meningeal manifestations were no more marked than usual, and were quite amenable to treatment. 5. Both cases were sporadic as far as could be learned by investigation of the locality and by a study of the Board of Health daily bulletin.

4. **Tonsillar Spots in Measles.**—Tonsillar spots in measles were observed by Herrman in thirty-five cases (40 per cent. of the eighty-eight cases examined). In 9 patients they were present one day before the eruption appeared; in 11 patients two days, in 7 patients three days, in 5 four days, in 2 six days, in 1 nine days before the eruption appeared. In 30 of the 35 patients Koplik's spots were observed, in 14 patients one day before the eruption appeared, in 15 two days, in 1 three days before the eruption appeared. In 13 patients the tonsillar spots were seen one day before Koplik's spots; in 3 two days, in 2 three days, in 1 four days, in 1 seven days before Koplik's spots. In 5 patients the Koplik's spots were seen 1 day before the tonsillar; in 5 patients the Koplik's spots were seen on the same day as the tonsillar spots, and in 5 patients the Koplik's spots were not seen, so that the interval could not be determined. In 12 patients the spots were visible for one day; in 17 two days, in 6 for three days. At the time when the spots were first seen, the temperature was less than 100 in 6 patients, between 100 and 100.5 in 6, between 100.5 and 101 in 3, between 101 and 101.5 in 8, between 101.5 and 102 in 2, between 102 and 102.5 in 7, between 102.5 and 103 in 1, and between 103 and 103.5 in 2 patients.

6. **Exudative Diathesis.**—During the past year Leopold has administered the atropin treatment to ten infants suffering from symptoms of the exudative diathesis—severe eczema, bronchitis or asthma. Mild cases were not treated. The patients were all institutional babies ranging in age from 4 months to 2 years, and were under constant medical supervision. The results of the atropin treatment on the lesions of the exudative diathesis were excellent; and this despite the fact that no changes in diet were made, and no other drugs administered. One infant died during the period of observation. In this patient atropin had a beneficial effect on the eczema, but in no wise influenced the pulmonary condition, death following a terminal bronchopneumonia.

Atropin was used in a solution of 1 grain of atropin sulphate to 480 drops of water. Three drops of this solution were given on the first day of treatment, and if no untoward effects were observed, the dose was increased 1 drop daily until patients received about 30 drops daily (equivalent to 1/16 grain of atropin sulphate). This last dose was given daily for one or more weeks until the manifest signs of the exudative diathesis had disappeared. Smaller doses were then administered for a few more days or weeks. In only one case did untoward manifestations appear; they were very mild, and did not recur after the initial dose of the atropin solution had been reduced. In no case was there any harmful result from the atropin treatment. It was clearly evident from the beginning that infants suffering from exudative diathesis were able to take large doses of atropin sulphate without showing toxic effects.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

September, LXXII, No. 3, pp. 385-576

7 Need of Instructors and Inspectors as Hospital Officers. R. L. Dickinson, Brooklyn.
8 Roentgen Ray Treatment of Uterine Fibroids. S. Stern, New York.
9 *Choice between Operation and Roentgenization of Uterine Fibroids. R. T. Frank, New York.
10 *Modification of Technic of Abdominal Cesarean Section. W. M. Brown, Rochester, N. Y.
11 *Contracted Pelvis and Difficult Labor. M. Hornstein, New York.
12 Carcinoma Uteri. L. W. Strong, New York.
13 Mentally Backward Child from Standpoint of Neurologist. M. Neustaedter, New York.

9. **Operation of Uterine Fibroids.**—Frank claims that the Roentgen ray cannot be used with safety: In rapidly growing tumors; in cases of metrorrhagia in which complete preliminary curettage with microscopic examination of the curettings is not feasible; in complicated cases in which ovarian cysts or serious adnexal trouble cannot be excluded; in fibroids complicating pregnancy. The rays should not be used in cases in which expense is a factor or in cases in which time is a factor. The rays are of chief value in cases in which operation is declined, in cases in which operation is contraindicated by serious heart, renal or pulmonary lesions, or in cases in which operation is contraindicated because of extreme psychical unrest. Consequently Roentgen-ray treatment is applicable to at the most 5 to 6 per cent. of all patients having fibroids.

10. **Abdominal Cesarean Section.** — A slight modification of the Davis operation is practiced by Brown. He makes the incision in the usual manner, about 10 cm. long and entirely above the umbilicus, if possible. By pressure on the sides of the abdomen an assistant holds the uterus firmly up against the abdominal incision while the cut in the uterus is being made. When the uterus has been carefully opened, and before the child is delivered, the uterine cut is sewed to the abdominal wound either with eight or ten interrupted sutures, or possibly by a continuous suture. The uterus is then emptied of child, placenta and membranes. It is impossible for the uterine viscera to get into the peritoneal cavity or for the abdominal contents to get into the way of the operator. In closing this

incision Brown finds that it is quite easy to place the whole of the first row of uterine muscle sutures before the temporary sutures are removed. By leaving the permanent sutures in the upper and lower angles of the incision long they are convenient for holding the uterus up in view while the last stitches are being taken. Brown has used this method now in four cases.

11. **Contracted Pelvis and Difficult Labor.**—Small external measurements when they are all proportional with an external conjugate of 15 cm. or over, provided they are found in a woman whose slender build accounts for a small pelvis, Hornstein insists deserve a fair test of labor. They usually have small children and will deliver spontaneously if the fetus presents favorably. A fair test of labor in a doubtful case and especially in a primipara must include a period of four to six hours in active labor with the membranes ruptured, although as a rule, three hours will decide the outcome. Cesarean section for relative contraction in a primipara, means repeated cesarean for subsequent children, whereas extraction of the child through nature's passages, even if it should result in a stillbirth, will enable the woman to deliver her subsequent children per viam naturalem, since a good deal of resistance which is encountered in primiparae is due to the soft parts.

American Journal of Physiology, Baltimore

October, XXXVIII, No. 4, pp. 415-494

14 *Studies in Experimental Glycosuria. Level of Blood Sugar in Dog Under Laboratory Conditions. J. J. R. Macleod and R. G. Pearce, Cleveland.
15 *Id. Sugar Retaining Power of Liver in Relationship to Amount of Glycogen Already Present in Organ. J. J. R. Macleod and R. G. Pearce, Cleveland.
16 *Differential Effects of Epinephrin on Splanchnic and Peripheral Arteries. F. A. Hartman, Boston.
17 Osmotic Properties of Calcium and Magnesium Phosphate in Relation to Those of Living Cells. E. B. Meigs, Philadelphia.

14. **Level of Blood Sugar in Dog.**—Macleod and Pearce point out that although the blood sugar level in an anesthetized animal does not remain unchanged from time to time, yet the changes occurring during a period of ten minutes are small when compared with those observed on blood similarly removed from animals in which the splanchnic or hepatic nerves were stimulated.

15. **Influence of Glycogen on Sugar Storage of Liver.**—Briefly summarized, the authors' experiments showed that the existing glycogen content of the liver does not demonstrably influence the rate with which this organ removes dextrose from the blood of the portal vein. The following points were noted: 1. The quicker rise in sugar concentration in the portal blood than in that of the vena cava. 2. The delay, after discontinuing the injection, in the return to the normal level of the sugar concentration of the blood of the vena cava and frequently also in that of the portal vein.

16. **Effect of Epinephrin on Splanchnic and Peripheral Arteries.**—Hartman found that dilute epinephrin slowly injected caused a fall in general blood pressure in forty-eight out of fifty-three animals tried. Three of the animals in which a fall did not occur, were in poor physical condition and one was just recovering from the effects of alcohol. Dilute epinephrin caused dilatation of the peripheral arteries even after extremely low pressures had been produced by hemorrhage. The same dose of epinephrin caused constriction of the splanchnic arteries. When the blood pressure was lowered by depressor stimulation, the same dose of epinephrin caused a fall, a rise and fall or a pure rise, depending somewhat on the height of the pressure. The average latent period for the peripheral fall in the blood pressure (from doses of 0.2 c.c. epinephrin, 1:100,000) was 15.7 seconds; the latent period for the splanchnic rise was 18.6 seconds. The duration of the splanchnic rise was 37.8 seconds, while the duration of the peripheral fall was fifty-nine seconds. The threshold for the change of a fall to a rise in the peripheral arteries, when epinephrin was injected (in three animals only) over a period of from ten to twenty seconds, was betweetn 0.1 and 0.3 c.c. of a 1:10,000 solution. Large doses of ergotoxin phosphate inhibit the splanchnic response to dilute epinephrin. The existence of sympathetic vasodilator nerves in the peripheral arteries and their absence in the splanchnic arteries would account for the opposed action of like doses of dilute epinephrin on the peripheral and splanchnic arteries.

Boston Medical and Surgical Journal

October 7, CLXXIII, No. 15, pp. 527-564

18 *Our Criminal Problem from Standpoint of Classification and Segregation. E. R. Spaulding, Framingham.
19 *Blood Pressure Determinations, Urinary Findings and Differential Blood Counts in Group of Young Male Adults. R. I. Lee, Boston.
20 *Gastric and Duodenal Ulcers. C. Graham, Rochester, Minn.
21 Use of Calcium in Treatment of Epilepsy. J. Bryant, Boston.
22 Synchronous Inspiration and Systole in Patient Exhibiting Equal Respiratory and Pulse Rates. P. D. White, Boston.

18. **Criminal Problem.**—If the criminal problem is one of treatment of the individual for his deficiencies rather than of punishment for the crime committed, Spaulding says that the following fundamental provisions for the administration of such treatment are necessary: 1. Adequate provision by the state for the permanent custodial care of all committable cases of mental defect, whether or not they have a court record. 2. The establishment of laboratories in their courts and correctional institutions for the study and diagnosis of all offenders. The equipment of all their institutions with facilities for classification and treatment of the various types which will remain even after the removal of the most defective. Such a classification will necessitate separate buildings, at least one of which should be equipped for hydrotherapy. The adoption of an indeterminate sentence, which shall enable us to treat patients until they are able to return with safety to the community. The physician has it in his power to do much toward educating the public to the need of fundamental measures of reform and toward counteracting the tendency toward superficiality of some enthusiastic believers in universal reform. His knowledge of mental and physical defect enables one to see more than the cross section of the subject, which is represented by the population at present confined in their penal institutions, and to appreciate the social and economic waste which is the result of their past neglect of generations of inefficients in the community.

19. **Blood Pressure Determinations.**—Lee examined 662 normal young men, the average age 18, average height 5 feet 8 inches, average weight without clothes, 143 pounds. The average systolic pressure was approximately 120 mm. of mercury; the average diastolic pressure 80 mm. Eighty-five, or 12.8 per cent., of the 662 presented systolic blood pressure readings over 140. The highest reading was 180. The diastolic pressures were found to be much more uniform. There was comparatively little variation between the readings in the recumbent and standing positions. The average was 80. Only five cases had a diastolic blood pressure over 100. All these five cases presented systolic blood pressures over 140, but only one of them presented a systolic pressure over 160. Of the five who presented diastolic blood pressures over 100, no other abnormality was found in three patients.

Of this group of eighty-five cases, 9 (or 10.5 per cent.) showed albuminuria. The percentage of albuminuria in the total 662 men was 5.1 per cent. In only one case with albuminuria was the systolic pressure in either the standing or recumbent position over 160. In seven of the eighty-six cases, a definite valvular lesion of the heart was found. One of these patients also presented albuminuria. In one patient a slight goiter was present. Another case of obesity presented a persistently high blood pressure. Five patients showed sugar in the urine; in two patients the sugar immediately cleared up and has not reappeared. Blood smears were made in every case. Only five patients presented a polynuclear leukocytosis of over 75 per cent. Only four patients showed an eosinophilia of over 5 per cent.; the reasons for these were not apparent. Seventy-three patients showed a lymphocytosis of over 50 per cent., but in no instance was the lymphocytosis over 60 per cent. In 153 cases the lymphocytes were between 40 and 50 per cent. of the white cells. In other words, 231 of the 564 cases showed a lymphocyte count between 40 and 50 per cent. The red cells were essentially normal in every case.

20. **Gastric and Duodenal Ulcers.**—According to Graham 72 per cent. of duodenal cases seen at the Mayo clinic in the past nine years gave fairly regular symptoms and 71 per cent. of gastric cases gave the expected syndrome, or were so clearly gastric that little hesitancy was felt in making a diagnosis. Pain is the one constant diagnostic factor in all peptic ulcers. Less than 1 per cent. of patients are recorded free from pain. The time of pain has some distinctive diagnostic significance. In the duodenal ulcers the pain came one-half to two hours after food in 23 per cent. of cases, and two to five hours in 77 per cent. of the cases. In gastric ulcers the time limits of one-half to two hours included 50 per cent. and two to five hours an equal number. In 20 per cent. of the duodenal and in 19 per cent. of the gastric ulcers the time of pain was not recorded. Eight per cent. of the patients with duodenal ulcer and 19 per cent. with gastric ulcer had pain within one-half to one hour after eating.

Pain at night appeared to be more decidedly frequent in duodenal ulcer, while ease from posture (lying down) seemed decidedly more frequent in gastric ulcer. However, the final analysis gives 14 per cent. of the patients with duodenal ulcer and 10 per cent. of those with gastric ulcer having pain at night. Postural ease was noted in 8 per cent. of the duodenal and in 9 per cent. of the gastric cases. These figures correspond much more closely than one would suppose from impressions gained in history writing. Continuous pain from the beginning of symptoms was mentioned in 4 per cent. of the duodenal and 9.5 per cent. of the gastric cases. Tenderness to touch was recorded in 41 per cent. of the duodenal and 40 per cent. of the gastric histories. The location and radiation of pain was noted as follows: Of the duodenal ulcers 49 per cent. were well confined to the epigastrium, 52 per cent. of the gastric were similarly located. Those with radiation to the back ran 24 per cent. duodenal and 22 per cent. gastric. In the diagnosis gallstones were considered certain or were given first place in 13 per cent. of the duodenal and in 9 per cent. of the gastric cases. Radiation to the left epigastric area occurred twice as often in gastric (10 per cent.) as the duodenal cases (4 per cent.). The percentage of radiation to the abdomen and fossae was quite similar (9.5 per cent. duodenal, 9 per cent. gastric). Radiation to right epigastrium was present in 6.6 per cent. of the gastric and in 13.7 per cent. of the duodenal cases. Therefore, tenderness to touch, radiation of pain, and the patient's ability to locate his subjective pain gave little basis on which to arrive at a differentiation. Vomiting was recorded as occurring in 79 per cent. of the duodenal and in 82 per cent. of the gastric ulcers, while gas was present in 77 per cent. of the duodenal and in 94 per cent. of the gastric.

History of hemorrhages by mouth was recorded in 18.5 per cent. of duodenal and in 25 per cent. of gastric cases. Blood by the bowels was similarly recorded in 18 per cent. of duodenal and in 24 per cent. of gastric cases. Perforation ran about equal in both classes (duodenal 28.7 per cent., gastric 26 per cent.) and of those that perforated, the pancreas received the perforation in 17 per cent. of the duodenal and in 25 per cent. of the gastric cases. Pain to the back, which more or less simulated gallstones radiation, ran about equal (24 per cent. duodenal, 22 per cent. gastric) in two conditions, all cases considered.

California State Journal of Medicine, San Francisco

September, XIII, No. 9, pp. 333-374

23 Typhoid. W. W. Behlow, Boston.
24 Statistics of My New Advancement Operation; Report of Cases. R. O'Connor, Oakland.
25 Diagnosis of Congenital Syphilis. H. H. Yerington, San Francisco.
26 Gastro-Intestinal Symptoms in Diseases of Circulatory System. W. W. Kerr, San Francisco.
27 *Benzene Treatment of Leukemia. W. W. Boardman, San Francisco.
28 Blood in Leukemia. H. R. Oliver, San Francisco.
29 Roentgen Ray Treatment of Leukemia. H. E. Ruggles, San Francisco.
30 Shall the Medical Society of State of California Have Examining Board? W. T. Barry, Santa Barbara.
31 Routine Examination in General Hospital for Diphtheria Carriers and Note on Schick Reaction. W. T. Cummins, P. K. Brown and C. L. Bittner, San Francisco.
32 Banti's Disease. H. H. Lissner, Los Angeles.

27. **Benzene Treatment in Leukemia.**—The principle of the treatment is considered sound by Boardman. He believes that with proper precautions, there is no appreciable danger in using benzol. The improvement is a real improvement and not due to accumulation of the leukocytes in the central vessels. The improvement is only temporary, as in their other methods of treatment. The treatment is applicable in all chronic cases of leukemia. Bronchitis and anemia cannot be considered contraindications. The presence of nephritis is a more serious complication and demands more careful consideration. The treatment is more readily administered and is less costly than the Roentgen ray and may be given to those unable to obtain Roentgen ray. The percentage of improvements is about the same under benzol as under Roentgen ray.

The drug is best administered in freshly filled gelatin capsules with an equal amount of olive oil; the maximum daily dose not to exceed 5 gm. The treatment must be carefully controlled by frequent blood and urine examinations and discontinued if there is evidence of kidney irritation, or when the leukocytes reach values of 25,000 to 20,000. The best results follow the combined benzol and Roentgen-ray treatment, the benzol effect apparently being increased by a preliminary Roentgen-ray treatment. Some cases will not respond to benzol in the usual dosage and in the usual time, and other patients are unable to take the drug owing to gastro-intestinal disturbances, etc. When carefully administered and carefully controlled, benzene is apparently a valuable addition to the methods of treating chronic leukemia.

Illinois Medical Journal, Chicago

September, XXVIII, No. 3, pp. 161-240

33 Clinical Problems in Connection with Some of the Complications of Acute Otitis Media. G. E. Shambaugh, Chicago.
34 Sympathetic Ophthalmia; Report of Case. R. Blue, Chicago.
35 Non-Suppurative Sinus Disease in Relation to Eye. J. A. Cavanaugh, Chicago.
36 Blind Spot. H. S. Gradle, Chicago.
37 Syphilis of Internal Ear. G. H. Mundt, Chicago.
38 Foreign Bodies in Respiratory Tract. S. A. Friedberg, Chicago.
39 Focal Infections with Special Reference to Tonsil. F. Brawley, Chicago.
40 Diagnosis of Otosclerosis. G. W. Boot, Chicago.
41 Urinary Analysis in Treatment of Nephritis. B. G. R. Williams, Paris.
42 Congenital Hypertrophic Stenosis of Pylorus. F. B. Riley, Chicago.
43 Effects of Harrison Narcotic Law as Observed in Jacksonville State Hospital. T. G. McLin, Jacksonville.
44 Empyema, Thrombosis and Embolism with Sudden Death Following Laparotomy; Cases Reported. F. C. Schurmeier, Elgin.
45 Organization Crying Need of the Hour. L. G. Burroughs, Collinsville.
46 Agar Culture Medium. J. E. Huber, Peoria.

Iowa State Medical Society Journal, Des Moines

September, V, No. 9, pp. 351-390

47 Etiologic Factors in Uveal Tract Diseases and General Examinations Required to Determine Their Presence and Decide on Treatment of Lesions They Produce. G. E. De Schweinitz, Philadelphia.
48 Early Acquired Spastic Paraplegia, Associated with Hypothyroidism and Ichthyosis; Report of Case. T. B. Throckmorton, Des Moines.
49 New Serum Treatment for Epilepsy. W. Held, Chicago.
50 Limitations of Surgery in Treatment of Pelvic Inflammations. P. Findley, Omaha.
51 Laboratory as Aid to Diagnosis. T. H. Glenn, Fort Dodge.

Journal-Lancet, Minneapolis

September 15, XXXV, No. 18, pp. 495-524

52 Future of Minnesota State Board of Health. H. M. Bracken, St. Paul.
53 Some Impressions on Goiter Question. R. H. Ray, Garrison, N. D.
54 Urinary Symptoms in Appendicitis. P. D. Peabody, Webster, S. D.
55 Neosalvarsan in Pernicious Anemia. M. C. Piper, Sanborn.
56 Twilight Sleep. C. J. Lavery, Aberdeen, S. D.
57 Divulsion of Pylorus for Spastic Contractions and Constrictions Due to Pathologic Changes Causing Partial Stenosis. J. E. Engstad, Minneapolis.

October 1, No. 19, pp. 525-554

58 Relation of Ocular Disease to General Medicine. C. E. Spicer, Valley City, N. D.
59 *Four Cases of Congenital Fracture of Clavicle. S. M. Johns, Velva, N. D.
60 Pathologic Laboratories of Great Britain. H. E. Robertson, Minneapolis.
61 Esophagoscope in Diagnosis of Diseases of Gullet. W. Lerche, St. Paul.
62 Infant Mortality in Minnesota. C. Easton, White Bear.

59. **Congenital Fracture of Clavicle.**—Johns' patients were brothers, aged, respectively, 24, 17, 14 and 12 years. The parents are living and in good health. There is another brother, 22 years of age, and one sister, 15 years of age, each in good health. No children of these parents are dead. The parents are farmers. These sons were reared on a farm, and now reside with their parents. One aunt, 35 years of age, is rachitic, the disease being of congenital origin and in a most severe form. With this exception, no other rachitic tendency is known among the relatives. There was an absence of a traumatic history in all four cases. None of the brothers had any knowledge of the existence of fractures. They had not experienced any inconvenience or pain from them, except the oldest brother, who suffered slight pain in his shoulder, when performing labor which exerted the shoulder muscles. Each of these cases show dystrophic conformation of other bones, more commonly of the cranium and thorax. In each the frontal bones are prominent. In one there is a flattened occiput. The ribs in two are of irregular curve, producing the barrel-shaped chest. The sternum in one shows imperfect development. There was irregular dentition in one, lordosis in one, and talipes varus in another.

Lancet-Clinic, Cincinnati

September 25, CXIV, No. 13, pp. 261-288

63 Tuberculosis Problem. S. H. von Ruck, Asheville, N. C.
64 Medical Referee. D. W. Layman, Indianapolis.
65 Dental Department of Cincinnati General Hospital. H. MacMillan, Cincinnati.
66 Morphin Habit; Report of Cure. A. E. Osmond, Cincinnati.
67 Practical Importance of Anamnesis in Diagnosis in Psychiatry. C. E. Kiely, Cincinnati.

Laryngoscope, St. Louis

September, XXV, No. 9, pp. 603-674

68 Experimental Studies of Effect of Various Atmospheric Conditions on Upper Respiratory Tract. G. H. Cocks, New York.
69 Papilloma of Larynx. T. Hubbard, Toledo.
70 Texas Screw-Worm Infection of Entire Nose and Throat Including Accessory Sinuses. S. Israel, Houston, Tex.
71 Theory of Tonsillectomy, Results in Pediatrics. S. Blum, San Francisco.
72 Examination of One Hundred and Six Cases of Nasal Accessory Sinusitis, Showing Value of Routine Examination and Certain Internasal Operative Procedures. J. J. Sullivan, Scranton, Pa.
73 New Support for Suspension Laryngoscope. S. Iglauer, Cincinnati.
74 New Bivalve Laryngeal Speculum. H. L. Lynah, New York.

Medical Record, New York

October 9, LXXXVIII, No. 15, pp. 593-638

75 Cardiovascular Renal Disease (Arteriosclerosis). L. F. Bishop, New York.
76 Simplified Treatment of Anorectal Affections; Rectal Constipation; Résumé of Intestinal Stasis. S. G. Gant, New York.
77 Diagnostic Value of Bence-Jones Albumin in Early Stages of Case of Multiple Myeloma. G. H. Sexsmith and E. Klein, Bayonne, N. J.
78 Exudates in Artificial Pneumothorax. L. S. Peters, Albuquerque, N. M.
79 Relation of Nasal Symptoms to Endamebic Infections of Nose and Mouth. A. C. Howe, Brooklyn.
80 Use of Pituitary Extract. S. W. Bandler, New York.
81 An Unusual Case of Masturbation. J. A. Gilbert, Portland, Ore.
82 Effect of Intravenous Injections of Radium on Persistent Positive Wassermann Reaction. W. Ayres, New York.
83 Simple Practical Needle for Intravenous Injections. H. R. A. Graeser, New York.

Michigan State Medical Society Journal, Grand Rapids

September, XIV, No. 9, pp. 453-500

84 Observations of Three Thousand Five Hundred Ninety Obstetric Cases. G. G. Barnett, Ishpeming.
85 Syphilis of Liver, Imitating Cirrhosis. A. I. Lawbaugh, Calumet.
86 Bronchoscopy and Esophagoscopy. H. M. Cunningham, Marquette.
87 Case of Mesenteric Chylous Cyst. R. C. Winslow, Sault Ste. Marie.
88 Three Cases of Dislocation of Semilunar. A. S. Kitchen, Escanaba.
89 General Paresis of Insane. F. C. Bandy, Newberry.
90 Usefulness of State Hospital. E. H. Campbell, Newberry.
91 Clinical Thermometer in Bladder. R. H. Crissey, Lansing.
92 Diagnosis and Treatment of Peptic Ulcer. H. B. Schmidt, Ann Arbor.
93 Case of Squamous Celled Carcinoma of Skin Following Empyema. W. A. Hoyt, Ann Arbor.
94 Three Human Hearts Showing Double Superior Venae Cavae. R. E. McCotter, Ann Arbor.
95 Case of Restoration of Upper and Lower Lids of Both Eyes. R. W. Selby, Ann Arbor.

Military Surgeon, Chicago

September, XXXVII, No. 3, pp. 207-310

96 March and Rail Trip by Sanitary Troops. W. W. Reno, U. S. Army.
97 Duties of Ambulance Companies. L. L. Hopwood, U. S. Army.
98 Field Hospital Tour of Duty, Sparta, Wis. F. W. Foxworthy, Ind. N. G.

Modern Hospital, St. Louis

September, V, No. 3, pp. 145-220

99 Geisinger Memorial Hospital, Danville, Pa. H. L. Foss, Rochester, Minn.
100 Occupation of Patients in State Hospitals for Insane. H. P. Frost, Dorchester Center, Mass.
101 Physician's Part in Making Small Hospital Successful. C. H. Cook, Natick, Mass.
102 Haverford College Infirmary and Dispensary. Baily and Bassett, Philadelphia.
103 Nervous and Mental Diseases in Curriculum. F. P. Norbury, Jacksonville, Ill.
104 Old Building Reconstructed into Excellent Children's Hospital. A. L. Goodman, New York.
105 Foods That Are Marketed in Small Packages. J. P. Street, New Haven, Conn.
106 Painless Childbirth and Hospital. C. H. Davis, Chicago.
107 Medicine and World War. G. D. Stewart and J. W. Draper, New York.
108 Operating Room. H. O. Collins, Minneapolis.
109 Efficiency and Progress in Hospitals. H. Wright, Cleveland.
110 Significance of Hospital Rating. F. E. Chapman, St. Louis.
111 Interdependence between Hospital and Outside Work. R. M. Bradley, Boston.

New York Medical Journal

October 9, CII, No. 15, pp. 737-784

112 *Gonorrhea Complement Fixation Test. A. A. Uhle and W. H. Mackinney, Philadelphia.
113 Autolysin Treatment for Cancer. C. Pope, Louisville.
114 Inoperable Cancer Treated with Autolysin; Report of Cases. E. H. Williams, Los Angeles.
115 Id. H. G. Nicholson, Charleston, W. Va.
116 Autolysin Treatment of Inoperable Malignant Neoplasm. A. Wilson, Wheeling, W. Va.
117 Treatment of Fractures of Upper End of Humerus. R. E. Davison, Pittsburgh.
118 Broader View of Mental Deficiency in Aliens. H. A. Knox, Ellis Island.
119 Weight Reduction. R. H. Rose, New York.
120 Abuse of Insanity Plea as Defense for Crime. M. A. Hays, New York.
121 Backache. S. Epstein, New York.

112. **Gonorrhea Complement Fixation Test.**—This paper is based on a study of 155 gonorrhea complement fixation tests, in which the serums of 141 individuals were tested by each of four competent serologists. The blood was withdrawn with a dry sterile needle from a vein in the forearm, collected in four sterile test tubes of 5 c.c. capacity each, and one tube was sent to each serologist. When more than one specimen of blood from the same individual, withdrawn at the same time, was submitted, different names were used. Of the 141 patients, fifteen were normal controls who never had gonorrhea; thirty-seven suffered from other diseases, and all denied ever having had gonorrhea, and presented no clinical evidences of infection; the remaining eighty-eight have or have had gonorrhea. Of the fifteen series of tests on normal people in the present group, reported by each of the four serologists, only one laboratory, B, reported negative in each case. The percentage of positive reports by the other three serologists varied from 6.6 to 13.3 per cent. In the next group of thirty-seven patients, none of whom presented clinical evidences of gonorrhea, laboratory B again reported negative in each case, while the other three laboratories vary in their proportion of positive findings from 13.5

to 35.1 per cent. Of these thirty-seven patients positive reports were submitted by one or more of the laboratories in twenty-one cases; two laboratories reported positive reactions in eight cases and one laboratory in the remaining thirteen.

Of the eighteen patients clinically cured for over five years, all laboratories agree in a negative report in eight; one laboratory reports a positive in four cases; two laboratories a positive in five cases, and three laboratories a positive in one case. Of eleven patients with acute gonorrhea of less than four months' duration, all the laboratories agree in a negative report in three cases. Six patients had uncomplicated chronic urethritis; twelve had chronic urethritis with a history of previous epididymitis, and twelve chronic gonorrheal prostatitis. A positive report was received: In ten cases from one laboratory, in seven cases from two laboratories, and in two cases from three laboratories. In the remaining eleven, all reports show negative findings. Of the patients with acute gonorrhea with complications, three had epididymitis, three arthritis, and one iritis. In two cases, both of epididymitis, uniform negative reports were submitted. In two cases there were one positive and three negative reports; in two other cases there were three positive and one negative report, and in one case four positive reports. Of the 141 cases, excluding all anticomplementary reactions, there were 128 tests reported by each serologist; fifty-one or 39.9 per cent. agree, and seventy-seven or 60.1 per cent. disagree.

Ophthalmic Record, Chicago

October, XXIV, No. 10, pp. 493-546

122 Pemphigus of Conjunctiva; Report of Two Cases. E. Stieren, Pittsburgh.
123 Late Infection Following Corneascleral Trephining. J. F. Crouch and C. A. Clapp, Baltimore.
124 Treatment of Trachoma. F. Allport, Chicago.
125 Spontaneous Reattachment of Retina after Twenty-Two Years' Duration; Report of Case. A. E. Davis, New York.
126 Eye Protection for Grinders and Machinists. H. W. Davie.
127 Some Unusual Features in Case of Senile Cataract Extraction. G. H. Burnham, Toronto, Canada.
128 Case of Epibulbar Sarcoma. H. F. Hansell, Philadelphia.

Pennsylvania Medical Journal, Athens

September, XVIII, No. 12, pp. 913-978

129 Myocardial Insufficiency. U. G. Gifford, Avondale.
130 Infections of Hand and Their Management. S. J. Waterworth, Clearfield.
131 Medical Man's Work in Field of Safety. C. A. Haines, Sayre.
132 Gallstones; Report of Case. A. L. Parks, Rome.
133 *Case of Spina Bifida. O. H. Rockwell, Monroeton.
134 Functions of Health Bureau. C. P. Henry, Reading.
135 Ocular Symptoms of Parasyphilitic Affections, Paresis and Tabes. C. W. LeFever, Philadelphia.
136 Relief of Indigestion by Surgical Treatment. S. McClary, Philadelphia.
137 Case of Continued Fever of Undetermined Nature. B. F. Stahl and N. B. Gwyn, Philadelphia.

133. **Case of Spina Bifida.**—After a somewhat prolonged and difficult labor Rockwell's patient gave birth to a female child deformed as follows: The child's body was normal above the pelvis; the pelvis, however, was double, with three legs, the middle and smallest leg being somewhat deformed. There was a single opening behind, anal, in the right pelvis; there were two openings in front, one in each pelvis, the one in the right pelvis being a vaginal opening, with urethra communicating with the bladder, which was single; the other opening in the left pelvis, at first taken for the second vaginal opening, proved to be a second anal opening, although without sphincter muscle. There were fecal discharges from both openings, not always simultaneous, but continuing during her life. Between the middle and left leg at lower end of sacrum was a large fluctuating tumor, spina bifida, covered with integument, tense and almost transparent. The child lived and grew, though never strong, and never walking, but mentally a bright and attractive child, until nearly 10 years old when after a few days of extreme suffering due to pressure, the tumor ruptured, discharging large quantities of bloody serum; death followed in about seventy-two hours after the rupture.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 18, II, No. 2855, pp. 425-460

1 *Treatment of Cholera by Hypertonic Saline Solutions. G. D. Whyte.
2 Administrative Control of Measles. R. M. F. Picken.
3 Universal Suspension Apparatus for Arm and Leg. M. Sinclair.
4 *Obliteration of Cavity in Tibia Remaining after Sequestrotomy. W. Gemmill.
5 Treatment of Septic Wounds by Electrolytic Bath. F. Fowler.
6 Case of Hysterical Amblyopia. K. Campbell.

1. **Cholera Treated by Hypertonic Saline Solution.**—In the course of the Swatow epidemic reported on by Whyte, 212 patients were treated with intravenous saline injections; 154 recovered, that is, 72 per cent. It was on these lines that the Swatow epidemic was treated and the results varied according to the age, sex and habits of the patients. The main causes of the fifty-eight deaths were collapse, hyperpyrexia, uremia and asthenia. Collapse accounted for death in 6 per cent. of the patients treated. Hyperpyrexia accounted for death in 11.5 per cent. of the patients treated. Seven patients died from uremia; that is, 3 per cent. of those treated.

4. **Obliteration of Cavity in Tibia.**—The operation described by Gemmill is after the osteoplastic method recommended by Schulten.

Journal of Pathology and Bacteriology, London

July, XX, No. 1, pp. 1-84

7 *Experimental Study of Metastasis. M. Takahashi.
8 Infective Abortion in Guinea-Pigs. J. H. Teacher and J. A. G. Burton.
9 *Occurrence of Pleomorphism and Mutation among Members of Hemorrhagic Septicemia Group of Organisms. J. P. McGowan and C. Y. Wang.
10 *Absorption of Iron from Organs after Hemolysis. R. Muir and J. S. Dunn.
11 Grouse Disease. J. P. McGowan.
12 *Pathology of Obstructive Edema of Lung, Based on Observations with Starling Heart-Lung Preparation. Y. Matsuoka.
13 Sarcoma Immunity in Mice. M. Tsurumi.

7. **Experimental Study of Metastasis.**—The studies with which Takahashi's paper deals were carried out by intravenous injection of tumor emulsions into the tail vein of mice. Fourteen different tumor strains were used; three sarcomas and eleven carcinomas. Of the three sarcoma strains studied, one failed to grow in the single short series inoculated, and the other two gave 33 and 88 per cent. of success, respectively. The eleven carcinoma strains varied between 0 per cent. and 78 per cent. success. The more differentiated carcinomas, papilliferous cystic adenocarcinomas and squamous-cell carcinoma, however, all failed to grow in the lungs. Seven alveolar carcinomas were not uniformly successful, five strains giving from 16 to 78 per cent., two strains 5 per cent. and 0 per cent., respectively. The solid alveolar tumors, therefore, appear to be more capable of intravascular growth than the more differentiated adenocarcinomas and the cancroid. As a general result it is concluded by Takahashi that the tumors of rapid growth grow better and in a higher percentage in the lung capillaries than the strains which grow slowly. Among the tumor strains used for these experiments some had produced metastasis after subcutaneous inoculation, while others had produced none through many (fifty to sixty) generations. On the other hand, the strains which did not metastasize to the lungs naturally, failed to grow on intravenous inoculation with a single exception. The percentage of successful intravenous inoculations is, however, not high in this strain. The conclusion seems justified that the absence of metastases after subcutaneous inoculation of many mouse tumors, is due to the inability of the tumor cells to survive after arrest in the lung capillaries and to establish organic union with the vessel wall.

9. **Hemorrhagic Septicemia Group of Organisms.**—McGowan and Wang show how an organism of the hemorrhagic septicemia group, by an increase of virulence through pas-

sage, has also concurrently been endowed with an increased biologic activity on artificial mediums, whereby it grows much faster on these mediums and produces acid and gas fermentation in some carbohydrate mediums in cases in which it only produced acid or no change previously. It would seem to be essential for the success of this passage that the organism be taken directly from one animal to another without intervening growth on artificial mediums. Retrogression of these newly acquired biologic activities would appear to be slow. The serum obtained by immunizing rabbits with the original and virulent strains, respectively, while agglutinating their own strains well, do not, or only slightly, cross-agglutinate. The immunity to a subsequent injection, both of the virulent and of the original strain appeared to be much greater after the preparatory injection of the virulent strain than after a similar injection of the original strain.

10. **Absorption of Iron After Hemolysis.**—Muir and Dunn found that after acute hemolytic anemia in rabbits the excess of iron which has been stored in the organs, has been nearly all absorbed by the time of complete regeneration of the blood, and has been presumably utilized for purposes of blood formation. The absorption is most complete from the liver cells; it is less complete, a certain excess still remaining, in the endothelium of the liver capillaries, in the pulp of the spleen and especially in the cortex of the kidneys.

12. **Experimental Edema of Lungs.**—Matsuoka carried out a systematic study of the experimental production of obstructive edema of the lungs in isolated heart and lungs of dogs. His investigations were made with the aid of the Starling heart-lung preparation in which the part played by the heart in the production of obstructive edema of the lungs can be well studied. He also investigated the influence of the extirpation of the pericardium and of changes in the temperature of the blood on the production of obstructive edema, and studied the gaseous metabolism and energy of the heart in this condition. Obstructive edema of the lungs takes place when certain limits of combined arterial pressure and venous inflow are exceeded. (*a*) Obstructive edema is produced with a constant moderate arterial pressure of 80 mm. of mercury, when a total output of heart of not less than 92 liters per hour is maintained for over fifteen minutes. Obstruetive edema of the lung is produced with a constant high arterial pressure of 160 mm. of mercury when a total heart output of not less than 38 liters per hour is maintained for over fifteen minutes. In cases of arterial pressure between 80 and 160 mm. of mercury, the limits of the output of the heart may be taken as lying about the average of the two extreme cases. All the above-mentioned maximum and minimum volumes refer to dogs' hearts which have an average weight of 42 gm.

The above mentioned limits may be raised still higher in cases in which a high arterial pressure of abundant venous inflow continues for a shorter period than fifteen minutes. How far the foregoing lower limits must be exceeded so as to produce obstructive edema in dogs with hearts of a specified size depends on the age of the dogs, on various bodily conditions, on the circumstances of operation, and on the duration of the experiment. The production of obstructive edema is considerably facilitated by the occlusion of the root of the aorta, when a relatively small amount of venous inflow is sufficient to produce the lung condition. In the production of obstructive edema, the output of the heart may be diminished to a minimum, and the blood content of the heart and the pressures in the pulmonary artery, the inferior vena cava, and the right auricle may be increased to a maximum, all quite independently of the height of the arterial pressure and of the amount of venous inflow. As the dilatation of the heart after extirpation of the pericardium easily assumes a pathologic degree, edema of the lung usually occurs more quickly and with a smaller amount of arterial pressure and of venous inflow than when the pericardium has not been removed. Gaseous metabolism and energy consumption of the heart are decreased in obstructive edema of the lung. In all cases in which the experiments with the Starling heart-lung preparation were carried out to a conclusion, the following pathologic conditions were seen in the lung; increase in volume following on diffuse congestive edema unrecognizable macroscopically, atelectasis and compensatory emphysema, and splenization of the lower lobes.

Lancet, London

September 18, II, No. 4803, pp. 635-684

14 Combining Medical with Military and Military with Medical Education and Mingling Music with Both. H. Morris.
15 *Bacteriology of Septic Wounds. A. Fleming.
16 Rhinophyma; Its Etiology, Pathology and Treatment. W. Milligan.
17 Galyl, Substitute for Salvarsan and Neosalvarsan. A. Foerster.
18 Case of Temporary Motor Aphasia Developing in Course of Tuberculosis. J. B. McDougall.
19 Salvarsan in Treatment of Yaws. W. M. McDonald.
20 One Hundred Consecutive Operations for Appendicitis. R. M. Glover.
21 Rupture of Ventral Hernia in Adult Woman with Extroversion of Bladder. H. B. Tawse.
22 Case of Supernumerary Toes. C. G. Havell.
23 Gallstone Complicating Appendicitis. F. Deane.

15. **Bacteriology of Septic Wounds.**—The organisms which Fleming has found in these wounds divide themselves into three groups: (1) spore-bearing microbes of fecal origin; (2) nonsporing microbes of fecal origin; and (3) pyogenic cocci. The first group includes *B. tetani*, *B. aerogenes capsulatus* of Welch, and certain putrefactive organisms which Fleming refers to as bacillus X and bacillus Y. The habitat of all these is the intestine of man and animals, or in soil which has been manured with animal excrement. The nonspore-bearing organisms of fecal origin include the streptococcus, *B. proteus*, *B. coli* group, and "wisp" bacillus. The streptococcus is the most important member of this group as regards infection of wounds. It is present in almost every wound up to a late stage. From its appearance in the wound early, and in association with organisms which are of known fecal origin, Fleming assumes that the streptococcal infection is also a fecal one. The third group of pyogenic organisms comprises especially the streptococcus and staphylococcus. *Staphylococcus aureus* is almost the only organism frequently occurring in wounds which is not common in animal feces. It is noteworthy that *Staphylococcus aureus* is seen in wounds only in the later stages, and as they are present on the patient's skin, it seems likely that their appearance in the wound is largely due to an invasion from the skin around.

The bacillus X is a straight bacillus 5 microns long and 1 to 1½ microns broad, nonmotile, gram-positive, and sporing freely in all mediums. In agar or glucose agar stab cultures there is much gas production. Coagulated egg medium is liquefied. Milk is not clotted, but in three or four days it is peptonized. One cubic centimeter of a vigorous milk culture injected subcutaneously into a guinea-pig produced much local edema which persisted for three days and then disappeared. The same quantity of a broth culture had no effect. Bacillus Y is a long, slender, gram-negative bacillus, feebly motile, which shows close to or at one extremity an elongated spore. It was not so commonly found as bacillus X. It forms less gas in agar or glucose agar, and the liquefaction of albuminous material such as egg proceeds more slowly. The smell of all cultures is excessively putrid. This bacillus was not pathogenic for guinea-pigs. The "wisp" bacillus is a small, slender, gram-positive nonmotile bacillus, which is of common occurrence in wounds, especially in the later stages. It arranges itself into V shapes or is aggregated into small bundles, something after the fashion of the diphtheroid group. It is an obligate anaerobe. In pus this organism is usually to be seen inside the leukocytes, and it would appear to possess a pyogenic character, as it is usually to be seen in large numbers in wounds which are producing large quantities of pus, but which differ in no other respect from similar wounds from which the purulent exudate is much less.

Annales de Gynécologie et d'Obstétrique, Paris

July-August, XLI, Nos. 7-8, pp. 545-608

24 *Ventrofixation of the Uterus. (Suites physiologiques et pathologiques de l'hystéropexie abdominale directe.) M. Muret.

25 Microscopic Study of Sclerocystic Ovaries, and Operative Conclusions. (La résection partielle des ovaires reconnus macroscopiquement scléreux ou scléro-kystiques, est-elle justifiée au point de vue microscopique?) J. P. de Figueiredo. To be continued.
26 Questions of Priority in the History of Medicine. (La réaction contre la culture allemande en Italie.) L. R. Sanguineti.

24. **Ventrofixation of the Uterus.**—Muret insists that ventrofixation of the uterus is not enough to ensure the complete cure of prolapse of genital organs unless the perineum and pelvic floor are made a good support besides. In two cases he found that the intestines had been gradually forced down into the pouch of Douglas, forming an actual posterior vaginal enterocele. The uterus in both had been fastened to the abdominal wall, but the pelvic floor had not been strengthened. He has found in the literature sixteen cases of ileus following ventrofixation by various technics. Such mishaps are avoided by fastening a large area of the uterus fundus high up on the abdominal wall, when the patient is elderly. With young women he leaves the fundus untouched, and fastens the lower part low down on the abdominal wall, suturing merely a narrow and superficial strip of the uterus wall. This results in the formation of a median ligament uniting the anterior wall of the uterus, just below the starting point of the round ligaments, to the abdominal wall above the pubic symphysis. If the ligament lengthens, the uterus returns to its normal position; if the ligament keeps short, the uterus is held a little higher than usual but there is no interference with pregnancy later. In 250 ventrofixations which he has done he has never known of complications on the part of the intestine later.

Bulletin de l'Académie de Médecine, Paris

September 7, LXXIV, No. 36, pp. 243-274

27 Localization of Projectiles. O. Laurent.
28 *Therapeutic Enhancing of Phagocytosis. (Action cytophylactique du chlorure de magnésium.) P. Delbet and Karajanopoulo.
29 *Importance of Epinephrin in Treatment of Wounded Soldiers. (Importance de la notion d'insuffisance surrénale et du rôle de l'opothérapie surrénale en médecine et en chirurgie d'armée) E. Sergent.
30 *Inflammability of Gas in Gas Gangrene. (2 cas de gangrène gazeuse du cou. Procédé de diagnostic différentiel avec l'emphysème souscutané.) Guéniot.

28. **Therapeutic Enhancing of Phagocytosis** — Delbet's experiments on dogs and in vitro have been confirmed by a few clinical experiences, all demonstrating, he declares, the remarkable "cytophylactic power" of a 12.1 : 1,000 solution of anhydrous magnesium chlorid. Before an intravenous injection into a dog of 150 c.c. of this solution, 245 microbes were found incorporated in 500 polynuclear leukocytes. After this injection, 681 were found incorporated among 500 polynuclears. In other tests the numbers phagocyted were respectively 71 and 308; 387 and 872. The effect seems more pronounced the more nearly normal the leukocytes. The solution does not seem to be toxic; no untoward by-effects were noticed in animals after injections into the cellular tissue, peritoneum or veins. In man he has never injected it into a vein, but has found it useful for dressing wounds and in subcutaneous injections. In one case of a suppurating wound after crushing of the knee, he was contemplating amputation but the phagocytosis under the magnesium chlorid improved conditions so that the limb was saved.

29. **Epinephrin for the Wounded.**—Sergent has been preaching since 1898 the importance of a deficit in suprarenal functioning as a factor in various syndromes. His experience at a base hospital has confirmed the frequency of acute disturbance in one or both suprarenals from toxic-infectious influences or hemorrhage. Also of sudden aggravation of a previously latent debility of the suprarenals. Under ordinary conditions they are able to accomplish their task, but under sudden stress they break down. Both conditions are encountered almost daily in wounded and sick soldiers from the front. Collapse was particularly frequent in typhoid among soldiers who had been under special physical stress. In many of these cases large subcutaneous doses of suprarenal extract tided the men past this dangerous phase. Similar experiences have been noted in typhus, according to the account of a French medical officer returned from captivity in Germany. In several cases Sergent witnessed the subsidence of the algid phase in choleriform diarrhea under the influence of injections of suprarenal extract. Naamé of Tunis has reported success in cholera beyond all expectations, from the use of epinephrin as an adjuvant to serotherapy. Two of Sergent's patients had been brought in completely collapsed; the asthenia was absolute. One had long presented symptoms of abortive Addison's disease; the other had recurring attacks of asthenia following typhoid years before. Both presented the typical "suprarenal white line," hypotension, hypothermia and tendency to collapse, but both rallied promptly under suprarenal treatment.

The wounded are in such a state of shock, as a rule, that the extra shock of general anesthesia is liable to extinguish the flickering flame of life, unless the surgeon appreciates the important aid to be obtained from epinephrin. Sergent urges that the ambulances, the first aid stations and the trains carrying the wounded should be supplied with suprarenal extract to use in preventing or combating suprarenal insufficiency. Even if the patient's suprarenals are working properly, this treatment is a most excellent tonic for the cardiovascular system. In the collapse of typhoid he warns that the amount must be at least 2 mg. of the 1 : 1,000 solution, fractioned into four doses, and supplemented by 1 or 2 mg. given by the mouth. This combines rapid and intense absorption with slow and continuous absorption. He is convinced that many of his patients owe their lives to this technic.

30. **Inflammability of Gas in Gas Gangrene.**—Guéniot has found this a useful aid in differentiating gas gangrene from subcutaneous emphysema. On contact with the actual cautery there was a tiny spurt of flame; it was never enough to burn the tissues.

Lyon Chirurgical, Lyons

September, XII, No. 3, pp. 229-396

31 *Abdominal Surgery in Field Ambulance. X. Delore, G. Cotte and A. Latarjet.
32 Apparatus for Immobilization and Extension, Permitting Changes of Dressings, for Compound Fracture of the Femur. G. Gayet and A. Théron.
33 Immediate Symptoms of Penetrating Wounds of the Chest. (Plaies pénétrantes de poitrine.) L. Desgouttes and E. Bressot.
34 *Importance of Lumbar Puncture in Cases of Nervous Shock and Wounds of the Skull in War. J. Baumel.
35 *Scalp Wounds and Contusion of the Brain. I, II, III. (Des petites plaies du crâne par éclats d'obus et de bombes sans pénétration du projectile, et des lésions nerveuses qui les accompagnent.) R. Leriche; (Des lesions cérébrales et médullaires produites par l'explosion à faible distance des obus de gros calibre.) R. Leriche.
36 Necessity for Double Trephining When Projectile Has Traversed the Skull. R. Leriche.
37 Trephining for Shell Wounds of the Skull. (Notes sur les suites opératoires de 33 trépanations pour plaies du crâne par éclat d'obus.) A. Gourliau.

31. **Abdominal Wounds in War.**—These three surgeons attached to field ambulances are all in favor of immediate operations for gunshot or shell wounds of the abdomen.

34. **Lumbar Puncture after Wounds of the Skull or Concussion.**—Baumel has found that lumbar puncture gave important information as to the extent and severity of the injury; it had also a marked beneficial influence as the spinal fluid was always under high pressure, even when there had been merely concussion without direct contact with the skull. The detailed findings in fifty-six cases are tabulated. The wound was the work of a fragment of shell in nearly all the cases. The polynuclears increase during an infectious process so that polynucleosis after injury of the skull renders the prognosis graver. In the cases with lymphocytosis alone, the meningitis, of which it is the index, can be only subacute. With simple commotion of the nervous system, lumbar puncture is the only rational treatment, as also with nonpenetrating wounds of the skull. It reduces also the disturbances from hypertension in cases of severe injury of the skull, while it gets rid of toxins and hastens the return of normal conditions. It should be done systematically, day after day, and seems to be absolutely harmless unless the pressure in the fluid is below normal to start with.

35. **Wounds of the Skull and Contusion of the Brain.**—Leriche devotes sixty-six pages to this study of wounds of the skull and the nerve lesions which accompany them. He has seen 397 cases in which the scrap of shell had apparently merely bruised the scalp. He always made an exploratory incision and trephined if the bone looked in any way abnormal, and seventy-eight in this group were traced to recovery or death. No matter how apparently insignificant the lesion, every wound of the scalp by a projectile should be incised and the bone examined, but the dura should never be incised if it is found intact, no matter how extensive the subjacent hematoma, contusion of the brain and immobility of the dura. High tension in the fluid at lumbar puncture is no criterion as to deep-seated lesions; high tension and an abnormal tint of the fluid reveal the existence of small foci of contusion of the brain which are not so much the work of the projectile as of the air concussion from the explosion of the shell. He found lumbar puncture a valuable aid in treatment. The details of eighty-seven cases are given, as also of eleven in which there was no direct wound but severe contusion of the brain or spinal cord from explosion of a shell or mine. The fluid keeps under high pressure for days and the patients exhibit paralytic phenomena or melancholia with stupor or jacksonian epilepsy. Edema of the brain and small hemorrhagic foci were found on trephining and lumbar puncture gave great relief as a rule.

Berliner klinische Wochenschrift

August 30, LII, No. 35, pp. 909-932

38 Action of Atropin and Scopolamin on Cats' Eyes. G. Joachimoglu.
39 Diagnosis and Treatment of Wounds of the Lungs. (Lungenschüsse.) S. Korach.
40 Lumbar Puncture for Submeningeal Hemorrhage of Traumatic Origin. T. v. Podmaniczky.
41 Nontoxic Dysentery Bacilli. (Ruhrbacillen des giftarmen Typus.) G. Arnheim.
42 *Tetanus. B. O. Pribram. Commenced in No. 33.

September 6, No. 36, pp. 933-960

43 Picking up the Wounded on the Field. (Verbesserung der Verwundetenfürsorge in der Front.) Köbisch.
44 Influences of Diseases, Especially Tuberculosis, on Growth and State of Nourishment of Schoolchildren. (Einfluss von Krankheiten auf das Wachstum und den Ernährungszustand der Schulkinder.) Thiele.

42. **Tetanus.**—Pribram regards the localization of the spasms as of great importance for the prognosis; it is naturally graver when the muscles of the diaphragm and glottis are involved, even when all the other muscles are spared. Pain in the epigastrium is an early sign of involvement of the diaphragm. He accepts the duration of the incubation as dating from the moment of toxin production, not from the moment of the injury. Three signs differentiate tetanus from tetany: the lack of the facialis phenomenon, of the contraction of the hand, and of the isolated adductor spasms. The frequency of pneumonia in tetanus suggests that it is a specific complication. He was impressed with the fact that in a remarkably large proportion of his tetanus patients, and in nearly all of those that succumbed, signs of the status lymphaticus were manifest.

The best treatment of the wound consists in radical excision of all necrotic tissue down into fresh bleeding tissue. Anything inducing a scab favors development of tetanus. In one case no portal of entry for the tetanus bacilli could be found except peeling between the toes from sweat. The usual measures have no effect on the diaphragm-glottis spasms. All we can do is to hold back normal breathing and supplement it at need with artificial respiration; we can realize this by severing the phrenic nerve on each side, with or without tracheotomy, by injecting magnesium sulphate with the shoulders lowered, or by gradually limiting the normal breathing by large doses of morphin. The morphin has to be given in increasing doses up to 0.3 gm. per day; ordinary doses have no effect. Symptomatic treatment aims to ward off spasms, and this is imperative with diaphragm-glottis spasms as any one is liable to prove fatal. When all is in readiness for artificial respiration, these large doses of morphin need cause no apprehension, he says.

Deutsche medizinische Wochenschrift, Berlin

September 9, XLI, No. 37, pp. 1085-1116

45 *Care Early in Typhoid. (Bedeutung der ersten Krankheitstage für den Verlauf des Bauchtyphus.) A. v. Koranyi.
46 Septic Meningococcus Infection; Four Cases. A. Bittorf.
47 Comparison of Roentgen-Ray and Clinical Stomach Findings. W. Jaworski.
48 Magnesium Glycerophosphate Proves More Toxic than the Sulphate in Experimental Tests. (Ueber die subkutane Methode der Narkose durch Magnesiumsalze: Sulfat und Glycerophosphat.) R. Kobert.
49 Hypophysis Extract Checks Diuresis. (Ueber die Beeinflussung der Diurese durch Hypophysenextrakte.) A. v. Konschegg and E. Schuster.
50 Irregular Pulse from Military Standpoint. (Der unregelmässige Puls.) P. Reckzeh.
51 Kaolin Plus Opium, by Rectal Injection, Proves Effectual in Dysentery. (Behandlung von Ruhr und ruhrähnlichen Darmkatarrhen.) du Mont.
52 Air Concussion from Infantry Projectiles not Serious. (Luftdruck bei Infanteriegeschossen.) M. Reuter.

45. **Management of Typhoid in First Few Days.**—Koranyi has been studying the influence on the course of typhoid, in his 523 cases, of the care of the patients during the first few days. The mortality increased from 5.6 per cent. among those patients received at the hospital from the first to the fourth day of the disease, to 10.1 per cent. after the seventh day.

Jahrbuch für Kinderheilkunde, Berlin

September, LXXXII, No. 3, pp. 175-260

53 *Albumin Milk. (2½ jährige Erfahrungen mit Eiweissmilch.) V. Poulsen.
54 *Congenital Ichthyosis. O. Bossert.
55 *Etiology of Scarlet Fever. F. Schleissner.
56 *Relations between Otitis Media and the Various Diseases of Infants. (Beziehung der Mittelohrentzündung zu den Krankheiten des Säuglingsalters.) F. Scherer and O. Kutvirt. Commenced in No. 2.

53. **Albumin Milk.**—Poulsen makes the albumin milk a little different from Finkelstein's formula, using 9 parts casein to 8 parts carbohydrate instead of Finkelstein's 2 to 1. It also contains a larger proportion of whey, namely, ⅕ liter whey plus the whey from ½ liter buttermilk, thus ensuring a larger amount of salts. One liter represents 560 calories instead of Finkelstein's 420. Poulsen has found this albumin milk most effectual in chronic diarrhea in infants over a year old, but he summarizes in detail his experiences with 124 infants fed on this albumin milk and their development followed during the months and years since. He emphasizes the importance of constant vigorous stirring while boiling up. He passes the freshly clotted casein from 1 liter of full milk through a hair sieve at least ten times, after mixing it into ½ liter water and ½ liter buttermilk. The cane sugar is then added, dissolved in as little water as possible, and the whole is boiled up and passed through a hair sieve until it is nearly cold. Then it is chilled further in water and the bottles are filled and placed on ice.

54. **Congenital Ichthyosis.** — Bossert says that only one original case of this affection has been published in German pediatric literature, and he gives here an illustrated description of a typical case encountered at Breslau. The skin was hard as leather and had cracked at numerous points. This horny shell over almost the entire body prevented suckling and the normal play of the vital processes, and the infant lived only four days. It was the first child of healthy and well-to-do parents, and seems to be about the sixtieth case on record.

55. **Etiology of Scarlet Fever.**—Schleissner succeeded in twelve of twenty-seven attempts in inducing in monkeys a disease apparently identical with scarlet fever. He insufflated into the mouth and nose twenty-four hour bouillon cultures of streptococci from scarlet fever cases. The disease could be also transferred to healthy animals by smearing with secretions from the throats of those affected. It proved impossible to reinfect those in the latter group, indicating that immunity had been realized. Likewise all attempts failed at inoculation with filtrates of the bouillon cultures.

56. **Otitis Media in Infants.**—Scherer and Kutvirt here conclude their study of the relations between otitis media and the various diseases of infancy. They found otitis media in 18.6 per cent. of the cases of nutritional disturbances, and in from 6.6 to 25 per cent. of the affections of the air passages, the proportion being larger the closer to the eustachian tube. The vomiting with digestive disturbances, the sneezing with rhinitis, and the coughing with bronchitis and pneumonia explain the frequent involvement of the middle ear. Fully 22.3 per cent. of the infants with inherited syphilis had otitis media, and 30.4 per cent. of the tuberculous infants. In these two groups the ear trouble developed insidiously. In every case of parotitis there was also otitis media. The latter seems to be only exceptionally a primary affection. Otitis media is always a grave affection for infants, depressing the vitality, and it may even prove fatal. But proper treatment, as for adults, applied early is generally followed by prompt recovery, although a tendency to recurrence may be apparent into late childhood.

They call special attention to their three cases of convulsions (eclampsia) in all of which there was a suppurative otitis media. Paracentesis was followed by prompt subsidence of the convulsions and striking improvement in the general condition. The circumstances in these cases render the assumption plausible that both the convulsions and the otitis media were manifestations of intestinal infection and intoxication.

Medizinische Klinik, Berlin

August 29, XI, No. 35, pp. 959-986

57 Modest but Certain Food Value of Blood from the Slaughter-Houses. (Blut als Nahrungsmittel.) F. Blum.
58 Reciprocal Relations between the Consciousness, and the Innervation of the Vascular System. (Die wechselseitigen Beziehungen zwischen den Vorgängen des Bewusstseins und der Innervation des Gefässsystems.) H. Bickel.
59 Disturbances Following Grenade Explosions. (Ueber Granatexplosionsstörungen.) L. Mann.
60 *Vaccination against Typhoid and Diagnosis of Typhoid in the Vaccinated. (Typhusschutzimpfung und Typhusdiagnose bei Geimpften.) C. E. C. Bronner.
61 The Exhibitionist. (Zur Kenntnis des Exhibitionismus.) G. Flatau.
62 Stereoscopic Localization of Projectile in Tissues. (Bestimmung der Geschosslage mittels der Stereoskopie.) Drüner.

September 5, No. 36, pp. 987-1014

63 Pneumonia. H. Hochhaus.
64 *Injurious Action on Central Nervous System of General Anesthesia and Means to Prevent It. E. Weber.
65 Photodynamic Action of Eosin Not Dangerous. (Zur Physiologie und Toxikologie des Eosins.) E. Rost.
66 *Importance of Fat Embolism in Military Surgery. L. Bürger.
67 Aleukemic Myelosis. F. Weinberg.
68 "Patella in the Elbow." (Ellbogenscheibe.) L. Katz.
69 *Mintz' Meat Extract Test Breakfast. (Das Mintzsche Bouillonprobefrühstuck.) E. Rosenhain.

60. **Typhoid in the Inoculated.**—Bronner has been studying in particular the agglutination titer after inoculation. He tested for it in 104 cases with intervals of from one to seven months since the inoculation. He was surprised to find that the eighty-fifth day seemed to be the dividing line. Up to that day all responded positively to the agglutination test, but after the eighty-fifth day 47.2 per cent. gave no agglutination response. The intervals between the inoculations did not seem to influence the agglutination titer. This test cannot be accepted as a criterion for the diagnosis of typhoid with a titer above 1 : 200, and only in about 89 per cent. of the cases can it be utilized for the diagnosis. An increasing titer, regardless of the actual figures, strongly suggests typhoid if a month at least has elapsed since the inoculation. The course of typhoid is modified by the inoculations, but it still retains its typical character. The blood picture and urine findings are apparently not influenced if the interval since the inoculation is longer than two weeks. It is a little more difficult to cultivate the bacilli from the blood, and serologic tests cannot be depended on in fully one fifth of all cases after three months.

64. **Means to Prevent Injurious Action of Anesthetics on the Central Nervous System.**—Weber has been making a special study for years of the central mechanism for the innervation of the blood vessels, and the war has afforded him unprecedented opportunities for this research. Some of his conclusions were summarized in these columns June 5, 1915, p. 1949, as he applied in treatment of concussion of the brain some of the facts learned in his experimental work. The vessels shrink, instead of the normal dilatation, during mild muscular effort when the central mechanism for the innervation of the vessels is deranged. The standard test is by dorsal and plantar flexion of the foot, hanging free; in health this gentle exercise induces dilatation of the vessels elsewhere in the body (except in the brain). After local anesthesia there are evidences of perverted vasomotor functioning, lasting for one or two days, and in about half the cases there is disturbance in the vascular reaction. With chloroform general anesthesia, the same occurs but much more pronounced, the disturbances lasting from five to six days and the morbid vascular reaction occurring in every case and being still manifest from one to six weeks afterward.

He theorizes to explain these phenomena, commenting on the extreme sensitiveness of the central vasomotor mechanism to injurious influences brought by the blood. He also comments on the prompt way in which this mechanism seems to be steadied and brought back to normal under the influence of stimulation from alternating hot and cold douches. This report is based on fifty cases studied from this point of view and known to have had normal conditions before the anesthetic was applied. Tracings from two cases are given; in one the tests showed abnormal conditions persisting four weeks after the chloroform. The alternating hot and cold douches were then applied (as described in the abstract referred to above). and by the fourth douche all the symptoms had disappeared, including the muscular weakness, exhaustion on climbing stairs, profuse sweating on slight exertion, and headache—all part of the syndrome resulting from derangement of the central mechanism for innervation of the vessels. Ether seemed to exert an injurious influence to a degree about midway between that of local anesthesia and chloroform.

66. **Fat Embolism in Military Surgery.**—Bürger remarks that the clinical diagnosis of fat embolism in the lungs or in the organs of the greater circulation was never made during life in the cases in his experience. But the clinical picture as he describes it seems to be characteristic. Prophylaxis is extremely important in managing the wounded in war. The Esmarch bandage should be applied the same as for hemorrhage to ward off fat embolism in all cases of multiple fractures or single fracture in the severely wounded, especially the elderly and those weakened by disease or alcohol, those that have been run over by a vehicle or thrown from a horse or hurled by an explosion. Immediate application of the Esmarch bandage will not only prevent further destruction of fat tissue by the blood, but will prevent that already broken up from being transported elsewhere. Even Momburg constriction at the waist line might be advisable, especially with crushing injury of the pelvis. Judging from his experimental research, already disintegrated fat may become bound by coagulating blood, and thus the danger of embolism be averted. The Momburg constricting band should not be left on too long; half an hour should be sufficient. Before removing the Esmarch bandage, venesection might drain away any loose fat particles in the blood, but Bürger thinks that this is scarcely necessary. Injection of gelatin into the limb might favor development of thrombosis.

It is extremely important, he reiterates, to leave the severely wounded where they are; any attempt to move them to a distance is liable to bring on fatal fat embolism. It may be necessary to make ample provision for draining the crushed soft tissues. When a crushed limb has to be amputated, the danger of fat embolism must be heeded more than has been the case hitherto, and, for the same reason, delirium should not be allowed to develop or should be checked.

The toxic action of chloroform is magnified when there is fat embolism. Most physicians regard fat embolism as beyond all aid, but Bürger thinks that much can be accomplished by prompt diagnosis and opening up of the focus in the bone and tamponing it. Venesection also relieves the heart combating against the fat embolism in the greater circulation, kidneys, etc. Saline infusion seems contraindicated, in his opinion, although Gaugele advocates it. Stimulation of the heart he regards as useful.

In his experience, the onward passage of the fat emboli seemed to be independent of the heart force, and to depend rather on the nature of the fat and the construction of the lung capillaries. Diversion of fluids to the intestines, as with calomel, is liable to prove useful. If symptoms of pressure on the brain develop from venous stasis or hydrocephalus, leeches to the mastoid process might divert the fluid effectually, as also revulsion in the scalp by hyperemia induced by an irritating salve. Lumbar puncture may also aid in diagnosis and as a therapeutic measure, but it must be applied with extreme caution. After recovery from fat embolism, we must expect considerable damage from the passage of the fat emboli, and time must be given for repair, longer than would be necessary with the same wounds, fractures and contusions without the embolism. We may expect to have the patient complain long of general weakness, dizziness, ready fatigue, heart disturbances, dyspnea, or depression. Lumbar puncture may relieve or cure some of these persisting symptoms, supplemented by hot foot baths, air and sun baths and revulsive measures in general, warning impressively against overexertion either mental or physical. If possible the patient should be given light work and gradually resume his ordinary occupation.

69. **The Meat Extract Test Breakfast.**—Rosenhain has been giving Mintz' test breakfast a thorough trial. (It was described recently in The Journal, Sept. 18, 1915, p. 1067.) He tabulates the findings in twenty cases with parallel test breakfasts. They testify that the Mintz technic is reliable and highly instructive, but that it belongs to hospitals and laboratories rather than to general practice. The Ewald test breakfast answers practical purposes better and gives all the information needed as a rule in general practice.

Münchener medizinische Wochenschrift, Munich

September 7, LXII, No. 36, pp. 1209-1240

70 Treatment of Diphtheria. O. Seidel.
71 Coagulation Reaction in Diagnosis of Syphilis. (Serodiagnostik der Syphilis mit chemischen Substanzen.) v. Dungern.
72 Agglutination of More than One Species of Bacteria. (Die Bildung von Nebenagglutininen.) F. Kutscher.
73 *Ingestion of Salt Checks Night Sweats and Sweating in General. (Einnahme von NaCl ein Mittel zur Verminderung der Schweissbildung bei Phthisikern und auf Märschen und zur Verhütung von Magenstörungen bei Anstrengungen und Hitze.) R. Link.
74 Emergency Obstetric Application of the Hydrostatic Bag. (Zur Technik der Hysteroryse.) K. Tietze.
75 Improved Technic for Politzerization. (Zur Technik der Politzerverfahrens.) K. Böttger.
76 Blinded Soldiers as Masseurs. R. Kuh.
77 War Injuries of the Central Nervous System and Welfare Work. (Kriegsbeschädigungen des Zentralnervensystems und soziale Fürsorge.) Rittershaus.
78 Localization of Foreign Bodies. (Zur röntgenologischen Fremdkörperlokalisation.) M. Favarger.
79 Constricting Band Renders Exanthem Manifest in Typhus. (Die künstliche Stauung als diagnostisches und differentialdiagnostisches Hilfsmittel beim Fleckfieber.) C. Dietsch.
80 Improved Technic for Splints. (Die Leerschiene.) v. Gruber.
81 Improvised Electrotherapeutic Appliances. Wunder.
82 Toxic Action of Sulphur Soap. (Intoxikationen nach prophylaktischer Schwefelanwendung und ihre Verhütung.) E. Hesse.
83 *Ring of Roofing Paper to Protect Superficial Lesions. (Dachpappe zur Fensterung von Verbänden.) Krug.
84 Wounds of Peripheral Nerves. (Ein offenes Wort an die Kollegen.) W. Fürnrohr.

73. **Ingestion of Salt Checks Sweating.** — Link gave a number of consumptives in his care a level teaspoonful of salt in half a glass of water, that is, about 5 gm. sodium chlorid in 150 c.c. water, on the assumption that the loss of salt in the night sweats might be responsible for the depression felt after them. To his surprise he found that the patients did not sweat as freely as under other conditions. The salt evidently checked the production of the night sweats. Since then he has given salt systematically in this way to over a hundred tuberculous patients and the effect was almost invariably good. The salt even checked sweating under sodium salicylate and during the crisis in pneumonia. The possible causes for this action of salt are discussed at length and he reports further the apparently favorable influence of ingestion of a hypertonic solution of salt preliminary to long marches to prevent excessive sweating.

83. **Ring to Protect Open Wounds.**—A broad strip of roofing paper is slit at intervals along one edge, and the strip is then rolled into a ring to fit over the lesion. The slit edge adapts itself to the surface of the skin below. A sheet of gauze is laid over the top of the ring, held in place by a second narrower ring slipped on outside. The tar paper does not absorb secretions.

Therapie der Gegenwart, Berlin

September, LVI, No. 9, pp. 321-360

85 Substitutes for Amputated Limbs. (Ueber den Ersatz amputierter Glieder.) M. Cohn.
86 *Organotherapy in War Medicine; Conception of Dyshormonism. (Anti-Thyreoidin und Hypophysin in der Kriegs-Medizin.) O. Kohnstamm.
87 Vaccineurin in Treatment of Neuritis. K. Löwenstein.
88 *Nonsurgical Treatment of Anal Fissures. F. Schilling.

86. **Dyshormonism.**—Kohnstamm relates a number of instances in which thyroid or hypophysis extract or epinephrin caused a surprising change for the better in various morbid conditions from disturbance in internal secretions, superposed on or caused by the emotional stress of the campaign or resulting from concussion of the nervous system. He regards neurasthenia in soldiers as having a somatic basis in molecular disturbances or changes in the nerve tissue like those which distinguish magnetic from nonmagnetic iron. In several cases some of the symptoms of exophthalmic goiter had developed in soldiers and officers on active service, but it subsided under antithyroid treatment. A typical asthma or bronchitis was materially benefited in many instances by a combination of hypophysis and suprarenal extracts. In one case of exophthalmic goiter in a soldier, tachycardia changed to bradycardia as jaundice developed and then returned again as the jaundice subsided. Hypophysis extract seemed to combat insomnia effectually and also proved useful in a case of periodically recurring functional angina pectoris of vasomotor origin. As the attacks returned regularly ten days before the menstrual period he assumed that ovarian functioning was responsible for them, and hence aimed to give the antagonistic hormone in hypophysis treatment. Its action on the heart is the more striking as it contracts the coronary vessels instead of dilating them like epinephrin.

88. **Anal Fissures.**—Schilling relates that only nineteen were females in his forty-six cases of anal fissure. In bottle infants with lime-soap stools, the resulting fissures usually heal under addition of carbohydrates to the food. Superficial fissures heal under a protecting salve containing a little anesthetic. Others may heal under Peruvian balsam or ichthyol. He disapproves of caustic applications, and combats the spasms and constipation by injecting a local anesthetic into the muscle below the tear. Glycerin suppositories are irritating; he prefers a pint of soapy water or soda-oil introduced through a soft tube with a number of openings. Twice or once a day he injects into the rectum some astringent, 150 c.c. of a weak solution of tannin or 1 c.c. tincture of krameria in 200 c.c. warm water, or 0.25 per cent. solution of copper or zinc, the patient lying on his left side and straining to expel all the fluid. This exercise in straining while reclining helps to relax the sphincter. Later he applies a little balsam or ichthyol. There must be no straining at stool, as this congests hemorrhoidal nodules. The accompanying nervousness must be combated likewise. With patience and perseverance the fissures gradually heal over under this treatment, as a rule, the tear filling up with scar tissue.

Policlinico, Rome

September 12, XXII, No. 37, pp. 1229-1260

89 Favorable Impressions of Scrotherapy in Measles; Eight Cases. (La cura del morbillo col siero de morbillosi convalescenti.) U. Majoli.

September 19, No. 38, pp. 1261-1296

90 Present Status of Malaria. (Le moderne conquiste della clinica della malaria.) V. Ascoli.

September 15, Surgical Section No. 9, pp. 413-460

91 Case of Hernia of Diverticulum of Meckel. (Contributo alla casistica delle ernie diverticolari e del "Littre.") C. Scandola.
92 Improved Technic for Ventral Herniotomy. (Semplificazione di tecnica nelle laparoplastiche per sventramenti post-laparotomici con applicazione alla cura radicale delle ernie ventrali.) G. Trotta.
93 Mixed Tumors of the Palate. G. Morone. Continued.

Riforma Medica, Naples

September 11, XXXI, No. 37, pp. 1009-1036

94 *Ataxia in Walking and in Swimming. (L'atassia nel cammino e nel nuoto.) A. Murri.
95 Coagulation Reaction in Diagnosis. (Di una speciale reazione di coagulazione del siero di sangue in condizioni normali e patologiche.) S. Seigliano.

September 18, No. 38, pp. 1037-1064

96 Immunization and Anaphylaxis in Experimental Glucosuria. A. Ferrannini.

94. **Ataxia in Walking and Swimming.**—A. Marina of Genoa has recently published a work on posttyphoid nervous affections, in which he relates that a typhoid patient was left with acute ataxia but was able to swim perfectly, notwithstanding his inability to walk. Murri discusses the mechanism of ataxia and the functioning of the cerebrum and cerebellum involved, saying that Marina's case seems to throw light on some of the obscure points in our knowledge of ataxia.

Russkiy Vrach, Petrograd

XIV, No. 28, pp. 649-672

97 Lobulation of the Liver, Spleen and Lungs of a Man; Resulting Cleavage and Separation into Parts, with Study of Embryology of these Organs. N. A. Batuieff. Commenced in No. 27.
98 Splenectomy for Floating Spleen; Nine Cases. V. P. Jilinskaya.
99 Unfavorable Experiences with Chemotherapy of Fibrinous Pneumonia. L. P. Dmitrenko.
100 *Foreign Body Several Years in Bronchus. V. I. Telega.

No. 29, pp. 673-696

101 *Pathologic-Anatomic Changes after Death from Asphyxiating Gases. I. T. Pojarisky.
102 Femoral Arteriovenous Aneurysm with an Osseous Sac. N. A. Bogoraz.
103 Care and Transportation of the Insane among the Troops in Active Service. N. N. Reformatsky.
104 Formation of Stone in Bladder around a Shrapnel Fragment. S. N. Lissovskaya.
105 *Neutralization of Acid Stomach and Intestinal Contents. A. M. Zaitzeff.
106 *Treatment of Poisoning with Caustic Substances. J. G. Dillon.

100. **Nut in Bronchus.**—Telega gives the history of a patient who had had a nut in the bronchi for six years. The symptoms from it were those of advanced tuberculosis. The foreign body was finally coughed up, but the patient soon died from pulmonary hemorrhage.

101. **Pathologic-Anatomic Effects of Poisonous Gases.**—Pojarisky studied the pathologic changes from asphyxiating gases in forty cases; in six cases after an interval of from twelve to thirty hours, in twenty after two or three days, and in fourteen cases from three to eleven days after the asphyxiation. The principal changes that occurred within twelve hours after asphyxiation were marked edema of the lungs and partial atelectasis, and severe changes in the blood, especially in Bizzozzero's blood plates and in the walls of the vessels, the endothelium. The red corpuscles suffer but little. Owing to these changes in the blood, substances form which increased the coagulability of the blood, rendering it thick and unable to circulate. In many cases there was formation of white adherent thrombi. The blood changes and thrombi formation render the work of the heart very difficult, and the nutrition of the tissues suffers, which leads to asphyxia and death from pulmonary edema. Miliary hemorrhages in the brain are very frequent. After three days complications may arise, such as putrid bronchitis, partial pulmonic gangrene, pleurisy, embolism, hemorrhagic infarcts, etc. These complications may lead to permanent disability even if there is recovery from the asphyxiating gases.

105. **Mechanism of Neutralizing the Acidity in Stomach and Intestine Contents.**—Zaitzeff studied the mechanism of neutralization of the acid stomach and intestine contents on five dogs with gastric, duodenal or intestinal fistulas. Altogether, twenty-eight experiments were made, of which four were done on a dog with a pyloric fistula. He found that the neutralization of the acidity in the stomach is done by the pancreatic juice, which is also responsible for the neutralization of the acidity in the upper portion of the small intestine. In the lower portion this is accomplished by the intestinal juice and mucus. The acid fluids (contents) having been neutralized, are absorbed all along the small intestine, and do not reach the end of the latter. The source of chlorin in the stomach is the pancreatic juice, as the proportion of chlorin increases in the stomach when acids not containing chlorin, such as acetic, sulphuric or lactic acid, are introduced into the stomach. The less concentrated the acids introduced into the stomach, the lower becomes its acidity. In the pyloric portion of the stomach the acidity is lower than in the fundus, because of the presence of the pyloric alkaline juice. After introduction into the stomach of acid fluids, the stomach content acquires the properties of trypsin digestion, that is, proteins are digested in an alkaline medium. This also shows that pancreatic juice gets into the stomach under such circumstances.

106. **Treatment of Poisoning from Caustic Substances.**—Dillon obtained excellent results in the treatment of poisoning with caustic substances such as glacial acetic acid, phenol, ammonium chlorid, sulphuric acid, etc., from lavage of the stomach always preceded by a hypodermic morphin injection to relieve the shock. The esophagus must be soothed and not irritated, which he realized by giving the patient by mouth pure olive oil, 200 gm. in twenty-four hours, keeping this up for seven or eight days if necessary. This was followed later by sweet cream, raw eggs, mucilaginous substances and butter, and gradually ordinary solid food is resumed. Water can be given in the form of rectal injections of normal salt solution, 100 or 150 gm. every two hours, or by the drop method. In addition the mouth should be kept clean, rinsing the mouth with some antiseptic solution, preferably hydrogen dioxid. Of 120 patients thus treated only one died. Three others did not reach the hospital until moribund and the treatment could not be carried out.

Hospitalstidende, Copenhagen

September 8, LVIII, No. 36, pp. 901-924

107 Disinfection of Sputum in the Home. (Om desinfection i Hjemmene af Tuberkuløses Ekspektorat.) K. Schroeder.

September 15, No. 37, pp. 925-948

108 Homogeneous Blending of Air in the Lungs. (Om Lungeluftblandingers Homogenitet. Undersøgelser i Anledning af Krogh & Lindhards Methoder til Bestemmelse af Hjærtets Minutvolumen.) C. Sonne. Commenced in No. 36.

Hygiea, Stockholm

LXXVII, No. 16, pp. 897-960

109 *Pathogenesis, Treatment and Prophylaxis of Mercurial Stomatitis. (Om kvicksilverstomatiten.) J. Almkvist.

109. **Prevention of Mercurial Stomatitis.**—Almkvist has published a number of works on this subject since his first report of experimental research in the *Nordiskt Mediciniskt Arkiv* in 1903. This stomatitis develops only when the blood contains mercury in a form that combines with albumin on and around the teeth to form an irritating compound. Prevention must be directed to keeping the cracks and crevices of the mouth clean of albumin. The tooth powders used must be of absolutely soluble material so that nothing be left to get into crevices, and all tartar must be carefully removed. Treatment should aim to sterilize all the crevices and he uses a syringe with long fine tip to force the disinfectant into the crevices. He has found hydrogen peroxid especially effectual when used freely in this way. If this is done now and then during the course of mercurial treatment, even the predisposed may be saved from stomatitis.

Ugeskrift for Læger, Copenhagen

September 9, LXXVII, No. 36, pp. 1429-1468

110 Quantitative Determination of Uric Acid in the Blood. (Bestemmelse af Blodets Urinsyremængde.) C. Jørgensen.
111 Roentgen Findings in Normal Large Intestine. II. T. E. H. Thaysen. Concluded.

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RELATION OF THE HOSPITAL TO THE COMMUNITY *

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To state that the modern hospital is a factor of great importance in the life of every community is to state a fact so well recognized, so oft repeated, that it seems almost an impertinence to say it again. Yet, strange as it may seem, there exist the greatest differences in standards, in fundamental principles, in organization, in scope of work, together with a great deal of ignorance on the part of the public, of physicians and of hospital administrators as to what hospital efficiency means. It might also be said that there is only one factor common to all and that is the uniform purpose of trying to make sick people well.

Consider for a moment the different methods of support for hospitals. In America we have two main types — the semipublic or endowed and the municipal or city hospital. I am speaking of general hospitals and therefore do not include the state hospitals for the insane. In this country it can be said without fear of contradiction that the best hospitals, those that have contributed most up to this time to medical education, to scientific work, and which have been managed with the greatest efficiency in the interests of the patients, have been the endowed hospitals. The municipal hospitals have been for the most part, and are still, interfered with by local politics, medical and otherwise, are insufficiently staffed, insufficiently supported and poorly managed.

In England we find a somewhat similar condition, the majority of the hospitals being supported by the subscription system. In Germany we find quite the reverse, the majority and the best hospitals there being supported by the state or the municipality and used for the broadest purpose of service, in that medical education and research are encouraged and supported everywhere.

In America we find the hospitals providing for both classes of society — the poor who cannot pay, and the more fortunate class, those who can. In England, adequate provision is made only for the poor. Sir William Osler has said that one of the greatest needs in the English hospital system is that provision should be made in the general hospitals whereby the well-to-do may receive treatment as good at least as that afforded the poor. In Germany the condition has, until comparatively recently, been somewhat the same.

We therefore see the widest differences with regard to support and scope of work, in the hospitals of three of the largest countries of the world; and these conditions typify those of practically all other countries.

What is the rational basis of support and what should be the scope of the work? Consider the condition in your own country. The state or city assumes the responsibility of providing for the insane, the defectives and those suffering from tuberculosis. The cities provide for the care of those suffering from contagious diseases and for a limited number of the poor who require treatment in a general hospital. But by far the majority of the poor must get hospital attention in those institutions which are supported by private philanthropy. It is the duty of some one to care for those too poor to provide for themselves. We have not yet accepted the principle that it is the duty of the rich to care for the poor. It would seem therefore that the duty rests with the city or state, or both. Now I am not arguing in favor of abandoning our hospitals which are supported by private funds, not at all, but I do wish to at least try to help to place the responsibility where it belongs. We are too accustomed to our present methods to make such a radical change without involving great sacrifice and great suffering, for on the part of the city and state authorities, our present methods are largely the result of lack of appreciation of the responsibility and the need. Furthermore, our system has worked well, but there is need that the responsibility be recognized and appreciated in order that the burden may not continue to be so unequally divided. That hospitals are obliged to accept state appropriations, made according to the whims of legislators, or according to the influence brought to bear, that they are obliged to accept per capita allowances from the city, which represents frequently not more than one-quarter, and rarely more than one-half the actual cost of caring for a patient, is neither in accordance with the principles of business nor equity.

The cost of hospital administration is increasing each year, and the financial burden for most hospitals is a matter of grave concern. The point which I wish to make is that, in the final analysis, the responsibility does not rest with the private philanthropist; and while it is in every way desirable to continue our system of endowed hospitals and to foster that particular kind of philanthropic spirit, it is at the same time absolutely necessary that the state and municipal authorities recognize their responsibility, recognize that these hospitals are doing a great public service, and when aid is needed, that the per capita allowance should be based on facts and at least approximate the actual cost of the service rendered.

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* Chairman's Address, read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

What should be the scope of work? By that question is meant, should hospitals provide only for the poor? It is an accepted fact that today a person who is actually ill with any serious illness requiring medical or surgical attention stands a much better chance of recovery if he receives treatment in a hospital. It is also generally conceded that, on the whole, the physician's private hospital, or the nursing home, does not supply the same advantages that can be obtained in the well-organized, thoroughly equipped general hospital. If these facts are accepted, then it follows that if a hospital is intended to serve the fullest needs of the community, it should provide, for those who can afford to pay, facilities at least as good as those furnished to the poor who cannot pay.

We have been considering the hospital in its relation to the community as an agency for the relief of suffering, and as such, whether endowed or supported by the municipality, it is a necessary factor in the preservation of health. The hospital is much more than that. It is an educational factor of great importance, both to the community in which it is located and to the country at large. Many of these hospitals are teaching institutions, furnishing the opportunity for bedside instruction and the practical experience for large numbers of students of medicine, who, when they have received their degree, go out to practice in that or some other community. Every hospital has its resident staff of physicians and surgeons, numbering all the way from one to a hundred, who serve in the hospital from one to several years. Here they perfect themselves, acquire a high degree of skill in diagnosis, treatment and surgical procedure, and in time go out to give the benefit of that skill to some community.

Furthermore, it is in the hospital wards and operating rooms that the senior members of the staff, by the study of large groups of patients, and by the experience gained in operating on large numbers of patients, acquire a skill and technic that has been such an important factor in the progress of medicine and surgery. In the laboratories, too, as a result of careful routine study, or of painstaking experimental work, new facts have been discovered, of the greatest importance in medicine and surgery, and to mankind.

The effect of this group of earnest, skilful workers in any community has a very practical value in the development of public hygiene, better sanitation, better living conditions and a higher plane of existence.

Then there is another most important group—the nurses. Every hospital of any size has its training school for nurses. In this school each year a number of young women are trained to give competent, skilful attention to those who are ill. We now recognize that good nursing is often quite as essential as good medical attention, and is just as often equally responsible for a favorable result. Hospitals turn out annually thousands of trained nurses, who in practicing their profession play an important part in maintaining the health of the community in which they work. The trained nurse is now called on to perform work which is vastly more important and vastly different from what was originally expected of her. In almost every phase of our civic and social life, she is called on to organize, to systematize and to teach, as private nurse, visiting nurse, school nurse, rural nurse, health department nurse, inspector and so on. The nurse is a most necessary and valuable aid to the physician, to the sanitarian and to social service. I cannot refrain from saying that it is high time that the medical profession and the public realize this, and that steps be taken to safeguard this profession from quackery and inefficiency, by establishing proper standards of education, which hospital training schools must meet, and by demanding compulsory registration for the nurse as well as for the physician, the pharmacist, the dentist, the osteopath and the barber. It will come and it will be the more to our credit that we show an intelligent interest and an early interest in bringing about this desirable result.

When we consider the work of the hospital in its broadest sense, we realize that it is not simply a place where sick people are cared for, but it is an educational institution of great value where those things are taught which mean health and happiness.

There is another side to the question, however. Has the hospital fully measured up to its opportunities, has it fully met the needs of the community? I think not; and I wish briefly to speak of a few of the possibilities for still further service. I do not pretend to say that there remain only a few questions to solve. Some hospitals are as nearly perfect as our present ideas can conceive, but many others are far from having attained that standard.

The first question which I wish to present to you is the need of a private or semiprivate service for patients of moderate means. The practice of medicine is now highly specialized. While people with ordinary ailments are satisfactorily treated by the average doctor, as soon as a person becomes seriously ill with any one of a large number of diseases with their usual complications, that person is no longer safe in the hands of the average doctor. If the doctor is intelligent and honest, he calls in some other doctor of larger experience and greater skill. He, in turn, may call in a specialist, who may advise a Roentgen-ray examination, after which still another doctor is consulted. Now, if the patient be a poor man, he may go to the hospital and in the public ward get all of this for nothing, or for a modest charge well within his means. If the patient be a man of large means, he of course has no difficulty. But if the patient is a member of that large class—those in moderate circumstances—earning a salary of from $1,000 to $2,000 per year, with a family to support, he cannot afford to pay the customary fee for such services, either within or outside of the hospital, for his pride prevents him from going into the public ward. What is to be done for him? In my opinion a hospital service between the public ward and the expensive private room, for the benefit of this class, represents a very great need. How shall this be provided? Obviously, it is not the duty of the city to provide such a service, the need of which arises simply because of the patient's pride and lack of funds. Equally obvious is it that funds given strictly for the benefit of the poor should not be diverted to this purpose.

Assuming, therefore, that this service is much needed, it is apparent that it must be provided by special endowment or by the use of a portion at least of the unrestricted funds. Boards of trustees should be educated to appreciate this need. Furthermore, it may safely be said that the amount required would probably not be larger, if any, than that which would be required to support the same number of patients in the public wards. In other words, the difference between the amount paid by the patient and the cost would not be much more in the one instance than in the other. It is taken for granted that while the patient could and would pay a moderate charge for privacy, he would not be willing, even if allowed to do so, to pay more than the usual ward rate for attention in the public ward. Therefore, the net cost to the hospital would be about the same in either case.

It is a subject which requires the careful consideration of hospital authorities. While I do not think it is a measure which should be adopted in a teaching hospital, because of the complications, it should be considered carefully by those which are not used for teaching, which represent the vast majority.

In line with this is the question of a pay clinic, or dispensary for the same class. The reasons for this are the same as those mentioned above, namely, the expense of getting competent advice when it is required from one or more specialists. There is a large class of patients who are able and willing to pay a moderate fee, but who cannot meet the regular fees of competent specialists. There are many who need such advice and who do not need to enter a hospital for treatment. The free dispensary is not for these, nor will they go to the free clinic and take their turn with large numbers of their less fortunate fellows, and yet they need a place where they can go and get just such advice as can be obtained in the free dispensary. Indeed, the fact that they have gone to the dispensary for advice has, in my opinion, been somewhat responsible for the talk about dispensary abuse. Yet many of these patients would gladly have paid a moderate fee and had no intention of imposing on any one, but were simply trying to get what they needed at a price within their means.

For this class, then some system needs to be devised by which they can get the necessary examination by one, two or three specialists at a fee within their means. Of course the argument against such a clinic will be that it interferes with the private physician. It is true it would interfere with the private physician, but if we recognize the need of such a clinic, we at the same time admit that the average physician does not fill the bill and cannot give the patient proper advice or treatment. Furthermore, it is an argument for fewer physicians better trained.

While a number of free dispensaries are necessary in every large city, there would not be need of more than one of two of these pay clinics. A consideration of the trend of modern medical practice, a superficial study of the desires and perplexities of a large number who seek advice from the hospitals, is sufficient to demonstrate that some provision should be made for those who can pay only moderate fees. Take as an example the clerk who earns from $1,000 to $2,000 per year and has a family to support. He makes both ends meet and that is all. It is for this man, as a representative of this class, that the pay clinic is needed.

The clinic should be organized very much as our efficient free dispensaries are organized. A few carefully chosen men, representing the different branches of medicine and surgery, should constitute the staff. The fees should be such that the patient could get competent advice at a total expense within his means, say for $10, and subsequent treatments or examinations for a small sum, say $1 or $2. The clinic could be run at night, so as not to interfere with the regular hours of the staff members. Such a clinic is urgently needed in every city of considerable size. The chief difficulty will be found in educating the rank and file of physicians to appreciate this need and to give their support. It is time that we gave serious consideration to this subject, for a solution of some sort must and will be found.

Finally, I wish to call your attention to one other problem that needs attention and which represents one of the weak points of our present hospital and social system. All hospitals are discharging, every day, patients whose physical condition requires some changes in the mode of life of the individual. The patient may be a stevedore or a truckman, with a weak heart, or he may be a mechanic who has lost a leg or an arm, or he may be partially paralyzed, or he may be suffering from any one of a number of conditions which make it impossible, or at least inadvisable for him to return to his old employment. These patients are being discharged day after day with advice, good advice to be sure, but which, the chances are, not one patient in ten can carry out unaided. The patient with the weak heart, who has always been a stevedore, and whom we tell not to do any work which involves a physical strain, is bound sooner or later to go back to the only sort of work he is familiar with, unless someone makes it his business to see that he gets employment suitable for him. This class of patients needs assistance simply to find suitable employment, and this aid can be supplied temporarily by someone in the social service department to whom this special work is delegated. But what of the man who has lost a leg, or an arm, or both, or who is permanently crippled? He is another and more difficult problem, for the only remedy is reeducation. He must be taught some work or trade which, even in his crippled condition, he can do as well as the man who is physically sound; or if that is impossible he should be taught something which will enable him to be, at least, partially self-supporting. To enable the individual to retain his self respect, when otherwise, as a useless member of society, he would lose it, is something well worth while. The hospital takes the patient in, patches him up and does a good job so far as it goes, but when the hospital sends that man out with advice which it is a foregone conclusion the man cannot follow, that is where the process falls short of being complete. Is this completion of the process the problem of the hospital? you may ask. I do not think so, and yet some agency is necessary to complete the work so well done up to this point, and the failure to supply such an agency means a tremendous waste of human material and oftentimes a repetition of work again and again.

I do not think it is a problem of the hospital, because it is a problem with every hospital, and for every hospital to attempt to do this work for its own patients means a great reduplication of work and a great waste of money. In my opinion there should be one central agency for the community, to which all hospitals could refer their patients of this class, with the proper prescription as to work to fit the condition. That agency would have to meet two problems; that of finding suitable employment for those who are simply physically weak, and the second and more difficult problem of teaching the cripples and the patients with the more severe cases of physical defects a new trade.

To solve this problem adequately is a big undertaking, but it is well worth while. It is a community problem, and an agency or institution to meet this need is just as much needed as a hospital. Consider the possibilities, the preservation of the self-respect and courage of these men and women, the finding for them, or the creation for them, of a useful existence, when unaided they are doomed to lives of idleness, uselessness and despair. It certainly presents great possibilities of increased efficiency in our present system.

We have had examples of the possibilities in the institutions for the blind, Dr. Hall's pottery at Marblehead, and Dr. Jaeger's Hospital of Hope in New York. All of those who have had much to do with hospitals will recognize the need.

I wish further to make the point that this work should not be based on appeals to the sympathy of employers, but on demonstrating or developing the fitness of the individual for the job. Sympathy employers may have, but they cannot be expected to clog their machinery with the unfit. I cannot at this time go into the subject at greater length. I wish, however, to urge the importance of this subject.

These are a few of the problems still awaiting solution and they loom up large. Ten years ago a hospital authority remarked that it seemed to him that most of the hospital problems had been settled. I hardly think we could agree with him, even now, only ten years later, for as I see it, the modern hospital is becoming an increasingly important factor in every community, both in the preservation of health and as an educational institution.

THE ESSENTIAL FACTORS IN THE DIAGNOSIS OF CHRONIC GASTRIC AND DUODENAL ULCERS *

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This review is undertaken to emphasize proved clinical factors and briefly to consider various phases of experimental, clinical and therapeutic advancement in their application to the diagnosis of benign, chronic gastric and duodenal ulcers. Our observations are based on the study of 2,400 cases of gastric and duodenal ulcers operatively demonstrated in the Mayo Clinic from 1900 to 1914, inclusive, with an especial summary of the cases of 1913 and 1914.

DIAGNOSIS

A skilful anamnesis, in the absence of extensive clinical observations or direct roentgenologic evidence of a lesion, is still the most important factor in the differential diagnosis of lesions causing gastric disturbance. With regard to ulcer, characteristic chronicity or remission of symptoms is readily apparent in the case records in over 80 per cent. of all our proved cases. The principles emphasized by Graham[1] since his earliest observations are as effective today as then and are the accepted diagnostic criteria in a large daily experience. Pyloric and duodenal ulcers in which complications are not far advanced invariably manifest periodic exacerbations. Seasonal variations, especially of spring and fall, appear in almost 40 per cent. of all cases. Nervous and physical fatigue, infection and exposure, dietetic indiscretions, toxic intestinal disturbance, etc., are prominent factors influencing recurrences. Between seizures complete relief from symptoms is the rule although frequently in ulcers situated well up along the lesser curvature remission rather than periods of complete relief may occur. In general the greater number of these patients have had symptoms for from five to twenty years, in our experience, few less than one, and a constant average of twelve and one-half years. During the period of attack, pain or distress, variable in character and intensity, is the common and constant symptom in nearly all cases.

Of secondary diagnostic significance are the location, type and area of radiation of the pain. The time of pain and method of its control are of primary importance. The complex of chronicity and periodicity of attacks in which pain or distress and the usual association of symptoms repeated uniformly day by day during the attack and bearing a fairly definite relation to food intake and control is of primary clinical importance in the diagnosis of 80 per cent. of cases of uncomplicated peptic ulcers. In the remaining 20 per cent. this complex may be irregular, atypical or almost entirely absent; or the symptoms may be "mixed," owing to coincidence of disease in contiguous organs, which occurs in about 16 per cent. of all cases of ulcer. It is this group which often taxes the resources of the clinician, but errors in diagnosis do not easily occur if the possibilities are constantly borne in mind especially in cases (1) in which a perforative process or a painful spasm simulates hepatic colic, (2) in cases in which ulcers had become chronic and complicated when the first symptoms appeared, and (3) in cases suggesting a malignant process, the result of an extensive ulcer, hemorrhage, cachexia and perhaps a palpable inflammatory mass.

Clinical differentiation between gastric and duodenal ulcer is extremely difficult and in most instances well-nigh impossible. This has been the opinion of most observers. With great regularity late pain and the nature of hemorrhage in proved gastric ulcer may suggest duodenal lesion. Then, too, not infrequently the earlier onset of pain in some cases of duodenal ulcer suggests gastric lesion. In about 5 per cent. of all ulcers coincident lesions in the stomach and duodenum are noted, an incidence which increases our difficulties. In our experience and in that of many other observers the Roentgen ray is of inestimable value. In this field it has its most practicable application besides occasionally furnishing the first reliable evidence to indicate the presence of ulcer; but too great reliance must not be placed on this; for, valuable as may be the information afforded by the Roentgen examination, it has its limitations. The degree of demonstrability of gastric ulcer is directly concerned with three factors: that is, position, size and depth of the ulcer. The direct sign of irregularity of the gastric contour (niche, accessory pocket) may be wanting in instances in which the ulcer is situated on the anterior wall, high up in the cardia and when it involves the pyloric segment; should it be shallow, "slit-like," it may not be successfully demonstrated.[2] Indirect and auxiliary signs, however, in combination with clinical data, may be helpful in establishing the diagnosis. The strikingly frequent occurrence of bulb deformity or hyperperi-

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* From the Mayo Clinic.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Graham, Christopher: Diagnosis Between Duodenal Ulcer and Gallstone Disease, The Journal A. M. A., Feb. 9, 1907, p. 515; Differential Diagnosis of Diseases Causing Gastric Disturbances, Northwestern Lancet, 1910, xxx, 139.

[2] Carman, R. D.: The Diagnosis of Gastric Ulcer by the X-Ray, Read before the Kansas Medical Society, Kansas City, Kan., May 5, 1915.

stalsis with residue in duodenal ulcer is worthy of note from both the point of diagnosis and localization.

The continuous or intermittent presence of altered or fresh blood in the gastric extract, the absence of evidence pointing to gross motor disturbances and the situation of pain and tender point to the left of the median line are strong presumptive evidence of gastric ulcer. Clinically, this general observation can be made: Uncomplicated types of duodenal and pyloric ulcer are invariably clear-cut throughout their life history; the longer the period between intake and pain, the lower the ulcer, as a rule; the more prompt the onset and the briefer the duration of pain, the higher the ulcer. In ulcer of the stomach proper this may not be so clear-cut as in duodenal or pyloric types, nor are the day-by-day symptoms so clearly defined. In ulcers well above the pylorus the symptoms are likely to be continuous, or remissions rather than intervals of complete relief are likely to be noted. The pain is not so often relieved by food; small amounts of food may give relief, while increased amounts may cause distress; more care as to diet is necessary; if bleeding occurs, hematemesis predominates; vomiting plays a more frequent rôle even in the absence of obstruction and affords relief; soda relieves pain when food does not; pain begins earlier, as a rule, often disappearing before the next meal, for obvious reasons, in the absence of stasis or marked hypersecretion. Thus the food-relief is minimized; but pain from one-half hour to two hours after food is quite the rule and is of diagnostic significance. Too much clinical significance cannot be placed on reliable evidence of gross hemorrhage in the presence of other symptoms characteristic of ulcer. This complication, however, occurs in only about 35 per cent. of all chronic gastric and duodenal ulcers. The association of hemorrhage with the ulcer-complex makes for safe diagnosis of ulcer in 95 per cent. of all cases. In 5 per cent. of all ulcers there is a silent bleeding type in which blood is regularly found in the stools but more or less complete absence of other usual clinical symptoms of pain, hyperacidity and food ease. Benign ulcer, unlike cancer, bleeds intermittently. Positive analysis of occult blood in the stool on limited examination was present in about 25 per cent. only of the cases studied. Hemorrhage has been noted in 2 per cent. of all cases of chronic appendicitis associated with marked gastric disturbance, while it is as high as 5 per cent. in chronic cholecystitis associated with the gastric reflex. In these cases the hemorrhage is probably due to primary follicular ulceration of the gastric or duodenal mucous membrane. More extensive observations on the frequency of occult blood, of general blood morphology and its diagnostic significance in ulcer are now under way and will be the subject of future consideration.

Briefly stated, in those organic conditions which most frequently cloud the diagnosis—chronic cholecystitis and cholelithiasis, chronic appendicitis, etc.—we obtain our greatest diagnostic aid from the irregularity of symptoms during the period of attack. This irregularity is chiefly concerned with the time of appearance of pain and the influence of food. Nothing follows in sequence day by day, perhaps due to the fact that the stomach behaves properly unless irritated by the contiguous lesion and this extrinsic lesion is irregular in its influence. Judging from our case records, chronic catarrhal or "strawberry" cholecystitis very perfectly and most frequently simulates the ulcer-complex. The features of chronicity and "spells" (of invariably briefer duration, however) with characteristic pain, hyperacidity and flatulency having some food relation, the absence of colic, icterus and localizing signs are not uncommon. In order to lessen diagnostic error, daily clinical observation, repeated gastric analyses under variable circumstances, examination of the feces and, finally, the therapeutic management based on the well-known principles laid down by Sippy[3] may be necessary. It is unnecessary to comment on the importance of having in mind and recognizing these types of chronic painful dyspepsia most frequently having their origin in these extragastric lesions. Of considerable moment, too, is the frequency of lesions coexistent in the gastroduodenal, biliary, pancreatic or appendiceal systems in which disturbances engendered by one may overshadow or make irregular the symptomatology of the other so that to the conceits of surgery must be left the ultimate diagnosis in too frequent instances.

Test-meal analysis so essential to gastric diagnosis has also its limitations. In the absence of definite evidence of blood, stasis, hypersecretion in the fasting contents, cardiac obstruction, etc., the findings are of value in so far as they are correlated with the clinical and roentgenologic data. They constitute a link, often a decisive one, in the chain of evidence. The instances of normal or subnormal acid value in the presence of a peptic ulcer occur in about 20 per cent. of all cases; on the other hand, hyperacidity and hypersecretion, even stasis of the first degree, are only too frequently associated with functional states, ptosis and extragastric lesions. These conditions would soon lead to diagnostic confusion if too much dependence were placed on a single or even a repeated gastric analysis. Again, on account of purely physical conditions a considerable residue may be overlooked as shown by the contribution of Harmer and Dodd.[4] This disadvantage can be largely overcome by the use of a lavage tube of proper consistency, calibration and ample fenestration such as is now in common use. The researches of Rehfuss[5] and his associates have made us revise our estimate of the normal contents of the fasting stomach. In selected cases the fractional study of gastric digestion by means of the same investigators' tube and methods has proved to be of practical diagnostic value. Hyperacidity is the rule in 60 per cent. of cases of gastric ulcer and hypersecretion, also in ulcers at or near the pylorus. These features, singly or combined, are noted in 75 per cent. of all duodenal ulcers. A considerable hypersecretion of 200 c.c. or more, likewise the recovery of retention contents of our modified Riegel meal after from twelve to fourteen hours invariably argues for a lesion or organic stenosis, especially if the findings are constant. The determination of gastric motility is of diagnostic importance second only to secretory function or disturbance and for obvious reasons the former is of especial interest to roentgenologists.

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[3] Sippy, Bertram W.: Diseases of the Stomach, Practical Treatment, Musser and Kelly, W. B. Saunders Company, Philadelphia, 1912, iii, 336; Gastric and Duodenal Ulcer: Medical Cure by an Efficient Removal of Gastric Juice Corrosion, The Journal A. M. A., May 15, 1915, p. 1625.

[4] Harmer, T. W., and Dodd, W. J.: Sources of Error in the Use of the Stomach Tube for Diagnosis, Arch. Int. Med., November, 1913, p. 488.

[5] Rehfuss, M. E.; Bergeim, O., and Hawk, P. B.: Gastro-Intestinal Studies: I, The Question of the Residuum Found in the Empty Stomach, The Journal A. M. A., July 4, 1914, p. 11; II, The Fractional Study of Gastric Digestion with a Description of Normal and Pathologic Curves, The Journal A. M. A., Sept. 12, 1914, p. 909.

Carman and Miller[6] conclude that their bariumized carbohydrate-meal method is a more sensitive test for gastric motility than the modified Riegel meal as commonly used in our clinic; that the modified Haudek double meal method is more informative than tubing after a motor-meal test since the former not only shows delay of evacuation beyond six hours but also yields information as to hypermotile conditions. Their conclusions are based on a comparison of results of both examinations in 950 patients who came to operation. The lesions were as follows: appendix, 125; gallbladder, 311; gastric ulcer, 109; gastric cancer, 137; duodenal ulcer, 268. Of these patients 220 (23.1 per cent.) showed a six-hour barium residue; 131 (13.7 per cent.) had food remnants after fourteen hours or longer. The majority (209, or 90.4 per cent.) of the 220 patients showing a barium retention were found to have cancer, or gastric or duodenal ulcer. They further conclude that a distinct residue after six hours from the barium meal given under prescribed conditions was in 90 per cent. of instances indicative of grave pathology, and usually denoted obstruction at or near the pylorus.

From personal observation we can concede a more sensitive test for motility in this method, especially in case of intermittent or low-grade retention dependent on pylorospasm, incomplete stenosis and on lesions of the accessory digestive system. One may add that the comparison of results between the two methods is hardly fair, principally because of difference in the time element and other features which must be taken into consideration. The motor meal under proper circumstances will continue to be a most practicable index of gastric motility—a fact conceded by eminent roentgenologists and emphasized by clinicians following observations made from the results of both methods. By the latter method one has the additional advantage of being able at the same time to estimate the secretory function of the stomach.

STATISTICAL STUDY

Exclusive of those cases in which a consistent diagnosis of gastric or duodenal ulcer was made and medically treated, there were 1,078 cases operatively demonstrated during the years 1913 and 1914. Of these, 264 were gastric and 814 were duodenal. Coexistent lesions in both organs were noted in 44, or 4 per cent. The average ratio of gastric to duodenal ulcers is well shown in this series, about 1 to 3, that is, 75 per cent. of the ulcers were duodenal. Of the 264 cases of gastric ulcer, 171 occurred in males and 93 in females. The average ages were 47 and 44.5 years, respectively. The average duration of symptoms was 9.8 years. In about 80 per cent. the course was intermittent, free intervals alternating with "spells" of variable duration, regular (40 per cent.) or irregular (49.5 per cent.) in frequency. In 50 per cent. the complaint was continuous and progressive over periods of from several months to several years prior to operation. Irrespective of the situation of the ulcer, pain appeared within 4 hours after meals in 85 per cent. of the cases; in over 30 per cent. it was present within 2 hours, in 55 per cent. within 3 hours, regarded as constant in 3.8 per cent. and irregular in 3.4 per cent. Definite nocturnal pain only occurred in 6 cases, or 2 per cent. Pain was controlled by food or alkalies, or both, in 180 cases. The majority of these (84 per cent.) showed relief after food, while alkalies alone gave relief in 15.6 per cent. There was a fairly definite history of bleeding (hematemesis or melena) in 73 cases, or 27.6 per cent. of this group; about 41 per cent. had hematemesis only, 15 per cent. melena, while both hematemesis and melena were mentioned in 44 per cent.

Gastric analyses were carried out in 255 cases: 38 per cent. of these showed presence of altered blood in the extract. Gross retention was evident in 33.3 per cent. The average total acidity was 54; the average hydrochloric acid was 42. In 18 per cent. the acid values were normal or below. The absence of free hydrochloric acid was shown in 13 cases. Under such a circumstance the possibility of carcinoma, syphilis or associated disease was evident. Five of these patients have since died from malignancy, three now apparently show malignancy; in the others the advanced age associated with considerable fresh blood in the extract, gallbladder disease or other pathologic lesions explained the achlorhydria.

The generally accepted complex of ulcer was more or less definitely present in 81 per cent. of the 212 cases; irregular but suggestive in 6.8 per cent.; classified as irregular in 5.3 per cent. In the remaining 7 per cent. the picture was atypical or the record was incomplete. A primary diagnosis of gastric ulcer was made in 174 cases, or 66 per cent.; an alternative one in 21 cases (8 per cent.). Duodenal ulcer was the primary diagnosis in 47 cases (27 per cent.). The Roentgen ray gave definite assistance in 65 per cent. of the 113 cases examined in this series.

The situation of the ulcers was as follows: the lesser curvature in 167 cases, or 63 per cent.; the pylorus, 35, or 13 per cent.; total ulcers at or near the pylorus, 87, or 33 per cent.; posterior wall, 27, or 10 per cent.; anterior wall 6, or 2 per cent.; 2 gastrojejunal ulcers secondary to gastro-enterostomy. Multiple ulcers were noted in 15 cases, or 5.6 per cent.

The complications were: advanced cicatricial pyloric stenosis, 11.7 per cent.; evidence of perforation, 28 per cent.; perigastritis with adhesions to neighboring structures, 28 per cent.; questionable malignancy, 11.7 per cent.; appendiceal disease, 33.7 per cent. In less than 25 per cent. of all cases was there no complicating factor, a fact which illustrates the advanced stage of the process at the time of first examination.

Of 814 cases of duodenal ulcers 628 (77 per cent.) were males and 186 (22.8 per cent.) were females. This characteristic disproportion in sex incidence Wilkie[7] has probably explained on an anatomic basis. The average age was 43 years and the average duration of symptoms was over twelve years. The clinical course was intermittent in 95 per cent. of all cases, and periodic in 50 per cent. Continuous preoperative complaint of variable duration was noted in 26 per cent. In more than 85 per cent. the pain appeared in from two to five hours after taking food; in the remainder it appeared within two hours. Nocturnal pain only was given in 6 cases (7 per cent.). Definite relief by food was noted in 67 and partial or irregular relief in an additional 15 per cent. Relief by neutralization was present in 39 per cent. Hemorrhage was reported in 208 cases (25 per cent.) and was classified: melena, 8.8 per cent.; hematemesis, 6 per cent.; both melena and hematemesis, 10.5 per cent. The acid values averaged 20 per cent. higher than in gastric ulcer and in only 7 per cent. were they below the accepted normal standard.

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[6] 6. Carman, R. D., and Miller, Albert: The Roentgenologic Determination of Gastric Motility with a Comparison of the Results Obtained in a Series of Cases Examined Both by the Roentgen Ray and the Test-Meal, Arch. Int. Med., to be published.

[7] 7. Wilkie, D. P. B.: Observations on the Pathology and Etiology of Duodenal Ulcers, Edinburgh Med. Jour., 1914, xiii, 196.

A primary clinical diagnosis was made in 543 cases (66.7 per cent.) and an alternative one in 67 cases; that of primary gastric ulcer in 88 cases (10.8 per cent.). This totaled 85.7 per cent., the usual average in all the series recently studied. Of 251 cases in which the tentative diagnosis of gallbladder disease was also made, 51 (20 per cent.) showed this disease present and 51 ulcers (22.3 per cent.) were shown to be chronic perforating. Reviewing the case histories, the ulcer complex was fairly regular in 71 per cent., suggestive in 7.2 per cent., and irregular in 13.2 per cent.

At operation advanced pyloric stenosis was shown in 251 cases (30.8 per cent.); perforation in 26.8 per cent.; periduodenal inflammatory disease in 23.5 per cent. Associated disease in the appendix occurred in 48 per cent.; in the gallbladder in 9.7 per cent.

A more detailed comparative study of the statistical end-results in these two groups serves to bring out the salient differential clinical features as previously mentioned.

ABSTRACT OF DISCUSSION

Dr. J. N. Hall, Denver: We have the very great advantage of knowing what we are discussing, since the diagnosis has been proved in every case. There is perhaps no other common disease so frequently and so closely mimicked in its symptomatology by several other diseases as is peptic ulcer. We have all seen patients treated for twenty years for gastric ulcer, but cured by the removal of the chronically inflamed appendix, with no ulcer present. I have recently had one of Ewald's patients so cured, and it is doubtful if he is surpassed in diagnostic ability along this line by anyone in the world. Chronic inflammation of the gallbladder, chronic gastritis of the hyperacid type, small omental hernias and even the tabetic crises, are other common causes of confusion in diagnosis. Whenever ulcer is suggested but the history is atypical, the evidence as to the possible presence of chronic appendicitis should be reviewed, for such a condition will often be found. I should personally lay more stress on the search for unilateral muscular rigidity, which is probably of more decisive value as evidence of a definite structural lesion than pain and tenderness combined. In no procedure is the possession of an educated touch more imperative. The appearance in the anamnesis of jaundice and biliary colic has been the cause of diagnostic defeat in many cases through failure to recognize that in duodenal ulcer the patency of the common duct may be compromised, either mechanically or through an infective process. We should doubtless give the appendix more credit than it now receives as a prime cause of peptic ulcer, since the commonly induced hyperacidity in chronic appendicitis is probably a potent factor. It is interesting to note that the essayist found the appendix inflamed in 30 or 40 per cent. of the cases. If the ulcer does not heal promptly under proper medical measures, operation should certainly be advised. One comforting thought under these circumstances is that we shall save more than enough lives through the finding of unsuspected cancer to balance the mortality rate. The fact that many ulcers may be found by opening the stomach or duodenum when they would have escaped detection otherwise, should be given due consideration. There are so many chances of finding cancer, pyloric or duodenal obstruction, serious adhesions, hourglass deformity, etc., that we practically always find more advanced pathologic changes than we anticipated. The acquirement of a drug habit or the development of arteriosclerosis, neurasthenic features or tuberculosis from the faulty nourishment must not be overlooked.

Dr. Max Einhorn, New York: I have mentioned on another occasion the reason for the discrepancy between the views of the Mayos regarding the frequency of ulcer and the views of other clinicians. The Mayos believe ulcer is two or three times as frequent as cancer. I have no doubt their work supports that opinion. But there is a difference in the material that comes to the surgeon and the material which comes to the clinician. Say I have twenty cases of ulcer, probably only one of those will undergo operation. The cases which undergo operation belong to those in which there is food stagnation, or the lesion is near the pylorus, and that is why the surgeons find duodenal ulcer so frequently. If we could open up all the ulcer cases, we would probably find ulcer of the stomach much more frequent than ulcer of the duodenum. As to differential diagnosis, I agree with Dr. Eusterman, that from clinical symptoms we can sometimes make a diagnosis, but usually we cannot do so. In the great majority of cases we will be able to make a more definite diagnosis on careful observation of the cases, especially as to the location of the ulcers. I have several cases in which the lesion was shown to be in the duodenum, whereas the symptoms would indicate gallbladder trouble. There are of course cases in which the two conditions are present—duodenal ulcer and gallstones. This sometimes can be found out before operation by careful examination. The duodenal tube and the examination of the bile and duodenal contents may furnish a great deal of information as to the presence of gallbladder trouble. It has been my experience that in gallbladder disease the bile is not as clear as it should be when we take it out fresh from the duodenum.

Dr. J. A. Lichty, Pittsburgh: An essential factor under this subject is the differentiation between the acute and chronic gastric and duodenal ulcers. The differences of opinion between the internists and the surgeons hinge largely on the failure to make this differentiation. The difference is just as great as between an acute ulcerative endocarditis and an old mitral lesion in a compensating heart. If we can differentiate definitely between the acute gastric and duodenal ulcer cases and the chronic cases with their consequent deformity or disturbance of function, we can very easily decide what are medical and what are surgical cases. A year ago before this section Dr. Joslin of Boston spoke of his results in gastric and duodenal ulcers. He found that most of his patients did not come to the internist until they had their disease six years, and they did not go to the surgeon until they had their disease ten years. It is useless for the physician and surgeon to accuse one another of neglect, etc., when in six years so much damage may have occurred that neither the physician nor the surgeon can expect satisfactory results.

The Reward of Scientific Study.—The student does not study Nature because that study is useful, but because it gives him pleasure, and it gives him pleasure because Nature is beautiful; if it were not beautiful it would not be worth knowing and life would not be worth living. I am not speaking, be it understood, of the beauty of its outward appearance—not that I despise it, far from it, but it has nothing to do with science: I mean that more intimate beauty which depends on the harmony in the order of the component parts of Nature. This is the beauty which a pure intelligence can appreciate and which gives substance and form to the scintillating impressions that charm our senses. Without this intellectual support the beauty of the fugitive dreams inspired by sensual impressions could only be imperfect, because it would be indecisive and always vanishing. It is this intellectual and self-sufficing beauty, perhaps more than the future welfare of humanity, that impels the scientific man to condemn himself to long and tedious studies.—H. Poincaré.

MEDICAL ASPECTS OF OPEN AIR SCHOOLS *

SHERMAN C. KINGSLEY
Director of the Elizabeth McCormick Memorial Fund
CHICAGO

Medical examination of employees is becoming the practice in the industries of our country. This has been found necessary by business men, first, to conserve the health and welfare of the individual, and second, to promote efficiency. Safety first methods and principles are becoming matters of first importance in the life of our country. Shop sanitation and proper working conditions are requisites in a first class business organization.

There are 20,000,000 schoolchildren in the United States. These boys and girls spend 11,415 years in the schoolrooms of the land every school day. This means a total every school year of 2,283,000 years. School attendance is compulsory.

Any business responsible for the expenditure of this amount of time would find it necessary to apply efficiency tests to be sure that working conditions were satisfactory.

Anyone who has visited schoolrooms and is aware of the enormous amount of time required from the boys and girls of the land cannot help wondering how much time is lost through drowsiness, inattention and half asphyxiation due to badly ventilated and overheated schoolrooms. Government in the United States concerns itself with the direction of the individual perhaps less than any other great nation of the world.

The public school affords our one most conspicuous exception to this rule. We compel the boys and girls to go into the schoolhouse and occupy school seats. We keep each one in the presence of the teacher and under the direction and supervision of the school authorities for a period of six to eight years, at least. Our theory is that each boy or girl reared in the United States should have at least a grammar school education. We now know that less than one-half ever finish the grammar school.

Through the work of our juvenile courts, settlements and vocational guidance bureaus, our children societies and other agents dealing with boys and girls, we are beginning to understand some of the pressing problems of child life.

Health inspection in public schools shows that 12,000,000 of our 20,000,000 schoolchildren have physical defects serious enough to interfere with school progress. Careful study in many cities further shows that from 2 per cent. to 10 per cent. of the total school population has physical defects so serious as to render school experience practically useless and to render it unprofitable to spend public money trying to educate them unless something is done to correct physical defects.

Advocates of the open air school believe that the time to spend time and money on the individual is when he is young and when such effort and expenditure will result in benefits which will accrue to the individual, and not wait until it is necessary to deal with them as chronic invalids or as finished dependents.

Open air school advocates believe that 100 per cent. of the schoolchildren should have their fresh air and hygienic rights. In many parts of the country there is no reason why all schools should not be open air schools all the year around, because the climate affords no serious obstacle.

In other parts of the country, the winter months constitute a problem, but for the major portion of the year, even in the colder latitudes, all schools can have open air conditions. Even in the winter months, open air conditions can be much more nearly approached through the periodic opening of windows to let in the fresh air.

The debilitated child affords a special problem and, as was said before, it is estimated that from 2 per cent. to 10 per cent. of the schoolchildren are of this type, and this would mean somewhere between 400,000 and 2,000,000 such children in the United States.

The Elizabeth McCormick Memorial Fund of Chicago has made the open air school a special feature of its work. In the school year 1913-1914, there were twenty open air schools in Chicago with an attendance of over 600 children. In the case of 590 of these children, fairly complete records were kept.

The Board of Education furnished teachers and school equipment, and the Municipal Tuberculosis Sanitarium of Chicago cooperated in furnishing nursing service and in providing food.

The Elizabeth McCormick Memorial Fund employed special physicians, furnished clothing and other service necessary to the conduct of the schools. The children selected were of the undernourished, anemic and tuberculous type, and came mainly from the congested districts of Chicago. The average size family represented by the children was 6.15. Average number of rooms 4 plus. There was an average of 1.8 tuberculous members in each family represented by these children. The average rent was a little over $12 per month. The average income in the families represented by the children was $7.02 per individual per month.

This study of income was made in the latter half of the year 1913-1914, when industrial conditions in Chicago were normal. This income is a little more than half the standard established by the Juvenile Court of Chicago as a minimum on which a family of the size represented by these children can live and maintain health and efficiency. The figure set by the Juvenile Court is $12.60 per individual per month for such families.

Seventy-five per cent. of the children were diagnosed as tuberculous, meaning bones, joints, glands, etc.; 20 per cent. were suffering from anemia, and malnutrition; 5 per cent. were suffering from other defects, bronchitis, heart disease, etc. In addition, 188 had diseased tonsils; 165 had adenoids; 466 decayed teeth; 152 defective eyes, and then there were other minor defects. The families of a majority of these children were known to the clinics of the Municipal Tuberculosis Sanitarium. There were many other unclassified defects. In addition to these conditions, hours of retiring, irregular meals, conditions of sanitation and cleanliness in a majority of the homes were unsatisfactory.

First hand acquaintance with these children throws strong light on the reasons why at least some of our children fall out of school at an early age and why they are so illy-prepared physically and mentally for the duties of life. They help us to understand why our general theory of a grammar school education for all the boys and girls reared in this country is not

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

being made effective, and why more than half of them never attain this standard, and why such large numbers leave school with only fourth, fifth and sixth grade preparation.

Advocates of the open air school state that a thorough knowledge of each individual child is necessary and that this knowledge should recognize the child's physical as well as his mental individuality.

TABLE 1.—WEIGHTS (BOYS) IN COMPARISON WITH NORMALS

Age	No. of Boys	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	6	0.37	0.34	0.32	0.35
8	13	0.29	0.47	0.38	0.41
9	21	0.37	0.43	0.43	0.43
10	24	0.41	0.51	0.40	0.48
11	28	0.5	0.45	0.43	0.44
12	18	0.61	0.58	0.59	0.51
13	29	0.7	0.66	0.6	0.65
14	14	0.91	0.85	0.81	0.86
15	9	1.09	0.9	0.91	1.01
16	3	0.52	1.00	0.90	1.13

In order that careful medical work might be done, the Elizabeth McCormick Memorial Fund, for several years, has paid the physicians in the Chicago open air schools. This enables them to give the amount of time that is necessary adequately to deal with these children. The physicians have spent an average of about four hours a week on each of the nineteen schools. They find that it requires about a half hour to give each child a careful examination, and such examinations are made on admission, discharge, and once or twice during the year.

In addition, there is the daily running supervision which takes care of any special ailments, sees that physical defects are followed up and corrected, that children having elevated temperatures and who are indisposed, should be placed on rest. The nursing service which is furnished by the Municipal Sanitarium takes about an hour and a half a day of the nurse's time for each school. The nurse inspects the children daily, supervising taking of temperatures, taking care of any little injuries or physical needs, and visits the homes and helps to get the best possible cooperation with the school in the child's behalf.

TABLE 2.—WEIGHTS OF GIRLS IN COMPARISON WITH NORMALS

Age	No. of Girls	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	4	0.24	0.33	0.36	0.35
8	10	0.45	0.38	0.35	0.40
9	27	0.44	0.36	0.39	0.40
10	20	0.44	0.52	0.44	0.45
11	28	0.55	0.5	0.49	0.55
12	33	0.65	0.86	0.65	0.76
13	21	1.02	0.77	0.80	0.83
14	22	0.85	0.71	0.90	0.80
15	4	0.52	0.65	0.74	0.70

Then there is a small number of children to each teacher. This makes it possible for her to know her children, and when she understands home conditions, physical needs and has the cooperation of nurses, social workers, juvenile court officers and other social forces of the community, she gets an understanding of her children that she perhaps never had before.

To begin with, she is usually chosen for her interest in the work and her general social as well as teaching sense. The children study under open air conditions. They have as much sunshine as possible and their work is made as varied and interesting as conditions will permit.

In some of the schools they have a daily shower bath, daily feeding and a rest period after the midday meal. The aim is to "weave all these features into a process of education and the hygienic way of life." Results are almost uniformly gratifying.

Children gain in weight, they increase in alertness, in spirit and interest and make better intellectual progress.

Improvement is also shown in the hemoglobin tests. The average gain in weight for these children in ten months was 4.95 pounds. This approximates closely what the gains of normal children of the same age and sex should be and is shown in the accompanying tables.

Tables 1 and 2 show that about half the children gain as much (or more) as normal children of the same age and sex, and about half gain a little less.

The following tables show the school progress of these children for their year in the open air school and the previous record of the same children in regular rooms.

TABLE 3.—SCHOOL PROGRESS OF 522 CHILDREN IN CHICAGO OPEN AIR SCHOOLS, SCHOOL YEAR 1913-14

1 child made three grades in this school year.
12 children made two grades this school year.
9 children made one and one-half grades this school year.
387 children made one grade in this school year.
113 children failed to make one grade in this school year.

TABLE 4.—SCHOOL PROGRESS OF 488* OF THESE CHILDREN PRIOR TO SCHOOL YEAR 1913-14 BASED ON THESE FACTS AND ASSUMPTIONS

First—The age and grade of each of the pupils was taken at the beginning of the school year 1913. Second—We assume that according to usual standards each child entered school between 6 and 7 years of age; that he continued in school, and that he should have made one grade each school year.

22 children averaged 0.50 to 1 year to a grade.
107 children averaged 1 year to a grade.
172 children averaged 1 to 1.50 years to a grade.
128 children averaged 1.50 to 2 years to a grade.
18 children averaged 2 to 2.50 years to a grade.
22 children averaged 2.50 to 3 years to a grade.
2 children averaged 3.50 years to a grade.
9 children averaged 4 years to a grade.
5 children averaged 5 years to a grade.
1 child averaged 6 years to a grade.
2 children averaged 7 years to a grade.

* Nine of the 522 children entered school in the school year 1913-1914; twenty-five had not completed one grade at the end of the school year 1912-1913, and therefore were not included in this table.

The open air school movement is spreading rapidly over the country. There is a deep interest in the physical welfare of schoolchildren, and it is the conviction of part of our people that the time to serve these children is when they are in the public schools; that it is not good business to allow them to sit for six or eight years with handicaps and defects which are preventing them from receiving the thing which the school wants to give.

New York City has 250 open window classes with the same number of children in each class as in the regular schools, and the promoters say the results are better than in closed rooms.

New York also has twenty-five classes for anemic children and in these classes there are twenty-five children, and here again they say the results are better than when these children go to the usual closed room. There is no feeding or rest period in these classes.

Many other cities have open window classes. In California and many other localities, the movement is spreading rapidly.

For the type of children we have been describing, we believe that something more than merely opening the windows is necessary if these children are to be restored to efficiency and made useful citizens.

In many places the penny lunch or diets of milk and crackers, sandwiches, or other less expensive methods of feeding are in vogue.

We believe that this work should have careful medical direction and supervision.

Children should not be subjected to extremes of temperature unless they are properly provided for it. There is no reason, however, why all the schools in the country should not approach much more nearly the open air schools than at present.

Even in climates where the winter temperature is a problem, windows can be opened at intervals and the rooms flushed with fresh air. The Creator has provided enough fresh air for all and almost any audience room is greatly improved by such frequent opening of windows to let the fresh air in.

One of our little boys in Chicago brought a companion to the school not long ago saying to the physician: "Say, Doctor, how sick has a feller got to be to get in this 'ere school?" The open air school advocates believe in giving all debilitated children in our schools the care and attention which will give promise of making them useful citizens, but they also believe that people should not necessarily be sick or debilitated in order to have their fresh air and hygienic rights accorded to them.

ABSTRACT OF DISCUSSION

Dr. B. Franklin Royer, Harrisburg, Pa.: We are indebted to Mr. Kingsley for placing before us in a perfectly sane and rational way some of the problems of school life, particularly the class of pupils requiring open air schools. Some of you may have been a little surprised to hear him make the statement that from 2 to 10 per cent. of schoolchildren require some form of special school care; and yet in many sections of the country the percentage runs even higher. In Pennsylvania we do medical inspection of schools perhaps on a larger scale than any other state. It is compulsory in districts of the first and second class; optional in districts of the third and fourth class. In fourth class districts the work is done by the State Department of Health. We have recently finished making an inspection of 468,000 rural schoolchildren; and in that group we found 70 per cent. defective, and 27 per cent. had defects of vision as shown by the crude test with Snellen's chart. Many of them would have shown other defects of vision had we been able to carry out more elaborate tests. What I more particularly want to relate, however, and it bears directly on the subject under discussion at present, is what we have recently observed in certain schools in the little coal town of Nanticoke, with a population of 8,000. Dr. Waters, the city medical inspector, in examining 365 pupils in the isolated eighth ward of that city, found a large number of the children having tuberculosis. He stood aside ninety-nine children in a school of 365 as probably having tuberculosis, and urged open air treatment. The physicians in the town made uncomplimentary remarks; the school board and local health board thought he was unduly radical and made diagnoses without proper information at hand, and suggested that he come to the state health department and ask us to make a confirmatory examination. We sent for this work Dr. Karl Schaffle, chief of our dispensaries, and Dr. Charles H. Miner, two of our best medical men, with large experience in examining tuberculous children. Nurses were sent along. A room was set aside where we might make physical examinations of chests of all suspicious children. To our surprise, out of a group of 120 children examined with great care, including the ninety-nine set aside by Dr. Waters, forty of them gave enough evidence of active tuberculosis to justify a diagnosis of this disease, and sixty were set aside as children who should undoubtedly have been in an open air school. That gave us a percentage of 17. Mr. Kingsley has put it at from 2 to 10 per cent. We have not attempted to work out the percentage in the better types of schools and in communities where well-to-do people live and better housing conditions obtain. However, Mr. Kingsley is certainly well within the limits for most communities.

In Nanticoke the school board was quite willing to cooperate, and immediately converted this entire school into an open window school, and are now planning to isolate in an open air school and teach separately those believed to be actively tuberculous, and to continue the great number of suspicious children in the open window rooms of the school now in operation.

The Department of Health has undertaken to correct conditions through the housing bureau, and has put enough pressure on the coal companies to make provision for building new houses outside the congested district, and we hope in this way to thin out and apportion to proper space the various families that are there, and eventually to do a great deal toward overcoming present conditions.

Dr. William C. Hassler, San Francisco: I would like to ask Mr. Kingsley and Dr. Royer whether in their sections they met with such opposition as the League for Medical Freedom, who object to the investigation of conditions in the home, and particularly among the schoolchildren?

Dr. Royer: School medical inspection was made compulsory in certain districts in Pennsylvania in 1911. No opposition appeared in these districts. The League for Medical Freedom, however, circularized every school board in districts of the third and fourth class, some 2,500 boards, where inspection was optional. A lot of them (1,500 districts of the fourth class) voted against inspection the first year. We took no note of the opposition and inspected in the districts where they refrained from voting against it. The next year half as many districts voted against inspection, even with the league's agitation continuing. The school boards have come around, fewer voting against it each year, and we are now inspecting practically everywhere. Their attack has been a complete failure. We have not opposed them at any time, and every blow they have struck has been a boost and has done us good.

Dr. N. K. Foster, Oakland, Calif.: I spend all my time as director of health in the Oakland schools. Five years ago I induced the board of education to build an open-air school. It was in the yard of one of the larger schools, and it was decidedly open air. The east side was entirely open and the south and west sides had open louvers clear across, so there was never a lack of air. We filled this school by picking out all the worst defective children we could find in the large school, about twenty-three I think. At the beginning of school in August we weighed the children in both schools carefully and at Christmas time we weighed them again carefully. The children in the open air school had done the same work as those in the other school. We had not, as Mr. Kingsley speaks of their doing in Chicago, given them food or rest. The only difference was in the air. The children from the open air room had every one gained in weight and they showed a relative gain of 55 per cent. over the children from the inside. Their mental advance had been equally good, all of them being promoted although many had failed before when they were inside. Several of them even made two grades. Special teachers have often remarked to me how bright and wide-awake these children always are, in great contrast to those in the inside schools. There cannot be any question that we are stifling and destroying the vitality of many of our children by shutting them up in close, stuffy schoolrooms. The result of this in Oakland has been that we have from fifty to 100 new rooms, and every one of those rooms can be open air; that is, they are built in units so that the air comes in from two sides; the one side is fixed with windows that can be opened entirely, and on the other side windows can be opened so that there can be a cross draught. I think that the ventilating engineers with their wonderful schemes and ventilating machines are doing more damage to the schoolchildren than almost any other people—pumping in devitalized, dead air that has lost its invigorating qualities for them to breathe, keeping it at an even temperature without any disturbing currents, making many of the children in our schools stupid. I hope the time will come, and I hope the medical profession will let this strike deep into their hearts, that if we want to take any step to make our people strong and vigorous and well, it must be through open air schools.

Dr. F. E. Corey, Alhambra, Calif.: I have constantly asked our people, if the schoolchildren can be made better and restored to health by putting them in open air schools, why should we continue to keep the well children in closed schools. I have asked the school authorities in my community why they persist in building closed school houses when we know and have heard so much of the benefit of open schools, expending vast amounts of money to build architectural monuments to endanger the health of the rising generation. I believe that the mechanically ventilated school, just alluded to, is a menace to the health of future generations, and we ought to bring to bear all the influence we possibly can to defeat it. I have seen some such buildings, and they have distressed me beyond measure, and I cannot express too emphatically my disapproval and my desire that this matter may be agitated all over the country until we get some light into the minds of our school authorities. That is where the trouble seems to be.

Dr. Heman Spalding, Chicago: As to the question raised here about the opposition to school inspection, in Chicago we began the examinations without saying anything about it to anybody; just proceeded, and everybody wanted their children to be examined—almost everybody. Occasionally somebody would say he would not have his child examined. We said, "Very well. We don't want to examine him. Don't bother us. Just take care of your own child"; and we continued that way for some time. Then the League for Medical Freedom began to oppose somewhat, and through some means or other—I do not know what—we threw down physical examinations for a year. Then we began again, but at the present time physical examinations are made only of such children as come with a signed certificate from the parents giving consent. We get a pretty large percentage in that way—enough to keep our men busy all the time—and will continue in that way for the present. We have no law in the state of Illinois requiring physical examinations of pupils as they have in Pennsylvania. We are trying to get such a law. I do not have the figures to give. Mr. Kingsley has given his figures, but our figures are not available as yet to give you the details and results of our examinations.

Dr. B. F. Howard, Sacramento, Calif.: It has been well pointed out that the open air school is an important factor in the prevention of tuberculosis. I wish that some one might give us a definition of an open air school. We have all kinds of schools, from the country school with the cracks between the boards, to the city school with a goodly number of windows. I think with the open air school, or any school, we need, perhaps, quite as much what we might call an open air school teacher. I have been in a great many schools that could really be called open air schools if the windows were only properly opened, and that is particularly so here in California. We have all the facilities in the way of climate for conducting open air schools for all of our children; and yet one goes into schools where the windows are closed, most of the time. I would like to have in connection with this definition of the open air school some recipe for producing an open air school teacher.

Dr. L. M. Powers, Los Angeles: May I ask, Dr. Foster, if you have come to any definite conclusion which is better, for the boards of education or the health department to have control of the school inspection? I agree thoroughly with the doctor in reference to ventilation. I have been through all of that.

Dr. Foster: That is a question that would bring up a great deal of discussion. It does not matter whether the board of education or the health department handle it, so long as it is handled. It is merely a matter of private opinion whether the one or the other do it.

Dr. Thomas D. Maher, San Francisco: We have in San Francisco between fifteen and twenty open air schools, or cold air schoolrooms, and we also have one class of physically defective children, children who have been for some years under the observation of the Associated Charities; and we have in prospect, I am glad to say, an open air class for pretuberculous and tuberculous children. That is what we have in prospect for the coming year, and I am sure that we will find in the public schools many children not only suffering from tuberculosis, but pretuberculous children with enlarged lymphatic glands, and cases of that character. We have in California no mandatory laws compelling any school inspection. We are going along and meeting with only sporadic opposition.

Dr. Otto P. Geier, Cincinnati: Two queries suggest themselves to me as the result of hearing this paper. First, if the open air school does so much for the tuberculous child and for the pretuberculous child, why should we not at once take the next rational step and make all of our schools open air schools? Why should we wait until we find by physical examination that a child is pretuberculous before we begin to use this remedial agency, fresh air? I think we all go through the cycle. My attention in Cincinnati was first called to the open air school in connection with the tuberculosis hospital, and later on we got busy with our open air school to treat pretuberculous children; and I believe one of these days we will have to come to the proposition of treating everybody as pretuberculous and give them all open air treatment.

The doctors seem to fail singularly with a thing they are working with all the time, and that is the open air hospital. We have just finished building a $4,000,000 hospital, and we have done the usual thing—put some porches on it, and roof gardens; but the expense of removing patients to inadequate porches and the expense of moving up to the roof garden is prohibitive. I believe that when that hospital builder finally arises who has the courage to turn the hospital inside out and put the inside on the outside, and just a few dozen rooms on the inside so that they may be cared for, then we will make some progress in our hospitals.

Mr. Sherman C. Kingsley, Chicago: I entirely agree with the point of view mentioned here two or three times, namely, that all children should have fresh air and plenty of it.

The ideal of open air school advocates is fresh air and hygienic rights for 100 per cent. of schoolchildren. I do not pretend to know the truth about ventilation. Many scientific studies are now in progress. The scientific experts, so far, do not seem to agree even among themselves. What we understand now concerning the ventilating system in vogue is that windows and doors must be kept shut. Not long ago it was almost equal to separation from the service for a teacher to violate this rule. It is a question whether we protect anything but the ventilating system. My own belief is that whether you have a ventilating system or not, or whether you keep the windows closed and keep the air moving by mechanical process, sending it through the pneumatic laundry to be washed and returned, no matter what the process, I believe that the teacher and the children themselves will be benefited by frequent opening of the windows and letting in some of the air which is always in abundance on the outside of our buildings.

Over and over again, even in so-called ideally ventilated rooms in new buildings, I have seen adult audiences revive, freshen up and regain the look of human intelligence on the opening of windows. They freshen like a wilted garden after a shower.

It seems to me that some kind of mechanical device should be helpful in getting air into the inside of large buildings where there are inner rooms, corridors and recesses. There are days when the air is stagnant and does not move without some provocation. However, I feel that ventilating systems ought to be used and made to serve, and not venerated and worshiped. Air has qualities, not motives and impulses. We sometimes act as though it would be accommodating and do the thing which is expected of it, just because we expect it.

It is my belief, as I said before, that the efficiency of every school building in the land will be greatly increased by the periodical opening of windows and letting in the air. I believe that both teachers and pupils should be taught to open windows rather than to close them and to feel that opening them was something they never ought to do. We know that we all feel better in the open air. All you need to do to convince yourself, is to look at the children when they gather in the schoolroom on September 1 and then look at them again in June. The open air and outdoor life that they get in the two months keeps them going for the other ten.

THE SANITARY ENGINEER IN PUBLIC HEALTH WORK *

SAMUEL G. DIXON, M.D., LL.D.
Commissioner of Health, Commonwealth of Pennsylvania

AND

B. FRANKLIN ROYER, M.D.
Chief Medical Inspector

HARRISBURG, PA.

For efficiency, a public health organization in a representative form of government should, in our opinion, be directed by one versed in sanitary and practical medicine as well as in sanitary engineering. A little training in entomology and geology would add to the efficiency of the executive. He should be clothed with great police powers. The foundation of the organization should be a statistical division, including vital, morbidity and marriage statistics. Cooperating and depending on this statistical division, a medical division should be established, headed by a medical chief with an experience of at least ten years in general and special hospital work and in epidemiology. The medical associates should be those fitted for bureau work and for field service throughout the territory over which the department has jurisdiction.

Independent of the responsibilities generally recognized as belonging to a medical division, it is essential for the best work to have a system of hospitals for communicable diseases. In connection with the department there should be a corps of sanitary engineers and a well-equipped laboratory with workers in pathology, bacteriology and chemistry.

Divisions for tuberculosis sanatoriums, dispensaries and for the distribution of biologic products are necessarily required.

Another important division should be one on housing, headed by a sanitary engineer or a broadly educated medical man.

To promote economy and efficiency in all the other divisions, the department must have a technical purchasing and bookkeeping division.

With the divisions already mentioned it is desirable that there should be one on foodstuffs and drugs, including, of course, milk hygiene, and all these should be accompanied by a division of education and publicity, for in a representative form of government the police medical laws cannot be readily enforced if they are far in advance of the intelligence of the people. The publications of the division should be both medical and literary, and as important as any is the utilization of the newspapers, as the latter are the only publishing channel that reaches every fireside.

Our personal experience has also impressed us with the great necessity for doing medical school inspection, and, in handling communicable diseases, of having a well disciplined staff of licensed nurses; they may not only teach the children in schools, but also teach the poor in their homes.

With this discussion of the suggested divisions of the organization we can better understand the place of the sanitary engineer in public health work.

The medical division is informed, through the statistical office or division, of the undue prevalence of infectious diseases in any community, such as are transmitted by water, milk or foodstuffs. The sanitary engineer often plays a most important part in overcoming the trouble.

While the medical inspector is analyzing samples of water and milk, and studying the movements of the individual persons who have been ill, and the character of the food supplied to them, the sanitary engineering staff traces the source of these supplies and their ultimate distribution in the infected territory. The sanitary engineer often definitely locates the source of infection, particularly when the public water supply is at fault. His services may always be employed with advantage in the enforcement of such sanitary reforms as may be required to wipe out the source of danger and in planning for the elimination of further dangers from it. It is only when the engineering department cooperates closely with the various other subdivisions of a public health organization that the executive officer may properly control and combine their efforts, direct their several separate plans of investigation, harmonize their results and do the state's work economically and effectively.

The medical officer and the sanitary engineer must work together in field epidemics, particularly of water-borne disease; let this be direct or indirect. The medical officer takes precedence and reviews with local men both the probable source of infection and obscure cases of the disease. An engineer follows and enforces disinfection procedure as well as abatement of nuisances detrimental to health, and such general sanitary clean-up as may be required. From the coordinated studies of the medical and sanitary engineering services of a department the executive officer naturally draws his inference on which he bases judgment and plans reforms, determines results and anticipates further needs.

Profiting by the strictly medical experience gained in the suppression of epidemics of water-borne disease and the results of bacteriologic research, the sanitary engineer investigates and studies the water supplies of the state generally, and the watersheds of such supplies, for the purpose of protecting and furnishing a potable water to the people and for the purpose of preventing the occurrence of epidemics in large centers of population.

A very large part of the activities of the sanitary engineer in a health organization consists in making those studies for the executive officer that enable him to pass judgment on the plans of water works and sewerage works which are to be built to serve the various

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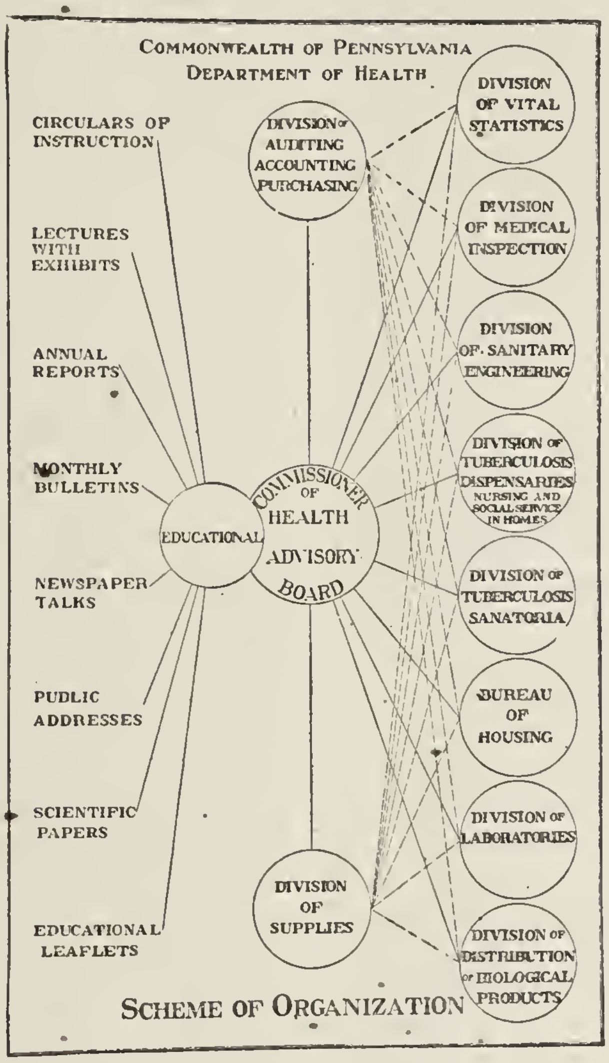
* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

communities of the state. It is from these preliminary investigations by the engineer that the executive officer determines whether the capacity of particular water works or sewerage works is sufficient for present and future needs, and whether such works are planned so as properly to safeguard the health of the public. In studies of this type the engineer has the assistance of the department's laboratory skill and scientific interpretation, in order to enable the executive officer to advise concerning the type of construction and character of the plant most likely to bring about desired purification, or pass final judgment on plans submitted.

Another important activity of the engineer in a health organization is supervision of water and sewage works already in service in order to hold responsible local officials up to the highest degree of efficiency in care and operation of the plant. Just as a chain is no stronger than its weakest link, so is the water plant or sewage plant no safer than the staff of its operators. Proper supervision may prevent disastrous results and in this supervision the engineer constantly needs the laboratory worker associated with him at his elbow.

In Pennsylvania no system of water supplies or sewers and no sewage disposal plant may be constructed or extended unless the plans and specifications therefor are first submitted to the department of health and carefully studied in the field by the sanitary engineering division. The facts thus obtained are carefully reviewed by the chief engineer, who then goes over the entire situation with the commissioner that recommendations may be made to the governor and attorney general for approval.

The sanitary engineer also patrols the watersheds, and in the patrol of the watersheds, seeks out and abates all possible sources of pollution. In the general work of the medical staff conditions are discovered that require the work of the engineering division.


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF HEALTH
CIRCULARS OF INSTRUCTION
LECTURES WITH EXHIBITS
ANNUAL REPORTS
MONTHLY BULLETINS
NEWSPAPER TALKS
PUBLIC ADDRESSES
SCIENTIFIC PAPERS
EDUCATIONAL LEAFLETS
DIVISION OF AUDITING ACCOUNTING PURCHASING
EDUCATIONAL
COMMISSIONER OF HEALTH ADVISORY BOARD
DIVISION OF SUPPLIES
DIVISION OF VITAL STATISTICS
DIVISION OF MEDICAL INSPECTION
DIVISION OF SANITARY ENGINEERING
DIVISION OF TUBERCULOSIS DISPENSARIES NURSING AND SOCIAL SERVICE IN HOMES
DIVISION OF TUBERCULOSIS SANATORIA
BUREAU OF HOUSING
DIVISION OF LABORATORIES
DIVISION OF DISTRIBUTION OF BIOLOGICAL PRODUCTS
SCHEME OF ORGANIZATION

Scheme of organization of Pennsylvania State Department of Health.

Coordination is the key-note of the successfully organized public health department and the sanitary engineering division is one strong arm in such an organization. Let us take, for example, the plan of organization worked out in the Commonwealth of Pennsylvania (see chart). You will note in the scheme of organization that the sanitary engineer derives his authority directly from the commissioner of health and reports directly to him; that he is relieved of the details of purchasing his supplies and doing his own bookkeeping; that he works side by side with the medical division and the other important executive divisions of the organization, any branch of which may instantly be called on for aid and cooperative work.

The Pennsylvania Department of Health in the very beginning of its organization conceived the present plan of organization and later worked it out in detail. The commissioner of health has never at any time hesitated to use the engineering division or any other division of the department for the purpose of ferreting out troubles having any bearing on public health.

The need for a sanitary engineer and a well-equipped laboratory has been recognized for many years. Not until ten years ago did Pennsylvania appreciate this necessity and in the organization of her public health forces under the laws of 1905 legal provision was made for the employment by the commissioner of health of such engineering assistance and laboratories as might be necessary to carry on the work of the department.

A division of sanitary engineering was organized. This division has increased in size until now it contains more than 100 trained employees, all giving their entire time to the sanitary details of the health work of Pennsylvania and laboring in conjunction with the medical and other forces of the department.

With a population of over eight millions (8,380,000) and a surface area of nearly 45,000 square miles, Pennsylvania has need for this engineering organization, which I believe is larger than that maintained by any other state.

The protection of the purity of the waters of the state is the fundamental work of the engineering division. This is accomplished by preventing the entrance of sewage into the streams and by the purification of water furnished to the public from polluted supplies, or else by requiring that water be obtained from uncontaminated sources.

The importance of this work is self-evident, as an adequate supply of pure water is necessary in every municipality. The urban population of our country is increasing, and with this growth comes a proportionate increase in the amount of water used by each individual. The quantity of water which can be procured from unpolluted sources is generally insufficient for the needs of our modern cities. It follows that the large surface streams will be used more and more as sources of public water supply. These streams are usually contaminated and their use would cause an increase in the occurrence of water-borne diseases, such as typhoid fever and bacillary dysentery. While it is true that polluted water can be purified, it is equally true that purification works occasionally fail in their function, and therefore cannot be considered an adequate safeguard.

The only sure remedy is to remove the cause and to restore all streams to as cleanly a condition as is practicable by the employment of modern methods of stream protection; in other words, by preventing the discharge of raw sewage into the streams.

A law passed by the general assembly in 1905, entitled "An Act to Preserve the Purity of the Waters of the State for the Protection of the Public Health," furnishes the Pennsylvania Department of Health with the necessary authority for carrying on this great work. The engineering division bases its operations on the provisions of this law.

This act prohibits the discharge of sewage by persons into any stream or other body of water in the state, and also requires all municipalities desiring to extend existing sewer systems to secure a permit therefore, issued on unanimous agreement of the governor, attorney general and commissioner of health. These permits stipulate such conditions as may be necessary to subserve the general interests of the public health. This law also forbids the construction of water works for the supply of water to the public, whether by companies or by municipal corporations, unless a written permit shall have first been obtained from the commissioner of health and under such stipulations that the supply may not be prejudicial to public health.

A great deal of study and investigation of an engineering nature is required for carrying out the provisions of this law. The permits issued by the state authorities cannot be arbitrary decisions. They must, to be of value and to carry out the intent of the law, be based on sound engineering judgment. Over 2,000 separate studies and engineering investigations have been made in connection with the administration of this law. From the organization of the department to the present time sewerage conditions have been studied in over 450 separate municipalities and townships in the state, and 940 permits granted as prescribed by law. Every one of these permits was issued after a personal investigation by officers of the department and contains such stipulations as were considered necessary to subserve the general interests of the public health. Two hundred and twenty-five modern comprehensive sewer systems for municipalities and ninety-seven sewage treatment plants have been built under these permits, and many others are about to be constructed. Seven hundred and eighty permits for water works construction have been issued controlling the supply of water to over 700 separate municipalities or townships. Field investigations and studies were also made in each case and the permits included such conditions as were necessary to protect the public.

One hundred and seventeen water filtration plants are in operation supplying purified water under permits from the department of health to municipalities having a total population of over four millions, or approximately 50 per cent. of the entire population of the state.

The department's activities do not cease after a water filtration or sewage treatment plant has been built and placed in operation. Weekly reports covering the details of daily operation of the works are regularly filed with the department of health and these reports are carefully studied by experts, and suggestions for improvements are frequently sent to the different municipalities. In addition, a force of trained engineers is constantly traveling about the state inspecting these plants at irregular intervals. These precautions are taken in order that the public may derive the benefits that can only be secured when the works are efficiently maintained. Their value has been proved many times as the department's representatives frequently find that, due to carelessness or ignorance on the part of the operators, the precautionary measures provided by the designer of the plant and approved by the state have been neglected or entirely forgotten.

The department's attention is directed to the discharge of sewage not only from public systems, but also from individual houses in the townships of the state. A large force of inspectors is engaged on a house to house inspection in the rural districts and especially on the watersheds of the streams used as a source of water supply. Nearly one half of the watershed area of the 28,000 miles of streams in Pennsylvania has been covered in these inspections. In case of pollution of state waters from an overflowing privy or cesspool, from a barnyard, or from kitchen or bath wastes, the inspection seeks to bring about an abatement of the pollution, invoking the aid of the courts, if necessary. The department's aim in this matter is not merely to secure a temporary abatement, but also to require the installation of such apparatus or the adoption of such measures as will cause a permanent abatement of the menace.

During the year 1914 alone, 104,587 properties on 371 different watersheds throughout the state were inspected. Of this number, 25,300 were in an unsatisfactory condition; 13,107 pollutions were abated on these properties during the year.

From the beginning of the work of the department to the close of the year 1914 a total of 739,437 properties had been inspected or reinspected and 117,168 abatements had been secured through efforts of officers of the department on properties scattered throughout the state. The effect of this work on communities drinking water from streams which previously had been contaminated by these pollutions must be counted as one of the factors that has reduced the general death rate and especially the typhoid fever death rate.

DEATHS FROM TYPHOID FEVER AND LIVES SAVED

1906 to 1914 inclusive

Year	Typhoid Deaths	Rate per 100,000	Calculated Deaths 1906 Rate Obtaining	Saving as Compared with 1906
1906	3,917	54.8	.....	.....
1907	3,538	48.6	3,989	451
1908	2,450	32.4	4,064	1,614
1909	1,712	22.7	4,140	2,428
1910	1,892	24.6	4,216	2,324
1911	1,716	21.9	4,291	2,575
1912	1,310	16.5	4,367	3,057
1913	1,470	18.1	4,443	2,973
1914	1,075	13.0	4,518	3,443
			Total saved	18,865

The engineering division also aids some of the state institutions of the commonwealth. Most of these have extensive water works and sewerage systems and a number of them have been designed and constructed under the supervision of the engineering division, by means of separate appropriations secured from the legislature for the work. These systems not only protect the health of the patients in the institutions and safeguard the streams below, but they have many times served as models for similar plants for villages and boroughs throughout the state.

A great reduction in the death rate from many diseases has been noticeable in Pennsylvania. The reduction in the typhoid fever death rate, one of the best guides in water purification, has been especially marked, and in the ten-year period since the state department of health was organized has resulted in the saving of thousands of lives to the state.

In 1905, when the department began its operations, Pennsylvania was a typhoid-ridden state. The purification of the water supplies and the improvement in general sanitary conditions have been factors of tremendous influence in bringing about this marvelous reduction in the number of deaths from disease so often water-borne in origin. This combining of work essentially engineering in nature with medical work brings results and proves the value and propriety of utilizing the sanitary engineer in a public health organization.

ABSTRACT OF DISCUSSION

Dr. Victor C. Vaughan, Ann Arbor, Mich.: The work that Dr. Royer has presented as done by the Commissioner of Health of Pennsylvania is a very good thing. Pennsylvania certainly needed to do this kind of work. Western Pennsylvania, as the doctor says, was a hot-bed for typhoid fever; and it was not confined to Pennsylvania but to the whole country. It was not safe for anybody to come into the region around Pittsburgh because of the possibility of getting typhoid fever. I think that many states have found it necessary to make the sanitary engineering department of the state health work very important. I know we have in Michigan. For some years we have had a very competent state sanitary engineer as an official of the State Board of Health and an engineering department; and we have the same rules, the laws that Dr. Royer has got for Pennsylvania. They say that the medical profession is the only profession that buries its mistakes — puts them out of sight. That is quite as true of the engineering profession as it is of the medical profession; and faulty engineering in this country has added greatly to the death list. It has not only added greatly to the death list, but it has increased enormously the expenditure of money. I had a letter only a few weeks ago from the editor of one of the engineering journals wanting me to write an article for that journal showing the advantage it would be to the engineering profession to have engineers examined like physicians are examined. Now understand me — wanted me to write an article showing the great value that it would be to the engineer to have state boards of examiners for engineers, just as the physicians have. I wrote him that state boards of medical examiners were not for the benefit of the medical profession; they were for the benefit of the public; and the same reason would apply to the examination of sanitary engineers. If anybody questions it, simply come to Michigan and travel around with me for a few days. I can show where bungling engineers have buried millions of dollars so that they cannot be resurrected, and at the same time have endangered the lives of, and probably killed, many people. The sanitary engineer is an important and essential adjunct to any health department. The public has the services of the United States, represented here by Dr. Rucker, as recognition of that fact. You cannot do public health work without the sanitary engineer.

Dr. B. Franklin Royer, Harrisburg, Pa.: I am glad that Dr. Vaughan reinforced in a positive way why it is absolutely necessary that engineers' plans for water works and sewage works be submitted to a central health organization for review and approval. It is not only in the interest of the health of the community, but it saves municipalities untold sums of money. Plans may often be submitted by an engineer who is a very good civil engineer but a very bad sanitary engineer, and unless the entire plans are materially changed, would be entirely unfit for the community's public health needs.

Popular Instruction Concerning Diet.—There is one kind of instruction much needed by the American people, which would illustrate better than any other the desirable preventive functions of health officers and boards of health, namely, instruction concerning diet.—Prof. Charles W. Eliot, *Public Health*, September, 1915.

INTERMEDIATE TRACHELORRHAPHY

ITS USE AS A PROPHYLACTIC AGAINST THE PERNICIOUS EFFECTS SOMETIMES CAUSED BY LACERATION OF THE CERVIX

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NEW YORK

It is not likely that any one doubts that extensive lacerations of the cervix during childbirth may do much harm, or, as lately has been shown again, by the studies of Schottlaender and Kermauner, that occasionally they may favor the causation of cancer. These authors found, in instances of cervical cancer, the presence of a laceration in the immediate vicinity in nearly every instance. Does it not then behoove us, if only as a prophylactic measure, to repair cervical tears, and to do this before pathologic changes, incident to the trauma, manifest themselves?

I purpose to plead for such procedure, and especially that it may be done when the sacrifice of material tissue is not a necessity. My justification lies in the fact that those who have made a careful study of the results of cervical tears almost invariably verify the assertion made by Dr. Thomas Addis Emmet concerning their deleterious effects. In support of this I call your attention first to the careful study of Brooks Wells, "The Etiological Relation of Cervical Lacerations to Uterine Disease," made from the clinical material of the late Paul F. Mundé and published in the *American Journal of Obstetrics* for 1888; and then to the paper read by Clement Cleveland before the New York Obstetrical Society, entitled "The Necessity for Early Operation upon the Lacerated Cervix," and published in the same journal for 1887. What those papers stated at that time holds good today. The analyses made by the authors cited I could multiply several times from my own practice, having, before and since then, seen thousands of lacerated cervices from which I could verify the position taken by these writers.

It is true that the resulting ills have been exaggerated by some physicians, but this applies to most matters, everything depending on the point of view. Some, indeed, have gone so far as to say that every laceration, whenever found, requires repair. I see many patients with slight tears who have been told that they must have the lacerations repaired, although they have existed a long time — too long to do an operation without denuding the torn edges by cutting away tissue — and are causing absolutely no trouble.

It is not my purpose, however, to dwell on the pernicious effects that lacerations may cause. It is conceded by those who have observed such patients, that sometimes the tears may give rise to disturbances, which are usually in relation to the extent of the injury. My purpose, rather, is again to call attention to a slight operation, to be applied in properly selected instances, whereby eventual ailments due to such injuries may be prevented.

The thesis I presented for admission to the American Gynecological Society, in 1887, was on "Intermediate Trachelorrhaphy." Under the rules of the society at that time, no papers coming before it were permitted to be published elsewhere than in the records of its activities. My thesis, therefore, appeared only in the society's transactions for 1888. Now, after so many years of added experience with intermediate trachelorrhaphy, I deem it but proper to place it before the profession at large for what it is worth.

My analysis at that time was based on 3,000 women who had borne children, in which number there were 109 who had lesions that were directly traceable to the tear. While I have not since attempted another analysis, yet from the recollection of my observations I am constrained to hold a similar view today.

From the foregoing it will be seen that I do not claim that all lacerations are productive of pathologic changes; neither do I claim that there is any time limit as to symptoms showing themselves after the injury. According to Cleveland the average time in his cases was four years and six months; but this may be shorter or longer.

Montrose A. Pallen, whose assistant I was during the early part of my professional life, held that all tears should be closed immediately after delivery; but it will be conceded that this is not practical or necessary, except in case of hemorrhage from an exceptionally extensive tear. It is far better to wait until the effect of contusion has passed off and bleeding has ceased, so that one may inspect with exactitude. Moreover, many small tears heal spontaneously post partum. After, say from four to six weeks post partum, however, the genital tract should be inspected, particularly in primiparas, because for these the operation is particularly intended, and if a tear of some extent is found, it should be repaired.

TECHNIC

My present method of repair is simpler than formerly — so simple, in fact, that any one with a little surgical ability can easily adopt it.

The patient is placed in the lithotomy position and the customary disinfection attended to. If she is not hypersensitive and not nervous, no anesthetic is required, for the operation is not very painful.

The cervix is pulled down with a pair of well-working bullet forceps, and exposed with vaginal retractors. The bullet forceps are then adjusted, one pair in the line of the cervical canal on the anterior lip, and one pair similarly applied on the posterior lip. With a narrow but very sharp scalpel — sharp especially at the point — a superficial film of tissue is scraped off the torn surface, taking particular care that the angles of the tear are made raw. For sewing I usually use a full-curved, medium-sized Martin needle, which has cutting edges; but one may use any other needle, if more accustomed to it. A No. 2 chromic catgut is passed so as to include the entire depth of the tear. Usually two sutures suffice for each side of the tear. Sometimes only one suture is required for one side, it frequently being the case, in instances of bilateral tear, that the extent of the tear on the sides are unequal in extent. This also holds good for stellate tears. Care should be exercised in tying. The surfaces should be brought together just snugly, never too tight, so that the sutures may not cut into the tissue. No after-treatment is necessary, and the patient may be about as usual after the operation.

It will be seen from the foregoing that the operation is not applicable to any case in which the tear has existed long enough to cause pathologic changes, in which scar tissue is present in the angles. In all such patients the scraping, or making the torn surfaces raw, does not suffice. That is why I say that it is particularly applicable for primiparas who have not previously sustained a tear, and that in the case of every primipara it should be part of the accoucheur's duty to make a visual inspection in about four to six weeks subsequent to delivery, and then to repair any existing laceration (unless it be of negligible extent) in the way outlined.

It is understood that in scraping the edges scrupulous care should be taken to avoid the mucosa of the cervical canal.

39 East Sixty-First Street.

A METHOD OF TESTING MUSCULAR STRENGTH IN INFANTILE PARALYSIS *

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The determination of the strength of partly paralyzed muscles in infantile paralysis, if made at all, has been done in the past by the roughest sort of guess, most often by pressing the hand against the contracting muscle. It was suggested to the physiological department of Harvard University in the winter of 1914-1915 that a more accurate means of estimating muscular strength would be of great value, and the method here described was formulated, with the following aims:

1. To enable a more accurate diagnosis to be made in the way of picking out the seriously affected muscles after an attack.
2. To obtain a means of indicating the muscles which were most promising for mechanical or operative treatment.
3. A quantitative measurement of this sort which would give a means of gaging the effectiveness of different modes of treatment.
4. A method of this kind might enable one to pick out from supposedly abortive cases certain cases in which remained a residual muscular paralysis too slight to be perceived by other methods.

To be of service the technic should be relatively simple and the results reliable. The method, which has been developed and used in a large series of tests extending over six months, seems to satisfy both these criteria to a reasonable degree.*

The index of muscular power employed is the resistance of the muscle group to a steady pull sufficient to overcome it. A sling is adjusted in an assigned position over the part of the limb in which the muscle group to be tested has its insertion. The sling is fastened to an accurate spring balance through which the pull is exerted. The balance must be held carefully in a line at right angle to the axis of the part of the limb to which the sling is adjusted, and is read either at the instant the muscle yields, as in the test of plantar flexion, or when the member is drawn into an assigned relationship with the body, as in knee extension.

A standard technic has been worked out for each of the following movements: In the legs, plantar and dorsal flexion, inversion and eversion of foot; adduction and abduction, flexion and extension of the hip; flexion and extension of the knee. In the arms, pectoral, latissimus dorsi, anterior and posterior deltoids; forearm flexion and extension; thumb adduction and abduction. These include the important groups except the trunk muscles and the rotators, which are mechanically difficult to test reliably. The tests in detail will be described in a subsequent communication.

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* From the Department of Physiology of the Harvard Medical School and the Orthopedic Department of the Children's Hospital, Boston. The preliminary report to the State Board of Health of Vermont of an investigation conducted under their auspices.

* The funds for the pursuit of this inquiry were furnished by an interested citizen of Vermont.

To be able to judge fairly the degree of impairment of an affected muscle group one must know what should be expected of the same group when normal. To this end we have prepared, on the basis of tests of a large series of normal children, tables of standard muscle strengths for all the groups listed above, for ages from 4 to 16 years. These tables give information not only of the normal strength of each group of muscles, but also of the relative strengths of the different groups.

To judge, on the basis of repeated tests, whether an affected muscle has improved or deteriorated, allowance must be made for possible variations in the vigor of voluntary innervation. To obtain data for this allowance we test regularly all the leg groups of both sides in cases that have any leg muscles affected, and all the arm groups when there is impairment of the arm.

Such changes of power as are shown by the *unaffected* muscles after a short interval are not referable to changes in muscular condition, but must signify changes in innervation. We can conclude, from the records of the unaffected muscles, what allowance to make for changes in innervation, and so determine how much of the change shown by the affected muscle is actual increase or loss of muscular power.

In favor of the method it may be said that successive tests at short intervals on the same subjects show the readings as to individual muscle groups to be, in a large percentage of cases, remarkably constant.

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SUDDEN BLINDNESS DUE TO SUPPURATION OF THE ACCESSORY NASAL SINUSES

WITH REPORT OF THREE CASES *

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That the intimate anatomic relations existing between the nasal accessory sinuses and the orbital contents has caused much eye complication has long been well known, but it is only within the last few years that special attention has been given this subject, as is shown by the literature on the subject.

In the last three years I have had in my practice three cases of sudden monocular blindness, which were diagnosed as due to nasal suppuration, and cured by endonasal treatment. These cases were of such a nature that diagnosis was not easy, one case being diagnosed by the presence of central color scotoma for red and green; one by dilated pupil, and one by dilated pupil, color scotoma and involvement of the ocular muscle. These cases led me to investigate the ophthalmic literature, to see if by tabulating the symptoms of all cases reported there would not be found some more definite way of diagnosing the eye condition and locating the nasal trouble. I have collected from the literature 88 cases of sudden blindness from nasal disease, most of them with normal fundus (those that were not normal having only optic neuritis, with the exception of two which had a neuroretinitis), leaving out the cases that were complicated by a history of syphilis, tuberculosis, detached retina, uveitis, and including only two having orbital abscess. This confines the cases to that form which we recognize as retrobulbar neuritis. In 69 of these cases one eye, in 19 both eyes were affected. Of the 88 cases, 16 are from the English literature, 14 from the French, and 58 from the German, and date from 1839 to the present time. The French seem to have reported more in the early literature, but of late years the German reports have predominated. Of the total, 63 cases have been reported in the last ten years. In order that my own cases may be commented on under the separate heading of "Symptoms," I herewith give their history:

Case 1.—H. O. J., aged 35, came under my care Feb. 11, 1911, with the following history: In November, 1910, while he was standing on a steel cable attached to an engine, the engine started, throwing him in the air and causing him to alight on a steel rail on the right side of his head, cutting his ear in the median line and causing a fracture of the base of the skull with the usual accompanying symptoms of hemorrhage from the ear, etc. He was trephined within forty-eight hours and a blood clot removed; he remained unconscious for several days. After regaining consciousness, it was noticed that he had a paralysis of the right externus muscle, causing diplopia, due, undoubtedly, to involvement of the sixth nerve of that side. When referred to me, one month after the injury, examination showed that he had a normal vision in each eye, but up to that time had developed no movement of the right externus muscle. He was placed on increasing doses of strychnin, and his right eye covered with ground glass, to relieve him of the troublesome diplopia. He was under treatment for three months, with slight improvement, when he was referred to me again, May 2, with a history of the vision in the left eye suddenly becoming obscure April 28. He was able to read in the morning, but in the afternoon could only see objects indistinctly, the vision gradually growing worse up to the time I examined him, when the vision in his left eye was 21/100, vision in the right eye being normal. Examination of the left eye showed the pupil regularly reacting to light and accommodation; no fundus change was found, except a possible engorgement of the retinal vessels; peripheral field of vision, normal for white, but an absolute color scotoma for red and green; no sign of exophthalmos or orbital involvement; urine negative; no syphilitic history. At this time he gave no history of nasal trouble, and nothing was found on examination. Thinking there might be some syphilitic trouble, he was sent home and placed on increasing doses of potassium iodid. He returned to me on the twenty-second, vision having decreased to counting fingers at a few feet. The pupils were still normal in reaction; central color scotoma was still present, and no sign appeared of orbital involvement. Examination of the nose at this time showed pus coming from under the middle turbinate on the left side. Probing disclosed no uncovered bone; no involvement of the frontal or maxillary sinus could be found. The sphenoid was not probed, but there was no pus coming from this region. Diagnosis was made of retrobulbar neuritis, due to empyema of the ethmoid cells. In order to drain them, the usual preliminary operation of removing the anterior end of the middle turbinate was done, and he was placed on 5 grains of hexamethylenamin three times a day. There was an increased discharge of pus, and in five days his vision went up to 20/20; the color scotoma was still present; there was no marked decrease in the amount of discharge for several days. He was kept under observation until August 17, the discharge at this time having decreased and the vision improved until he could read a number of letters in the 20/15 line. Since that time no further work has been done on his nose. The vision has remained practically normal, although the central scotoma for red and green did not disappear for a year, and there is still a slight blurring of central vision, the pupil being slightly larger than that of the other eye.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Case 2.—Miss M. S., a trained nurse, aged 23, came to me March 9, 1914, giving the following history:

Six days previously, while at work, vision in the left eye became dim, the pupil dilating markedly in a few hours. There was no pain, but some headache over the left frontal region. She had been using no medicine to which the dilatation could be ascribed; she had not been sick, though there was a history of an acute cold one month before. She had been healthy except for illness in childhood, and had had nasal catarrh for years. There was then some discharge from the nose, but I did not think it was pus. Examination of the eye showed no reaction of the pupil to light, accommodation or consensually; there was no change in the fundus, with the possible exception of engorgement of the veins; no signs of exophthalmos or orbital involvement. The patient complained of some pain on pressure over the left ethmoid. A few days before, a severe pain on the left side of forehead lasted several hours. Examination of the nose showed the septum deflected to the right, left nostril wide, with the middle turbinate bone showing a polypoid enlargement on the anterior end with some crusts underneath, but no signs of pus; vision 21/100, unable to read test type at 14 inches. This patient's eyes had been examined a year before and glasses prescribed for slight hypermetropic astigmatism. At that time she had normal vision in each eye. A roentgenogram was made of the skull, but nothing was found pointing to sinus involvement. She reported again the following day, vision having decreased in the last twenty-four hours to such an extent that I was unable to take the field of vision for either white or color. Probing under the anterior end of the middle turbinate, I found uncovered bone; no sign of trouble in the frontal or maxillary sinus, and apparently no trouble in the sphenoid. The preliminary operation of removing the anterior end of the middle turbinate bone was done under cocain anesthesia. The nose was treated in the usual way following the operation, and the patient was placed on hexamethylenamin. During the course of her recovery from the operation, she had a temperature of 103, which the next day fell to 100. There was very little discharge of pus up to the eighth day after the operation, with no improvement in vision or change in the pupil, when there came a decided flow of pus. Her temperature immediately became normal, the pupil decreased in size, vision increasing to 20/40; the nose continued discharging, but the quantity of pus diminished. On the fifteenth day after operation, vision was 20/60, and improved later, going up almost to normal. March 31, she again had pain over her eye, the pupil became dilated, and vision went down to 20/40. At this time I advised removal of the entire middle turbinate, with exenteration of the ethmoid cells, but the operation was refused. I did not see this patient again for six weeks, when she came back to me, telling me that the eye had gone bad twice since her last visit, the pupil again being dilated, with only ability to count fingers at three feet. I again advised operation, which was consented to. The operation was done June 22, under general anesthesia; the middle turbinate was removed, the ethmoid cells opened and curetted; some pus and granulations were found. For two days following the operation she had some headache, but no elevation of temperature; on the fourth day the pupil was markedly decreased in size, and she was able to see large objects and count fingers distinctly. July 31, she said quite a quantity of pus had been coming from the nose, but was decreasing daily. The pupil had regained practically normal size, but the action was somewhat sluggish. She had been able to read with this eye from the sixth day after the operation; the condition had been steadily improving. On the twenty-sixth day, vision was 20/15. This has remained permanent up to the present.

Case 3.—C. M. H., a physician, aged 40, came to me Aug. 8, 1914, with a history of having suddenly become blind while driving his automobile, forcing him to stop for several minutes, until he could partially adjust himself. He had previously had good eyesight in both eyes; had noticed slight double vision. Vision in the right eye was 20/30, left eye, 20/15, the right pupil being slightly larger than the left and reacting to light and accommodation; but on reacting to light, dilating while light was still thrown on it. There was no exophthalmos, but diplopia was demonstrated with colored glasses in the central line only. Examination of the fundus showed no change, with the exception of a possible engorgement of the retinal veins; peripheral field of vision for white, normal; absolute central color scotoma for red and green. The patient had had sinus trouble years before. Examination of the nose showed no pus; perhaps pus was coming from the nose, but it was doubtful. Roentgenograms showed nothing from which a diagnosis of sinus involvement could be made: Wassermann and urine, negative. August 10, the pupil was widely dilated, no reaction to light, accommodation or consensuation, the patient being unable to count fingers at 10 feet, and central color scotoma for red and green still present. Reexamination of the nose showed that there was no pus present. No uncovered bone could be found with the probe, but the middle turbinate was pressed tightly against the lateral wall; no involvement of the frontal maxillary or sphenoid could be found. Feeling that there might be some involvement of the ethmoid, I advised an operation for the removal of the anterior end of the middle turbinate, to give drainage and a chance to examine the sinuses, but the operation was refused. Hexamethylenamin treatment was continued for three days, when enteritis, caused either by the medicine or diet, ensued, during which there were severe cramps. During this attack about half a teaspoonful of foul-smelling pus came from the right side of the nose, with immediate improvement of vision, the pupil returning to normal in a few hours. Feeling that his trouble was relieved, he refused operation, and at present he has normal vision, normal pupil and no color scotoma.

In the review of the eighty-eight cases collected, I have attempted to show the frequency of the diagnostic signs in the eye, possibly connecting these with the sinus causing the trouble, hoping in this way to locate more definitely the source of the nasal involvement. This was difficult, however, as in only a few cases in which there was more than one sinus involved, could the seat of the trouble be positively located in one cavity to the exclusion of the others. I will give the symptoms in the order of their frequency, as shown by the tabulation.

NERVE INVOLVEMENT

Some difficulty was found in tabulating the nerve findings, as a number of the early cases were rather obscure, and the diagnosis made from the description of the condition present rather than the definite term of diagnosis used by the author. The fundus in all of these cases, with the exception of one or two which had a retinitis, together with nerve involvement, was normal, the optic neuritis being the only ophthalmoscopic symptom present.

The nerve was involved in 52 cases, 9 of them being optic atrophy, 43 optic neuritis, 5 of the neuritis cases showing a choked disk. In the 9 cases of optic atrophy, the seat of the trouble was:

Maxillary sinus	1
Ethmoid	3
Ethmoid and sphenoid	2
Not located	3

In the cases of optic neuritis the seat of the trouble was:

Maxillary sinus	3
Maxillary and ethmoid	1
Maxillary, ethmoid and sphenoid	2
Ethmoid	18
Ethmoid and sphenoid	8
Sphenoid	8

Of the 52 cases, the ethmoid was involved in 33, showing the preponderance strongly in favor of the ethmoid cells in this trouble.

Of the choked disk cases, 1 was from maxillary sinus, ethmoid and sphenoid trouble, this being Halstead's[1] patient, in whom the left eye was blind from a right-sided suppuration; 1 other was Dubois'[2] patient, the posterior ethmoid being the seat of the trouble; location in the other 3 not being given.

It would be natural to think that the posterior cell would cause more pressure on the nerve by the closer proximity to it and the more confined area of the orbit in this location. Halstead's order of operation and results were as follows: Removal of the anterior end of the middle turbinate, entrance of the posterior ethmoid cells and sphenoid cavity. The condition began to improve, and in a week from that time the patient could count fingers held directly in front of her. Two weeks from the first operation, removal of the remaining part of the middle turbinate, probing and syringing the sphenoid was done, followed by slow improvement in sight. Three weeks later, the antrum, which was filled with pus, was opened and cleaned. Improvement continued after this until, five and a half months after operation, vision was 6/18. He ascribed the blindness and swelling of the optic disk to pressure from the sphenoid.

Fish[3] says that among 36 cases of optic neuritis found in the literature, 26 cases were of diseases of the nasal accessory sinuses. He, therefore, maintained that this etiologic factor should be credited with greater importance than is usually accredited it.

The direct nasal relationship was shown in 15 cases by improvement in the ocular condition following drainage; the 11 remaining cases were attributed to the same cause, although the connection could not be demonstrated by ocular improvement, as most of the cases presented more or less optic atrophy, while in others the treatment as advised was not undergone. In this paper he reports a case of optic neuritis from growth, as have others. Elschnig,[4] in discussing the significance of accessory nasal disease in the pathology of the eye, says that these cases represent about 15 per cent. of all optic nerve affections.

In the 43 cases of optic neuritis here tabulated, 38 patients improved with nasal treatment, showing this certainly to have been the causative factor in the large majority. From the analyses of these cases, we can safely say that blindness due to nasal sinus empyema, in addition to the retrobulbar neuritis, does, in about 50 per cent. of the cases, advance to such a stage as to cause an optic neuritis, and in a small percentage of cases goes on even to a choked disk; that all of these conditions are due possibly to the same cause, one being but an advanced stage of the other, and dependent to a certain degree on the location of the nasal involvement. None of my patients had an optic neuritis, but I ascribed this to the fact that they either had partial drainage from the affected sinus, or that they were seen early enough to prevent its formation.

PUPILLARY CONDITIONS

The condition of the pupil was one of the earliest signs of the eye involvement from the nasal accessory sinuses, Beer,[5] in 1817, giving the following classification: "Vicarious Amaurosis of Suppurating Coryza Without a Demonstrable Accumulation of Mucus in the Frontal Sinus." He says the pupil in this form of amaurosis is greatly dilated without losing its clearness, the iris is immovable and its pupillary margin is not regularly rounded, but angular. Under the heading of "Vicarious Amaurosis of Suppressed Coryza with Accumulation of Mucus and Pus in the Frontal Sinuses," he says:

> After the sudden suppression of severe coryza, the patient begins to suffer from pain limited to the root of the nose and the frontal sinus region, accompanied at the same time by a very considerable amaurotic amblyopia, affecting either one eye or both eyes together, and associated with various light phenomena, and a narrowed, perfectly round, but very pale black pupil, entire immobility of the iris and diplopia.

Others of the early writers reported dilated pupil, but this point seems to have been neglected in our later text-books. Recently Elschnig[4] has called attention to it as one of the symptoms in this type of amblyopia. In the cases investigated, the pupil of the affected eye was dilated in 18, or about 20 per cent., contracted in 4. In the patients with dilated pupils the sinuses affected were the following:

Maxillary sinus and ethmoid	1
Maxillary, ethmoid and sphenoid	1
Ethmoid	9
Ethmoid and sphenoid	2
Sphenoid	1
Not located	4

In patients with contracted pupils:

Ethmoid and sphenoid	1
Ethmoid	3

The cause of this symptom has seldom been commented on by the authors.

Trousseau[6] says, in discussing reflex ocular disturbance of nasal origin: "I have seen the disappearance of an apparently inexplicable unilateral mydriasis following upon the cauterizing of ulcers in the nose." He points out that there exists a true asthenopia of nasal origin, which yields only to the treatment of the nasal pituitary. While we are unable to say exactly, this cure may have been caused by a shrinking of the membranes, allowing pus to be discharged from one of the sinuses. This is the only paper assigning a cause for the dilatation. In my two cases, I thought it was a symptom of diagnostic value, pointing to the location of the pus in the anterior cells with pressure on either a ciliary ganglion or short ciliary nerve, but Halstead's case,[1] in which the dilatation came no doubt from the opposite sphenoid, and Gutmann's[7] case, in which he ascribed the trouble to the opposite antrum, make it look doubtful, although the latter patient had acute catarrh on the side of the affected eye, and there may have been an involvement of the nose on this side as well. But that the cause is not due to blindness alone is certainly true, or all cases would have a dilated pupil. That it is not due solely to the pus is true, for Richet[8] reports a case of dilatation caused by mucocele, while Varese[9] reports a case due to sarcoma of the superior maxillary sinus. However, this patient had involvement of the sinuses and improved after the ethmoids were drained.

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[1] Halstead: Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Sudden Blindness of the Left Eye; Operation; Recovery of Sight, Tr. Am. Laryngol., Rhinol. and Otol. Soc., New York, May, 1901, p. 61.

[2] Dubois: Rhinogene eenzijdige Papillitis, Nederlandsch. Tijdschr. v. Geneesk., 1912, i, 336.

[3] Fish: A Study of Optic Neuritis in Connection with Nasal Accessory Sinus Disease, Brit. Med. Jour., Nov. 2, 1907, p. 1218.

[4] Elschnig: Die Bedeutung der Nasennebenhöhlen-Affektionen in the Pathologie des Auges, Internat. Centralbl. f. Ohrenh., 1914, xii, 487.

[5] Beer: Vicarious Amaurosis of Suppressed Coryza without a Demonstrable Accumulation of Mucus in the Frontal Sinuses, Lehre von den Augenkrankheiten, Vienna, 1817, ii, 530.

[6] Trousseau: Troubles oculaires réflexes d'origine nasale, Bull. Méd, Paris, 1889, iii, 506.

Roemer,[10] in discussing absolute immobility of the pupil, says the lesion may be situated in the sphincter, in the short ciliary nerve, in the ciliary ganglion, in the motor root of the ganglion, in the trunk of the oculomotor nerve, or in the ganglion cells of the sphincter. If the lesion is situated posterior to the ciliary ganglion, physostigmin (eserin) will continue to act. If in front of it, the effect of the drug will be lessened.

Four cases of contracted pupil are reported. Hoffmann[11] reports a case in which there was supra-orbital pain, and ascribes the condition to involvement of the surpraorbital nerve and involvement of the oculomotor fibers supplying the sphincter pupillae, this case having exophthalmos. Von Eicken[12] reports a case, but ascribes no cause; this patient had diplopia and slight exophthalmos; it was due to suppuration of the ethmoid cells. Knapp[13] reported an interesting case with contracted pupil, irresponsive to light with no light perception in the eye, and a distinct optic neuritis, which improved after removing the anterior end of the middle turbinate. One week later the pupil reacted to light, but instantly dilated again; the pupil was normal on the twenty-third day after operation.

EXOPHTHALMOS

Exophthalmos was mentioned as a symptom 17 times, with the following sinuses involved:

Maxillary sinus	4
Frontal and ethmoid	1
Ethmoid	7
Ethmoid and sphenoid	1
Sphenoid	1
Not located	3

This should point to this symptom as coming more frequently from the antrum and ethmoid, possibly because of their having a larger surface given to making up the bony wall of the orbit. Elschnig[4] says in unilateral infections, one half of the cases present a slight exophthalmos, measurable by means of Hertl's ophthalmometer. This close observation by Elschnig makes it seem as though exophthalmos had been present in many cases and not diagnosed by observation. In Gutmann's[7] case, all the conditions were ascribed to the antrum on the opposite side, but, as noted under "Pupillary Conditions," there was an acute catarrh on the affected side, which might have been a sinus involvement. Sommer, in discussing Meyer's[14] case, reported a case in which there was exophthalmos, which was ascribed to frontal and ethmoid involvement, and which at postmortem examination showed advanced caries of the sphenoid bone with normal sphenoid cavity.

The external muscles were involved in 11 cases, as follows:

Maxillary sinus	3
Maxillary and sphenoid	1
Ethmoid	4
Ethmoid and sphenoid	2
Sphenoid	1

showing, as in exophthalmos, the predominating influence of the antrum and ethmoid.

RESTRICTION OF VISUAL FIELD

Berger[15] says, in 1887: "I was the first to observe a narrowing of the visual field following upon disease of the nasal fossa. A short time after my communication, analogous observations were published by Zeim, Killam, Hamilton and others." Eighty-two of the total number of cases were published after Berger reported restriction of the peripheral field as one of the symptoms, but only three cases of restriction could be found. Birch-Hirschfeld[16] claims that the restriction is of later date than the central scotoma, and emphasized the fact that central scotoma, first relative, then absolute, is the first symptom. Van der Hoeve[17] and others emphasize the point that the first symptom is the enlargement of the blind spot for color, believing this to occur exclusively in involvement of the posterior accessory sinuses.

The three restricted fields were: Maxillary sinus 1, ethmoid 1, and frontal 1; all of them being cases of long standing, which strengthened Birch-Hirschfeld's assertion that restriction comes later.

SCOTOMA

There were fourteen cases in which scotoma was mentioned, but all of them were not confined to the central field. They are divided as follows:

Maxillary sinus	1
Maxillary, ethmoid and sphenoid	1
Frontal and sphenoid	1
Ethmoid	10
Sphenoid	1

Snellen[18] reports a case of the right eye being blind, left eye with visual acuity of 6/60; temporal hemianopsia cured by opening the sphenoid. Onodi[19] reports a case of suppuration of the posterior ethmoid cells and of the sphenoid sinus, associated with optic atrophy of long standing on the right side, with optic neuritis and temporal hemianopsia on the left side;

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[7] Gutmann: Erkrankungen des Auges in ihren Bezichungen zu den Nasen-Nebenhöhlen Empyemen, Ztschr. f. Augenh., 1906, xv, 403.

[8] Richet: Thèse de Sautereau, p. 68. Quoted by Kuhnt: Ueber die entzindlichen Krankheiten der Iternhöle, 1895, p. 106. Hopjik: Entzündliche Erkrankungen der Nebenhölen der Nase, 1915.

[9] Varese: Malattie dei seni della Faccia, Arch. di ottal., 1895, iii, 96.

[10] Roemer: Text-Book of Ophthalmology, New York, Rebman Company, 1913, p. 580.

[11] Hoffmann: Entzündliche Affektionen in der Orbita und am Auge, Ztschr. f. Augenh., 1906, xvi, 1.

[12] Von Eicken: Komplikationen bei Erkrankungen der Nasen-Nebenhöhlen, Tr. German Laryngol. Soc., 1908, p. 17.

[13] Knapp: Bilateral Optic Neuritis after Ethmoiditis, Tr. Am. Ophth. Soc., 1908, xi, Part 3, p. 681.

[14] Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonderes der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.

[15] Berger: Rapports des maladies des veines avec celles du nez et de ses cavités voisines, Bull. Soc. de méd. prat. de Paris, Jan, 15, 1892, p. 35.

[16] Birch-Hirschfeld: Beitrag zur Kenntniss der Sehnerven Erkrankungen bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch f. Ophth., 1906, lxv, 440.

[17] Van der Hoeve: Sehnerven-Erkrankung bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch. f. Augenh., 1909, lxiv, 18; ibid., 1910, lxvii, 101.

[18] Snellen: Bezichungen zwischen Erkrankungen des Sehnerven und der hinteren Nasen-Nebenhöhlen, Internat. Centralbl. f. Laryngol. u. Rhinol., 1909, xxv, 491. (Utrecht Medical Meeting, April, 1909.)

[19] Onodi: The Optic Nerve and the Accessory Sinuses of the Nose, Lückhoff's Auth. Trans., New York, William Wood & Co., 1910, p. 93.

the left eye improved slightly after operation. He points out that the posterior ethmoid cells are not infrequently closely related to the optic canal, the bony wall being very thin in all these cases. Gutmann[20] reports one case of right-sided central scotoma, with temporal narrowing of the field, which result he ascribes to the action of toxins arising from empyema of the ethmoid cells. His patient was operated on with subsequent loss of vision. Van Gilse[21] reports a case in which the patient in the course of a coryza underwent a loss of vision in the right eye with pain, right-sided headache and slight swelling, slight peripheral restriction of the visual field, central scotoma for white and color, enlargement of the blind spot for color, and an absolute annular scotoma. Removal of the middle turbinate was followed by a narrowing of the scotoma; opening the posterior ethmoid cells had no influence on the eye symptoms; incision of the sphenoid one week later gave no improvement of the eye. When the frontal sinus and anterior ethmoid cells were opened three weeks later, the frontal sinus was found to be healthy; one ethmoid cell was filled with mucopus. On the day following operation, the exophthalmos had practically disappeared, as also the annular scotoma. This is one of the cases clearly demonstrating the fact that many sinuses may be involved without being entirely responsible for the condition of the eye; the symptoms in this case showing no marked improvement until after a solitary anterior ethmoid cell was opened.

W. L. Meyer[22] reports a case of bilateral central scotoma, in which he opened the right and left ethmoid cells, on account of the profuse nasal secretion, with no definite pathologic findings; vision first improved, then became slightly aggravated on the right side.

In considering this symptom, we are led to believe that the field for white and color is very frequently markedly significant, pointing to more definite location of the nasal trouble; bitemporal hemianopsia naturally pointing to a sphenoid involvement. The field could be easily explained if we considered the symptom to be due solely to pressure, as the anatomic structure of the different orbits might be such that pressure was not equally applied, thus causing a restriction of the nerve at different points. Many investigators have shown that the sphenoid cavity is of such irregular shape and location that it could cause, in addition to a temporal, a bitemporal hemianopsia. It would be natural that a sphenoid cavity could be so placed that it would cause a temporal or bitemporal hemianopsia.

CENTRAL SCOTOMA

The most definite sign, and one on which most reliance can be placed, is that of central scotoma, the process, no doubt, being the formation of the central scotoma which, in time with the increased pressure, causes a restriction of the field. Central scotoma was reported in twelve cases, it being the only symptom in one case reported by Fuchs,[23] which was due to involvement of the ethmoid and sphenoid. However, Panse[24] reports a patient with left-side amblyopia, with light perception, who had been unable to see for eight days; the left pupil was larger than the right, sluggish in its reaction, optic papilla and retina slightly blurred; the middle turbinate was removed with slight improvement as a result. In this case a central color scotoma was never demonstrated; a Wassermann was positive, but, in spite of the syphilitic base, a nasal operation induced a temporary improvement.

Jessop[25] reports a case of a small color scotoma for red, associated with exophthalmos, in which he found an endothelioma on the greater wing of the sphenoid.

ENLARGEMENT OF THE BLIND SPOT

Enlargement of the blind spot has been so recently brought to our notice that sufficient data have not yet been accumulated from which to judge its value. In addition to Van der Hoeve's claim, de Kleyn[26] looked for this symptom in a large number of nose cases in his clinic, in diseases of the nose and the anterior sinuses, but found a normal blind spot for white and color. Whereas, in fifty-two cases of disease of the postnasal accessory sinuses, an enlargement of the blind spot for white or color was noted in forty-six cases of extensive posterior ethmoiditis or sphenoiditis, in all cases the eye symptoms were much improved, the majority entirely cured by nasal treatment. Van Gilse[21] in his case reports it. Dubois[2] failed to find it in a case of left-sided papillitis with negative nasal findings. Panse[24] reports a case of bilateral disturbance of vision, in which the optic papillae were congested; the visual field showed enlargement of the blind spot; no unusual findings in the nose, but the middle turbinate was removed and the ethmoids exposed. Three weeks later vision was improved to 5/6 and 5/8, optic disk normal. Recently Onodi[27] has given statistics on 100 cases from his clinic in Budapest. Among 70 accessory sinus empyemas, ocular changes were present in 47 cases; negative findings in 23; central scotoma was present 6 times, 3 times bilateral; 1 combined with an enlargement of the blind spot, and 2 with optic neuritis; enlargement of the unilateral scotoma occurred in 3 cases of empyema of the maxillary sinus and the ethmoid cells, bilateral scotoma in a case of empyema of the ethmoid cells, the sphenoid sinus and frontal sinus, respectively. Enlargement of the blind spot was present 38 times; 28 times alone, and 6 times associated with central color scotoma. Narrowing of the visual field occurred once. In bilateral empyema, the blind spot was enlarged, but only on one side in part of the cases. In unilateral empyema, enlargement of the blind spot was noted 11 times on the same side, and 7 times on the contralateral side.

Marbreiter[28] reports 100 cases of empyema examined in two years in the nose and throat clinics of Strassburg. When possible, the examination was made before and after the operation. Enlargement was always more frequent for color than for white. Her cases do not agree with those of Van der Hoeve

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20. Gutmann: Augensymptome bei Erkrankungen der Nasen-Nebenhöhlen, Centralbl. f. Augenh., 1910, xxxiv, 103.
21. Van Gilse: Ein Fall von Entzundung der Nassennebenhöhlen mit Neuritis retrobulbaris, Internat. Centralbl. f. Laryngol. u. Rhinol., 1911, xxvii, 601.
22. Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonders der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.
23. Fuchs: Case of Eye Disturbance in Accessory Sinus Disease, Lehrbuch der Augenh., 1905, Ed. 10, p. 766.
24. Panse: Die Heilung retrobulbären Erblindung durch Nasen Operationen, München. med. Wchnschr., 1912, No. 52, p. 2887.
25. Jessop: Two Cases of Proptosis Associated with Diseases of Ethmoid and Sphenoid Respectively, Tr. Ophth. Soc., 1903, xxiii.
26. De Kleyn: Affections of the Accessory Sinuses, and That It is the First Symptom Which Appears in the Eye, Arch. f. Ophth., 1910, lxxv, 513.
27. Onodi: Ueber die Okulo-orbitalen-Komptiktionen nasalen Ursprunges, Pest. med.-chir. Presse, 1914, Nos. 19-20, p. 150.
28. Marbreiter: Ztschr. f. Augenh., April-May, 1914.

and de Kleyn, who consider the presence of enlargement of the blind spot indicative of empyema of the posterior sinuses. She found it many times in diseases of the anterior sinuses. This symptom, unquestionably, has great possibilities as a diagnostic point, which will be shown by further investigation.

Recently Loeb[29] has reported a case of scintillating scotoma, cured by operation on the ethmoid sinus.

CAUSE

Hajek[30] recently said that the teaching of a common rhinologic origin for retrobulbar neuritis did not rest on a solid basis so far as actual proof is concerned. He has repeatedly obtained temporary improvement after opening the ethmoid labyrinth, without pathologic findings, but he has also frequently had no success at all. In some of the cases, assumed to be those of rhinologic origin, in which he had decided to operate, spontaneous cure occurred in the course of time. Other patients who were operated on became totally blind after a transitory improvement.

Baumgarten[31] reports a case in which the patient suddenly became blind in the right eye with normal ophthalmic findings, in which, on removal of the middle turbinate and opening the sphenoid, he found nothing but thickened mucosa. In the same paper he reported a case in which the patient had loss of sight in one eye within three days. Four months later pressure atrophy of the optic nerve was seen; removal of the ethmoid bulla and incision of the anterior sphenoid wall showed only thickened mucosa. Subsequently more posterior cells were exposed, with improvement of vision. The thickened mucosa in this case shows that there must have been some inflammation existing. It is extremely doubtful on opening a cavity of this character, with the amount of blood occurring during an operation, that one can always tell the presence of a small amount of pus, and a small amount is all that is necessary to do mischief.

De Schweinitz,[32] speaking of edema of the lids from maxillary sinus disease, says that if the disease is of long standing, it assumes a positively brawny consistency, showing, no doubt, a cell proliferation. He quotes Dr. Walter Williams in saying that he has seen edema of the lids when only a few drops of pus have been in the cavity of the antrum.

Various theories have been expressed as to the cause of this form of amblyopia—pressure, circulatory disturbance and toxemia. That pus alone is not responsible for the condition is shown by Hajek and Baumgarten's report, and that the same condition of the eye may be caused by a noninfectious growth is illustrated in articles previously quoted in this paper. The one theory that seems to fit all cases is that of pressure. This pressure may be of two kinds, gradual and sudden; sudden pressure, which I believe is illustrated in my three cases, is no doubt due to the sudden rupture of the bony wall separating the sinus and the orbit without rupture of the periosteum, thus bringing immediately direct pressure on the orbit and its contents, causing disturbance of the functions of the nerves and interference with the circulation. The gradual pressure is, no doubt, due to the inflammatory condition, suppurative or nonsuppurative, being transmitted from the sinus to the orbit with or without infection, possibly enlargement of the vessels with cell proliferation. It is doubtful whether the toxins are directly responsible for the central scotoma, but they no doubt play an important part in producing a low-grade cellulitis. This theory is borne out by de Kleyn and Gerlach's[33] postmortem study of a case of empyema of the maxillary sinus with erythema, intense conjunctiva and edema of the lids, in which they described a circumscribed infiltration just opposite the sphenoid sinus, and continuation of the infiltration toward the septum along a vein, an interstitial optic neuritis with numerous vacuoles in the optic nerve.

I believe we can safely say that all the symptoms enumerated can be ascribed to the same cause, one being simply a different degree of the other, the primary stage being a slight involvement, the maximum stage represented sometimes by orbital abscess or direct infection. Other cases in which there is no orbital infection and a loss of vision coming on after slight improvement, to my mind show the shrinking which takes place after the cause is removed, which shrinking causes constriction of the optic nerve. If we accept this theory, it not only explains this condition, but explains many cases of muscular asthenopia, and possibly, many cases in patients who have defective central vision, which has been ascribed to amblyopia ex anopsia.

ABSTRACT OF DISCUSSION

Dr. James W. Dunn, Cairo, Ill.: Oculists have long been intimately acquainted with the important rôle affections of the frontal and maxillary sinuses play in the production of disturbances of vision. This is not surprising when we recall the comparative ease with which diseases of these cavities are diagnosed and the more or less prominent symptoms such as displacement of the eyeball and interference with its motility associated with pathologic conditions here that have broken over into the orbit. Not until recently, however, have we endeavored to learn fully the part affections of the ethmoid cells and the sphenoidal sinuses play in producing visual disturbances. Investigation has now taught us that a few bilateral and many unilateral cases of obscure interference with vision are dependent on diseases of these latter cavities.

The relations existing between the optic nerve and the posterior ethmoid cells, the sphenoidal sinus and the posterior part of the frontal sinus are not constant. Usually the sphenoidal sinus bears the most intimate relation to this nerve, but at times the latter may be almost completely surrounded by a hyperdeveloped ethmoid cell. Again, the intimate relation existing between the optic nerve and the sphenoid sinus and ethmoid cells on account of the thinness of the bony plate intervening in normal conditions may be made more intimate by the failure of complete development of this partition. Thus the liability of the nerve to injury from pressure in all cases of disease in these cavities is increased occasionally by congenital dehiscences. Thus also is the nerve made liable to direct involvement through continuity of tissue. Unilateral central scotoma, enlargement of the blind spot and postoptic neuritis are significant of disease of the posterior ethmoid cells and sphenoid sinuses. This is particularly true if there are no indications of central brain lesion, no external ocular manifestations, and no ophthalmoscopic evidences in the case.

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[29] Loeb: The Influence of the Nose on Eye Affections as Evidenced by a Case of Bilateral Blindness and One of Unilateral Scintillating Scotoma Cured by Operations on the Ethmoid Cells, Tr. Am. Laryngol. Assn., May, 1914, p. 157.

[30] Hajek: Affektionen der Netzhaut und des Sehnerven, Pathologie und Therapie der entzundlichen Erkrankungen der Nebenhöhlen der Nase, 1915, p. 422.

[31] Baumgarten: Sehstörungen durch Affektionen der Nase bedingt, Monatschr. f. Ohrenh., 1910, xliv, 1053.

[32] De Schweinitz: Diseases of the Eye, Ed. 7, p. 788.

[33] De Kleyn and Gerlach: Arch f. Ophth., lxxxiv, 164. Ophthalmic Year Book, 1913, x.

All the cases reported by the essayist are visual disturbances from empyema of the ethmoid cells. That the seat of trouble was in the posterior cells in Case 2 is patent from the report. This is not so evident from the reports on the other two cases. When, however, we recall the slight interference with motility and the absence of displacement of the eyeball in these cases we are justified in concluding that these were similar to Case 2. Indeed, it seems probable that Dr. Stark would have found more conclusive evidence in his examinations than he did had it not been that these were the cells causing the eye complications. My conviction is that, generally speaking, those cases of interference with vision from diseases in the frontal and maxillary sinuses are easy of diagnosis, but the really puzzling ones are those from affections of the sphenoid sinus and posterior ethmoid cells.

Of the fifty-two cases of involvement of the optic nerve collected by the essayist, in forty-two the seat of the trouble was either the ethmoid cells or sphenoid sinuses, or both. This is in accordance with what we would suppose from the anatomic facts brought out.

DR. OTIS ORENDORFF, Canon City, Colo.: The case I wish to report is of especial interest for the reason that it is complicated with neurasthenia and dental disturbance. I was wrestling with the case just at the time I received a copy of the paper by Dr. Stark. May 11, 1915, Mrs. H. C., aged 27, housewife, mother of three healthy children, always enjoyed reasonably good health, but for several years was subject to numbness in left side which her physician attributed to hysteroneurasthenia; had slight pyorrhea; subject to headache for years, aggravated by stooping, etc., as well as on fixation; no history of catarrh or throat trouble, but a slight mucous discharge and sneezing for one month. This would not be of diagnostic importance for the reason that it occurred in the hay-fever season. Vision failed suddenly in the right eye the day before the consultation. The pupils were both slightly dilated and sluggish; right worse; right eye turned out and up occasionally and patient complained of diffuse haziness and deep tenderness, and at times there was slight injection. The ophthalmoscope showed in the right eye possibly slight haziness but a normal fundus could be distinctly made out: the left a little retinal hyperemia. Refraction: Right .1/10 not improved. Left, $8/10 —^{1} + .50 = 8/10 —^{1}$, May 13, 1915, refraction and examination under homatropin with the same result. She was advised to consult a dentist, who reported the upper wisdom teeth unerupted and severe pyorrhea of the first lower right molar, this tooth being very loose, but there was no tenderness or indication of retained pus about the teeth. May 15, pain on movement and deep pressure in right eyeball. Right vision reduced to fingers at 6 feet. Ophthalmoscope still negative; pupil more dilated and practically no reaction. Although the nose had appeared normal, cocain and epinephrin were now applied, which revealed a little bulging in the right ethmoid and an enlarged middle turbinate pressing on the lateral wall of the left cavity. However, these conditions were not so marked as in other noses in which they give no trouble whatever. There was a small drop of pus very high in the right cavity. Suction and posture brought no more. There was not sufficient vision in the right eye to take the fields, but in the left eye they were normal.

A competent internist reported positively that there was no general condition that would account for this woman's trouble and insisted that the disease was hysteria. I now made a tentative diagnosis, acute retrobulbar neuritis secondary to an acute ethmoiditis, and promptly opened up the anterior ethmoid and found plenty of pus in the upper portion, but none in the lower cells. For some reason there was a serious hemorrhage. Recovery was uneventful. Examination, May 18, showed R.V. 1/10; May 20, R.V. 3/10; May 24, R.V. 5/10; June 8, R.V. $8/10 —^{4}$, L.V. 8/10. Incidentally the right third molar was appearing. Fundi normal. The patient noticed that clearing begins at the upper part of the field. While the rôle that the teeth are playing in this case is uncertain, there can be no doubt that the chief etiologic factor can be found in the ethmoid sinus.

DR. HANS BARKAN, San Francisco: I have seen some cases which simulate these, one this year and five or six before that, which are of special interest. The first was a case of sudden blindness in a young person; such cases occur most frequently in young people. They proved to be in all multiple sclerosis. This condition should always be borne in mind in seeing a one-sided blindness or occasional bilateral, complete and acute in its onset, with or without some involvement of the nerve. We do not need the usual classical triad, namely, scanning speech, tremor and nystagmus, any more to diagnose multiple sclerosis. A missing patellar reflex, a one-sided corneal anesthesia or absent abdominal reflexes, for instance, are enough to be at least suspicious, especially when combined with an acute retrobulbar neuritis. Three of the cases I have seen have been accompanied by considerable headache; practically all of them have cleared up in four or five days from blindness to practically normal vision by rest and sweating. It is of particular interest to me that some of these patient came saying that they had had these attacks once or twice before, but that vision had returned in a few days and they had not bothered to see an ophthalmologist. Since hearing Dr. Stark's very interesting paper I have felt still stronger about this question of mapping out the blind spot. I consider it of practically no value unless done by Bjerrum's method. There are certain points to be observed in taking it. The patient will give a somewhat smaller blind spot when the object is led from within the blind spot outward than if from the periphery toward the blind spot. There is another point I have not seen mentioned which was pointed out to me some years ago; in examining the fundus we know that the course of the vessels from the disk outward varies considerably; in some people they run more grouped together than in others. In this case if the mark be led toward the blind spot along the direction of these vessels a blind sector corresponding to them will often simulate an enlargement. I personally believe the value of this method in these cases to be problematical.

DR. WALTER R. PARKER, Detroit: Anatomically the accessory sinuses offer the greatest possibility for optic nerve infections. Clinically, however, the proof of the sinuses being the sole etiologic factor in any given case is comparatively rare. The coexistence of optic nerve lesions and sinus infections does not necessarily prove a causal relationship. The possibility of some general disease being responsible for the changes in the nerve should not be overlooked. Three or four years ago I saw a case of retrobulbar neuritis in a patient with sinus infection in which the neural diagnosis was hysteria. Eighteen months later she showed unmistakable symptoms of multiple sclerosis. The examination of a case of optic neuritis is not complete which does not include that of the rhinologist. Only by reports of carefully prepared cases, such as the author has given us, will this subject be cleared up.

DR. ROBERT W. MILLER, Los Angeles: It has been my fortune to deal with quite a number of these cases in the past few years. I have also seen a few cases of optic neuritis due to diseases of the teeth. In conferring with specialists in other sections I find that many of them are accustomed to see these cases with a considerable, and perhaps rather increasing, frequency. Some competent observers in Chicago, where we would expect to find frequent occurrences, do not find them very often. We note what Dr. Parker has just said as to the infrequency of such cases in his experience. My impression is that if we look for them more constantly, we shall find them more frequently. It is but a very little step from the cases of sudden blindness to those which develop more gradually. More gradual development of blindness has been the rule in the majority of cases I have seen. One or two of the speakers have mentioned the importance of the general health, and I would emphasize the necessity of carefully bearing in mind the influence of general diseases and the ability to recognize all forms of disease. We should often invoke the aid of the Roentgen ray in diagnosis.

In the treatment there are two points to be especially borne in mind. In the young patients whose tissues are soft and easily influenced, in whom we have not a great amount of hypertrophy of the bony structure, it is an excellent way to put them to bed, employ local and general therapy, including hot baths, and we often secure improvement or recovery without surgical intervention. When we have made up our minds that we are dealing with a surgical case, it will be preferable not only to remove the anterior end of the middle turbinate body, but do a partial or practically complete exenteration of the ethmoid labyrinth. This insures drainage, instead of leaving the matter in doubt. The well-known variability or lack of uniformity of the ethmoid structures in different skulls, together with the fact that we are dealing with a condition of retention, seem to me to fully justify this view.

Dr. W. H. Roberts, Pasadena, Calif.: Some years ago I did a combined extraction for cataract on an old man, with good results. About a year following the operation he came in saying he could not see with the eye operated on, and gave a history of having contracted a severe cold some six or eight months previously. He had had deep-seated pain on the side of the affected eye. After some weeks' duration he had a discharge of pus from the nose which relieved the pain, but the vision of this eye was entirely gone. The ophthalmoscope showed optic atrophy. A sphenoidal abscess had caused pressure on, and atrophy of, the optic nerve.

Dr. E. H. Cary, Dallas, Tex.: The question of nasal pressure, per se, in the sinuses producing the blindness described by Dr. Stark does not seem the correct explanation to me, for we have symptoms ranging from slight vasomotor disturbances to blindness occurring in people who have nasal defects, hypertrophic and cystic middle turbinals giving nasal pressure with adhesions, as well as ethmoidal disturbances where there is neither pus nor secretion. I think it is wise and opportune to report such cases and to relate all such observations with the idea of bringing the ophthalmic point of view back to the relation between the nose and the eye. The eye and ear hospitals, which have magnified the importance of these organs to the exclusion of the nose, have materially lessened their students' chances for correct view of the whole. There must be more than mere interchange of ideas; the ophthalmologist must know the nasal possibilities. Having been trained as an ophthalmologist, no one ever charged more cases of iritis and associated eye disorders to syphilis than I have, but syphilis can be thrown out as cause in many cases, similar in type, yet differing sufficiently for an observer to be able to place the responsibility where it belongs. An ethmoidal, turbinal, or nasal ridge, either or all the cause of a nasal reflex, is easily and promptly curable.

A schoolteacher gave a history of recurring attacks of an extremely painful left eye where the vascular let down was marked; some exophthalmos was noticed and vision had been reduced to 2/200. Such attacks occurred at intervals over a period of two years, made more violent by a cold. When seen the blood vessels of the deeper structure in and around the globe near the inner canthus and lower lid gave the typical appearance the vessels always have when a nasal reflex is at fault. Intra-ocularly the patient had a detached retina, and this was the first case I had ever seen which in any way clinically backed up the theory that detachment was due to faulty secretion of fluid of the ciliary processes. Hence, in operating on the nose for the cause, I refused to trephine for retinal condition and awaited results. Within two weeks she had absorbed the fluid back of the retina sufficiently to see 16/70. The history of the case was that the retina had been detached for two years, whereas here we had a suppression of secretion, due evidently to delayed or interrupted impulses governing the ciliary body and processes. I have seen secondary glaucoma produced from too many impulses, or an exaggeration of secretion, and relieved from this same cause, by the use of similar operative procedures.

Dr. H. H. Stark, El Paso, Tex.: I found the blind spot enlargement of such a conflicting nature that I feel one is unable to judge of its diagnostic value without further investigation, and as Dr. Barkan says, it is hard accurately to determine. I was waiting for some one to bring up the question of multiple sclerosis in such cases, as did Dr. Parker. The eye symptoms of this disease are so much like the cases I have reported that I feel it quite possible for nasal sinus suppuration to be an etiologic factor in sclerosis of the brain and spinal cord. Dr. Cary speaks of a case of detached retina. In the literature collected for this paper, I find one case of blindness due to retrobulbar neuritis, which was caused by sinus suppuration. This patient had a detached retina, but the blindness was due to the pressure on the optic nerve and orbital contents, and the cause of the detached retina was considered the same. This case was not included in the report, as only clear cases of retrobulbar neuritis without complication were tabulated.

POSTOPERATIVE DETACHMENT OF THE CHOROID

WITH ESPECIAL REFERENCE TO ELLIOT'S OPERATION FOR GLAUCOMA *

HANS BARKAN, M.D.
SAN FRANCISCO

I have chosen to present this subject because, apart from the articles by Marshall and Hudson in the English ophthalmic literature, there are none but isolated case reports to be found in the American; and because I have paid particular attention to its occurrence, especially in postoperative cataract and glaucoma cases, since my attention was first called to the occurrence of postoperative detachment of the choroid in the clinic of Professor Fuchs.

There are, broadly speaking, four classes of detachment: (1) tears of the ciliary body with the aqueous percolating into the suprachoroidal space; (2) traction on the choroid and retina by organizing masses in the vitreous; (3) hemorrhage in and beneath the choroid from ruptured vessels; (4) inflammatory detachment.

Restitutio ad integrum is possibly only in the first group, and this group, whether due to tears of the ciliary body, as Fuchs believed, or to the causes which are to be described later, is the only group to be considered under the class of postoperative detachment.

According to de Wecker (Graefe-Saemisch Handbuch) von Ammon first observed the condition, succeeded by Stellwag von Carion, Virchow and Iwanoff; these all being postmortem observations. The first clinical description we owe, as we do so many others, to von Graefe; the first clinical description and postmortem examination in the same case to H. Knapp, who diagnosed detachment of the choroid, believing it due to an underlying tumor. Necropsy findings, however, showed a collection of serous fluid.

Reuling and Marshall both gave early anatomic descriptions of the condition. Fuchs, in 1900, wrote the first classical monograph on the subject, in which he mentions that only ten cases have been reported since Knapp's case in 1868. The occurrence of a few cases in the clinic directed his attention to the matter and careful observation by himself and his assistants of all postoperative cataract and glaucoma cases in the next few months established the fact that postoperative detachment of the choroid in these cases was nothing unusual and seemed to occur with about equal frequency, whether the case was one of simple extraction or glaucoma iridectomy.

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The opinions as to the nature and origin of the ophthalmoscopic findings in the cases reported before Fuchs' study are the following: Haab believed them to be cysts and explained their rapid disappearance to the bursting of the cyst wall. A cyst, however, could not grow in a few days to a considerable dimension because the delicate tissue of the retina would tear. In addition, the visible protuberance would disappear instantly after the rupture of the cyst, which it does not do. Finally, the practically retained function of the retina at the place of detachment speaks against the cyst theory. Velhagen believed them to be cyst-like detachments of the epithelium of the ciliary body. With the great expanse of the choroidal detachment, the epithelium would have to be detached not only over the ciliary body but further backward over great areas of the choroid, which, in view of the slight attachment of the epithelial cells to each other, is not to be thought of. Lindemann believed that he was dealing with swollen and blood-stained cortical masses in the vitreous after extraction. This view is entirely in contradiction with the appearance of the choroidal detachment, as well as with the fact that after iridectomy and glaucoma operations, absolutely similar detachments are to be seen. These various theories existed until Fuchs' classical description in which he so depicts the occurrence of choroidal detachment that I will simply quote his description.

> We are dealing with cases of senile cataract. . . . The course of the operation is usually a normal one, the same being true of the course of the healing in the next few days. . . . However, if the anterior chamber is shallow, it has disappeared entirely without there being any sign of rupture of the wound or filtration of the scar. Simultaneously, the eye is soft. Focal illumination, as well as the inverted image, will disclose the detached parts of the choroid projecting in hemispherical form into the vitreous. This detachment may take place soon after the operation, or may take place a few months afterward. It progresses to a certain height and then very quickly—within a few days—it recedes, the anterior chamber at the same time becoming deeper and the tension of the eye again becoming normal.

With lateral illumination, the hemispherical projections are of various shades of yellow and brown without visible vessels on the smooth surface, without folds and without movement. If examined in the inverted image, the choroidal detachment appears very dark, sometimes almost black, and if it be a very flat one, it can be diagnosticated only by the appearance of a dark shadow, the border of which forms a convex line posteriorly.

In 318 extractions with iridectomy the percentage of choroidal detachment was 4.4; in 175 without iridectomy 5.1 per cent., and it was to be noted that in the cases of detachment, one-fourth were complicated extractions in the sense that there was either vitreous loss, or cataract delivered in the capsule. In 111 iridectomies for glaucoma the percentage of detachment was 10. In examining some of these eyes which had previously been operated on for cataract, Fuchs found tears of the ciliary body in enough cases to make him feel that aqueous percolating through these tears into the suprachoroidal space could very well account for the choroidal detachment; that this does not happen immediately after the operation he explained by mentioning the possibility of the tears being, in the first few days, filled with blood and coagulated serum. That this explanation will not necessarily fit all cases is evident from the fact that in many operations after which choroidal detachment has occurred, no instrumental interference with the angle of the chamber or of the iris has taken place at all; and yet choroidal detachment has taken place.

Meller (1911) believes as Fuchs does that the detachment is caused by aqueous beneath the choroid, but traces the path of the aqueous in a different fashion; instead of as Fuchs does, through the pupil, anterior chamber, and tears in the ligamentum pectinatum into the suprachoroidal space, through the ciliary body directly into the suprachoroidal space. Aqueous is secreted in greatly increased quantities after operations and he believes that under certain conditions, possibly due to the nonrupture of the ciliary epithelium, some of this aqueous forces its way back through the ciliary body directly beneath the choroid.

Marshall's earlier view—serous exudation from choroidal vessels, and Hudson's later view and the result of his pathologic examinations—correspond well and seem to suit most cases more completely than either Meller's or Fuchs', though the probability cannot be denied that the mechanism of Fuchs as well as that of Meller may by itself cause an *ablatio* in certain cases and may form a contributing cause at least in some percentage of the entire number. Marshall and Hudson believe that the serous exudation arises from the choroidal blood vessels, particularly from the thin-walled choroidal veins, and that under conditions of abnormally low intra-ocular tension, an abnormally free transudate of fluid from these vessels occurs, which again stops when tension is reestablished. That an abnormally low tension is a necessary coincidence with choroidal detachment is plain from clinical observation as well as from the pathologic findings of Hudson. The microscopic evidence of pronounced edema of the ciliary body, which we would expect to find if the aqueous transudated directly downward, is lacking, and it does seem that the anatomy and construction of these parts is such as to form an effectual barrier to the passage of fluid from the region of the processes to the suprachoroidal space. The objection to the ideas of Fuchs has already been mentioned.

In a series of 574 pathologic examinations of eyes which had clinically been of low tension and which included perforating injuries, shrunken globes, corneal ulcers and iridocyclitis, it is to be remarked that tension when noted, as it was in approximately 90 per cent. of the cases, was found low in every one which pathologically showed a detachment. (It is not stated, however, whether these tensions were taken with a tonometer.) Meller himself asserts that the eye is not soft because there is a choroidal detachment, but because there is a leaking spot in the eye from which aqueous is constantly sickering. The choroidal detachment has only taken place because the eye has become soft and one cannot therefore say that the eye stays soft as long as the choroidal detachment persists, but that the choroidal detachment persists as long as the eye stays soft. In this way, it is to be understood why the choroidal detachment increases in size; when the opening in the chamber shuts, normal tension is reestablished, the secretion of aqueous sinks to its normal amount (its excess secretion having been, in Meller's opinion, the direct cause of the detachment; in Marshall and Hudson's opinion, the excess secretion from the choroidal veins having been the cause) and with establishment of this normal tension, the choroidal detachment disappears. There has never been a case noted of disappearance of the *ablatio* while the chamber remained shallow.

If we grant the universality in some degree of choroidal detachment in all cases of marked and quickly occurring low intra-ocular tension, and I personally am inclined to do so, because in every condition of decreased tension the eye will in some fashion attempt to restore its equilibrium, and is, I believe, more likely to do so by excessive fulness of the choroidal system of veins than by any other means: then tears in the ligamentum pectinatum must be looked on as accidental complications rather than the usual cause for the detachment.

Fuchs says in his argument against active exudation as the cause of the detachment, "An active exudation cannot be brought into relationship with a decrease of tension." Not in a closed globe, certainly, but in one in which there is an abnormally rapid escape of fluid by abnormal channels, an exudate of any kind or consistence can form with no relationship whatsoever to the tension.

Heine's operation of cyclodialysis offers a striking illustration. In his many cases he has observed choroidal detachment only once. Yet here is the ideal tear through the ligamentum pectinatum and a detachment of the ciliary body. It is true that pathologically studied, these eyes have shown that the tears are very rapidly filled with blood and within a few days fibroblasts appear and active tissue and scar formation obliterate the path of the spatula. Here again we have no choroidal detachment, I believe, because there is no sudden reduction in tension. In the great majority of eyes in which choroidal detachment is observed, there is a decisive lessening of the volume of the eye with the advancement of the iris and lens diaphragm, and of the vitreous, added to a certain amount of scleral rigidity, and large and abnormal channels of outflow for the aqueous—all factors in low tension. We know too that the more sudden and the greater the change in tension the more frequent is choroidal detachment; in cataracts about 4 or 5 per cent.; in glaucoma iridectomies about 10 per cent.; in the Lagrange sclerectomy about 20 per cent.; finally, in the Elliot, from 10 to 15 per cent.

Schur, in 1913, made the first reference to choroidal detachment in Elliot's trephine operation, closely followed by Paderstein. Since then, single case reports of its occurrence in Elliot's trephine operation have been published, and Elliot himself mentions its connection with his operation very briefly in the book dealing with his operation. Now, it has struck me in reviewing the American literature, that this most interesting detachment of the choroid after cataract and glaucoma operations is seldom noted clinically; Elliot glaucoma operations have been reported frequently in the last two years, the cases varying in number from case reports of six or ten to case reports of twenty or thirty. Some of these papers describe in detail both operation and the course of healing, and yet in very few instances is the occurrence of an *ablatio* mentioned. Knapp, however, in 20 cases noted it three times; in two, hypotension existed for from six to eight weeks; Quackenboss also mentions the late reestablishment of the anterior chamber and choroidal detachment in one case: but, in the main, it is conspicuous by its absence in the history of the cases; and yet we know from Meller's statistics, and I know personally from examination of a goodly number of these cases, that choroidal detachments occur in from 10 to 20 per cent. of glaucoma operations.

Now it is true that these detachments can be and often are evanescent; that they often occur as early as the second or the third day after the operation; that they may exist for only two or three days; and perhaps the fear of early postoperative examination of cataract and glaucoma cases has kept us from noting this condition more frequently. I have never seen untoward events happen in the examination for choroidal detachment the day following operation, by projecting through the pupil the light of a Priestly Smith lamp by means of the plane or convex mirror of one's ophthalmoscope, and asking the patient slowly to look down, upward, right and left. This, moreover, need not be done if the chamber is not shallow, for if the chamber is not shallow, there is no choroidal detachment. The number of chambers remaining shallow or entirely absent, especially in a well-performed Elliot operation, is numerous, and in practically every one of these choroidal detachments can be detected.

I have had the opportunity to observe eyes operated on by Elliot's method from the day of operation to the day of dismissal from the hospital in a comparatively large number of cases—175. These were all operated on with as large an iridectomy as we could obtain. The tension of the eye before operation did not seem to affect the frequency of choroidal detachment after trephine. Of those that showed detachment, as many were of a tension of 30-35 mm. as were of 40-50 mm. The percentage of detachment was 9. In all of these the chamber was very shallow or entirely absent. In many cases, the patients were sent home without the chamber having reformed and were not seen again. Vision was not interfered with and was as could be expected from the general condition of the eye. On the day of dismissal, the field of vision in 120 of these cases was recorded (the others for some reason—glaucoma absolutum, small fields, stupidity—could not be taken) and the area corresponding to the choroidal detachment was found in the fourteen cases observed to be no different than the one taken before operation. In one case, while the object was seen, it was described as being very blurred. Twelve of the detachments occurred on the temporal side; two on the nasal side; and one superiorly. None was seen on the inferior aspect, an observation which agrees practically with the location of the detachment in cataract operations as described by Fuchs. The area of the trephine opening in all these cases was marked by a pellucid, thin, rather protuberant conjunctiva, depressed easily with a spatula, and undoubtedly draining very freely. That this was in direct connection with the detachment is certain.

Meller has reported the only case of recurring detachment in Elliot's operation: it recurred six months after the operation, the scar being extremely cystoid; no direct rupture could be ascertained. The eye was very much softer than usual at dismissal and the patient complained of a sudden blur of vision. This patient, as all the others, recovered in a few weeks, the chamber reforming.

In the cataract and glaucoma cases observed by me in Lane Hospital—thirty-two cases of cataract, sixteen of glaucoma—choroidal detachment occurred in the former in no case, in the latter in two cases. I attribute the absence of detachment in the cataract cases (though the total number of cases is of course too small to draw any general deductions), to the fact that our cataract patients are kept flat on the back with both eyes bandaged longer than in the European clinics, where, as in Fuchs' clinic, it is the habit to get the patient up the day after operation. There, in my daily rounds among from forty to fifty cataract and glaucoma cases, shallow chambers, usually without external signs of rupture of the wound, were not at all an unusual thing to find on the third or fourth morning and were regarded rather lightly; and, in fact, seldom had deleterious consequences.

In conclusion, I would state:

1. Clinically demonstrable postoperative detachment of the choroid takes place after cataract operations, with or without iridectomy, in about 4 per cent.; in Elliot's trephine operation, in about 10 per cent.; in Lagrange's sclerectomy, in about 20 per cent.; it does not occur in linear extraction, or simple iridectomy.
2. The sine qua non for its existence is low intraocular tension, caused by abnormally rapid escape of aqueous through the wound, extending over some interval.
3. The chamber is not shallow or absent because of the detachment; the detachment is secondary to the condition of the chamber.
4. The fluid responsible for the detachment is derived, probably, from the choroidal blood vessels, and not improbably from the veins.
5. Choroidal detachment is of relatively frequent occurrence after Elliot's trephine operation, and should, if for statistical purposes only, be looked for, and its occurrence noted in all cases of Elliot's operation.

ABSTRACT OF DISCUSSION

Dr. W. H. Roberts, Pasadena, Calif.: Dr. Barkan has called our attention to a fairly frequent sequel of operations for cataract and glaucoma. Postoperative detachment of the choroid has undoubtedly been overlooked by the majority of eye surgeons, as so few have made note of it. Fortunately, such detachment has but little clinical significance, as the choroids all become reattached, whether recognized or not, and no treatment is required. The cause of the detachment is purely speculative, as is the source and course of the fluid, as Dr. Barkan has pointed out. Lowered tension, the result of a leaky anterior chamber, is probably the chief cause. This would appear to be proved by the more frequent detachments of the choroid in operations favoring aqueous drainage and in direct proportion to the quantity escaping. Following cataract operations Dr. Balkan reports 4 per cent. to 5 per cent.; following broad iridectomies for glaucoma 10 per cent.; following the Elliot trephine operations or sclerostomies 15 per cent.; following Lagrange sclerotomies 20 per cent. Just how the fluid reaches the suprachoroidal space cannot be positively determined. Dr. Barkan has mentioned several theories. One that he did not refer to is a cyclodialysis caused by postoperative traction on the iris, following the iridectomy, which enables the anterior chamber to empty itself into the suprachoroidal space. Verhoeff, in a recent article (*Arch. Ophth.*, xliv, No. 2, p. 134) mentions a detachment as probably due to a cyclodialysis, in which he removed the eye, and on sectioning it, he says "no traces of a present or past cyclodialysis could be found, but no doubt a small one could have healed without leaving any visible trace." I doubt if it would be advisable for all operators, who find a postoperative empty anterior chamber, to subject their patients to such an examination as would be necessary to diagnose a detached choroid. It would subject the recently operated eye to more of a strain than would be good for it, and might cause the separation of the corneal section in cataract cases.

Dr. J. M. Ray, Louisville, Ky.: The first case I saw I did not recognize as detachment of the choroid. It occurred in a cataract case in which on making the first dressing oblique illumination showed a brownish mass coming forward into the coloboma that at the time I thought was a detachment of the retina. In this case there were two mounds with a depression or valley between. I watched this carefully and studied it with the ophthalmoscope at my second dressing and could make out very well the elevations. To my surprise by the time the wound was well healed and the anterior chamber reformed the mass had disappeared. In 1909 soon after the trephine operation came into general use I saw a case with my associate Dr. Lederman in which there was a brownish mass to be seen through the peripheral coloboma and the man complained of inability to see below. After studying this case carefully I recalled the former case following the cataract operation, and the diagnosis then seemed easy. Soon after the trephine case I saw a third in which quite a brown mass was visible with the ophthalmoscope and the patient complained very much of inability to see below. In this latter case the mass did not seem to protrude forward as much as the first two cases. In the course of time all these eyes became good eyes. There was no further evidence of any detachment. They did not seem to interfere with the remedial effect of the trephine. Dr. Knapp in his book on "Ocular Tumors" reports and illustrates a case following cataract operation.

Dr. Frank C. Todd, Minneapolis: I am one of the many who have not observed their cases with the ophthalmoscope after operation, during the time when the detachment can be seen. Dr. Barkan made the statement that such a detachment has no clinical importance and I am wondering if that is positively true. I have trephined in seventy odd cases. I have observed a number in which the vision diminished after trephining, where the tension was reduced, and where the vision remained lower than normal. It occurred to me in reading Dr. Barkan's paper that this lesion might be present to so low a degree that it could not be observed with the ophthalmoscope. I have not made observations soon after the operation, but something of this kind may have taken place which accounted for the poor vision in those eyes with very reduced tension, and I would like to have Dr. Barkan's opinion as to this character of cases.

Dr. Harold Gifford, Omaha: I must confess that I have overlooked a number of these cases. I know I have done this because it is only recently that I have begun to look for them systematically after dilating the pupil, and in about twenty-five trephinings I have found three detachments of the choroid, while in three times that number that I had done previously without subsequent dilatation of the pupil, I found only one detachment of the choroid. In one case the patient had a double detachment, one at each side. The reason for the frequency of this occurrence after trephining must be sought in the long continued hypotension. It cannot be due to the traumatism; that is, to the traumatic enlargement of the opening between the anterior chamber and the superchoroidal space; otherwise it would be more frequent after cataract extractions.

Dr. Edward Jackson, Denver: I have seen no postoperative detachments following trephining, but I have done only a few trephinings. Dr. Barkan dismissed in a sentence or two the subject of spontaneous detachment. I have one case that seems to have a natural place in this discussion. About eighteen months ago I saw a man who had been complaining of impaired vision for several weeks, and on making an examination with the ophthalmoscope found the choroid pushed forward in the region of the macula. Vision was reduced to 1/15 of normal, and the swelling gave the appearance of sarcoma. In six months the vision was 6/10 normal. He gave no history of injury to the eye, although I made a very careful inquiry concerning this point. Spontaneous detachment is more frequent than we realize. This case certainly would not have been observed had it not involved the region of the macula.

Dr. Hans Barkan, San Francisco: In regard to Dr. Roberts' remarks concerning the danger encountered by the patient in undergoing an examination for detached choroid, I will say that in Europe where I accumulated the great majority of these statistics the examination, fortunately, is not considered so serious. I have, however, kept it up in a small number of cases and have found there is no trouble about it. Of course it is to be remembered that when the chamber is not shallow there is nothing to be gained in making the examination. Therefore, the number of eyes that you might endanger are confined to those cataract cases in which there is no chamber. Where there is at the end of twenty-four to thirty-six hours no evident external cause for the absent chamber there is absolutely no danger in making the examination. In regard to Dr. Ray's observing the valley between the choroidal detachment, there are two explanations for that—the choroid and sclera are firmly attached to each other and the suprachoroidal space is obliterated by an old choroiditis or that a vortex vein entering at the bottom of the valley should naturally hold down at this point the choroid. Dr. Todd's question rather sticks me. I can only say that in these cases in which there were fourteen out of 150, or 10 or 11 per cent., we did not notice any bad effects in the lowering of tension. Perhaps the bad vision in the cases he mentioned may have been caused by the axial myopia that took place and by the wrinkling of the cornea with its consequent irregular astigmatism. I certainly cannot explain it on the basis of the choroidal detachment.

In reply to Dr. Fenton, both Professor Fuchs and Professor Meller advocate that there is no logical reason why a patient should not be given the benefit of this saving operation in addition. Pathologically speaking, there are some very good reasons why the operation should be performed, and undoubtedly the trephine hole shows more tendency to remain open; as iris lying beneath it otherwise tends to form a substratum of connective tissue and adhesions block up the hole. Whether as large an iridectomy as was performed is advisable or not, I am not in a position to say. A great percentage of these cases came in a state of advanced glaucoma with high tension. Among the operations there were not as many incipient glaucomas as there were acute glaucomas and chronic inflammatory cases; therefore it was quite easy at that time to do as large an iridectomy as possible, as the high tension almost invariably caused a fairly large prolapse of the iris into the trephine hole.

In regard to the question asked, Heine's cyclodialysis of course seems the ideal condition for a choroidal detachment to take place, but Heine in his many operations noticed choroidal detachment only once; this I take as strong proof, in accord with Dr. Gifford, that it is the sudden lowering of tension which is responsible for the detachment; we note here that the tension is lowered only temporarily and not markedly.

Factory Inspection.—According to a statement of the National Child Labor Committee, although Georgia has a child labor law, it is a dead letter on account of the failure of the legislature to provide for a factory inspector. At present the Commissioner of Commerce and Labor of Georgia is charged with the enforcement of the child labor law, in addition to his many other duties, and he is provided with only two office assistants. The bill to provide for an assistant factory inspector to enforce the child labor law was favorably reported by both house and senate committees at the last session of the legislature, but no action was taken. Dr. J. A. McKelway, secretary for the Southern States of the National Child Labor Committee, cites this as proof of the need for a federal child labor law which could be enforced by federal inspectors.

EARLY DIAGNOSIS OF INTUSSUSCEPTION

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An intussusception, though of rare occurrence, is one of the most dangerous surgical conditions of infancy. If the obstruction is recognized early the intestine may quickly be released by operative treatment.

My object is to review clearly the early symptoms which occur when there is still time to save a patient too young to localize or to describe his sufferings.

To diagnose intussusception during the second or third day is usually easy, but this delay is fatal.

Why does intussusception occur in babies? The conditions favorable to the invagination are a long mesentery and active, irregular peristalsis. The circular muscular fibers of the small intestine contract, and an upper segment of ileum is driven through the narrowed lumen. Sometimes the beginning invagination is released spontaneously. Peristalsis is increased by the obstacle and several inches of intestine are pushed into a lower segment; with the intestine the mesentery is also dragged in, aggravating the obstruction and nipping the intestine. The obstruction usually occurs in the lower ileum and the mass of bowel is pushed through the ileocecal valve and drags the cecum and colon with it.

As the intussusception is attached to the mesentery, the tumor moves in the arc of a circle and may be rotated to any region of the abdomen.

The effect of this accident is:

1. To produce agonizing pain; the crying of the baby often indicates the exact moment of the obstruction.
2. To arrest the fecal current and stop digestion and to cause vomiting.
3. At the site of the obstruction acute swelling and congestion occur, forming a tumor, hindering the release of the invaginated intestine and causing bleeding and a discharge of bloody mucus through the colon.

Thus we have the four principal symptoms: pain, vomiting, an abdominal tumor, and discharge of blood and mucus from the rectum.

PAIN

Nearly always the baby is breast-fed and of good disposition and digestion. Suddenly, without apparent cause, the child cries bitterly. Illustration: A fat, nursing baby of 6 months suddenly awoke at 6 a. m., and cried most piteously. This was the exact moment the telescoping commenced. The patient always cries, sometimes continuously, sometimes intermittently. The child's face is pinched and suffering, pale, cyanotic. A dangerous condition of shock is evident at a glance. The physician is most successful who listens to the mother's story of the baby's unusual sufferings and takes alarm quickly. After a few hours the symptoms of shock may disappear and the pain cease for a few hours. This amelioration is due to an edema of the intestines, and is also seen in strangulated hernia. Beware of this deceptive lull. A fatal condition is progressing and most mistakes in diagnosis occur because the physician arrives when the baby is a little better.

VOMITING

Associated with the initial pain is vomiting due to shock, arrest of the intestinal current and regurgitation of duodenal fluid. The vomiting may occur every hour or two, may cease for a while and return. It is aggravated by food and laxatives so often given. Vomiting is rarely absent in acute intussusception. During the whole period of obstruction the baby refuses food and eventually rejects what it swallows. Fecal vomiting is infrequent. Although vomiting is an every-day occurrence with bottle babies, it must be emphasized that the intussusception patient is usually breast-fed, with a healthy digestion.

ABDOMINAL TUMOR

The abdominal tumor of intussusception is a mass of telescoped ileum, cecum, colon and mesentery. It may be found in any quarter of the abdomen rotating on an axis of mesentery. The tumor is insensitive; feels like a walnut or a potato; may be localized at one time and later disappear under the liver or in the pelvis. The abdomen is generally soft and may be thoroughly palpated. Often the tumor is undiscovered and the physician's diagnosis must be made from other symptoms.

Protrusion of the bowel through the anus is a late symptom indicating the telescoping of long areas of intestine. It may simulate a prolapsed rectum. The rectal mucosa, however, is easily replaced; a mass of intestine is not.

A digital examination of the rectum should be made in every suspicious case.

Sometimes no information is gained; sometimes a hemorrhage follows; sometimes the soft fleshy mass of incarcerated intestine is felt high in the rectum. A bimanual examination may discover a mass of telescoped bowel.

Early, at times, when the child is not crying, the abdomen is soft and relaxed. Later there may be distention. Peritonitis is a rare, late development. Often the irritation of the obstruction causes an effusion of peritoneal fluid.

Adhesion of the bowel wall is unusual; I have never seen it. The chief obstacle to reduction is swelling. The surface of the intestine is often purple from congestion and the bruised appendix in a condition leading to inflammation. After the obstruction is relieved a persistent diarrhea may show the damage the intestinal mucosa has suffered. Some children have a fairly good heart action for a day or two. Fever is not a symptom of intussusception, yet many cases have a rise in temperature after a few hours, probably from intestinal toxemia.

COURSE OF DISEASE

If the telescoped bowel is not released within twenty-four or thirty-six hours the baby will surely die of pain, vomiting, exhaustion, shock and toxemia from poisons exuded by the injured intestine. Death takes place in from two to seven days. Spontaneous sloughing of the intussusception has been reported. I saw one case, but the child died suddenly a year afterward, probably of intestinal stenosis.

The physician, in dealing with a supposed intussusception in a baby, faces dangerous possibilities. To wait may be to lose the child's life. To advise and force a dangerous operation in case of a mistaken diagnosis is a disgrace.

Several times I have anxiously watched a baby who was vomiting and in pain and have seen the symptoms spontaneously cease.

When a suspicious case is seen it should be closely watched. Much mischief is caused by giving food and laxatives. To give opiates for pain is to mask the symptoms until it is too late to act. An experienced clinician will quickly realize he is dealing with a serious atypical case, not one of infantile indigestion and colic.

BLOODY MUCUS STOOLS

The jamming of the intestine produces swelling, congestion and irritation. As a result blood and mucus exude from the lower end of the obstruction and flow from the anus, either as a hemorrhage or as bloody mucus dysentery.

A bloody mucus stool suddenly passed from a healthy baby is almost pathognomonic of intussusception and was absent in but one of my sixteen cases. The patient may pass one or two small fecal stools, the contents of the lower bowel; afterward nothing but blood and mucus.

The intestinal hemorrhage may occur early; first a gush of bright red blood and then bloody mucus, possibly after a digital examination or taking a rectal temperature. The finger or thermometer is withdrawn covered with blood, and bleeding follows.

Occasionally the intestinal hemorrhage is observed after the first day, too late for an early diagnosis.

When the incarcerated intestine has been pushed deep in the lower bowel there may be rectal tenesmus and bloody mucus stools which simulate dysentery.

When intestinal obstruction is complete the constipation is absolute and no gas passes the anus. The question should be asked: Has the child passed gas since it was taken ill? An intussusception may be excluded if large amounts of gas have been discharged, but small amounts of gas may leak through the nipped bowel. Twice in my experience the mother observed the passage of gas although a subsequent operation showed a dangerous intussusception.

One should always suspect an intussusception when a healthy breast-fed baby suddenly cries, vomits, passes bloody mucus stools and shows symptoms of shock. The surmise becomes almost a certainty if the thermometer or examining finger is covered with blood.

A roentgenogram of the intestines after an injection with bismuth is strongly advised. Three times I have seen the symptom-complex of intussusception confirmed by this method. All three patients were operated on and recovered.

A surgical consultation should at once be called and the responsibility shifted to the surgeon.

As to the operation, much depends on the surgeon's skill and speed. A minimum amount of anesthetic should be carefully given. The operator should not eviscerate the child to find the obstruction. The incarcerated intestine should be pushed, not pulled out; the appendix should not be unnecessarily removed. The proportion of operative cures of intussusception steadily increases.

A successful, experienced surgeon has several times said to me that if a case of intussusception was seen early operation was easy, and the credit of saving the life belonged to the physician who could at once recognize an atypical case.

ILLUSTRATIVE CASES

Case 1.—Ileocecal intussusception with early diagnosis. James, an artificially fed 11 months' boy weighing about 17 pounds, had easy digestion with no food vomiting, though his weight had been stationary for a month. At a night feeding—10 p. m.—a slight increase was made in the food. At midnight the baby commenced to vomit and cry and continued to vomit frequently until the next noon. The last vomited fluid was yellow, a regurgitation from the duodenum. With the vomiting the baby suffered from pain, crying paroxysmally and seeming in utter misery. The baby passed a fecal stool at 6 a. m. and the mother thought that the child passed gas during the night.

A rectal injection given during the morning was almost instantly expelled. No food or laxatives were given from the onset of vomiting.

Seen at 1 p. m., thirteen hours after the vomiting had commenced, the child was crying from abdominal pain. Temperature 100.5; heart sounds strong. No abdominal mass was felt on palpation. After the withdrawal of the thermometer from the rectum there came a gush of fluid blood and mucus. Nothing was felt on digital examination. Nothing was elicited by bimanual examination.

The condition suggested an intussusception: A baby in good condition was, without adequate cause, attacked with severe abdominal pain with vomiting and the discharge of blood from the rectum. From 1 to 5 p. m. the vomiting ceased and the baby seemed easy, without pain. There were five small fluid, bloody stools. The improvement during the afternoon did not dispel the idea of intestinal obstruction, as bitter experience has taught me that in a case of intussusception, after a fierce onset of pain and vomiting, a lull in the patient's misery may occur from edema of the intestinal mucosa.

The surgeon agreed with me that the case was one of intussusception and a roentgenoscopy was done; but little bismuth could be injected into the rectum and the picture showed the obstruction to be in the left lower quadrant. The operation showed the mass of invaginated intestine in this region, but neither the surgeon nor I could feel any abdominal tumor.

Operation by Dr. Marshall Clinton, twenty hours after beginning of illness, showed a large amount of serous effusion from peritoneal irritation. The invaginated intestine lay about the sigmoid flexure; about 20 inches of ileum had been pushed through the ileocecal valve and the cecum, ascending and transverse colon had been jammed into the left lower abdominal quadrant. The serous surface of bowel and appendix were much congested. The ileum was slowly pushed out from the colon; there were no adhesions; the appendix was removed. Length of operation about twenty minutes. There was no vomiting. The baby was feverish and had frequent stools for a week. It was fed on breast-milk. Recovery was complete.

Case 2.—Early diagnosis. Helen, aged 3 months, was partly nursed and partly fed.

November 6 at 3 a. m. the child took the bottle well and slept until 6 a. m., when it attempted to nurse and seemed ill, and cried as if in pain. She commenced to vomit and passed two stools. During the morning she cried a great deal, vomited five times in three hours and had six small stools of mucus and blood. Occasionally fluid blood flowed from the rectum. Examination was made two hours after symptoms began.

On palpation to left of navel a sausage-shaped mass 1½ inches long was felt; it was not tender. The abdomen was relaxed. On rectal examination, nothing was felt. Blood flowed from the rectum directly afterward.

Four hours after the onset of symptoms a surgeon agreed with me that an intussusception existed. There were:

1. The sudden onset symptoms in a healthy child.
2. The occurrence of vomiting, pain, bloody stools, and presence of an abdominal mass.

A large rectal injection of warm water was given, after which there was relief for several hours from vomiting and pain.

A surgeon, Dr. Clinton, was called. He found the child easy and comfortable. The abdominal mass had disappeared, displaced by injection. Both the surgeon and I felt that an intussusception existed and that the temporary amelioration was a deceptive lull.

Roentgenoscopy at 4 p. m. showed intussusception in the right upper quadrant. Some bismuth passed, the obstruction showing closure of the lumen of the bowel was not complete.

Operation was performed at 7 p. m. No abdominal tumor was felt during the late afternoon. Blood leaked several times from the rectum. Four inches of the ileo-invagination were pushed out. Relief from the intestinal obstruction occurred with rapid improvement.

Case 3.—Intussusception with late diagnosis, in a 6 months' old fat baby, breast-fed. May 22, at 6 a. m., the child, previously in perfect health, commenced to cry as if in pain (acute), and grew white as if in a faint. It was given an injection, also castor oil and a hot bath. It was quite ill during the day, would not nurse, and during the afternoon had several discharges of bright red blood from the rectum.

May 23: The child was quite collapsed; vomited through the day and had three or four stools of mucus.

May 24: Fifty-two hours after the onset, 10 a. m., the heart was rapid and feeble. Temperature 99. The child was depressed, had passed no gas or fecal matter since the beginning of its illness. Rectal examination was negative. A mass was felt in the lower quadrant of the abdomen by palpation.

At operation, about sixty hours after the onset of symptoms, a gangrenous appendix was removed. The duration of operation was fifteen minutes.

The mass felt in the left lower adbominal quadrant was a mass of invaginated bowel. The ileum had penetrated into the cecum for 6 inches; the ascending colon was pushed to the left of the umbilicus; the lower ileum and colon were intensely congested; the ileum was easily pushed or pulled out of the ascending colon; the appendix was strangulated and gangrenous.

The child was in good condition after the operation but died in two hours.

Case 4.—Intussusception, diagnosed as a case of dysentery. A girl, aged 5½ months, breast-fed, was well until July 19, when it seemed in pain and passed a number of stools of pure blood. It was sent as ill with dysentery to the Fresh Air Mission Hospital.

July 20 and 21: Occasional vomiting occurred of a yellow fluid. Frequent stools of mucus and bright red blood were passed, but no fecal matter. There was a suggestion of a tumor in the left and lower quadrant.

July 22: Temperature 102. The child was in great pain, crying for a day at a time. There was no suggestion of collapse. The abdomen was not distended. There were numerous stools of mucus and blood. A tumor was felt in the left lower quadrant. The child vomited fecal matter during an irrigation. The introduction of the tube into the rectum was very difficult. Rectal examination showed the intestine occluded about 2½ inches from the anus, by a mass of intestine. The finger in the rectum pushed back the intestine out of reach.

Operation at Children's Hospital about eighty hours after the beginning of symptoms.

An abdominal incision 3 inches long was made between the navel and pubis. Some serous fluid escaped. There were no adhesions. A large mass of intestines was crowded into the region of the sigmoid flexure. The entire colon was slightly congested. The ileum was invaginated through the ileocecal valve. The small intestine, easily pulled out, occupied the interim of the cecum, ascending, transverse and descending colon.

On the surface of the ileum, 9 inches from the ileocecal valve, was a depression like a dimple, on the surface opposite to the attachment of the mesentery, perhaps the beginning of intussusception.

The surface of the intestine was brownish here, not gangrenous.

The child collapsed at the close of operation. Two hours after the operation its temperature was 106.5, pulse 240. Death soon followed.

CLINICAL AND ELECTROCARDIOGRAPHIC STUDIES ON THE ACTION OF DIGITALIS *

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It is extraordinary that, after continuous use for 130 years, the study of the action of digitalis retains so vital an interest, not only in clinical medicine, but also in experimental pharmacology. This interest has been quickened by the fundamental investigations of James Mackenzie on the mechanism of the heart beat and by the construction by Einthoven of a galvanometer suitable for registering the action currents of the heart.

I mention James Mackenzie especially, because in the bewildering variety of studies which he has stimulated he has, almost alone, kept in view the essential objects of investigation in the domain of cardiovascular disease. These are, first, the study of symptoms suggesting the presence of incipient heart disease, and second, the study of the mechanism of heart failure and its treatment. His study of the disturbed rhythms of the heart was undertaken to ascertain whether they had a vital relation to these subjects, and to learn whether an appreciation of their significance would aid in understanding altered function.

I doubt very much whether the disordered rhythms of the heart, taken by themselves, presented a subject of fundamental interest to Mackenzie, and in that, too, he has differed from his followers. The reader remembers, no doubt, that he called his book "Diseases of the Heart"; but its theme may be said to be the arrhythmias in their relation to heart failure. This view of the arrhythmias gives them a new significance in studying the action of drugs. They can be made to serve as important indicators in estimating the value of therapeutic effects. Mackenzie's work, therefore, provides an important reason for reexamining the action of digitalis. Just as it was important to recognize the arrhythmias and to appreciate their significance, it was necessary to have far more accurate and more satisfactory methods of registering the motions of the heart than arterial and venous tracings, which record only the motions of the vessel walls, and in many instances record them badly or not at all. The string galvanometer, although it is not a substitute for them, has come to replace the older methods by one eminently practical, free from error due to the personal equation and reliable within the limits of its capacity. This instrument has made Mackenzie's work more easily available. Its use, as I hope to show, has made possible the introduction of added criteria for recognizing the action of drugs. Mackenzie's new conceptions and Einthoven's new instrument, reported almost simultaneously, made therapeutic investigation from a new point of view desirable.

I want to discuss the effects of digitalis on heart rate, on conduction, on the electrocardiogram, on blood pressure and on diuresis. But because there is still a very distinct divergence of opinion between practitioners of clinical medicine and pharmacologists, as to how digitalis acts, I must take account of the views of both in presenting the subject. But the matter is not simple, for clinicians differ in the results of their observations, and pharmacologists on the interpretation of experiments.

The school of Schmiedeberg still maintains that the main action of a digitalis body is on heart muscle; the school of Gottlieb, while it does not deny to digitalis bodies a cardiac action, still maintains the view that it has an important action on the walls of the arteries. Both schools find that the drug increases the excursion of the heart in contraction, both believe that it elevates blood pressure, both believe that it increases the amount of renal secretion.

It is perhaps not an overstatement to say that in a general way clinicians have been too much influenced by these experimental results and have felt obliged to find that the administration of the drug in patients results in parallel phenomena. It requires a very small experience in treating patients suffering from heart disease to find oneself disappointed because the expected results did not occur. And when discrepancies were noticed, the discovery was not often followed by an effort to explain them. The subject was often dismissed by finding fault with the potency of the drug or by discovering an idiosyncrasy in the patient. But even if drugs were always potent and there were no individual idiosyncrasies, it is extremely likely that patients would continue to react in different manners to the drug. And the reason for that must be that individuals, although they suffer from what in a general sense is called heart disease, yet present a great variety of clinical pictures.

If the cardinal symptoms of heart failure alone are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, it becomes clear that patients do not usually present all of these signs at once, that some present one or two of them, or a group. It must be apparent that the pharmacologic experiment does not take this diversity of circumstances into consideration; the experiment is done under artificial conditions, and the doses which are employed bear no relation to those permitted in clinical medicine. There can be no question of the usefulness to therapeutics of these experiments; as guides, they are indispensable, but it must be clear that they neither replace nor parallel the clinical conditions we must treat. That there has consequently been a divergence between the results of pharmacologists and clinicians in a practical sense was inevitable. The responsibility for it is probably shared equally by both. Pharmacologists have dealt usually with simple normal conditions; clinicians with complex pathologic ones.

In therapeutics, divergent accounts of the action of the digitalis bodies are also found. For instance, they are sometimes said to reduce the heart rate, and to act almost as specifics; others deny such an action. In the presence of fever their use is discouraged by some as valueless. In the domain of valvular defects a variety of indications and contradictions for giving the drug prevails; some regard these as unimportant. Until recently, some avoided it in cases of high systolic arterial pressure, because it was reputed to elevate this to dangerous limits. Some, again, have detected a striking effect in a short time (Marvin), while others have recently reported that it has no effect on pressure at all. Its effect on diuresis has, on the whole, been commonly held and has been gained on account of the disappearance of edema, when this sign of heart failure is present.

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* From the Hospital of the Rockefeller Institute for Medical Research.
* Read before the Section on General Medicine, College of Physicians, Philadelphia, Dec. 14, 1914.

A drug having apparently such very powerful actions as digitalis must be extremely valuable and must gain in usefulness if its modes of action are carefully studied and precisely recorded. It has been no easy task to reconcile the divergent views drawn from experimental experience, and equally difficult to understand the contradictions expressed by reliable clinicians. We have therefore been engaged in the Hospital of the Rockefeller Institute in the attempt to understand and to reconcile these differences, in order to make more available the data of experimental pharmacology, and to ascertain whether the indications for the use of digitalis could be simplified if patients were grouped with a view of delimiting the conditions in which uniform results might be expected. For these purposes it has been deemed wise to study digitalis in the human subject, because in the first place it is about its action in patients that information is wanted, because, in the second, that information can, in practically all respects, under present conditions be satisfactorily obtained, and because, in the third place, the study can be made not only without any prejudice to the patient, but, indeed to his advantage.

It is apparent, if the cardinal symptoms of heart disease during heart failure are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, that not all patients present all of these complaints, and that each patient suffers from only a selection of them; of these symptoms the most obvious basis for the arrangement of patients into groups for the purposes of treatment, especially at the present time, is rhythm. Rhythm, it will be remembered, was the subject with which Mackenzie started. The basis has, in point of fact, been found extremely serviceable, for in a general way it has been said that the drug acts on cases of auricular fibrillation very successfully, and has even been called, erroneously of course, a specific; while in cases presenting a sinus rhythm it has been said to fail. We have therefore divided patients primarily into fibrillators and nonfibrillators. On the question of rhythm, pulse rate also depends, and we regard these two factors together, but not, of course, as the same. The second basis on which patients can be divided is the question of edema and the retention of water, involving the question of salt metabolism, and these two symptoms may also be regarded as phases of a similar disturbance. The third basis on which we have found it useful to study patients has been on the basis of the height of blood pressure. We do not, of course, pretend that a classification such as this presents all the points of view from which either heart failure or the treatment of heart failure can be viewed; it omits important symptoms such as dyspnea and pain. Often these are cardinal, often they are secondary signs. But, after much consideration, we have adopted it as a useful working plan for testing the effect of drugs. The classification then, is as in the accompanying tabulation.

CLASSIFICATION OF PATIENTS

A. Normal rhythm..	a. Without edema.	1. With normal blood pressure
		2. With high blood pressure
	b. With edema	3. With normal blood pressure
		4. With high blood pressure
B. Auricular fibrillation	a. Without edema	5. With normal blood pressure
		6. With high blood pressure
	b. With edema	7. With normal blood pressure.
		8. With high blood pressure

The group of patients which presents the simplest form of disease is the first one, in which the rhythm of the heart is normal, there is no edema and the blood pressure is not elevated. This is the state found in a patient who, if he presents himself for treatment at all, is in an early stage. It is naturally understood that an early stage of heart failure does not by any means suppose an early stage in heart disease. It is, on the whole, the simplest kind of heart failure which one is called on to treat. The general physiology of such a patient presents the nearest approach to the normal. It is the effect of giving digitalis to him to which we have confined our attention and with which this report principally deals. It is clear that often he requires no drugs; if digitalis is given him it is important to determine what effects are to be expected, and also how the expected effects are to be recognized. This is the method of experimental pharmacology, and the results obtained in this way can be most nearly compared with experimental conclusions. They can be made also to serve as a basis for considering the effects on the more complicated groups.

I have mentioned earlier the topics I mean to discuss, but it is well to dwell for a moment at this point on another. Aside from changes in the physical signs which some clinicians believe themselves capable of appreciating, we have no means whatever of estimating alterations in the functional efficiency of the heart, referable *to the heart itself*. If it were possible, an accurate estimation of contractile force would be the most important single measure to take, but for this we have no satisfactory criteria. Observations on blood flow, blood pressure, estimations of volume output, electrocardiography, have all been equally disappointing. Those effects reported earlier, of changes in the magnitude of ventricular contractions gained in experiments, are more recently admitted (Joseph) to have been obtained by doses far too great. The much smaller doses now used are still much larger than are permitted in therapeutics, but even these fail to show marked changes in the extent of the excursion of the ventricular wall which were formerly held to indicate the nature of effective digitalization. The methods employed in pharmacology are not superior to those now available in clinical medicine. Both are on a par in respect to obtaining objective records of this phase of digitalis action. We must believe, therefore, that if digitalis increases the ability of the ventricles to pump blood, it does so by means of a change which is more subtle than can be distinguished by our methods.

The most important alteration we look for traditionally is in the pulse, or better, the heart rate. This is the first subject we have investigated. For the present we omit fibrillators from consideration. The reduction in the rate of the heart is an effect of digitalis on which we have been taught to rely, both by pharmacologists and clinicians. It is, unfortunately, an effect which we have not found constant in the type of case we are considering. We know also that it fails to reduce rate in the tachycardias of a paroxysmal nature, in those of exophthalmic goiter, and in those of fever. That the pharmacologist could report such an effect depended, no doubt, on the size of his dose. That the clinician believed it to occur depended until recently on his not distinguishing between fibrillators and nonfibrillators. The brilliant reduction in rate was found in the former. It was also found in the sinus rhythm when edema was present; but neither group of patients is at present under discussion. In the absence of edema, a reduction in rate may be said to occur principally in the hypodynamic and unstable heart, in the heart which for unknown reasons undergoes spontaneous alterations in rate. In hearts of this nature, a natural tendency to reduction is accentuated by administering digitalis. Aside from these, the majority of individuals do not respond to therapeutic doses of digitalis by a fall in heart rate. When amounts equal to 0.4 gm. of leaves a day are given for five to seven days, ventricular slowing does occur, but it occurs as the result of the blocking of the auricular impulses. The latter continue at an unreduced speed and do, as a matter of fact, usually exceed their initial rate. In view of the continued initial, or, in most cases, accelerated auricular rate, it is doubtful whether one may speak of a digitalis slowing of the heart as a primary phenomenon. It depends obviously on the disturbance of a function other than that of stimulus production. We have been led to conclude from our observations, therefore, that digitalis slows the sinus rhythm only in the group of hypodynamic hearts, and that to produce slowing is not a primary function of digitalis in therapeutic doses.

Mention has been made of the blocking of auricular impulses after a sufficiency of digitalis has been given. It is a phase of its action to which Mackenzie drew attention clinically and von Tabora in experiments. Mackenzie, and more especially Lewis, believed it to be produced only when the conducting fibers between auricles and ventricles were previously damaged, more especially by rheumatic inflammation, as evidenced by the fact that the auriculoventricular interval was unduly lengthened. We have been able to show that an action on conduction can invariably be observed in patients, varying from simple lengthening to block. An effect on conduction may therefore be set down as a usual effect of giving the drug, apart from specific preexisting injury. An evidence of delayed conduction can be observed very early after the administration of the drug has been started. We have noticed it within forty-eight hours. In many instances, the auriculoventricular interval gradually lengthened during the succeeding three to five days until partial heart block occurred. We have believed it possible to maintain conduction time at any length we have thought suitable, by controlling electrocardiographically the amounts of digitalis requisite to produce the effect desired. Not all cases, however, show the gradual lengthening in conduction which I have described; block then occurs with extreme abruptness within a few hours. After the administration of digitalis has been terminated, alterations in conduction usually continue about two days. In the exceptional case, it may persist for two weeks. If gastro-intestinal symptoms have occurred, they do not persist beyond two or three days.

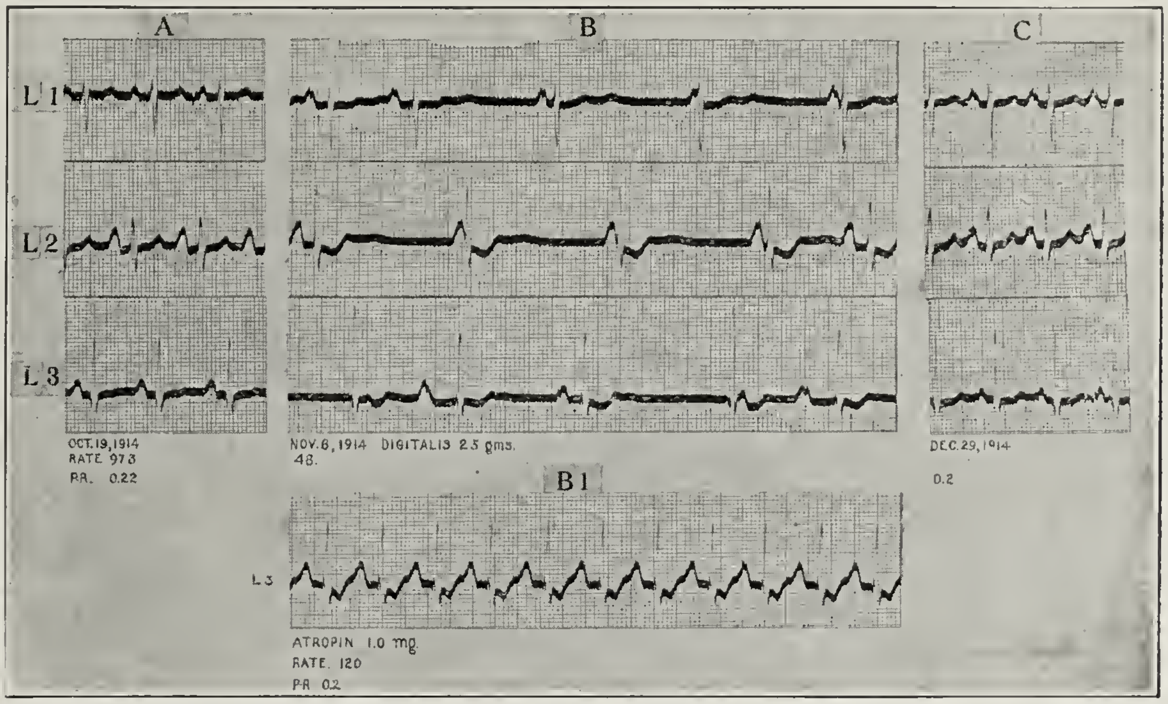

Fig. 1.—Divisions of the ordinates equal 0.1 millivolt; divisions of the abscissae equal 0.04 second. *A*, before digitalis was given; three leads (Einthoven) are shown. *B*, after 2.5 gm. of digitalis had been given; inversion of the *T* wave is shown in Leads 2 and 3; the curves in Leads 1 and 2 show a type of nodal rhythm described in the text. *B 1* was taken a few minutes after *B*; atropin, 1.0 mg. was injected; it shows that the rhythm of the heart returned to normal; the inverted *T* wave persisted; Lead 3 is shown. *C* shows the three leads; the curves were taken when digitalis had been completely eliminated and the curve had returned to the outline of the control, *A*.

The occurrence of delayed conduction has been dwelt on for the purpose of showing that in certain cases, probably in a large number, the fact that digitalis is acting on the heart can be ascertained early in the administration. When the sign is obtained, it is definite. The problem which arises for decision is whether or not it is a sign which indicates a beneficial action on the heart. For a definite answer on the basis of this sign alone, more experience is required. A greater degree of digitalization can be obtained; but we may learn that on obtaining this effect, the maximum which is desirable has been reached.

When full doses of digitalis have been given, sufficient to cause delayed conduction, abnormal heart rhythms are commonly seen. They have been much described and occur as exaggerations of the normal sinus arrhythmia, extrasystoles, partial heart block, and rarely auricular fibrillation. We shall omit further mention of these. One arrhythmia which is still practically unknown as the result of giving digitalis may be described here. In this form none of the auricular beats is blocked; auricles and ventricles both continue to beat and do so almost at the same rate (Fig. 1). But there is incomplete coordination between them, so that a fixed relation ceases to exist. They must, however, be closely related. The conclusion cannot be escaped that they have an origin in common, or two related origins. If it is a common origin, the lack of exact coordination must depend on a shifting of the site of stimulus production, similar to one we have described in the ventricles, possibly complicated by changes in conduction; if it depends on two competing stimulus-producing foci, they must be actuated by a common factor. It is a matter of interest that we have found arrhythmias of this form associated only with various forms of intoxicants, notably digitalis. Robinson and Auer have seen it also in the presence of anaphylactic shock.

Aside from the lengthening in auriculoventricular conduction which, as has been said, begins in many cases soon after digitalis treatment is initiated and can be taken as an indication that an effect on the heart is being obtained, even though no change in rate has occurred, another new sign in the electrocardiogram appears to be one of great importance. This sign is an alteration in the size, shape, and direction in the *T* wave (Fig. 2, *A* and *B*). If digitalis is given to a patient whose electrocardiogram contains a *T* wave pointing in the usual upward direction, the first change noticed is usually a diminution of the height of this wave, usually in the third lead first, and later in the second. The first lead may also show changes, but relatively speaking, less frequently. The change may be noticed as early as twenty-four hours to consist in a diminution in the height of the wave, but at the end of forty-eight hours this change is more distinct and the wave may by this time have become iso-electric. At this time or, more often, later, it becomes inverted. Instead of becoming iso-electric or inverted, it may become diphasic, and in a number of cases of this sort it is easy to distinguish *T* waves consisting of two parts, a first portion which becomes inverted and then returns quickly to a second portion which represents the end of the original wave. The diagram (Fig. 2 *A*) explains this relation. The dotted line represents the altered portion of the curve. There are, of course, many electrocardiograms in which, for pathologic reasons, the *T* wave is originally pointed in a downward direction. If digitalis is given to such patients, the direction of the *T* wave is altered, and during the action of the drug may be directed upward (Fig. 2 *B*). An especially beautiful example of this variety we have found in a case of complete heart block. Usually the negative *T* wave becomes deeper, especially in the third lead. That the change is due to digitalis is proved by the fact that when the drug is stopped, the *T* wave returns to its original size and shape. The length of time required for it to return to its initial condition varies between five and twenty-two days. To be certain of the change, we have repeated the observation a number of times in the same individual, and to be certain, also, that it is not dependent on a pathologic heart, we have shown it to exist in persons whose hearts are quite normal. It is a sign, then, that the heart is digitalized, and it is a sign which appears early. It appears at a time when no change in conduction need have occurred. It appears in the absence of any alteration in rate. The factors on which the change in the *T* wave depend, we cannot explain precisely at the present time. That it is an evidence of an alteration in the contractile substance of the heart is an inference which is naturally drawn from the circumstance that at the present time the electrocardiogram is generally regarded as the expression of changes in the electric state of the muscle. Whether, in a clinical sense, the change in the *T* wave is to be taken as an indication of beneficial or not beneficial action, it is impossible to say, though there seems little reason to question the fact that it is.

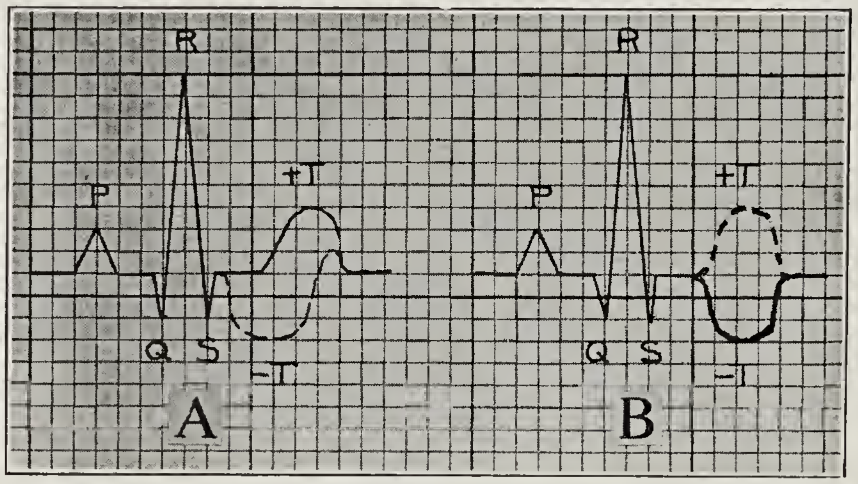

Fig. 2.—*A*. The solid line represents the normal outline of the electrocardiogram. The *T* wave is directed upward. The dotted line shows the change which occurs in the *T* wave under the influence of digitalis. *B*, in a similar way, shows the change in certain cases when the *T* wave is initially directed downward. Under the influence of digitalis it turns upward.

Many matters for consideration arise in relation to the sign. It is a matter of discussion just now, for instance, whether the effect of digitalis on heart muscle depends on an intimate combination of the drug with the muscle (Speicherung) in which digitalis is destroyed or consumed, or whether it acts merely by virtue of its concentration in the circulating fluid. In the latter case, the signs of its effect disappear promptly with the withdrawal of the drug, with the diminution in its concentration. The drug is not consumed and, if the solution is recovered, may be used with equal efficiency in a succeeding heart. The essential point of difference is as to whether or not the drug is actually consumed when it is given. In both cases it must, of course, be excreted. If the drug acts merely by virtue of its concentration, a rapid excretion may be expected, and its composition may, of course, be altered; it need not necessarily reappear as the original substance. In the case of its being consumed, its composition on excretion would naturally be altered, but one would expect the rate of its excretion to be much delayed.

In view of what has been said of the change in the *T* wave, under the influence of digitalis, and more especially of the dependence of the change on alteration in the heart muscle, it is difficult to escape the conclusion that a degree of great intimacy in the combination between the drug and the muscle must have taken place. It is clear that the influence on the muscle may outlast the presence of the drug, but it is difficult to believe that an action of such prolonged duration (three weeks), after giving the drug has ceased, can depend on a simple matter of concentration.

Two criteria have, then, been shown in electrocardiograms to indicate surely the fact that digitalis is acting on the heart: the first in the slight but definite lengthening in conduction, the second the very curious and very constant alteration in the *T* wave. Even if no slowing whatever of the heart occurs, we may be certain, by virtue of finding one or both these phenomena in electrocardiograms, that definite digitalis action on the heart has taken place. Rate, the criterion for which we looked and on which we relied, fails us, but in its place we have these other and surer ones. If these statements prove to be correct, they necessitate an alteration in the indications for the use of digitalis. It is not a drug, at least in the cases we are considering, which alters the rate of the heart—it is a drug which, by virtue of its combination with heart muscle, has a bearing on contraction, an effect which is evidenced by its effect on the *T* wave. It appears, then, that the groups of cases in which the drug was supposed to be of value have decreased in number, that is to say, those in which an effect on rate was expected, while groups in which new indications for the use of the drug may be found in the light of muscular and conduction effects we may hope will increase. In consequence, many patients with heart disease from whom digitalis has been withheld may, with new criteria, be drawn into groups for whom it is indicated.

In contrast with the action of digitalis in nonfebrile patients, it is worth referring to the well-known and often mentioned failure of the action of digitalis in cases of fever. Its general failure has been dwelt on by Mackenzie, whose opinions have recently suggested an investigation of the problem to Gunn in Cushny's laboratory. Its failure in pneumonia, in particular, has been dwelt on by G. A. Gibson of Edinburgh. Similar views in regard to the reputed impotence of the drug are no doubt held in this country. Elsewhere, as in Krehl's clinic, it is usually given and thought to be beneficial. It is not exactly clear what is meant by a failure of digitalis to act in the presence of fever. As an antiphlogistic it need not be considered. What is usually wanted in fever is an agent either to slow the pulse or to increase its strength. It is no doubt a general experience that digitalis does not slow the pulse in fever, and its failure to do so is the complaint most often made. That failure in this respect is not unexpected is clear from our experience in nonfebrile cases. Whether it strengthens the pulse or, in other words, increases the force of ventricular contractions, is an effect which has also been much discussed. Satisfactory objective measures of this are not available, but there is much clinical, that is to say, subjective evidence on the part of observers favoring the idea that it exists. In the absence of evidence bearing on contraction, electrocardiographic evidence can be supplied to show that digitalis has an action during fever of a nature precisely similar to that already described in nonfebrile patients. This evidence consists, as in the nonfebrile, in its influence on the auriculoventricular interval and on the *T* wave. Here, as in the nonfebrile cases, the changes begin within from twenty-four to thirty-six hours and persist for days after defervescence and after the giving of the drug has been stopped. Whatever its nature, it is clear that the same sort of support can be given the heart by digitalis during fever as in its absence. That this is the sort of support that the heart demands may be open to question. It is an error, therefore, to regard its action as a failure until its efficiency from actual, rather than from incorrect points of view, shall have been examined. Possibly as an aid to contraction, much may be gained from its use; but the expectation of obtaining an action on heart rate must be abandoned.

There is, however, a group of febrile cases in which digitalis acts efficiently on rate. In our experience these have not been patients exhibiting the normal sinus rhythm, but patients showing auricular fibrillation or auricular flutter. These rhythms appear spontaneously during attacks of fever and disappear spontaneously afterward. Occasionally the ventricular rate in such cases is inordinately high, the high rate itself being a predisposing factor toward heart failure. The most desirable thing to accomplish in these instances is a reduction in rate. By the use of intravenous doses of strophanthin, one might expect to block the greater number of auricular impulses which cause the acceleration of the pulse and to reduce the ventricular rate to reasonable limits. In several patients in whom the abnormal rhythms were found, strophanthin was injected and has acted in the described way. Under these circumstances this method of treatment has seemed to us a life-saving remedy. It may be mentioned that, except for its greater speed in action, strophanthin is not necessary and that exactly similar results in cases of flutter have been obtained by the use of digitalis by mouth. The effect on rate which digitalis has on auricular fibrillation and flutter, when these occur in fever, is precisely the same as in the nonfebrile state, and the results obtained are precisely the same. We are led to believe, therefore, although we have reached no definite conclusion, that there is no difference in principle between the way digitalis acts in fever and in nonfebrile conditions. One might venture the suggestion that, from the point of view of heart rate, and from the point of view of an emergency, the possession, in certain cases, of a heart beating after the manner of auricular fibrillation or flutter may, in fever, be a valuable asset, for it is in these rhythms that digitalis, by blocking auricular impulses, is able to slow the pulse rate. It may be mentioned, incidentally, that fever patients having auricular fibrillation initially are not necessarily prejudiced in the outcome of the disease by the abnormal rhythm.

Another topic long a subject of conflict is the relation of digitalis action to blood pressure. Clinicians have often withheld the drug from patients having high pressure in the fear of producing unpleasant consequences, as, for instance, cerebral apoplexy. One of the most recent contributions to this phase of the action of digitalis has been Marvin's. His investigations with a single dose of the tincture in normal medical students led him to conclude that, after five hours, an elevation of from 10 to 15 mm. Hg occurred in systolic pressure, and that the effect of this persisted for fifty hours, when the curve resumed its initial height. Many exact studies have been made in recent years, notably by Mackenzie, Price, and Lawrence. These and other investigators have failed, on the whole, to find pressure changes resulting from the administration of the drug. The form of this statement demands a certain modification. The clinical reports bear the defects mentioned earlier—that they are based on cases indiscriminately selected, or not grouped at all. They include cases with high pressure and cases with low. The heart mechanism, in itself an important factor, is, especially in the German reports, not considered. The estimation and interpretation of pressures in auricular fibrillation, as will be shown in another place, present problems much more intricate than those in the sinus rhythm, and the results of investigations indicate a different response to digitalis.

In the group of patients under consideration, those with sinus rhythm, without edema, and with a moderate or low systolic pressure, we have seen no substantial alteration in the level of either the systolic or the diastolic curve. Our conclusions are like those of other more recent observers. The few opportunities we have taken to verify the observations made by Marvin have failed in establishing results similar to his. In the cases we have studied, then, no alteration in pressure was found. In so far as the older fears are concerned, it is apparent that digitalis must be considered a safe drug to use.

Vascular effects, however, aside from changes in pressure, may be produced, and the untoward or beneficial nature of these requires consideration. A specific vascular action, not dependent on heart action or on pressure effects, has been advanced and held by the school of Gottleib. Gottleib, while admitting a cardiac action of digitalis, nevertheless maintains that the peripheral action of the drug is the one by virtue of which its prime effects are produced. More recently clinicians, employing optical methods of registration devised by Frank, have again taken up these aspects of digitalis action, and reports are now being published of alterations in reaction of the blood vessels, notably in the tension of the vessel walls, when they are under the action of the drug. It is the results of these investigations, far from satisfying as yet, which demand further study in order to establish the assurance that the vessels of the body, and more especially of the brain and meninges, do not become subject to injury as the result of giving digitalis.

The last phase of the action of digitalis which I wish to discuss is the relation of the drug to the excretion of urine. The foxglove obtained its initial reputation because diuresis was so enormously increased when it was administered. For almost a hundred years it was supposed that this was the one and most striking of its effects; but now the situation in regard to this phase of the problem is less simple. The questions now being discussed relate first to when digitalis does, and when it does not, increase the amount of urine, and, second, when it does, by virtue of what mechanism this result is brought about. The first problem, whether or not the amount of urine is increased, is a clinical problem and can be definitely solved. In the patients in the group under consideration, it may be stated definitely that no increase in diuresis takes place. It is, of course, remembered that these patients have no edema. The problem as it relates to patients having edema is naturally different, and involves other factors; but in the simplest form of case, no increase in the amount of urine takes place. So far, digitalis cannot be considered a specific diuretic. In experiments the situation is different, because there, although obviously edema is likewise absent, it is almost universally maintained that increased urinary flow takes place. But the clinical and the experimental conditions are not quite parallel, because in the latter, doses which have usually been employed are much larger than normal, that is to say, from three to fifty and more times the lethal dose for man; and because the method is an acute method, for the drug is given intravenously, or under the skin, and the effect is observed under the conditions of surgical operation. But, although the clinical and experimental conditions present results so divergent, it may be interesting to enumerate the theories which are given in explanation of the occurrences observed in experiments, the more in that they discuss factors which must be considered in the diuresis which occurs when digitalis is given in edema. As may have been supposed, three possible explanations have been urged, first that the experimental diuresis depends on a local vascular action in the renal vessels; second, that it depends on the general elevation in vascular blood pressure, and third, that it depends on the increased force of the heart's action. It will be noticed that none of these explanations refers to an action on renal epithelium. But this phase of the discussion of digitalis action scarcely bears on the problem now being considered, and may consequently be dismissed.

We return to considering the effect of digitalis in patients of our group. Diuresis, as has been said, does not occur in any stage of the treatment. When the cardiac effects are clearly discerned, as in the auriculoventricular interval and in the state of the *T* wave, no alteration in output is found. Intake is, of course, maintained level. But later, when dissociation occurs, and gastro-intestinal symptoms have taken place, the output actually diminishes. On account of loss of appetite, and, in some cases, of nausea and vomiting, the fluid intake naturally falls and accounts satisfactorily for urinary decrease. In view of these considerations, the conclusion is justified that a specific effect on urinary output does not occur as the result of giving digitalis to the class of patients under discussion. This, in itself, is not a significant contribution to an understanding of the pharmacology of the drug, but in another place it will be shown that it has an important bearing on the drug's action in edema.

No consideration of the action of digitalis on the various functions of the heart, on rate, on conduction, on contraction, and on circulation, is complete without a reference to the nature of this action. For many years a war of words, the two most prominent of which were "myogenic" and "neurogenic," was fought. This fight was waged on the question of the conduction of impulses in the heart. The battle became a drawn battle; no decision could be reached. Anatomic studies showed that both nerve and muscle elements were inextricably associated in the heart in general, and in the special muscular systems as well. The effort to distinguish the functions of one tissue from those of another became impossible, and the struggle was abandoned.

The same words, "neurogenic" and "myogenic," have in a similar way formed centers around which another battle has been fought, the battle to elucidate the mechanism of the action of digitalis. Fortunately, these battles have been less violent, and the lesser violence was probably due to the fact that it was always more than half suspected that neither one side nor the other was altogether wrong, and, in fact, that both sides were partially right. Our studies, it seems to us, indicate that this is so. So far as atropin may be taken to be a drug acting especially on the ends of the vagi, a release of the heart from a phase of digitalis action by its use indicates a nerve action of digitalis (Fig. 1 *B*). So far as digitalis has other effects, which atropin does not release, it may be inferred that it has an action directed more especially to muscle. Both effects can be observed at the same time, as we have seen, and by virtue of them another struggle, one may hope, has been terminated.

Our studies have, then, led us to draw a number of definite conclusions in regard to the way digitalis acts, and to find new criteria in the *T* wave and in the effect on conduction for detecting when the drug is acting. It seems important to emphasize the fact that it is essential to distinguish differences which patients suffering from heart disease present, and to study them in groups, with these differences in mind. Rhythm certainly offers a prime basis. The effect of digitalis on rate and on a number of other capacities varies with the nature of the disturbed function. In the use of the drug in pneumonia we have found it to have an action essentially similar to that found in the nonfebrile. In the absence of edema, we have not observed a diuretic effect. Evidence has been found which indicates persistence of action, longer than can be accounted for if the drug acts only by virtue of its concentration. We have shown that digitalis has a twofold action on the heart, nervous and muscular. We believe that clearness of indications will result only if the exact mechanism of the action of the drug is ascertained; for only when these are clearly met, can rational treatment be instituted.

NEW METHODS OF PYLOROPLASTY FOR CONGENITAL PYLORIC STENOSIS *

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CHICAGO

In recent years, the operation of posterior gastro-enterostomy for congenital pyloric stenosis has become more and more popular. This is largely due to the remarkable results of H. M. Richter of Chicago and Charles L. Scudder of Boston. The former reports twenty-two cases, with only three deaths, which surpasses anything thus far recorded in literature. While it is true that Richter and a few other surgeons who have made a special study of the technic of this operation on infants have achieved wonders with posterior gastro-enterostomy, many of our most eminent and skilful surgeons can claim no such results. All surgeons, even including those who recorded the most brilliant results, will admit that this operation is too much of a surgical procedure for the emaciated and moribund infants who have been brought too late to the surgeon, from failure of early diagnoses, or too long a period of medical treatment. It was an experience with exactly this type of cases that led us into a detailed study of this condition, and in turn caused us to devise the new operative procedure to be described later.

Case 1.—Of two cases which came in February, 1915, to Dr. Abt at the Michael Reese-Sarah Morris Hospital for Children from out of the city, one was an extremely emaciated moribund infant, 11 weeks old, who was treated for an acute gastritis before admission. The child started to vomit at 2 weeks, and continued for nine weeks, up to the time when seen by Dr. Abt. There was also a history of constipation. On examination, a tremendously distended upper abdomen, with the characteristic peristaltic gastric waves, was noticed, and a tumor was felt on palpation. In spite of the moribund state of the child, it was decided to operate, as it seemed the only chance the child had for recovery. A posterior gastro-enterostomy was performed, with all the precautions as to shock and technic as detailed by H. M. Richter, Scudder, and Downes of New York. The tumor at the pylorus was olive-shaped, about the size of the terminal phalanx of the thumb. On its anterior upper quadrant was a peculiar ridge of muscle extending from the midportion of the tumor to its duodenal end, and which had an appearance similar to a tuberosity on a bone. The tumor was white, anemic in appearance, hard to the touch, and of the consistency of cartilage. We also noticed that exposing the stomach produced not nearly the shock that handling of the small intestine produced. The latter action caused the child to become pulseless, and to stop breathing. When the small intestine was returned into the abdomen, and the operation stopped for a time, the pulse reappeared, and the breathing became regular again. When the small bowel was handled again, the child again went into a complete collapse. The duration of the operation was twenty-five minutes. The patient did well for ten days, when it started to vomit. This continued for thirty-six hours, when the patient collapsed and died.

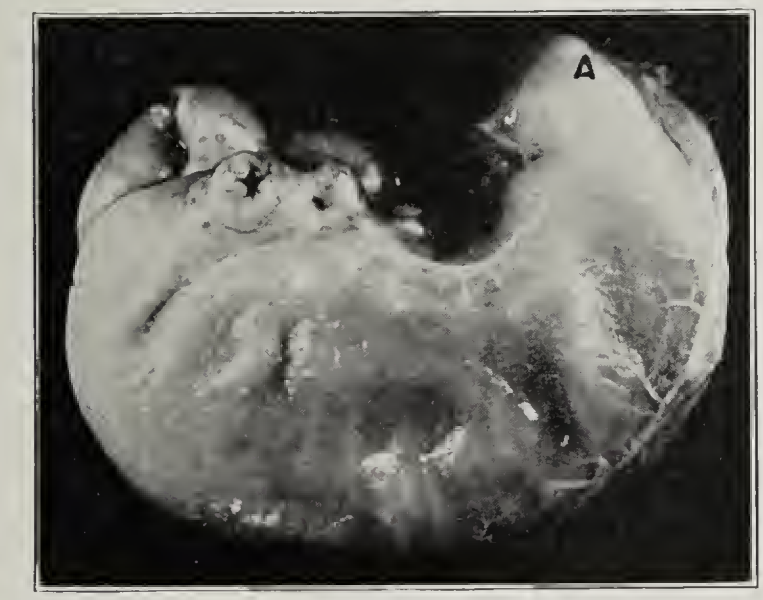

Fig. 1.—Tumor with pyloric ridge (*A*).

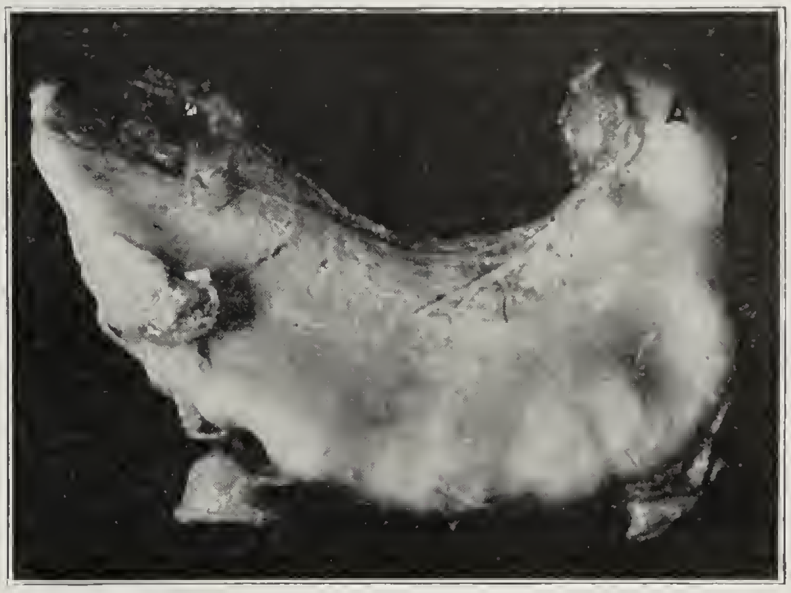

Fig. 2.—Tumor with pyloric ridge (*A*).

Case 2.—The second case was that of a child, 8 weeks old, who had vomited for six and a half weeks, who was also in a moribund condition. Posterior gastro-enterostomy was performed. The stomach was extremely dilated. The pylorus had the typical tumorlike enlargement, with the usual ridges on its upper anterior quadrant. The child went into collapse, and died six hours after the operation. Duration of the operation was twenty-two minutes.

Necropsies.—The necropsies showed that the stomach in both cases appeared to be more the normal size than at the time of the operation. Both stomachs were put through the water test, and both gastro-enterostomies appeared water-tight. In the stomach of the first case a 14 F. catheter could be passed through the pylorus, but none in the second case. Both cases had the typical tumor, with its ridge, as described above (Figs. 1 and 2). On cross section (Fig. 3, the pylorus revealed the enormous hypertrophy of the circular muscles, and in some areas also a hypertrophy of the longitudinal muscle, especially where the ridgelike processes appeared (Fig. 3A). The intermuscular connective tissue bundles (Fig. 4) were also enlarged, and seemed to be involved in the process. This coincides with the findings of Dr. Abt, in 1900, and Lewis and Grulee.[1] The mucous membrane was thrown into longitudinal folds (Fig. 5), and was redundant. It was infolded and compressed by the surrounding hypertrophied muscular tissue.

We believe that these congenital pyloric stenosis cases can be divided into two classes:

1. A. Large tumors with almost complete compression of mucous membrane and complete obstruction.

B. Small amount of hypertrophy of muscularis, but with almost complete compression of the mucous membrane, and complete obstruction.

2. A. Large tumors, with only partial compression of the mucous membrane, and only partial obstruction.

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* From the Michael Reese-Sarah Morris Hospital for Children, and the Morris Institute of Medical Research of the Michael Reese Hospital.

[1] Lewis, Dean, and Grulee, C. G.: The Pylorus After Gastro-Enterostomy for Congenital Pyloric Stenosis, The Journal A. M. A., Jan. 30, 1915, p. 410.

B. Small amount of hypertrophy of muscularis, with only partial compression and only partial obstruction.

We believe that many of the so-called pylorospasms which are treated medically with good results, but show recurrence of symptoms from time to time even into adult life, belong to the class of hypertrophy, with partial obstruction. Such cases have been recorded by Marie, Russell and Landerer, and some of these have later come to operation.

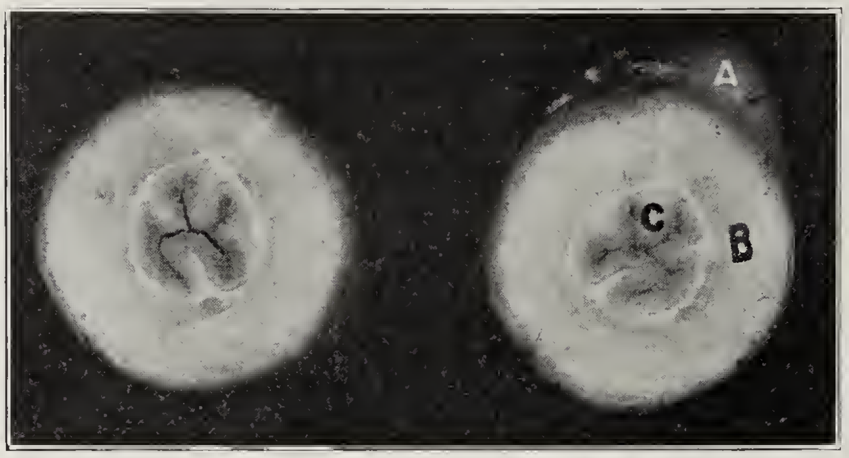

Fig. 3.—Cross section of pylorus; *A*, muscular ridge; *B*, circular hypertrophied muscle; *C*, the infolded membrane.

The new surgical procedures which we have devised are based, first, on the pathology described in the foregoing, and second, on the results from animal experiments.

Ramsteadt, who made a longitudinal incision through hypertrophied muscle, down to the mucosa, and Nicolls, who made a V-Y-shaped incision through the muscularis down to the mucosa, produced only a slight gaping of muscle and herniation of the mucosa at the site of the pylorus. Weber, who modified this slightly by suturing at right angles to the long axis, had not much success, since it was difficult to suture the hard, cartilage-like, hypertrophied muscle in the transverse direction and make it hold. It is evident from Figure 5 that the Ramsteadt, Nicolls and Weber operations produce a hernia on only one side of the pylorus. They do not reduce the infolded mucous membrane, and do not reduce the cartilage-like, hypertrophied musculature, so that the peristaltic waves can pass over the pylorus.

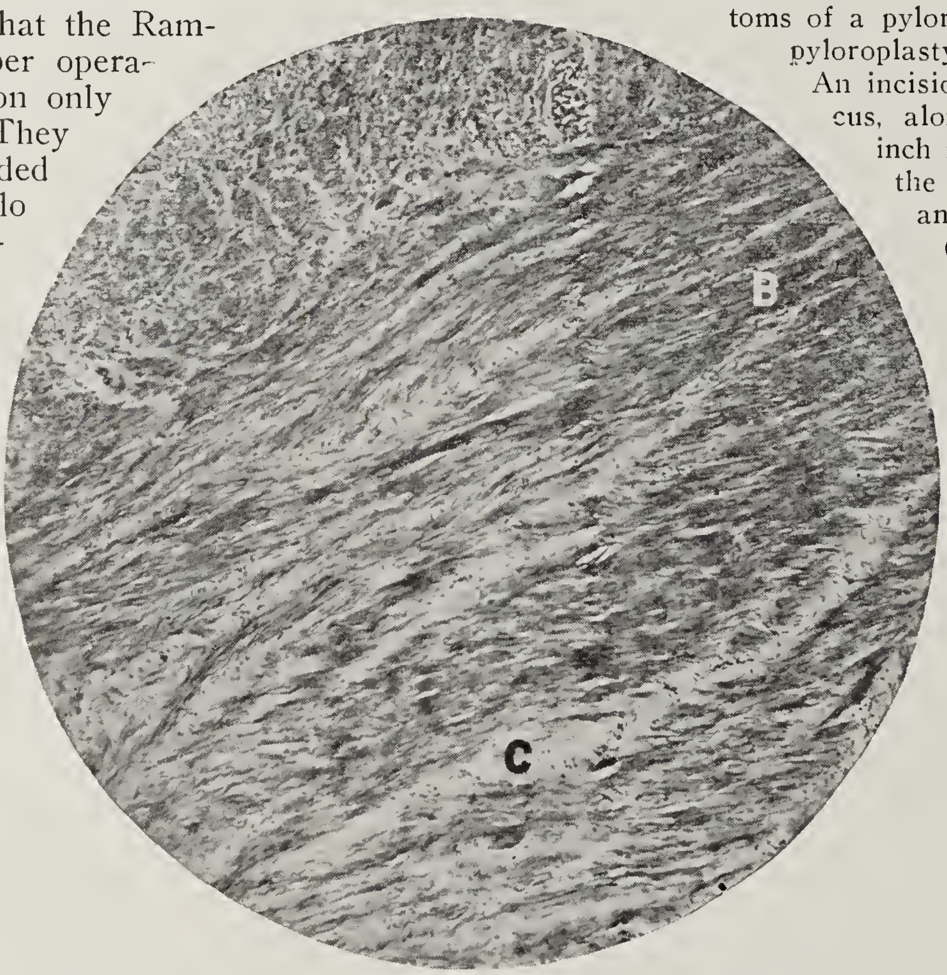

Fig. 4.—*B*, intermuscular connective tissue bundles; *C*, hypertrophied muscle.

I have demonstrated[2] how easily the mucous membrane can be shelled out by everting the muscularis. Since publishing the report of this work, I have performed fifty-six pyloric closures, with gastro-enterostomy by this method. By fluoroscoping these animals, we found by separating the mucosa from the muscularis that we would get a paresis of the pylorus, which would last from two to twelve weeks. On the other hand, in a series of animal experiments, a report of which will appear in print later on, in which we resected one half of the circumference, and one half of the length of the pylorus and pyloric antrum, we reconstructed the resected half by two superimposed free fascial transplants. No paresis occurred. To the contrary, this reconstructed pylorus, with its one-half normal intact mucous membrane and muscularis, and its other half of fascial transplants, showed on fluoroscopic examination a perfectly normally functioning pylorus. When the mucous membrane is separated from the muscle, we separate Meisner's from Auerbach's plexus, which probably accounts for the paresis of the pylorus. This is the first essential step in the pyloroplasty. By cutting down to the mucosa and shelling it out, we reduce the folds of the infolded mucous membrane (Fig. 5), and produce a paresis of the spastic pylorus. The second part is to reconstruct the hypertrophied musculature to its normal thickness. This can be performed by either cutting away the inner circular layer, or utilizing it as a plastic flap, as will be shown in the following steps in four cases operated on by this method.

1. TYPE A.

Case 3.—A baby, aged 3½ weeks, was admitted to Dr. Abt's clinic at the Michael Reese-Sarah Morris Hospital for Children, with all the typical signs and symptoms of a pyloric stenosis. Operation of a pyloroplasty was performed, as follows: An incision, 1 inch above the umbilicus, along the right rectus, and 1 inch in length, was made through the skin. This was retracted, and a slight curved incision (Fig. 6) was made through the anterior sheath of the rectus. This was carried through the abdominal wall to the peritoneum, and the peritoneum opened. A fine gauze sponge was placed immediately into the abdomen to prevent evisceration. A fine catheter was now passed by mouth into the stomach to allow the collapse of the enormously distended stomach. A small retractor was placed in the right side of the incision, and slow traction was made. With the index finger hooked into the lesser curvature near the pylorus, I was able to deliver the hypertrophied pylorus into the wound without bringing any other portion of the stomach or bowels into the wound. The pylorus was now grasped between the thumb and index finger (Fig. 7) and a longitudinal incision was made over the upper anterior quadrant of the pyloric tumor, and slightly beyond each end of it, down to the mucosa. If one should hesitate to use the sharp scalpel here, for fear of injuring the mucosa, he could make a superficial incision into the tumor and divide the deeper portions to the mucosa, with the handle of the scalpel. The hypertrophied musculature cannot be everted so easily as described in pyloric closure, but one side of the musculature can be grasped with fine gauze by the assistant, while the operator makes pressure with the thumb and index finger from below. Then a Kocher dissector, with the aid of the scalpel, was used to free the mucosa from each side of the divided muscularis until it was almost completely shelled out. The mucosa separates very easily; in fact, much easier than it does on the normal pylorus, either human or animal.

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[2] Strauss, A. A.: Two New Methods of Closure of the Pylorus for Pyloric and Duodenal Ulcer, The Journal A. M. A., Oct. 31, 1914, p. 1525.

The muscularis was now everted as much as possible, and a very fine scalpel (Fig. 8) was used to divide the muscle tumor longitudinally into two layers of equal thickness, a deep and a superficial, and the incision thus made was carried lateralward by a specially constructed angle knife almost to the edge of the divided muscle tumor. This newly made flap was everted (Fig. 9). The opposite side was then treated in the same way. The everted edges were closed with No. 00 fine waxed silk interrupted sutures (Fig. 10). A small piece of free transplant from the great omentum was sutured with four interrupted waxed silk sutures over the pylorus to cover the raw surfaces (Fig. 10, inset).

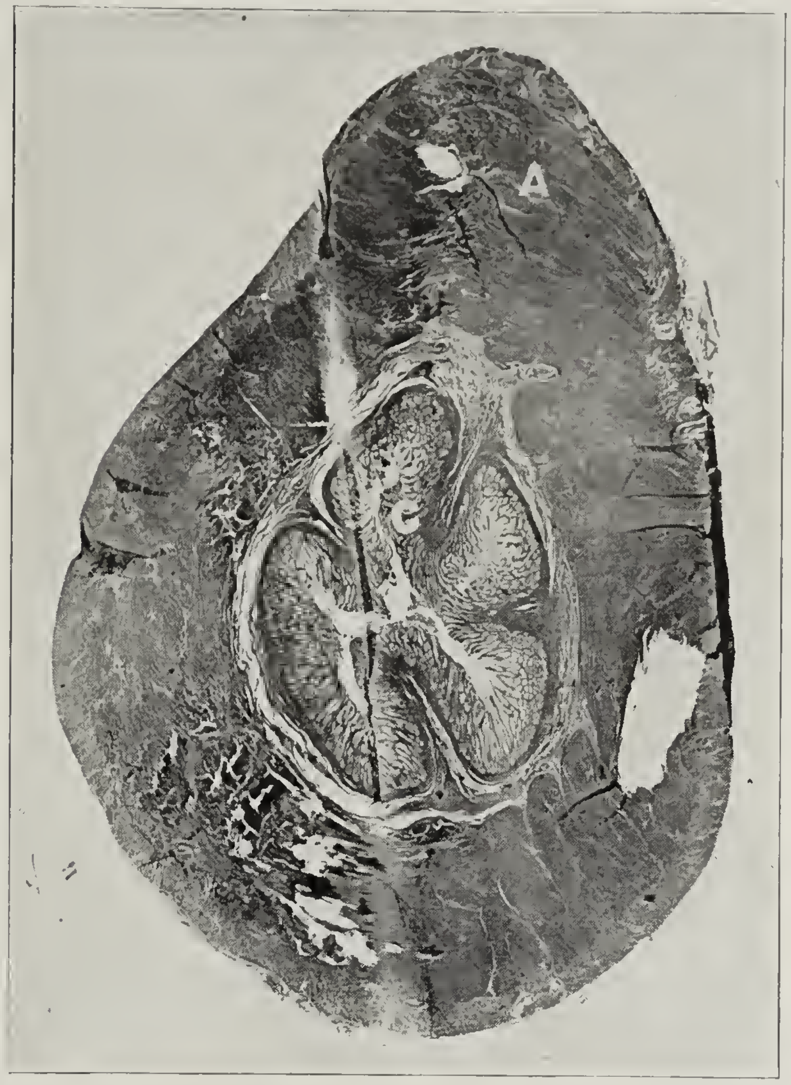

Fig. 5.—Photomicrograph; *A*, hypertrophied muscle; *C*, infolded membrane.

We now had a reconstructed pylorus, with about the normal thickness of muscle, and plenty of room for the unfolded mucosa. The entire operation did not take over ten minutes, and seemed to be devoid of shock. The abdomen was closed with a slight imbrication of the walls, as one would use in an inguinal hernia. Interrupted chromic catgut was used. Two tension sutures of heavy waxed silk also were used. I believe the imbrication will prevent hernia and evisceration. The patient was now turned over to Dr. Abt for the after-care. He made an uneventful recovery, was given water a few hours after the operation, and mother's milk in twelve hours. He quickly gained in weight. There was no vomiting, no gastric peristalic waves were to be seen, and the patient had normal bowel movements. The patient was fluoroscoped and roentgenographed at the end of twelve weeks. The pyloric function was normal, and the emptying time of the stomach was normal. The patient is now far beyond his normal weight for a baby of that age.

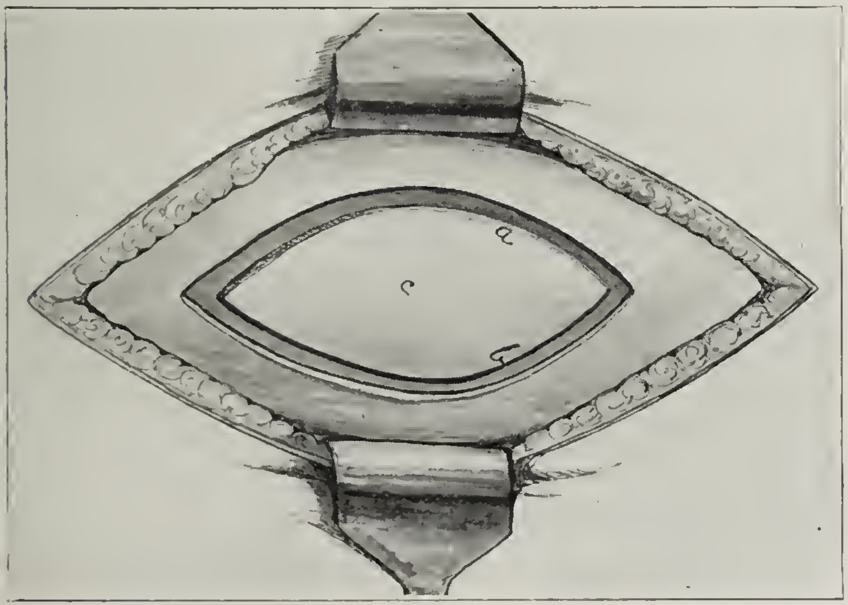

Fig. 6.—Incisions: *a*, first incision; *b*, second incision; *c*. sheath of rectus (anterior).

Case 4.—With my colleagues, Dr. George L. Davenport and Dr. Julius Hess, I saw a second case with all of the characteristic symptoms and signs of pyloric stenosis. I persuaded Dr. Davenport to try the above-described method. He very cheerfully permitted me to direct the steps of the operation. Local anesthesia was employed. The operation was performed by him with perfect ease in ten minutes. The patient was turned over to Dr. Julius Hess for the after-treatment, made an uneventful recovery, and is gaining weight rapidly. No gastric peristaltic waves could be seen following the operation.

Cases 5 and 6.—In a third and fourth case which came to Dr. Abt, operation was performed in the same way, and the patients were turned over to Dr. Abt for the after-treatment. Both have made uneventful recoveries.

1. TYPE B.

When the hypertrophy is very marked, we shell out the membrane, but instead of making a plastic flap of the tumor we remove the larger portion of the inner circular muscle. This procedure we have performed thus far only experimentally on dogs.

SECOND METHOD

When there is a small hypertrophy of the muscle tissue with almost complete compression of the mucous membrane, we make a second curved incision (Fig. 6 *b*) through the anterior sheaths of the rectus, and remove the oval flap with some of its muscle. After freeing the mucous membrane of the pylorus, we insert this free fascial transplant, as in Figure 11, which is covered with a free transplant from the great omentum with four interrupted fine silk sutures. This method has been performed on ten dogs, which were

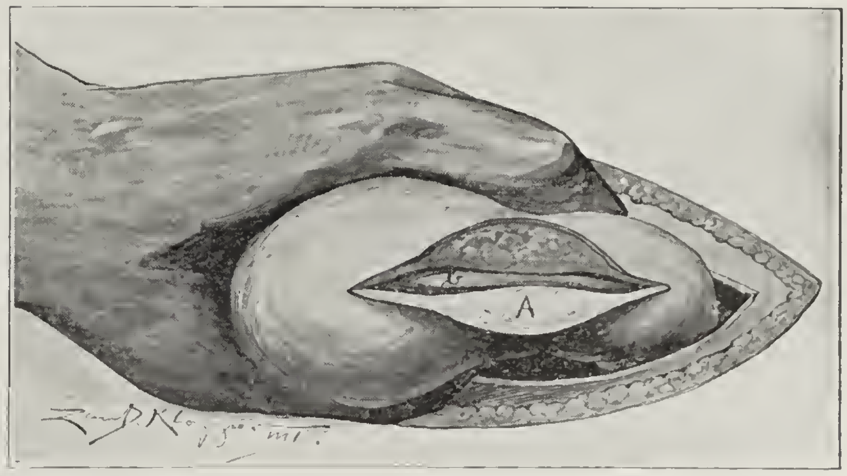

Fig. 7.—*A*, muscle tumor; *B*, the mucosa.

later fluoroscoped and roentgenographed, and killed at the end of six months. The pylorus was functionating normally, and the transplant organized without any cicatrization (Fig. 12). There seems to be a slight compensatory dilatation of the stomach wall opposite the transplants.

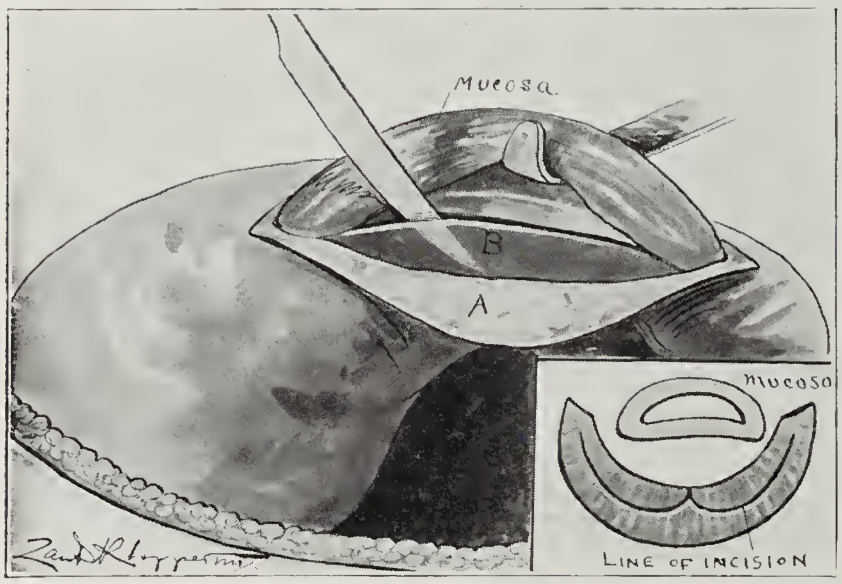

Fig. 8.—*A*, muscle tumor; *B*, internal layer of muscle; inset, transverse section.

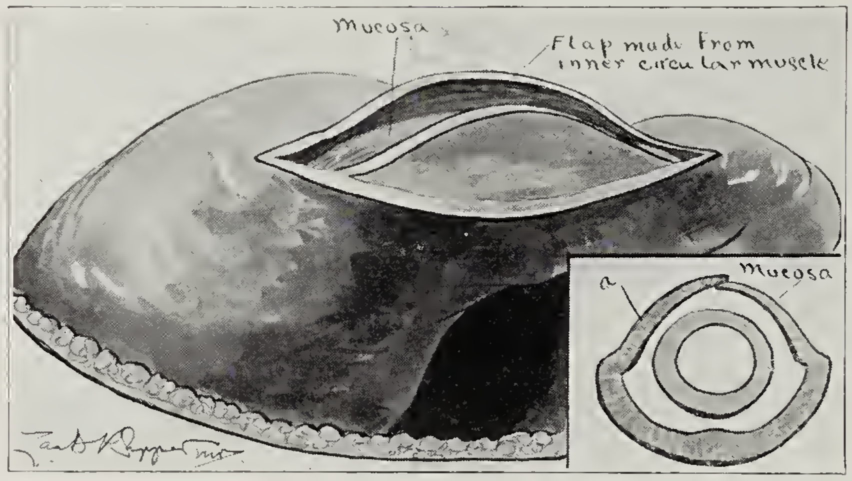

Fig. 9.—Muscular flaps turned out; inset, transverse section: *a*, muscularis.

ETIOLOGY

As regards the etiology of this condition, there are two views: first, that it is a congenital hypertrophy which later produces the spasm; and, second, that it is a physiologic hypertrophy, produced by the hypermotility and spasm of the musculature of the stomach. In order to answer this question, Dr. Abt and I are conducting some animal experiments at the Morris Institute for Medical Research of the Michael Reese Hospital. The basis on which we are working is as follows: If this condition is a physiologic hypertrophy produced by hypermotility and spasm, we ought to be able to reproduce it by producing spasm and hypermotility, and if this physiologic effect does not produce a hypertrophic tumor, such as we find in congenital stenosis, it would speak highly for the congenital origin of this condition. To prove this, the following experiments were performed:

Several groups or series of young dogs, from 6 to 10 days old, were used. The pylorus was exposed and the mucosa shelled out for half of its circumference. A fine free fascial transplant was sutured to the partially shelled out mucosa and sutured so as to produce the infolding, such as is seen in Figure 5. This infolding produced an obstruction which would barely allow a fine probe to pass through. In other words, we tried to reproduce the pathologic condition as found in congenital pyloric stenosis. The animal vomited, and had hypermotility and spasm, but no tumor developed.

On a second series of animals the foregoing experiment was performed, plus the cutting of the splanchnic nerves.

On a third series now being done the same experiment is being reproduced, plus stimulating the vagus nerves. This part of the experiment is accomplished by placing two fine insulated sterile wires around the vagus nerve and allowing them to come through the wound. In this way we are able to stimulate these nerves and produce a hypermotility as often as we care to do so.

On a fourth series of animals, after the stomach was opened, a foreign body was placed into the pylorus of sufficient size so it could not pass through but would allow a small amount of food to go through the pylorus. This foreign body was so sutured that it could not be regurgitated back into the stomach.

All of the experiments just mentioned are in addition to some others which will be described in detail in a later paper. They all produced hypermotility, vomiting and some spasm, but no hypertrophy of the pyloric muscles, such as is seen in congenital pyloric stenosis.

These experiments certainly speak highly for the congenital origin of this condition. Coutley, who found a pyloric stenosis in a 7-month premature infant, also speaks highly for this view.

Those authors who set forth the argument that, if it was congenital, the symptoms should start at birth, and not two or three weeks after birth, can be answered in the following hypothesis: The new-born infant for two or three days after birth gets but a few drops of colostrum, and a very small amount of milk. That the amount of milk in the first two or three weeks only gradually increases, we also know. We believe that like all other internal organs, and like other physiologic functions in the body, the stomach does not reach its full physiologic limit, especially as to motility, until that time. That is to say, the newly born infant has a very small amount of muscular activity, but this physiologic action is gradually developed and does not reach its full limit until two or three weeks after birth.

We are now carrying out some fluoroscopic examinations of newly born infants to prove this point. In a child born with a congenital hypertrophy, if such is the case, the slight opening left in the pylorus is sufficient to allow the undeveloped peristaltic waves of the first few weeks to force the food through, but the constant high tension to which the musculature of the

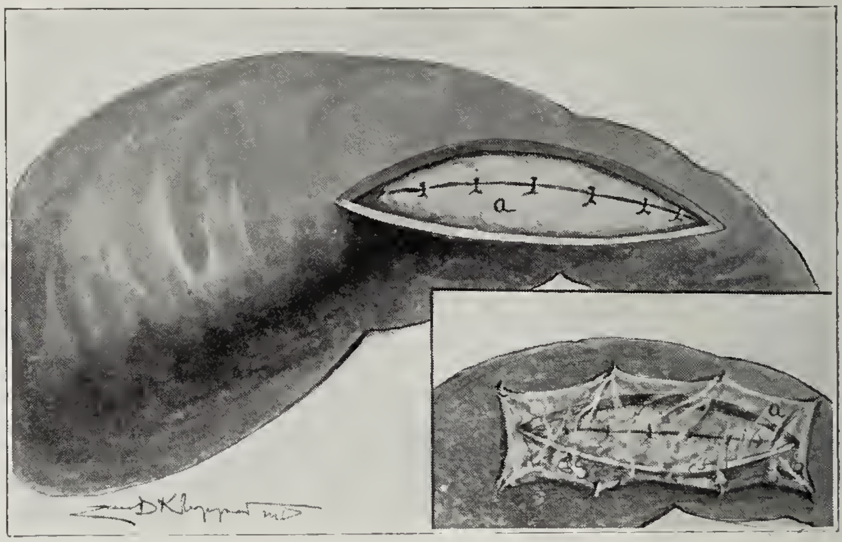

Fig. 10.—The newly made muscle flap sutured; inset, *a*, free transplant of great omentum covering field of operation.

stomach is forced finally throws it into a spasm which helps to close the pylorus, and produces all the subsequent characteristic symptoms.

We believe that one of the greatest arguments against the physiologic origin of this hypertrophy is that in a physiologic hypertrophy that portion of the stomach which undergoes the greatest muscular activity would show the greatest amount of hypertrophy. It is well known, from a mechanical standpoint, that there is less muscular motion immediately in the region of the pyloric ring where this tumor occurs than there is in the antrum of the pylorus, where the muscular movement of the peristaltic waves is greatest. If this is true, the tumor should appear in the antrum rather than at the place where it is found. It is also very hard to conceive that this tumor should not have a gradual ending on the antrum and on the duodenal side, if it is due to the physiologic hypermotility and spasm, whereas, as a matter of fact, it ends abruptly. It is also contrary to any knowledge we have of conditions in other parts of the body, and the rate of tissue growth, that such a tremendous amount of hypertrophy should be produced as we have seen in infants who were operated on at the end of one week after birth.

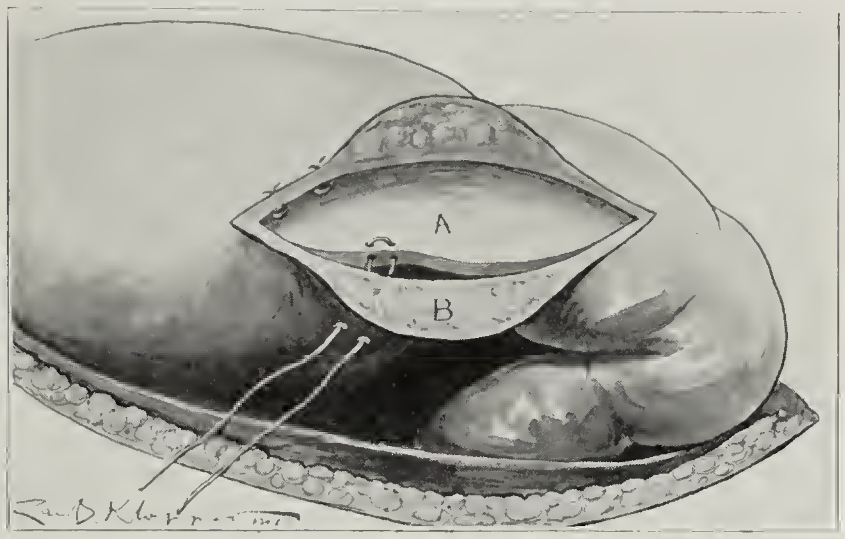

Fig. 11.—*A*, fascial transplant from anterior sheath of rectus; *B*, muscle tumor.

CONCLUSIONS

The advantages of the above-described methods of pyloroplasty over posterior gastro-enterostomy are:

1. The incision required is very small, in contradistinction to that necessary in performing posterior gastro-enterostomy — large enough to deliver the partially distended stomach, transverse colon, and then to find the right loop of jejunum.

2. Those who have performed gastro-enterostomies in these infants will appreciate the saving of a tremendous amount of shock thus secured.

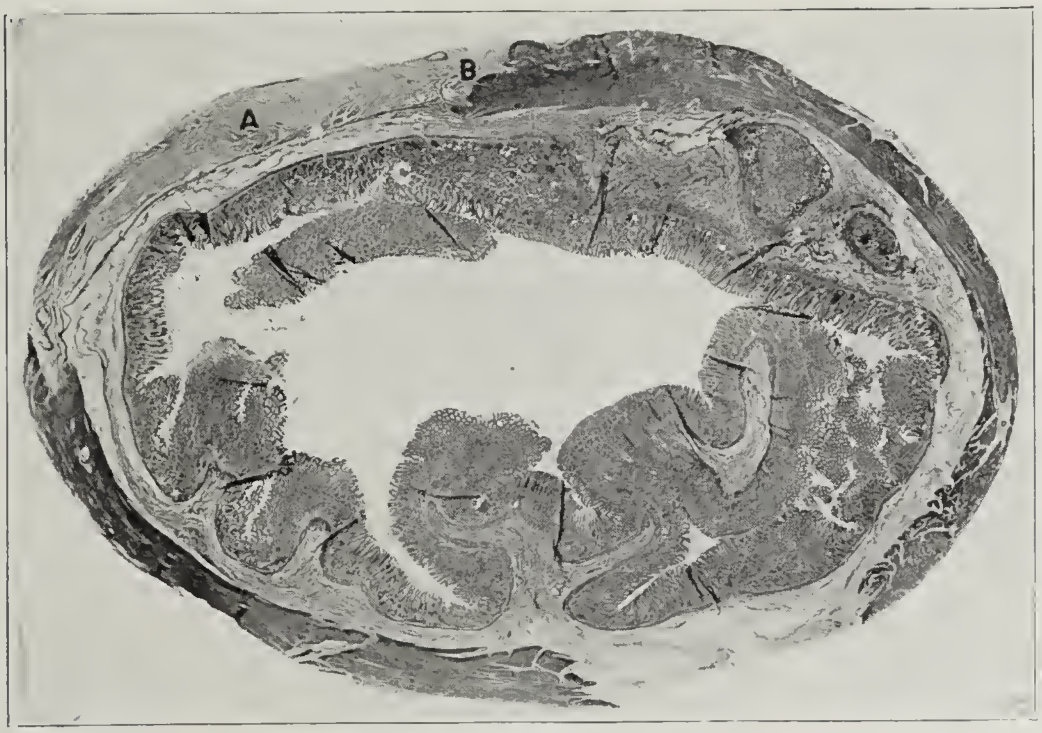

Fig. 12.—*A*, fascial transplant; *B*, union of transplants with muscular tissue; *C*, mucous membrane.

3. The methods of operative procedure described cover every form of pathologic condition so far found in congenital pyloric stenosis.

4. The operations reconstruct a pathologic pylorus to a more normal pylorus, particularly as to its lumen and enormous thickness of musculature.

Finally, the normal anatomic relation of the stomach to bowel is preserved by the pylorus remaining the normal connecting tube between stomach and duodenum. The developing liver and pancreas in the infant, which we know from experiments in physiology are stimulated reflexly by food passing through the duodenum, must certainly be considered in a more normal condition here than with a closed-off pylorus, as occurs after a posterior gastro-enterostomy.

Moreover, the duration of the operation is one-third the time taken by posterior gastro-enterostomy.

The most important fact regarding this operative procedure is that these children come back from the operating room with no more shock than from the smallest minor operation. The projectile vomiting has ceased, no peristaltic waves are seen, they take their nourishment, and do not appear ill at all, as one would expect from an abdominal operation.

30 North Michigan Ave.

A Unique Work for Tuberculous Children.—The annual report of the North American Children's Sanitarium for 1914-1915 gives a history of the movement started in 1901 for the relief of poor children in Philadelphia during the hot months of summer. Since then this movement has been supported almost entirely by what has become a seasonal feature of Philadelphia life known as "porch parties." After a few years a seaside sanatorium for the treatment of tuberculous children was founded and much good has been done. The active and consulting staff of the sanatorium includes a large number of the more prominent surgeons and physicians of Philadelphia and Atlantic City, where the sanatorium is located. Prior to 1914, the sanatorium was supported wholly in the manner stated above with the assistance of the newspaper which founded it. In 1914, owing to the war, the income of the sanatorium fell off to such an extent that it was felt that it would have to be partially closed down, but an appeal made to the public by the newspaper, supplemented by the surgeons who compose the executive staff, resulted in very gratifying contributions which enabled the managers to keep the hospital open to its full capacity of thirty-six beds and even to increase it to forty-five. Substantial and commodious buildings completely equipped for treating particularly surgical tuberculous affections in children are owned by the sanatorium management. Since the sanatorium opened in 1910, 150 children suffering with tuberculosis of the bones and joints have been admitted. Of these, 114 have been discharged and thirty-six still remain.

OXYCEPHALIC EXOPHTHALMOS

WITH TRAUMATIC RUPTURE OF BOTH EYES[*]

RALPH A. FENTON, A.B., M.D.
PORTLAND, ORE.

Tower skull is so generally associated with mental deterioration that such patients are rarely studied by the ophthalmologist, but drag out a miserable institutional existence. The case herewith reported presents an unusual combination of unaffected mentality with the most excessive deformity and the severest ocular complications.

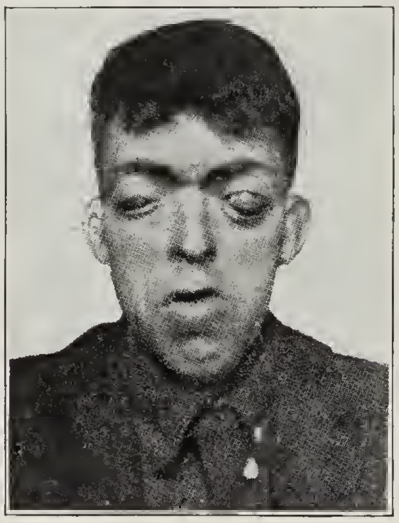

Fig. 1.—Front view, before rupture of left eye, after lid repair, December, 1914.

A. L., white man, aged 47, parentage American for several generations, has had four brothers and four sisters; all relatives are long-lived, strong, healthy and of large frame. This man stands 6 feet 2 inches, and if his shambling, bowed posture were straightened he would be 2 or 3 inches taller. His hands are large and knotty from manual labor, his feet very large, splayed outward and flat. He has a characteristic "pituitary" slouch forward of the neck between the shoulders, and his gait and posture in walking are gorilla-like. He is unmarried, but considers his sexual powers normal; the sexual organs are of normal size and development.

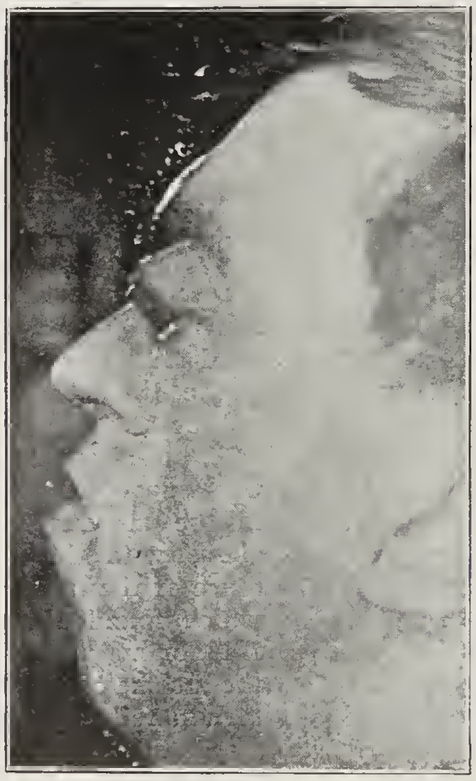

Fig. 3.—Side view, after rupture had healed, February, 1915.

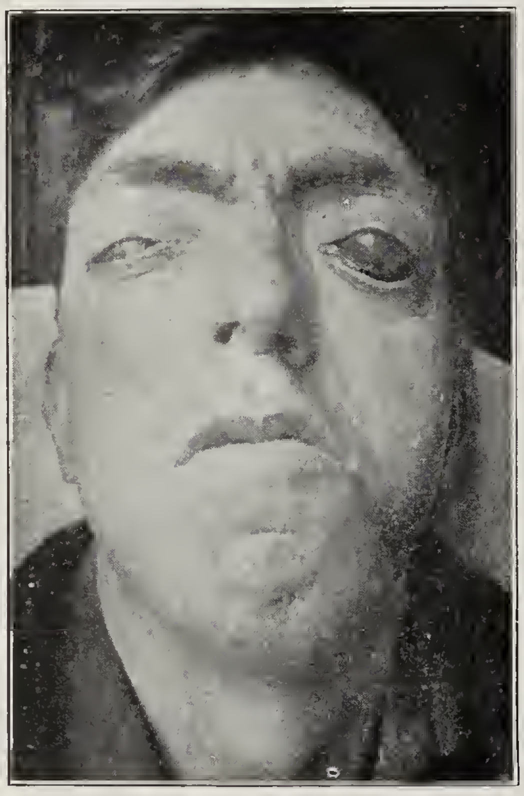

Fig. 4.—Front view, same time as in Figure 3.

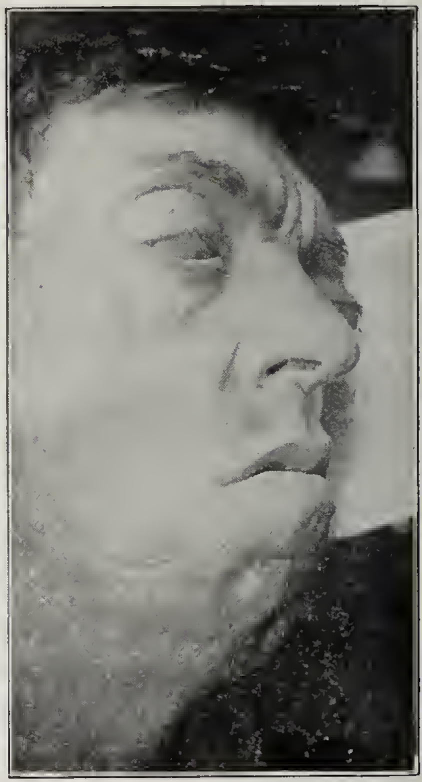

Fig. 5.—Three-quarters view, same time as in Figures 3 and 4; the left eye in this view projects as far as the nose.

His vision was somewhat defective in childhood, so that he did not go to school much; and his peculiar head and ugly face aroused cruel comment and made him rather shy and retiring. He was brought up on a farm, and since maturity has done various sorts of heavy work in lumber camps and in land clearing. When 39 his right eye was torn open and blinded by a flying fragment of a broken claw hammer. His general health has always been excellent, save for an attack of measles at 40, from which he was in bed for four days, and after which his sight failed somewhat. Previous to that time he had always been able to read newspapers in comfort, but within a few months his vision was reduced to the large headlines.

The remaining (left) eye seemed to protrude more and more after this attack of measles, and he had several severe corneal ulcers, which healed with much scarring and visual loss. The increasing exophthalmos, probably now due to the postfebrile softening of the sclerocorneal coat, and consequent lengthening of the globe, pushed the lower lid down more and more, and finally everted it altogether.

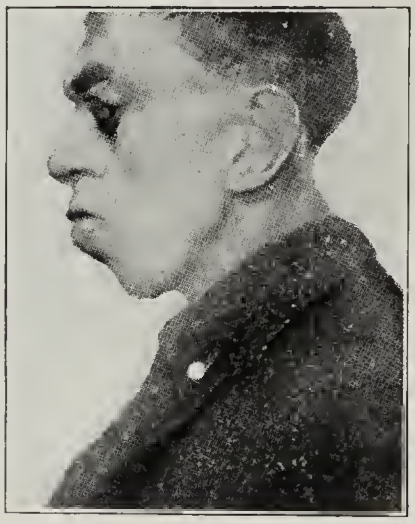

Fig. 2.—Side view, same time as in Figure 1.

For this complete ectropion he came to us in November, 1914. The Ziegler cautery puncture was extensively made at one sitting under cocain, with rather pronounced reaction; the eye was kept open and filled with petrolatum, and after four weeks the scarring had restored the lid margin into contact with the globe. At this time refraction was attempted, and it was found that vision had improved with correction of the lagophthalmos from 2/200 to 5/200; — 7.00 sph. ⌢⌣ — 3.00 cyl. ax. 180 degrees gave 12/200, but this was not prescribed at that time; he was cautioned to wear protecting goggles but neglected to obtain these.

January 10 he was brought in with the lids enormously swollen, conjunctiva chemotic and anterior chamber full of blood. The eye had been struck by a flying branch, rupturing the sclera subconjunctivally, just back of the limbus and in front of the internus insertion. Vision, light perception. He was put to bed, with iced compresses and atropin; a slow iritis was gradually controlled, and he went home in four weeks with about the same vision as before the accident. There is a slight increase in the photophobia which had annoyed him ever since his attack of measles.

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[*] Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The present condition, then, as shown in Figures 1, 2, 3, 4 and 5, is a total exophthalmos of both eyes, the globes lying outside the anterior margins of the orbit. The right eye is flattened, shrunken, small cornea, vision nil. Left eye, buphthalmos, conical cornea with transverse leukomas; conjunctiva thick and grayish, lids thickened and drooping, but not everted; pupil large, irregular, transversely oval, and disappearing behind the nasal limbus at the site of the recent scleral rupture; at this point lies an extruded patch of uveal pigment. There is divergent strabismus of about 10 degrees; all rotations are limited and difficult; he moves the head instead of the eye. The upper lid is held down voluntarily in the ptosis position to shade the pupil. Vision has come up to 10/100 and photophobia and conjunctivitis are much lessened since March, under —4.00 cyl. ax. 60 degrees, medium smoke tint, constantly worn.

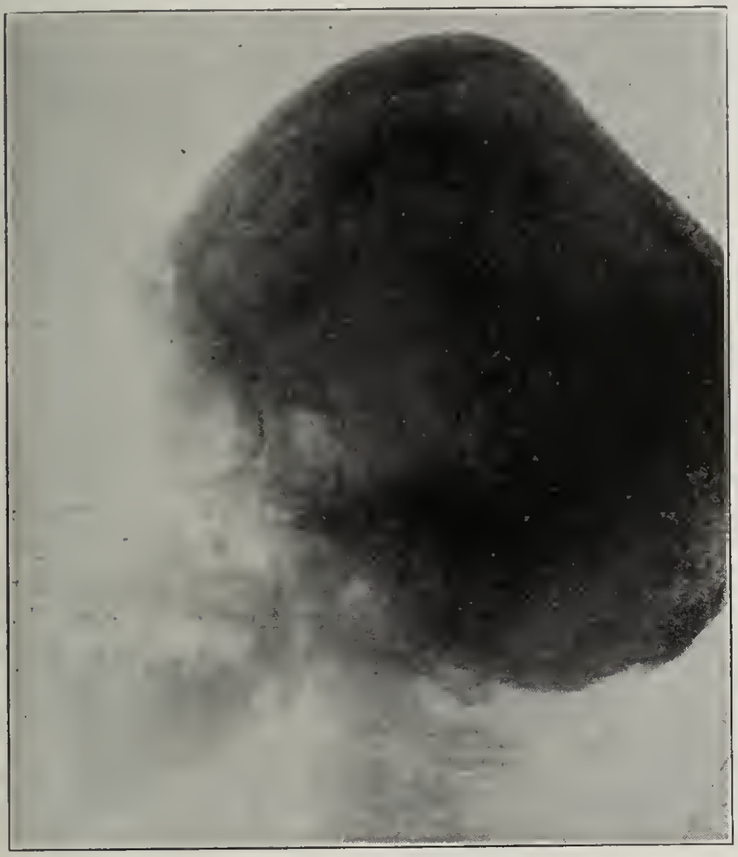
Fig. 6.—Lateral roentgenogram.

There is moderate septal deviation without obstruction, and no nasal discharge is present. The palatal arch is characteristically high, and the teeth in both jaws incline forward, occlude badly, and are much decayed.

The ears are large, but very thin, approaching the Morel type. Partial ossification of the lobular and meatal cartilages has taken place on both sides. Hearing is normal.

In Figures 6 and 7 we note especially the pointed vertex; the triangular form of the enormous skull; the grooves of the frontoparietal convolutions on the inner surfaces of those bones; the apparently normal sella impinging by a thin wall on large sphenoidal sinuses; the lowering and shoving forward of the orbital roof from a horizontal position to an angle of 45 degrees; the large open frontal sinuses, and the almost simian degree of prognathism.

With all this deformity we should expect mental deficiency, occasional motor pareses, or jacksonian attacks; but such things have never occurred. This man is heavily muscled and surefooted, a thorough and capable workingman within his visual limitations, well-informed beyond his opportunities, very fond of good music, kind and neighborly but very shrewd.

Generalization on a single case is fraught with fallacy; yet may it not justify us in revising a little the gloomy prognosis of clouded mind and useless life that attends the birth of such a child? The eye deformity suggests obvious measures of protection, and more than the usual caution should follow up the acute infectious diseases. Nor need we always assume the presence of hypophysial cysts or tumors. This man's large frame is common to all his family. Probably pressure has somewhat modified the activities of his chromaffin system, but he presents none of the dystrophy of the adiposogenital type and none of the cerebral hebetude which authorities lead us to expect.

I would ask the section's opinion whether early double subtemporal decompression might not save such cases from this gruesome catalog of complications. This would be worth the risks incurred, even if it could not, as here, save the alert mind of this unfortunate man from its lifelong incarceration behind so hideous a mask.

801 Stevens Building.

ABSTRACT OF DISCUSSION

Dr. Harold Gifford, Omaha: The photographs of this case give a fine representation of what Virchow called *Spitzkopf*. For some reason this term has been almost altogether displaced in Germany by *Thurmschädel*, our English equivalent being peaked or tower skull. A Greek term like oxycephaly is preferable to these expressions from the vernacular, which often call up an entirely erroneous picture, since it can be used entirely without prejudice as to its real meaning. The fact is there is a great deal of confusion as to the type of skull indicated by these terms. In Germany *Thurmschädel* is generally used to designate a skull which is flattened in front but which runs well out to the rear with a prominence at the site of the superior fontanel; this type being the result of the too early closing of the coronal suture. The typical *Spitzkopf*, such as is shown in the case of Dr. Fenton, is probably caused by the premature closure both of the coronal and the lambdoidal sutures with resultant flattening both in front and behind. Whether the narrowing of the optic canal

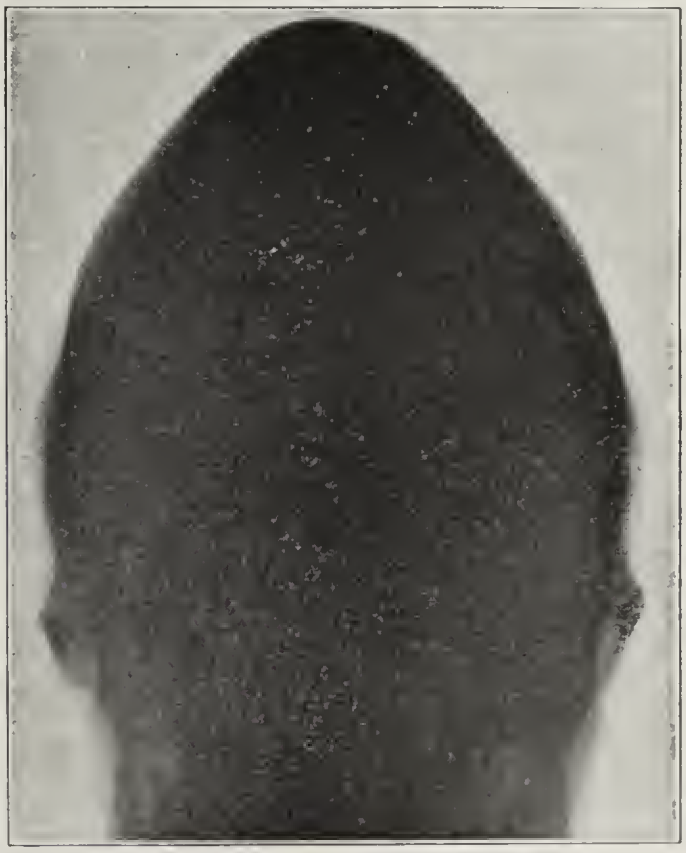
Fig. 7.—Frontal roentgenogram.

which was first observed in these cases by von Michel, is due to the pressing downward and forward of the superior orbital plate or whether the atrophy of the optic nerve is first caused by intracranial pressure, and the narrow optic canal is simply a lack of development corresponding to the small size of the nerve, is a matter of dispute. Following the idea that the displacement of the orbital plate is the main cause of the atrophy, Schloffer has opened the cranium, raised the frontal lobe and chiseled off the superior wall of the optic canal. In the two cases in which he has performed this operation, the visual results have been practically zero; and this is really what we should expect since the injury to the sight in these cases is nearly always produced in early childhood or infancy, and has generally reached the stationary point by the time that most of them are brought to the oculist for treatment. I believe that by keeping in mind the possibility of premature closure of the sutures as the cause of poor sight in infants and children, we might, by early decompression operations, do some good in many cases which hitherto have been allowed to go without treatment until it was too late. Luckily such exophthalmos with resultant corneal ulceration as is shown in Dr. Fenton's cases is very rare, as is the occurrence of ectropion; in fact the only other case of ectropion that I know from oxycephalic exophthalmos is one reported a few years ago by my colleague Dr. Patton. The excellent mental development which Dr. Fenton notes as remarkable in such an idiotic looking individual has been noted by other authors; in fact, but one in twenty of these unfortunate oxycephalics shows marked mental deficiency. This undoubtedly means, as Virchow pointed out, that peculiarities in the shape of the skull have much less influence on the development of the brain than is commonly supposed. An otherwise healthy brain adapts itself to the new conditions and finds room for its growth in other directions, while the poorly developed brain of the microcephalic idiot is the cause, not the result, of its peculiarly shaped skull.

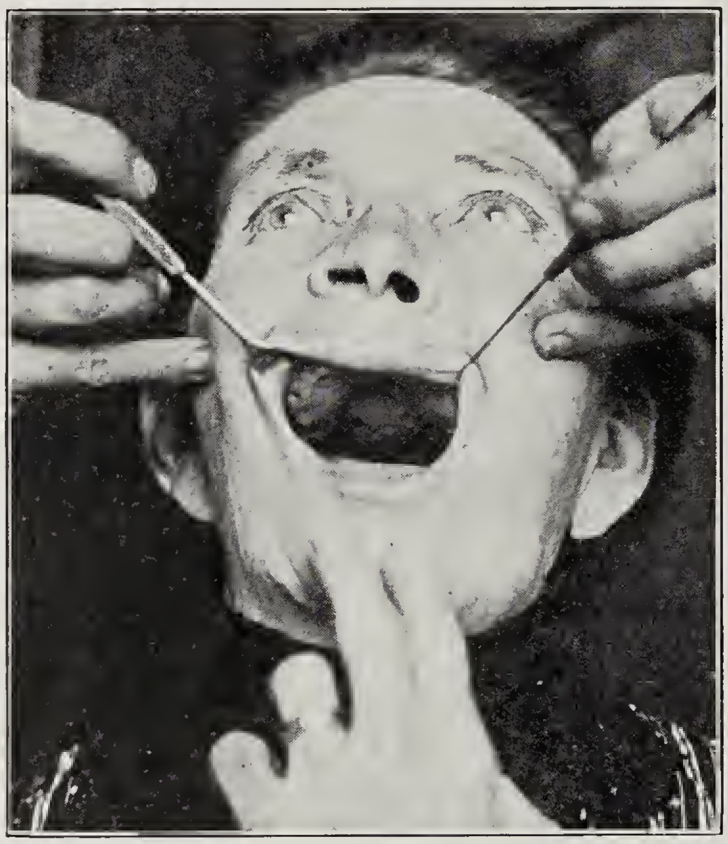

Fig. 1 (Case 3).—Sarcoma of the roof of the mouth. Picture taken May 8, 1908, operation April 20, 1907. At that time tumor was as large as an egg, the nose was closed and the cheeks swollen.

Dr. Edward Jackson, Denver: Since tower skull or oxycephaly began to attract attention in connection with visual disturbance, I have looked for these cases, but I have seen no case of disturbance of vision with very marked skull deformity. I think these cases must be distinctly rare outside of some parts of Europe. Records have been based on a number of oxycephalics in a blind asylum. Dr. Gifford has brought out that the disturbance of vision comes very early in life. The stage of optic neuritis which precedes the optic atrophy is always in early childhood. There are practically no records of such cases except when children were brought into the asylum for the blind very early. As has been pointed out, many cases have shown marked narrowing of the optic foramen. It seems to me much more probable that the essential deformity, the original deformity, is rather in the bones at the base of the skull than in the union of the sutures of the vault. The thickening of the bone leads to the narrowing of the foramen. Trephining has been done too late in life to hope for any good results. We have more to hope for in these cases in the direction of internal secretions than we have from operative interference early enough to be of any benefit.

Dr. Ralph A. Fenton, Portland, Ore.: In regard to the protection of the eyes, this man found bandage pressure extremely painful. It was almost impossible to interfere with the upper lid of the eye in which he sees; so we have protected his eyes by keeping them filled with white vaselin. He does a good deal of work now out of doors where it is dusty. This man happens to be an exception to the general rule. His blindness is a result of ulcers instead of pressure on the optic nerves.

MALIGNANT TUMORS IN AND AROUND THE ORBIT

WITH REPORT OF STARVATION METHOD OF TREATMENT *

E. H. CARY, M.D.
Fellow of the American College of Surgeons
DALLAS, TEXAS

Since the starvation treatment of malignant growths of the upper neck and face has undoubted value, ranging from prolongation of life to a cure, depending on the nature of the case, amount of involvement, age of the patient, character of the operation, etc., I have been led to say a word on the subject and report the twenty-two cases in which operation was performed during the past nine years, two of which were nonmalignant tumors of special interest in which ligation seemed necessary. These cases follow Nos. 1 and 2, in which the patients were not operated on.

Robert H. Dawbarn of New York must be credited with the employment of the idea of starvation for malignant growths in the parts described, inasmuch as he has pointed out the numerous anastomoses of the external carotid artery, and suggested excision after tying each branch of the artery in an attempt to destroy permanently all such connections. He has further shown how futile is any attempt at starvation when the external carotid of the other side is permitted to remain.

My own experience has been so consistently in line with his that it seems worthless to report, unless it may serve to call attention to cases looked on as hopeless, yet not entirely so, and thereby enlist workers here to give that aid which can be given in many cases in which the patients are frequently encouraged to refuse any and all surgical attention.

HISTORICAL

It might be well here to go briefly into the history of ligation for malignant tumors and beg you to keep in mind the difference between ligation and excision.

In regard to the external carotid from the tables of Madelung and Lipps, it was tied for a tumor of any sort about 1830—it was not applied for outspoken malignancy until about 1854, at which period Maisoneuve endeavored to give the method a fair test. He performed unilateral and bilateral ligature collectively seven or eight times, securing no benefit from the procedure. The growths were all cancers of the buccal cavity, tongue and pharynx. Then follows a case of Lannelongue in 1873.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The next record of ligation of external carotid for starvation purposes was by Dr. Joseph D. Bryant,[1] in 1887. Tuffier, a French surgeon, in 1897 reported three cases; all of these were ligation, none attended by favorable result.

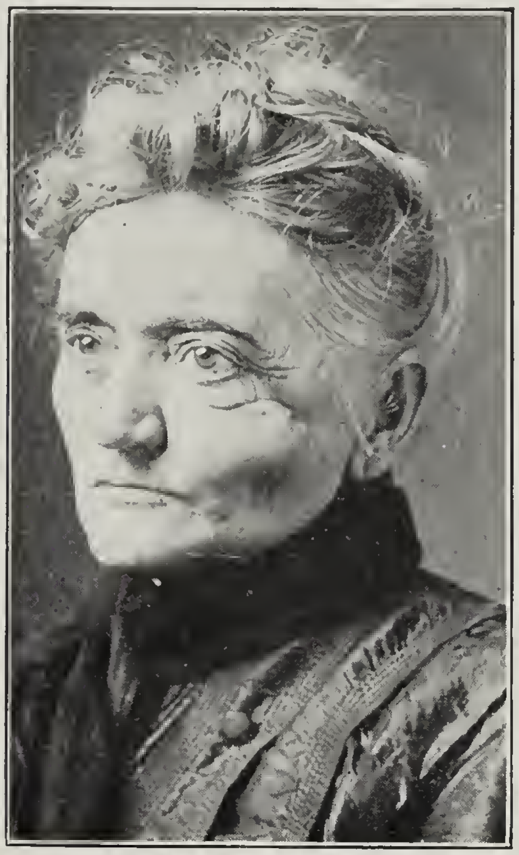
Fig. 2 (Case 5).—Sarcoma. Scar after removal of tumor, which displaced eye outward and upward.

Following this came the masterly essay by Dawbarn, winning the Gross prize in 1902, reporting eighty-three operations of various surgeons on forty-eight patients, over a period of eight years, all practicing his operation of ligation on both sides of each branch of the external carotid with excision, with a tabulated list of cancer twenty-four, sarcoma twenty, no definite report, two, angioma two.

In cases of cancer, life was prolonged for seemingly a short time; the tumors usually showing lack of activity for a few months. In the twenty sarcoma cases, the record was truly remarkable, especially when you understand that these cases were all hopelessly involved and rapidly approaching an end. Out of twenty cases—they being ward cases—only eleven could be traced; one of these was a tumor of the orbit, and the operation was supposed to be of no value, inasmuch as the blood supply is also derived from a branch of the internal carotid. Dawbarn had but two recurrences out of the remaining ten. Taking the three-year limit as a radical cure, he had four definite recoveries out of eight cases which survived the accidents of the first year, these being all far advanced and considered hopeless and ineradicable sarcomatous masses.

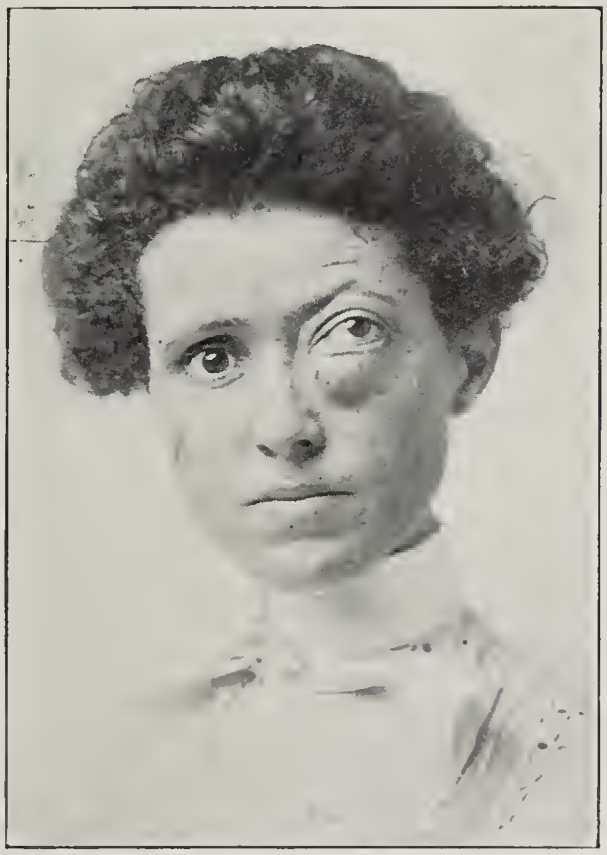
Fig. 3 (Case 7).—Melanosarcoma.

Dawbarn's cases are grouped into three classes in which the excision of the external carotid may be performed:

1. "Those where excision of both external carotid, and to avoid deformity, leave an operable tumor in place, thereafter depending on a closely and regularly maintained observation of growth for a period of years."
2. "Cases where the growth is operable and consequently excised."
3. The third class would comprise those whose cancer is already ineradicable, involving, for example, the base of the tongue, the floor of the mouth, and pharyngeal wall; here nothing is done to the growth, but all lymph nodes are removed in the path of the operation for excision.

First, I shall report two cases typical of others, occurring when the starvation treatment of excision was not practiced.

Case 1.—A sarcoma, involving the antrum on the left side, occurred eleven years ago in my practice. I have never forgotten this big, strong Norwegian, whose life was rapidly destroyed in spite of all that we did. The left side of his face became a tumor mass, sapping his life. The man died after an illness of only three months. The laboratory report showed small round-cell sarcoma. In this case ligation and excision were not practiced.

Case 2.—Another patient was sent to me from Mangum, Okla., ten years ago, with a history of eight years before having sustained a kick from a horse, which broke the nose, changing its relative position, markedly deviating the septum, and blocking the fossa of the right side so that it was impossible for the patient to breathe through the passage when suffering with the slightest cold. Two weeks before coming to me he had developed what seemed to be a maxillary sinusitis with swelling of the right side of the face with more or less discharge from the right nostril. The pain had been so acute that a dentist had extracted all of his teeth, thinking that this would relieve him. His physician was called in and recognized what appeared to be a polypus in his nose and advised him to come to me. I found an immense polypus growing from the ethmoidal membrane, filling the cavity of the nose and extending into and filling the postnasal space. It appeared benign and was promptly removed.

A day or two later an Ash operation, as practiced at that time, was done on the septum. It was straightened, complete drainage established and a favorable prognosis given. It was not long before I found my mistake, for from all surfaces there rapidly appeared new growths; even in the vault of the pharynx nodular masses appeared. A section of tissue was sent to a pathologist for examination, and the whole mass thoroughly removed. Microscopic examination confirmed the belief that it was sarcoma, and was of the round-cell variety. The ethmoid cells commenced to break down, and the right eye protruded and was pushed to the right side. Pain became intense and it was necessary to establish drainage through the inner canthus to the ethmoidal cavity.

Believing the most radical operation of no service, I advised the patient to return home. He went home and the next day, to St. Louis, where he was operated on, dying in two or three days. Ligation and excision were not performed.

These two cases are typical of others in and around the orbit observed by me, in which the disease invariably made rapid progress and the patients died early, regardless of the most complete removal of the tumor, wherever located.

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[1] Bryant, J. D.: Med. News, 1887.

I shall now briefly discuss eleven cases of sarcoma occurring in various parts of the face and neck, with nine cases of carcinoma, along with two other cases, one being adenoma of the tongue and submaxillary space, and the other, a teratoma of the soft palate. I shall not go into details, for much of the history would be tedious and necessarily of little scientific value. In all of these twenty-two cases, ligation and excision were practiced.

SARCOMA CASES

Case 3.—Mrs. D., aged 62, had a sarcoma of three years' growth, involving both antrums. When I first saw her, both of her cheeks were markedly swollen, and she was unable to breathe through her nose. Her mouth being open, a tumor about the size of an egg could plainly be seen, involving the roof of the mouth. The patient had lost in flesh and strength, and it seemed that she could not survive a week. April 20, 1907, the external carotid and branches were ligated and excised on the right side, and two weeks later on the left side. The patient rapidly improved and the tumor diminished sufficiently for her to breathe through the nose. The hemorrhages ceased. The gums receded. The egg-shaped tumor in the roof of the mouth subsided, and the pain, which had been excruciating, disappeared. May 8, 1908, she was seen and we were unable to find pulsation in any of the arteries which had been excised. Figure 1 was taken on that date. The patient went to the county poor farm, and we have a record of her death, three years after the operation, from pneumonia, having lived with her tumors in a fairly comfortable manner, being given opiates for whatever pain she had. There was a pathologic report of the section, but the sarcomas were not disturbed.

Case 4.—Mrs. D., aged 57, had a well-formed subperiosteal tumor lying over the superior maxillary and malar process near the antrum on the left side. There was history of a six months' growth, extremely painful on pressure; the patient said that there was constant pain, evidently due to pressure on the infra-orbital nerve. Oct. 18, 1907, ligation and excision of the carotid on the left side was done, with complete removal of the tumor, which was a large, spindle-cell fibrosarcoma. Two weeks later the opposite side was ligated and excised. After leaving for home the patient did not return for observation. She died eighteen months later, presumably from metastasis.

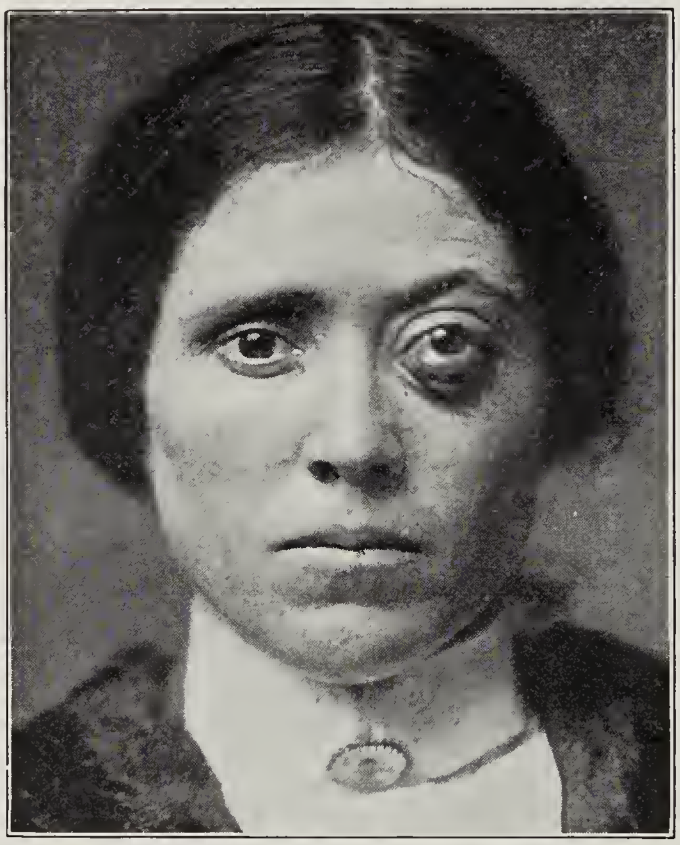

Fig. 4 (Case 7).—Later picture showing return of growth.

Case 5.—Mrs. M., aged 58, had a sarcoma involving the left antrum, extending into the orbit, and pressing the left eye far to the left. In December, 1907, ligation and excision were done on both sides, after which the tumor was removed and the eye replaced (Fig. 2). The patient regained strength, and the tumor area remained quiescent for about a year. This was followed by a slow ulcerating process involving the antrum and the orbital plate, causing the eye gradually to slough with some pain and no bleeding. The patient became addicted to morphin, which her family freely administered, and she died two years after the operation. There were no granulations. It looked as if lowered vitality due to morphinism intensified lack of vascularity to the parts, which slowly sloughed, and the patient died of the complications.

Case 6.—Mrs. C., aged 28, had a sarcoma growing from a perforated septum, closing both nares. It was further complicated by a seven months' pregnancy. One side was ligated and excised, Oct. 15, 1909. Two weeks later the opposite side was, and the tumor removed, the patient making an uneventful recovery. Five and one-half years later she was still living, having given birth to two children since the operation, and is now well.

Case 7.—Miss M., aged 20, had melanosarcoma of the orbit, complicated with hematoma, causing absorption of orbital fat and pushing the eyeball far out to the left. At this time, as the patient refused operation on the external carotids, the internal rectus muscle was divided and the eye was pulled further forward. A small tumor mass extending toward the optic foramen was removed without stretching the optic nerve unnecessarily. The orbital operation was facilitated by the absence of orbital fat, and the eye being pressed back into position, the muscle was stitched; drainage was then left for four days. The patient recovered binocular vision and seemed none the worse for her operation. This patient was operated on, Aug. 1, 1910 (Fig. 3). The pathologic report was a melanosarcoma.

Dec. 28, 1911, the patient returned (Fig. 4), accepting the ligation and excision operation, which was performed. The eye was pushed far out to the left with a tumor mass growing in the orbit. This tumor mass was all removed along with the eye; a circular incision was made near the margin of the palpebral fissure, and after the removal of contents of the orbit, the skin was pressed down into the orbit, covering most of it, allowing a small area of granulation to take place. The same method I have employed with excellent results, when one could leave the orbital fat, giving a smooth surface, as in Case 16, in which it had been removed on account of carcinoma of the conjunctiva. March 10, 1915, the physician reported Patient 7 well with a 22-months-old baby.

Case 8.—S., boy, aged 9, March 10, 1911, gave a history of having had a blow three years before over the inner canthus followed by swelling which lasted for days. In August, 1910, the swelling returned. A tumor involving the orbit, apparently originating in the ethmoidal cells, pressed the left eye outward. The tumor was fairly prominent and had been incised by an investigator for pus. I removed this tumor and cauterized the surface following the carotid operations on both sides. A year later there was a tendency to growth, but the eye was in good position and diplopia had not returned. The patient came to me, Jan. 1, 1914, nearly three years later, with a history of bleeding from the postnasal spaces, severe vomiting and headache. He was blind in the left eye, which protruded to the left side. He had lost his temporal field in the right eye, but retained his nasal field of vision.

Opthalmoscopically the left nerve was greatly inflamed, the eye being pushed well outward, with slight ability to rotate the ball. The right nerve showed the nasal side involved and apparently choked for 6 diopters with the temporal half of the nerve congested, but otherwise distinctly not involved, suggesting that the temporal half was sheathed, while the nasal half was bearing all the brunt of the tumor now involving the chiasm. The tumor had traveled back slowly through the orbital fossa following the nerve to the chiasm, and then the surrounding tissue of the brain. The boy died within the month (Fig. 5).

CASE 9.—Boy, aged 2, had a sarcoma involving the left antrum and extending into the orbit. The eye was very prominent. Operation was performed on both sides, followed by removal of the tumor and with thorough cauterization of all the affected area. This was a desperate case. The child died four months later. The tumor mass had been growing perceptibly for six months.

CASE 10.—G. G., boy, aged 19 years, had an exophthalmic and blind right eye. Vision in the left eye was 20/70. The papillomacular bundle of fibers was intact. An orbital sarcoma involved the optic nerve of the right side. The patient was operated on, May 16, 1912, following ligation and excision of the external carotids and branches of both sides. The orbital cavity was completely exenterated, following a circular skin incision near the margin of the lids, leaving the skin to be transplanted into the bony cavity. The patient made an excellent recovery from immediate operation. The tumor in this case had extended back to the chiasm, leaving only the nasal field of the left eye intact, showing how the function of the optic nerve to the right side and fibers going to the nasal side of the left eye had been destroyed, with their respective fields. Opthalmoscopically the right optic nerve was greatly inflamed from the growth. The left optic nerve on the nasal side was swollen and apparently choked. On the temporal side it was congested, but not swollen or choked, suggesting a separate sheath for each side. Report March 23, 1915; patient living, tumor has not returned, now blind in left eye, married in August, 1913, total loss of vision January, 1914. Is now strong but cannot see and is mentally confused under certain circumstances. I was surprised to learn that he is still living (Figs. 6 and 7).

CASE 11. — Boy, aged 11, had an angioma of the cheek as well as a fibrosarcoma which extended down toward the supra-orbital notch and through disturbance of circulation had caused a subconjunctival hemorrhage into the conjunctival sac. March 2, 1912, both externals were ligated. The angioma was removed from the cheek. The tumor was removed from the brow. A letter March 7, 1915, stated that the patient was well and that there was no sign of return.

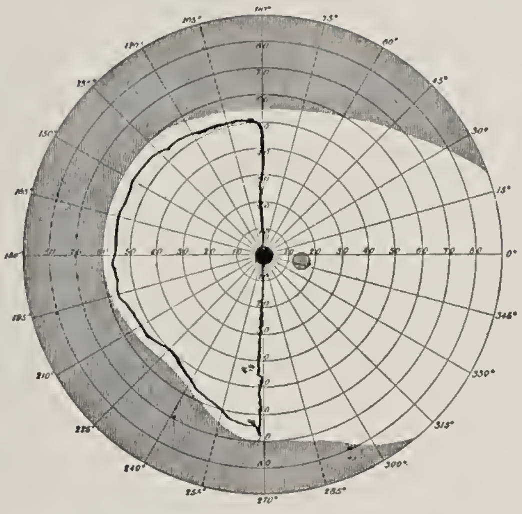

Fig. 5.—Field of right eye in Case 8.

CASE 12.—S., a young woman, schoolteacher, with osteosarcoma, involving subperiosteally the alveolar process of the inferior maxilla, increasing the size of her chin to a marked deformity, complained, March 11, 1912, of pain radiating through her face and head. The growth involved both sides of the inferior maxillary bone to a point one-half inch back of the mental foramen. At the time of ligation and excision of external carotids, I made an incision, thinking I might remove some of the deformity, but decided on investigation to leave it with the hope of shrinkage. This has taken place perceptibly. Three years have passed. She is now living and states that though she has a prominent chin, she is without pain and feels well—better than one year before the operation.

CASE 13.—Mrs. W. H. M. had sarcoma involving the left side of the orbit, beneath the frontal bone, with swelling due to edema extending over her left temple. Sept. 14, 1910, the orbital tumor was removed and examined, and found to be a sarcoma. The patient refused operation on the external carotids at this time, but on Aug. 18, 1911, she returned with edema over the temple from another mass in the orbit. She was now persuaded to have the external carotids and branches on both sides ligated and excised. The mass was not removed. She is at present living at Athens, Texas, and a recent letter states that she is now blind in that eye. Her vision was good when the carotid operation was performed (Fig. 8).

CASE 14.—A boy, aged 12, November, 1910, had a large mass of adenomatous tissue growing on the surface of the tongue, principally the right side, about midway its length. In addition to this, he had a tumor the size of a pullet's egg growing in the submaxillary space of the same side. After ligation and excision of both sides the adenomatous tissue was removed and the base cauterized on the tongue. The tumor, which proved to be adenoma, was also removed and the wound closed. Healing was tardy and interrupted through infection, which yielded to antistreptococcic serum. The patient has been entirely well since.

CASE 15.—Mrs. B., May, 1914, had a teratoma of the right side of the palate. She had had a fibroma removed from the uterus two years before. She had not noticed the least inconvenience from the mass growing between the muscles of the palate until a tonsillar infection was superimposed, when she had difficulty in swallowing and in breathing. Her physician, on inspection, discovered that the oropharynx was almost closed. When tonsillitis had subsided, she was sent to see me. On examination I found half of the oropharynx closed with a mass which pushed her tonsil down. It was smooth and gave no evidence, from appearance either anteriorly or posteriorly, that it was so large. To avoid hemorrhage and to enucleate the tumor, ligation and excision was done on both sides. A teratoma, 2 by 3 inches, kidney shaped, was removed through the separated muscular fibers, following an incision through the mucous membrane in the axis of the fibers. There was no bleeding, and dissection of the tumor was accomplished with the finger and blunt tonsillar dissector. The patient is living and well. The pathologist found connective tissue, cartilage, myxomatous tissue, some epithelial cells and some adenomatous tissue and classified it as a teratoma, not a dermoid.

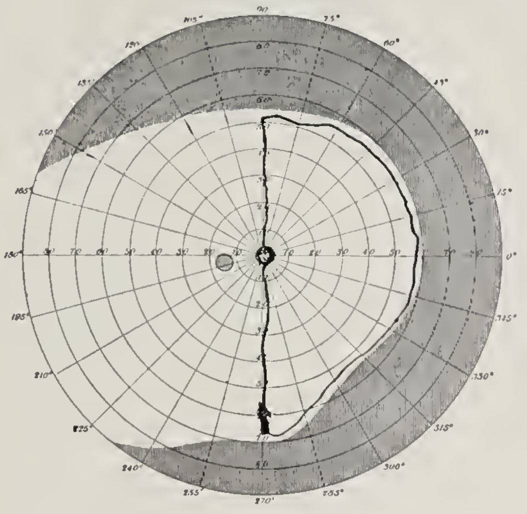

Fig. 6.—Field of left eye in Case 10.

CARCINOMA CASES

CASE 16.—H., man, aged 60, underwent a double excision and ligation, in which a cancerous mass, far advanced, was removed, July 3, 1908, in the region of the superior carotid triangle, it being a metastastic tumor from an old carcinoma of the eye. A complete exenteration had been done fifteen months before. The patient improved for the first two months, holding his own for two months following, and then declined in strength and was advised to go home and was also told that he might expect the worst. Although his life was lengthened, he died some months after the operation.

CASE 17.—T., man aged 61, had a carcinoma of the right side of the tongue which had increased in size and had been recognized for six months. May 15, 1908, the external carotid and branches on one side were ligated and excised, half of the tongue removed and all glands carefully dissected. The right hypoglossal nerve was sewed to the base of the tongue. The patient lost but little blood and slowly recovered from the effects of the operation. Two weeks later the external carotids in the left side with all glands were similarly treated. One year after the operation the patient was alive. Since that time, I have been unable to gain any information as to whether he is living or dead, but concede his death.

Case 18.—J. T. G., man, aged 35, Dec. 1, 1911, had a carcinoma involving the ethmoidal cells. I operated on both external carotids the same day. Some days later all of the ethmoidal cells were removed. The paient died in October, 1912.

Case 19.—B. T. C., aged 48, June 5, 1911, had carcinoma of the ear. The carotids of both sides were operated on, all glandular involvement and a hard carcinoma mass removed from back of the cartilage of the left ear. The ear was replaced and the patient slowly made a good recovery and was living when last heard from.

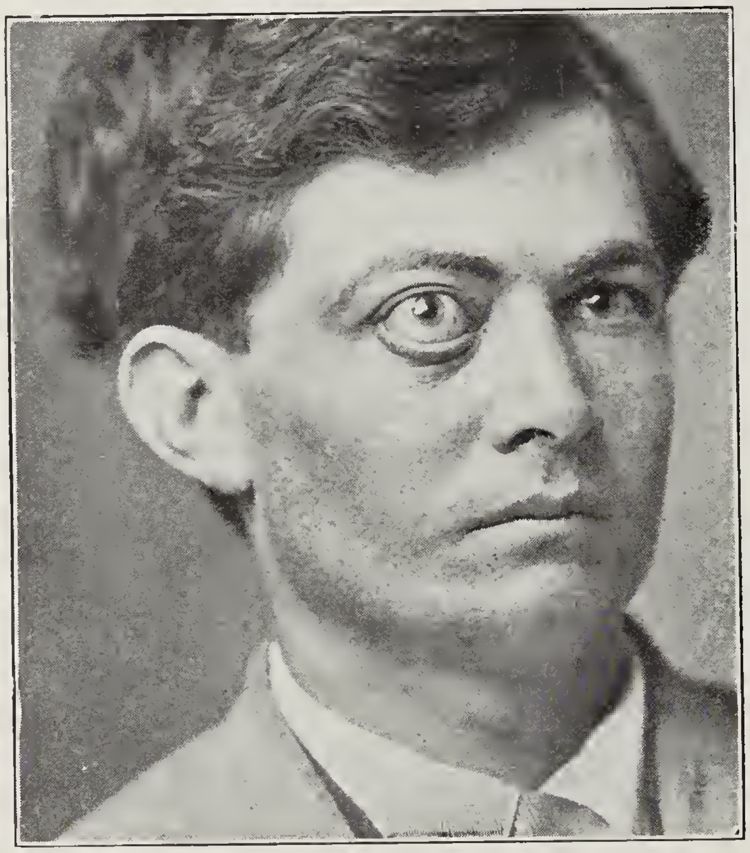

Fig. 7 (Case 10).—Orbital sarcoma.

Case 20.—J. S. G., man, aged 46, Dec. 16, 1911, was operated on for metastatic carcinoma of the lip involving the parotid gland of the right side. From pressure of this gland the patient had suffered excruciating pain throughout many branches of the trifacial nerve. The excision and ligation operation of both sides was followed by dissection of the involved parotid which had locked the jaws; the tumor extended well up beneath the lobe of the ear, and was dissected away from the internal carotid artery and jugular vein. This patient was made more comfortable, and died Oct. 1, 1912.

Case 21.—J. C. A., aged 52, June 22, 1912, had carcinoma of the lip. All branches of both carotids were excised, the cancer of the lip removed and all glands dissected. The patient was seen several months afterward and showed no evidence of return. I presume that the patient is now dead.

Case 22.—Mrs. S. A. G., aged 76, July 6, 1912, had epithelioma of the ear, left side, and epithelioma of the skin near the right inner canthus. Following carotid operation, the ear was removed and the cancer of the inner canthus dissected. The parts have healed and there is no evidence of return. She had double cataract as well. These were removed, and normal vision obtained. Recent report states that the patient is living.

Case 23.—Mrs. H., of Gilmer, Texas, was operated on, June, 1911, for carcinoma of the orbit, involving the eye and surrounding tissues. Ligation and excision of all branches was done, on both sides, and the tumor mass with the ulcerating eye removed. Several days later erysipelas developed and there was a serious infection which gradually subsided, the patient making apparently a good recovery. She was living at Gilmer in December, 1912. I have not been able to hear of her since.

Case 24.—C., man, aged 58, of Grand Saline, Texas, July, 1914, had a carcinoma involving the tongue wall on the left side, of six months' duration. Ligation and excision was done on both sides, all branches, and the glands dissected. One half of the tongue was removed to the base and the whole area closed with uninterrupted sutures without raw surface being left. The patient is now living but probably has metastasis in the neck. A letter states that there is swelling on that side.

CONCLUSIONS

1. (*a*) All branches of each external carotid must be tied.

(*b*) In the majority of cases both sides can be operated on without an interval of two weeks, and this without shock.

(*c*) Sarcoma offers the best results.

2. It may be noted that all the sarcomas occurred on the left side, except two. As the common carotid arises from the transverse portion of the aorta, a morbific tendency might find nourishment in excess from this circumstance.

3. Circulation from the ophthalmic branch of the internal carotid does not prevent the value of the operation in the orbit, as Dawbarn concluded.

4. In this group of cases, sarcoma occurs in all ages. In females it occurs most often beyond the age of 19, and in males, under this age.

5. Cancer occurs in this group oftener in males and only in one case under 46 years of age, which was the ethmoidal case of 28, coming under Case 6 (sarcoma).

6. I have not found in any of my cases an anomaly in the carotid distribution.

7. The results seem best when the tumor is not disturbed, suggesting traumatism at the sight, always an exciting factor.

8. Though I have not practiced ligating uniformly the accompanying veins, it may be better to do so.

9. Although certain carcinoma cases were treated with the Roentgen ray, no good results were observed.

10. In two cases in which tumors involved the optic nerves — Case 9 secondarily and Case 10 primarily —both demonstrate that the optic tracts reach the chiasm and there decussate; when a nerve proceeds to its destination, the respective nasal half possibly, and the temporal half probably are separately sheathed, as is also the papillomacular bundle of fibers, which are intact and which may be disturbed but not destroyed.

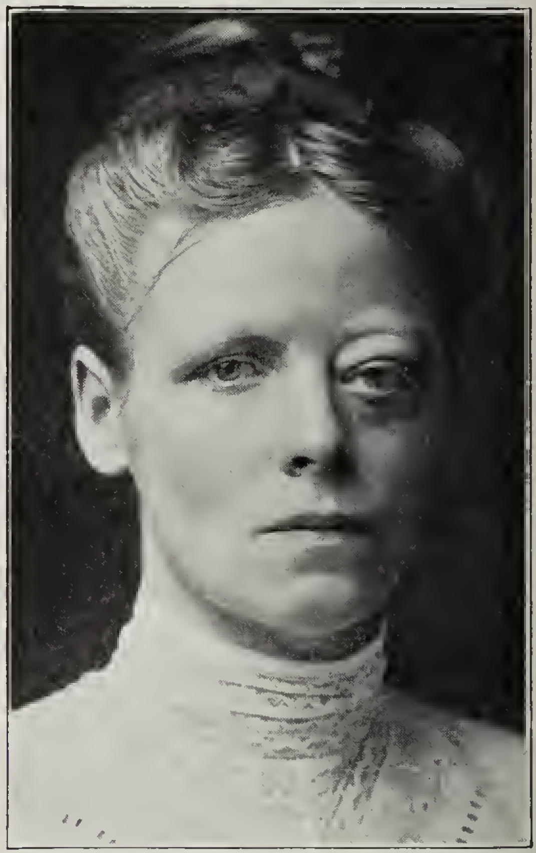

Fig. 8 (Case 13).—Sarcoma of orbit.

These two cases suggest that, when the temporal sides leave the chiasm, these bundles become invested in a manner to permit an uninterrupted spread of an inflammatory process of either nerve to the nasal half of the other—this being limited as described in Cases 8 and 10.

I have known of the pia sending out trabeculae between fibers, splitting them up into bundles, each fiber having its own myelin sheath, but not a neurolemma as other nerves. A later report might demonstrate a distinct investment of the respective halves, but more likely the temporal side and not the nasal on account of anatomic developments.

One other explanation might account for the foregoing observation: the extension of the inflammatory process of the optic nerve might follow the nerve around on the side involved back of the chiasm, and in this manner cause complete destruction of the nasal half before they decussate, the choking of this part of the disk in the opposite eye taking place from that fact.

There of course is an excellent reason why the operation is of value in sarcoma and to a more limited extent in carcinoma. Our knowledge of metastasis is based on the morphology of these tumor masses, and we all know that the cells of the sarcoma variety make up the walls of the blood vessels, the cells themselves depending on this rich blood supply for their growth. When this is cut off, they necessarily shrink and cease to grow; whereas, in carcinoma, the blood vessels are not involved. The lymph channels remain and can easily carry off some of the infection to lymph nodes elsewhere, extending the progress regardless of the blood supply.

My observation has been that a distinct deterring influence is exerted in the carcinomatous growth, but that is the best that can be said. On the other hand, in sarcoma, your result can in a way be measured by the completeness of your operation in tying off and destroying all of the branches so that anastomoses will be controlled, whatver the cause of malignancy; the lack of nourishment influences the growth.

The technic of the operation as well as the things to avoid while operating will interest you only when a case presents itself. This information you can find without difficulty.

ABSTRACT OF DISCUSSION

Dr. C. G. Savage, Nashville: The subject presented by Dr. Cary is worthy of our deepest consideration. I have never had any ligations done.

One case I recall especially because of a second recurrence in a strange location. The cancer involved primarily the lower right lid, but later involved the right eye also. My first operation removed the entire lid and the globe. There was a recurrence in the orbit a few months later. In the second operation I removed the entire orbital contents. Without further manifestations in the orbit, a tumor formed on the corresponding side of the neck just below the ear, which was evidently malignant. It seemed to me that the man was doomed. I do not like to operate below the chin line, so I had one of our surgeons operate for the last malignant growth. The operation was done very thoroughly, the wound was left open and Roentgen-ray treatment instituted. Afterward I saw the patient frequently and I think I can safely say that at least a year after the operation there had been no recurrence. At that time the man was rejoicing because we had told him we could give him only temporary relief. The presentation of this subject ought to have a tendency to further nullify the recurrence of such tumors.

Dr. E. H. Cary, Dallas, Tex.: A question has been asked concerning a point which I did not bring out in the paper for the sake of brevity. In carcinomatous growths ligation could only effect a retardation of the growth. You really do not check it as much as you want to check it and the operation is not a success in carcinomatous growth. If there was some plan by which the lymphatic channels could be found and cut off, I think you could find a method of cutting off the spread of carcinomatous growth. In carcinomatous growth it is true that best results can be obtained if you can tie and cut off all the branches on each side and not disturb the main growth at all. One case of sarcoma involving the inferior maxillae, without much traumatism, I recall. This sarcoma receded and the woman has been teaching school for three years. I began operating with the idea of removing the growth, but when I saw it I knew it would remove almost the entire chin, so I proceeded as mentioned.

INTRATHECAL INTRACRANIAL INJECTION OF AUTONEOSALVARSANIZED SERUM FOR SYPHILITIC HEADACHE *

ALFRED GORDON, M.D.
PHILADELPHIA

Among the various methods devised for the use of salvarsan or neosalvarsan in the management of cases with involvement of the nervous system caused by recent or old syphilitic infection, the autosalvarsanized serum method appears to be the most successful. Such seems to be the view held by the majority of observers who are familiar with the subject. My experience in almost a hundred cases of syphilitic and parasyphilitic affections of the cerebrospinal axis is entirely in accord with that of others. Comparing this method with the intramuscular and intravenous, the results obtained are by far superior to those in the two latter procedures. The reason of it has been emphasized by Swift and Ellis, the originators of the method, and has been sustained by subsequent observers. Indeed the statement is a logical one that by subarachnoid injections a spirocheticidal substance is brought into direct contact and immediate relation with the nervous tissue and the spinal fluid, and consequently with the etiologic agent disseminated in both.

The introduction of salvarsanized serum may be accomplished in two ways: either intraspinal or intracranial. The intracranial method has been applied chiefly in cases of paresis, as it has been shown by a number of writers that only slight beneficial effect, or no effect at all, resulted from the intraspinal injections in this particular affection so far as mental symptoms are concerned, although some improvement has been obtained in the condition of the cerebrospinal fluid, particularly with reference to the cell count. In my experience with twenty-seven paretics, amelioration in the mental manifestations was observed in ten patients. Nevertheless, if a comparison is drawn between the syphilitic affections in which the brain symptoms predominate and those in which the cord symptoms are the most conspicuous, I may say that the autosalvarsanized serum, introduced through lumbar puncture, has given me, speaking generally, more favorable results in the latter than in the former cases.

It is therefore logical to presume, at least, that the circulation of the cerebrospinal fluid is such that it is not capable of transmitting the intraspinal injected specific remedy in an upward direction toward the upper portion of the cerebrospinal axis. At this juncture it is interesting to take notice of the important experimental work done with the object of verifying the above clinical observation.

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* From the Neurological Department of Mount Sinai Hospital.

Harry Campbell[1] gives the following account of experimental work in the *British Medical Journal:*

> If trypan blue be injected through a trephine hole into the cranial subarachnoid space above the tentorium cerebelli, not only the cortex cerebri, but the entire cerebrospinal axis is found, postmortem, to be stained. If, on the other hand, the pigment be injected into the spinal subarachnoid space by means of a lumbar puncture, the cortex cerebri remains unstained, the staining in these cases being confined to the spinal cord and brain stem. It would appear that the cerebrospinal fluid flows from the cranium spinalward—probably a meager current—and also that some slight ebb and flow takes place between the fluid in the subarachnoid space at the base of the cranium and the spinal subarachnoid space, in accordance with variations in the quantity of intracranial blood.

More recently, William C. Woolsey[2] repeated Campbell's experiments with trypan blue and arrived at the same conclusion, namely, that when administered intraspinally its diffusion to the cranial cavity is less intense than in the cord. He could see that the meninges of the cord were stained a deep blue up to the level of the cervical enlargement from which point, by gradual gradations, the intensity of the color diminished to the foramen magnum. The periphery of the cord itself just under the pia was stained a distinct blue for a distance of from 0.5 to 1 mm. below the surface. No such invasion of the brain above the medulla could be distinguished.

Wardner[3] and Martland have made postmortem injections of carbolfuchsin into the spinal subarachnoid space on several cadavers. In no case, they say, even with the bodies placed head down and in almost erect position, has any staining of the structures beyond the posterior fossa been observed.

All these facts throw considerable light on the subject and explain fully the comparative failure in treatment of paresis or other syphilitic affections of the brain by the exclusive intraspinal introduction of salvarsanized serum.

The direct intracranial method has at this time quite a number of advocates. Levaditi, Marie and Martel, Neisser and Pollac, Marinesco and Minea, Berriel, Balance and Campbell are the earlier writers who almost simultaneously utilized salvarsanized serum for intracranial injections. All of them observed favorable results. Wardner, in a recent contribution,[3] reports six cases which he treated in collaboration with Martland, Eagleton and Beling by the intracranial method, from which he obtained some encouraging effect.

That the introduction of autosalvarsanized serum into the subdural space of the cranium may be a method *par excellence* in some select cases in which cerebral symptoms predominate; that the previously mentioned experimental work with regard to the current of the cerebrospinal fluid which is directed from the cranium spinalward, but not vice versa—both facts find their striking corroboration in the events of the following case, which seems to possess all the characteristics of a carefully carried out laboratory experiment.

J. K., tailor, aged 40, contracted syphilis at the age of 25. About two years ago he commenced to have pain in the upper cervical region. At first nocturnal, the pain gradually became continuous. The patient relates that the several physicians whom he consulted at first all agreed that in view of the history of syphilitic infection it was advisable to administer salvarsan, to which the patient consented.

The slight effect produced by the first injection necessitated repetition of the treatment and he received five injections, all intravenously. As the headache continued with greater severity, his last physician, Dr. Bellak, referred him to my service in the Mount Sinai Hospital. On examination the following condition was found. He suffered intense pain in the entire cervical and upper dorsal regions but especially in the occipital region and over the vertex on the left side. The pain was so severe that for nights he could not sleep. He was unable to eat, lost his appetite and began to lose in weight.

Physical examination showed: slight Romberg sign, markedly increased patellar tendon reflexes, but no other abnormal reflexes. He had frequent and sometimes imperative micturition and defecation. There was complete loss of sexual power. There were no changes in the objective sensibility. The mentality was fairly good.

The eye examination by Dr. LeFever showed a double primary optic atrophy well advanced; no response to light in either eye; accommodation and convergence were diminished; the visual fields symmetrically contracted; pupils unequal: right, 2.5 mm.; left, 3 mm.

A Wassermann test made on admission to the hospital by the pathologist, Dr. Rubenstone, proved to be strongly positive in the serum and spinal fluid.

Urinalysis showed traces of albumin. The thoracic and abdominal viscera were normal. The diagnosis was made of cerebrospinal syphilis.

In view of the previous intravenous injections of salvarsan which, according to his physician, gave no results, the intraspinal injections of autoneosalvarsanized serum were undertaken. The patient was given, intravenously, 0.9 gm. of neosalvarsan. About thirty minutes later 50 c.c. of blood were drawn from the median basilic vein. The blood was set aside for clotting and then centrifuged. It was then heated to 56 C. (132.8 F.) for half an hour and placed in the ice box over night. The next day the serum was diluted with a normal solution in freshly distilled water to make in all 30 c.c. A lumbar puncture was immediately made, 30 c.c. of spinal fluid were withdrawn and replaced by the 30 c.c. of the neosalvarsanized serum.

On the day following the treatment the pain in the head and in the neck was slightly improved, but very soon the same suffering returned. The condition of the sphincters began to improve rapidly; the tendon reflexes became less prompt. As the patient's suffering was unusually severe and he could not sleep, two weeks later another identical treatment was given and again without any effect on the headache. The withdrawn spinal fluid showed still a strongly positive Wassermann reaction and increased albumin content.

During a period of twenty-one weeks the patient received seven intraspinal injections of autoneosalvarsanized serum at two and three weeks' intervals. With the exception of the first, for each of the six other injections, 0.6 gm. of neosalvarsan was used. The Wassermann reaction remained positive. While the symptoms referable to the spinal cord have all disappeared, and the pain in the neck, probably due to a syphilitic cervical pachymeningitis, has greatly improved, nevertheless the headache remained unaltered in severity. It was particularly intense in the left parietal area. The insomnia was exhausting to the patient. The eyes were repeatedly examined and found in the same condition.

As the patient persistently pointed to the left parietal region as the seat of the intense pain, the thought occurred to me that we may deal here with a localized syphilitic thickening of the skull. He had been given, symptomatically, all coal-tar preparations, sedatives, mercurials and iodids, and there was no relief from the excruciating headache.

A decompressive operation was proposed to the patient and he promptly accepted it. Dr. N. Ginzburg removed a large flap of bone over the left parietal region. The skull was

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1. Campbell, Harry: Brit. Med. Jour., March 14, 1914, p. 577.
2. Woolsey, W. C.: Experimental Subarachnoid Injections of Trypan Blue, Jour. Nerv. and Ment. Dis., July, 1915, p. 477.
3. Wardner, Drew M.: A Report of Five Cases of the Intracranial Injection of Auto-Sero-Salvarsan, Am. Jour. Insan., 1915, lxxi, 459.

found decidedly thick. The membranes were seen covered with light gray patches of the size of a ten-cent piece, four in number, and quite a large number of very small patches irregularly distributed. The dura was not opened.

On the day following the operation the patient felt some relief from the headache, but twenty-four hours later the pain returned with the usual severity. The wound healed up very promptly. The patient kept on suffering for the following two weeks. Insomnia, and anorexia were pronounced.

It was evident to me, in view of the fact that the cord symptoms were controlled by the intrathecal spinal injections of autoneosalvarsanized serum, that the latter did not reach the subarachnoid space of the cerebrum. Campbell's remarks[1] regarding the experimental work on the spinalward current of the cerebrospinal fluid appeared to me strongly applicable to the present case. An excellent opportunity presented itself here for injecting the cranial subarachnoid space. Accordingly the patient was given an intravenous injection of 0.6 gm. of neosalvarsan and serum was prepared by the pathologist in the adopted manner for the following day.

The patient was etherized; a lumbar puncture made; 30 c.c. of spinal fluid were withdrawn. The wound of the skull was reopened and 30 c.c. of the neosalvarsanized serum were injected carefully under the dura in close proximity to the large gray patches. On the day following the operation the patient began to feel better. The headache gradually subsided. He commenced to sleep at night, the appetite improved rapidly. The scalp wound healed up in ten days. The patient left the hospital two weeks later totally free from pain. He began to gain in weight and felt happy. Since then he has reported to the out-patient department regularly every week for a period of four months. No recurrence of pain has been observed. While the patient's general condition is, at present, normal, the condition of the eyes remains unaltered.

The present case appears to be of great importance from a therapeutic standpoint, also because of a clinical corroboration of the physiology of the movement of the cerebrospinal fluid.

The fact that seven injections of neosalvarsanized serum into the spinal subarachnoid space relieved and finally removed the cord symptoms alone and brought no relief whatever to the intracranial manifestations, points logically to a strict parallelism between this clinical observation and the experimental observation with trypan blue previously mentioned.

It is evident that had a good upward flow existed in the cerebrospinal fluid, the large amount of neosalvarsan injected in the spinal intrathecal space would have carried its spirillicidal effect to the neurons of the cortex cerebri. The rapid and remarkable effect produced on the brain tissue by direct contact with neosalvarsanized serum is undoubtedly equal if not superior to a direct laboratory experiment carried out with mathematical precision. My patient will perhaps require repeated intracranial injections, but the result obtained so far points strongly to the intracranial route as being the only one to be adopted in cases with conspicuous and persistent cerebral manifestations.

1812 Spruce Street.

Paranoids and Brilliancy.—The paranoids are often supposed by an innocent public to be brilliant because they are frequently fluent talkers, plausible, and full of pseudologic, and the world, especially today, is prone to worship the god of verbosity. If I were breeding people as we breed horses, no man with a gift of gab, a different quality than gift of speech, would be permitted to come into my experiment station.—Charles W. Burr, M.D.

SPONTANEOUS EVOLUTION OF A TRANSVERSE PRESENTATION

WITH REPORT OF A CASE *

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NEWARK, N. J.

A transverse presentation, if unaided by art, may have five possible terminations: 1. Impaction, with excessive retraction of the upper uterine fibers, rupture and death of mother and fetus from hemorrhage or exhaustion. This is by far the most common outcome of neglected shoulder presentations. 2. Spontaneous birth by a doubled body, the condition termed "evolutio conduplicato corporis" by Roderer, in which the head and thorax are jammed tightly into each other and are born together. 3. Spontaneous rectification, that is, under exceptional conditions the lower fetal pole may be pushed downward and finally become the presenting part. 4. Spontaneous version, in which, as the result of excessive unilateral contractions of the uterus, the upper fetal pole is pushed downward and actually presents at the vulva. 5. Spontaneous evolution, as described by Douglas of Dublin. In this favorable termination, the presentation remains unchanged, but the trunk and buttocks, impelled by powerful contractions, roll past the shoulder and extrude from the vulva before the presenting shoulder.

It was my good fortune to attend a case of labor with transverse presentation, which terminated with the interesting phenomena of this last form of natural delivery. Inasmuch as Prof. J. W. Williams of the Johns Hopkins University cites in his treatise but one instance of such an occurrence in his varied and extensive obstetric experience, the report of this case must prove at least of statistical value.

Mrs. B., a stocky young primipara, aged 20, height 4 feet 10 inches, weight 140 pounds, was admitted into the maternity ward of the Newark Beth Israel Hospital, July 12, at 5 a. m. in advancing labor. Her pelvimetric measurements were those of a slightly justomajor pelvis; interspinous 27, intercristal 30 and external conjugate 22 cm. The junior intern, Dr. Hirsch, examined her on admission and found the os dilated 4 fingers, but because of a tense and bulging bag of waters, he alleges, he was unable to make out the exact presentation; he could find no fetal heart sounds. At 7:30 the bag ruptured and the right arm prolapsed as also some coils of cord, which had no pulsation. He at once summoned me to the case. The diagnosis was apparently a left scapulo-anterior, so I ordered ether anesthesia in expectation of doing a version or decapitation if I found the former measure too hazardous. I might add that the patient was having terrific bearing-down pains.

Before she was fully under the anesthetic, to my great surprise, I observed the shoulder rotate forward under the pubic arch, sink downward and become visible at the vulva. With the next pain, which was unusually violent, the dorsum, laterally bent, appeared, then the buttocks, legs, posterior shoulder and arm. The head still remained in the pelvis: tilting the trunk toward the abdomen of the mother and making moderate traction effectually liberated it.

The fetus had some noteworthy characteristics; it was the size found in an 8-months' pregnancy and weighed 5½ pounds; it showed signs of commencing maceration, as evidenced by peeling of the skin, in several small areas; the neck was peculiarly elongated so that it had a diameter of 1½ inches; the head was of conical shape and terminated with a meningocele; all the cephalic bones were widely separated and the umbilical cord, more than a yard long, tapered almost to a point at its umbilical insertion.

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* Presented before the Clinical Society of the Beth Israel Hospital, July 27, 1915.

Outside of a slight rise of temperature the first four days of the puerperium, which was probably sapremic, the patient made an uneventful recovery.

It can be readily understood that evolution is impossible unless three essential requirements are fulfilled, namely, a roomy pelvis, a small, easily compressible fetus and powerful bearing-down pains; all these factors were manifested in this case.

In the rather meager literature of this remarkable resourcefulness of nature, a few instances of living children have been reported. In the treatise on midwifery by Prof. William Thomson Lusk, my lamented teacher, mention is made that Kuhn cites a case in which a living child was born, weighing 4½ pounds, after the spontaneous evolution of a shoulder presentation. Also that Simon, according to Spiegelberg, collected 125 cases in which 14 infants were born living; three of the mothers had died.

The determination whether spontaneous delivery will be effected in a particular instance is extremely difficult and ordinarily we should waste no time in anticipation of such a favorable outcome; this is especially true if the diagnosis of transverse presentation is made early before the bag of waters has ruptured. But if the expectant mother is in good condition, if the fetus is premature, if excessive retraction has already taken place making internal version a dangerous procedure, and if evidence of beginning evolution is already present, we might for a reasonable time adopt the policy of "watchful waiting" rather than proceed at once to decapitation. Indeed, in favorable instances, if the pelvic floor is offering an unyielding obstacle to Nature's attempt at delivery, we might expedite matters by following the recommendation of Dr. Taylor and overcome the resistance, by making deep incisions into the distended perineum to the extent of 3 or 4 inches, at the vulva.

56 Boston Street.

APPENDECTOMY THROUGH THE RIGHT INGUINAL CANAL

GEORGE DE TARNOWSKY, M.D.
CHICAGO

Removal of the appendix through the right internal inguinal ring is not a new procedure; it has probably been done, in a more or less unpremeditated manner, by many surgeons; but, so far as I can learn, the method has never been advocated as a justifiably integral part of a right inguinal herniotomy.

The now well-established custom of removing the appendix whenever the lower abdomen is opened led me to adopt the habit of carrying out the same prophylactic procedure during the performance of all right inguinal herniotomies, whether of the oblique or direct type. The femoral ring is usually too far removed for this purpose. I have performed the operation over fifty times with uniform good results. In no case has infection occurred, either within the peritoneal cavity or in the inguinal canal; the wounds have healed with normal rapidity and, so far, no relapses of the hernias have been reported. The patients have not complained of more pain than is habitually experienced in simple herniotomies; neither has nausea or meteorism been accentuated by the added intraperitoneal work.

The cecum lies in the right iliac fossa, directly on the iliac fascia. Its lower end is from 4 to 6 cm. from the internal ring, depending on whether it is in a distended or contracted condition. When it is full, the lower end lies just over the outer half of the inguinal ligament. The outer wall or outer right margin is in contact with the lateral abdominal wall. It is always sufficiently mobile so that it can be delivered through the ring, partially or in toto, depending on the size or distensibility of the latter. As for the appendix, the only practical point to remember is that it is given off directly from the mesial posterior wall of the cecum, behind and beneath the termination of the small intestine. Delivery of the cecum must be resorted to whenever the tip of the appendix is retrocecally located, its mesentery is abnormally short, or it is displaced by kinks or adhesions.

TECHNIC

1. The usual herniotomy incision is employed, opening the inguinal canal.

2. The sac is separated from the cord, the sac opened, and its contents—if any—dropped back into the peritoneal cavity.

3. The contents of the inguinal canal are protected by means of a gauze pad.

4. The index finger of the right hand is passed through the sac opening obliquely upward and outward, that is, continuing in the direction of the canal.

5. The finger is swept along the iliac fossa from without inwardly until the cecum is encountered. The appendix can often be recognized by the touch, and its relative position ascertained.

6. If the internal ring admits two fingers or can be readily stretched to admit them, I am in the habit of introducing both index and middle fingers, grasping the cecum between them, and delivering it. When the appendix is freely movable, it has often been possible to hook the index finger over its base and thus deliver it, only one finger being necessary for this maneuver. With a small, not readily distensible ring, by passing a straight intestinal forceps of the Barrett type alongside of the index finger, the cecum can be identified, grasped by the forceps and delivered. Finally, I have lately tried the expedient of putting on a surgical cotton glove over the rubber one in order to obtain a better grasp of the slippery cecum or appendix. The experiment is worth trying, but one must get accustomed to the clumsy thickness of the cotton glove.

7. The removal of the appendix itself presents no great difficulties. Only three points in technic need be emphasized:

(*a*) Having grasped the appendix or its mesentery by means of a suitable forceps, as much of the cecum as possible should be replaced into the peritoneal cavity before going any further. This will avoid any possible danger of strangulation.

(*b*) The purse-string suture is placed around the base of the appendix before it is amputated or its mesentery is tied off. This obviates the annoying possibility of the stump slipping out of sight before the operation is completed. In other words, it gives the operator something to hold on to.

(*c*) In the retrocecal type of appendix, with very short mesentery, it is much easier to amputate the appendix first at its base, between two clamps, dissecting it out from below upward and controlling the blood supply by means of a running suture of fine silk or catgut. These closely adherent retrocecal cases are the only difficult ones to remove. It is a waste of time to try and reach the tip of the appendix first; the tension is so great that either the mesentery or appendix will tear. Suture of the short meso-appendix must be done by means of a short full-curved needle; here again it has seemed easier to begin proximally, that is, at the stump of the appendix, and suture upward, using the glover's lock-stitch.

8. The hernial sac is closed, and the hernitomy completed. It seems puerile to state that no drainage should ever be used in the canal, but as I have on several occasions been asked this question, it has seemed best to lay emphasis on this particular point.

COMMENT

As technic and confidence in the procedure improved, the time element has been rapidly reduced. Anesthesia is now prolonged an average of five minutes, so that undue lengthening of the operation cannot be adduced as a contraindication. The alleged danger of infecting the inguinal canal with resultant recurrence of the hernia, which has made a number of clinicians hesitate to adopt the procedure, has proved to be nonexistent.

In my series of cases, 30 per cent. of the appendixes removed were found to be grossly pathologic; hence I feel convinced that inguinal apppendectomy is a rational procedure. Of course, I do not advocate the inguinal route in nonherniated patients; neither would I advise that an acute appendix be removed by this route, even in the presence of a coexistent right-sided hernia. I am of the opinion, however, that, in all right inguinal herniotomies, the removal of the appendix through the sac and ring is a legitimate, logical and comparatively easy procedure.

Should the necessity of drainage ever present itself, it is a simple matter to pass a curved forceps through the sac opening to the iliac crest and make a stab drain. This was done in Cases 528757 and 530288 of my Cook County series. The first case proved to be one of tuberculous peritonitis with a badly kinked retrocecal appendix; the second, wrongly diagnosed as a strangulated hernia, turned out to be a gangrenous appendix with abscess in the scrotum. Both cases healed satisfactorily.

30 North Michigan Avenue.

A PLAGUE-LIKE DISEASE OF CALIFORNIA GROUND SQUIRRELS AFFECTING MAN IN OHIO

WITH A DEMONSTRATION OF SPECIMENS *

W. B. WHERRY, M.D.
CINCINNATI

SUMMARY

Following the discovery of a plague-like disease, due to *B. tularense,* by McCoy and Chapin in California, W. B. Wherry and B. H. Lamb described the occurrence of the same micro-organism in two cases of conjunctivitis in Ohio. Both cases were characterized by ulcerative conjunctivitis involving the palpebral conjunctivae, accompanied by lymphadenitis of the preauricular and cervical glands on the corresponding side, a high temperature and marked prostration.

These patients were under the care of Dr. Derrick T. Vail and Dr. Robert Sattler, respectively, and their clinical courses have been published in the *Ophthalmic Record* (1914) and the *Archives of Ophthalmology* (1915).

In searching for the probable source of infection in these two cases the following points were considered: Both patients were affected with the virus affecting rodents in California; both patients had handled rabbits previous to the onset of the disease; there were numerous rumors that wild rabbits in Ohio, Kentucky and Indiana were dying off in large numbers of some disease. With the kindly cooperation of Dr. J. H. Landis, health officer of Cincinnati, the same disease due to *B. tularense* was discovered in wild rabbits found dead in southeastern Indiana.

The virus (a small encapsulated rod) is extremely difficult to demonstrate and is best stained with anilin Hoffman's violet or gentian violet. It could not be grown on any medium except the coagulated egg-yolk recommended by McCoy and Chapin.

All the esential features of the disease as it occurred in man could be reproduced by placing a little of the virus in the eye of a rabbit or guinea-pig.

Infection also takes place, in rodents, through the gastro-intestinal tract, through the nasal mucous membrane, and, as shown by McCoy and Chapin, squirrel fleas (*Ceratophyllus acutus*) may successfully transfer the virus. As the recent experiments of Dr. Wayson show, the house fly and the stable fly (*Stomoxys calcitrans*) may also transmit the virus shortly after feeding on an infected animal.

It seems likely that this rodent disease is widely distributed and that through the watchfulness of health officers further cases will be discovered.

ABSTRACT OF DISCUSSION

Dr. G. W. McCoy, Honolulu: It is gratifying that what we thought was a problem of purely scientific interest should have turned out to be one of practical importance in preventive medicine. Apparently we have another disease to add to the list of those traced primarily to the lower animal and occasionally transmissible to man. I would like to emphasize that this is an example of a plague-like disease, but one not due to a pest-like bacillus. It is easy to get these things confused. The organism, as Dr. Wherry has said, is in no way similar to the plague bacillus, yet in practically all the animals with which we worked the symptoms and lesions were similar to those of plague. We thought we were fairly familiar with plague, but when the first case of the new infection came under observation we would have fallen into error but for the fact that we insisted on cultural verification of every case. We carried the infection on in animals, and soon found that we were dealing with a disease of rodents other than plague. A great similarity to the lesions of the plague was the most striking point about it. After we had had a great deal of experience with this disease to supplement our experience with plague, we could in a majority of cases differentiate the gross lesions; and of course a microscopic examination would practically always decide the matter at once, and a cultural investigation would invariably do so. Dr. Wherry spoke of the cultures losing their virulence. We found that to be the case with the cultures from squirrels. I do not recall now whether we had any culture that became entirely avirulent. There is one point of importance about the lesions produced by these avirulent cultures, and that is that they produce in guinea-pigs lesions which are practically indistinguishable from those of tuberculosis. I remember when we first observed these subacute or chronic lesions we thought there had been some error in our technic and that we had introduced tuberculosis. We found that this was not the case. I may say that we always kept in mind in our work the possibility of the occurrence of the plague-like disease in man.

Dr. N. E. Wayson, San Francisco: We have duplicated Dr. McCoy's methods of flea transmission of the disease, but were not so successful as he in our results. Healthy animals separated from those infected by wire netting of the same mesh as mosquito netting, with fleas as the only common carriers, remained well. Our experiments with fly transmission were positive. The stable-fly transmissions were made by allowing the fly, held captive in a vial covered with netting, to bite the infected animal, and transferring it to a normal animal, changing the gauze between bites to prevent possible contact infection of the shaved belly of the normal animal. The stomoxys experiments were successful in a small percentage of cases; but the house-fly experiments yielded nearly 100 per cent. of "takes." The house flies were allowed to feed on, and crawl over, infected viscera, and then crawl over a cocainized eye. This method was positive in transmission, even with a twenty-four-hour interval between the exposure to the infection and to the normal eye.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

We have not been successful in transmitting the plague-like disease by the methods of the Indian Plague Commission, in which fleas known to be infected are individually fed, under observation, on normal animals. Our control experiments in plague with this method have also been negative; probably due to an insufficient degree of septicemia in the infected animal used as a host. The same criticism in the plague-like disease experiments will not hold.

Dr. Nathan Barlow, Cuyamel, S. Honduras: During the last fifteen months in Honduras we have frequently had outbreaks of a peculiar disease which resembled climatic bubo, and was reported by me as an epidemic of climatic bubo, but which resembled very closely the disease described by Dr. Wherry, with the exception that there were no conjunctival symptoms. The gland juice from this disease was found by ordinary cultural methods and by ordinary stains to be free from demonstrable micro-organisms, which agrees with the description of climatic bubo; but it seems to me not impossible that some diseases which are at present classed as climatic bubo may really be infections with the same or a similar organism to that described by Dr. Wherry.

I should also like to bring out the importance of making practitioners in subtropical countries more acquainted with this and all other plague-like diseases, because it has twice happened that my assistants have made the diagnosis of plague, and were ready to bring about measures which would have been sure to quarantine Honduras, and I was able to see the cases before these steps had been taken. By making the proper examinations we were able to demonstrate that the cases were not plague. The serious results of such a mistake would be greater in the case of the Central American countries than in the United States, because the health authorities cannot go so far with the people there as here; and after one such error it is very likely that if true plague were later found, the necessary quarantine measures would be very much delayed.

Dr. William B. Wherry, Cincinnati: I do not see any reason why this virus should not produce other types of disease in man besides conjunctivitis. It seems possible, judging from McCoy and Chapin's work, and our own work on animals, that human beings might be infected by way of the gastro-intestinal tract and through abrasions of the skin. The virus might give rise to some forms of rhinitis, sore throat, and tonsillitis. Those are the possibilities. I am not at all certain that the virus is virulent enough to produce septicemia in man. Unfortunately we did not avail ourselves of the opportunity that we had to test that. We should have drawn off some peripheral blood to see if the virus were circulating or not. In one case we took blood rather late, and the results were negative. It seems that the virulence of the virus is diminished by passage through man. Guinea-pigs inoculated directly from a human being died after six or seven days; and in three or four days when it came from another guinea-pig; so apparently the virulence is slightly diminished for rodents by passage through man.

Improving the Race.—Environment and education alone cannot make appreciable progress in the improvement of the race. But with favorable surroundings and the selection of the best types the field for improvement is limitless.—Luther Burbank.

New Instruments and Suggestions

PROTECTION OF STERILIZED DRESSINGS FOR SHIPPING ABROAD

Gordon G. Copeland, B.A., M.D., Toronto, Ontario

It may be of interest to report by what method surgical dressings have been sent abroad to the Red Cross or other organizations, insuring their arrival in perfect condition. A year ago I was impressed with the unsatisfactory methods of shipping sterile dressings, and devised some of the essential steps in the method I report. I explained the idea to the Canadian Red Cross, and other organizations here who have enthusiastically adopted the method, which has proved practical in actual operation.

Red Cross packing cases are 27 by 15 by 15 inches, outside measurements, with rope handles. These cases fit into transport wagons and are a standard size. They are 26 by 14 by 14 inches, inside measurements. I designed two tin boxes of equal size to exactly fit into the standard Red Cross case. They were first manufactured through the kindness of the Christy Brown Company, and the Macdonald Manufacturing Company is now making the boxes and selling them at the actual cost of material, about 25 cents. The box is according to the following description: 30.2 cm. ($11\frac{11}{16}$ inches) wide, 35.1 cm. ($13\frac{13}{16}$ inches) long, 34.7 cm. ($13\frac{11}{16}$ inches) deep, outside measurements. All edges are soldered. There is a rim or ledge turned in all around the open top, the ledge being 0.8 cm. ($\frac{3}{16}$ of an inch) wide. There are two lids: the first is of flat tin which is to be soldered to the top ledge when the dressings are in place. It is 29.6 cm. ($11\frac{11}{16}$ inches) wide, by 34.7 cm. ($13\frac{11}{16}$ inches) long. From one corner a triangle is cut off, 3 cm. ($1\frac{1}{4}$ inches) on two sides. On the under surface a wire ring is soldered, and under this another slightly larger triangle of tin is soldered to make the corner the same size as before it was cut. This ring is for tearing off the soldered lid when necessary. A top lid with a turn down of 1.8 cm. ($\frac{11}{16}$ of an inch) is put on over all.

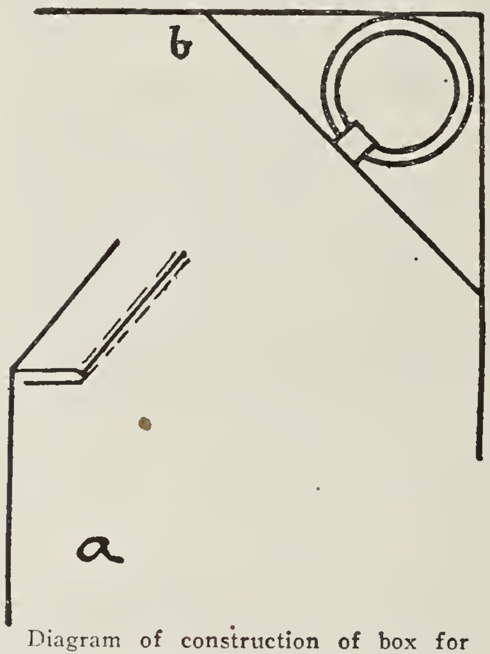


Diagram of construction of box for sterile dressings; *a*, ledge turned in around open top; *b*, ring for purpose of opening box.

The dressings are packed into Canton-flannel bags which exactly fit the tin boxes. In order to have the right shape, the bags are placed in the tin box first, and the dressings, such as gauze wipes, compresses or surgical pads made to the standard Red Cross sizes, are carefully packed into the Canton-flannel bags. When full, the bags are taken out of the tin boxes, and sewed up with a running or overcast stitch which can be easily undone. The bags are marked with a table of contents and the name of the society making them. They are then wrapped in sheets so as to be handled without soiling. The bags of dressings are then steam sterilized under high pressure on two occasions, and are absolutely sterile. The tin box is flame sterilized by pouring in methylated spirits and lighting it. The first tin lid is also flame sterilized at the same time. The boxes become nearly red hot, and absolutely sterile. A nurse, wearing sterile gloves, packs the sterilized unwrapped bags into the sterile tin boxes, and the sterile tin lid is put on with the ring up. This lid is then soldered all around and at this stage, every crack being hermetically sealed, the interior of the box and the contained dressings are and will remain sterile so long as the box is unopened. A list of contents is placed on the top of the first tin lid, the final lid is placed on top, the two boxes are placed in the wooden Red Cross case and the lid nailed on. These boxes may be sent to the ends of the earth, the contents being in perfect condition as regards dryness and sterility so long as they are unopened; and surgeons at the base hospitals, or at the firing line, can depend on the dressings arriving in as perfect condition as if they came from the sterilizer to the operating room in the best hospitals.

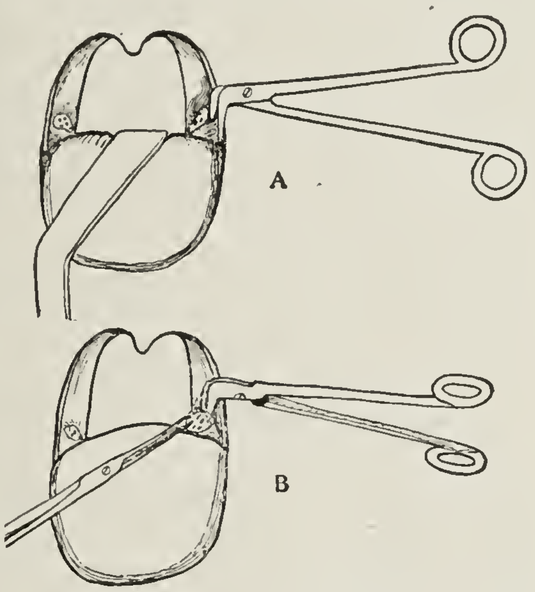
The majority of the guaranteed sterile dressings sent from Toronto have been sterilized and packed at the Toronto General Hospital under the conscientious supervision of Miss Gunn, the woman superintendent, and Miss Dunbar. The reports coming to us from abroad are that the dressings are a wonderful blessing to the surgeons and the wounded.

NEW INSTRUMENT AND TECHNIC FOR CIRCUMCISION OF THE TONSIL

Frank G. Murphy, M.D., Mason City, Iowa

In a previous article[1] attention has been called to a new operation for the relief of chronic tonsillar infection. This operation consists of the establishment of free drainage of the tonsillar and peritonsillar region, with subsequent atrophy of the tonsil, by separating the attachments around the tonsil instead of its enucleation. The method of procedure in this operation is as follows:

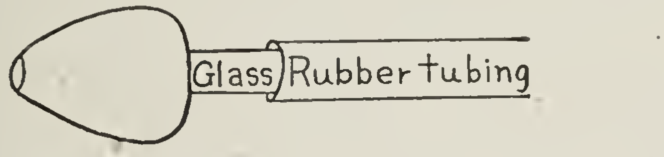
After the field of operation has been anesthetized, the forward blade of the scissors is inserted behind the plica between the anterior pillar and the tonsil, the incision being made as deep as possible, as at *A* in the illustration.



New instrument and technic for circumcision of the tonsil: *A*, incision; *B*, grasping of tonsil with forceps.

The tonsil is then grasped as at *B* with a pair of tonsil forceps. As gentle traction is being made with the forceps, any attachments which there may be to the posterior pillar are severed. Adhesions in the supratonsillar fossa are then cut. The anterior fossa is then dissected farther back so that the tonsil, when the operation is completed, is attached only to the pericapsular tissue.

Irrigating Tip.—Below is a drawing of an improvised urethral and bladder irrigating tip which has served me well. The tip is the hard rubber portion of a discarded stethoscope



or ear piece, into which is inserted a couple of inches of glass tubing, firmly held by the use of a little cement, and to which is attached the rubber tubing of the irrigator bottle.—J. A. Van der Hulse, M.D., Akron, Ohio.

The Child and the State.—When the state, for its own protection, compels a child to go to school, it pledges itself not to injure itself by injuring the child.—Dr. William H. Allen.

Therapeutics

PNEUMONIA

(*Continued from page 1461*)

TREATMENT

4. *The Bowels.*—The bowels should move daily. Constipation should be prevented, but a diarrhea is not desirable. A cathartic may be given in the beginning of the disease, the one preferred by the physician. Later, his preferred laxative, whether a compound aloin tablet, a cascara tablet, or some other combination, should be given, but, preferably, it should be a vegetable laxative. An occasional enema of glycerin and water, one ounce of each, will be found valuable. It will empty the colon and prevent the necessity of giving large doses of a laxative or a cathartic. Such treatment will aid in preventing tympanites.

A diarrhea will weaken the patient and add one more element to cause weakness of the heart. If it occurs, the bowels should be cleaned out with a laxative, castor oil if it can be taken, and then movements should be prevented by $\frac{1}{10}$ grain of morphin. Saline cathartics are likely to increase the amount of gas in the intestine, and hence are generally contraindicated. Bismuth is likely to remain too long in the bowels and promote the growth of germs and the absorption of toxins, which will add one more danger in the pneumonia toxemia that is constantly feared. Phenyl salicylate (salol) in 0.25 gm. doses, in capsules, may be given in these diarrheal conditions, four or five times in twenty-four hours, for a few days, and will often stop excessive fermentation.

5. *Care of the Skin and Mouth.*—It is rare, with the proper diet, the proper treatment of the bowels, and with plenty of fresh air, that the temperature in pneumonia is so high as to require sponging with cold water. Even when the temperature is very high, with a cerebral complication, tepid sponging in a warm room is as severe treatment as should be tried. Ordinarily, then, sponging once or twice a day with hot water is advisable, both for the comfort of the patient and to remove perspiration and keep the skin active. The temperature is more or less reduced by the warm sponging, the blood-vessels of the surface are slightly dilated, the circulation is equalized, and the normal activities of the skin, which are essential, are increased. Also, warm sponging tends to relieve the tension of blood in the head, and many times aids in promoting sleep. If the patient's temperature is low, hot-water sponging is certainly advisable, and hot-water bags should be used around the extremities and even around the body. Such a condition is often seen in pneumonia in alcoholics. Profuse, cold, clammy perspiration should never be allowed to remain on the patient's body. Warm alcohol sponging in such conditions is advisable, that is, sponging with pure alcohol. A dash of alcohol in a basin of water has no therapeutic or physiologic value and represents nothing but a fad.

Cleanliness of the mouth, teeth and tonsils is very important. The patient may have infected himself from his own tonsils or his own gums; such possibilities should be remembered, as well as the necessity of keeping the mouth as clean as possible during the illness. While alkaline mouth washes are cleansing and soothing, acids are more likely to kill the mouth germs; hence not only are orange juice and lemonade advisable for the salts that they contain and for stimulating the secretions of the mouth, but they may even have a germicidal value. There is no reason why a patient should not chew pieces of orange. The pulp, if swallowed, is perfectly harmless, and adds some bulk for the intestines to act on. Suppurating spots in the mouth should be touched with tincture of iodin or with Lugol's solution. Hydrogen peroxid solutions may be used in full strength for swabbing, or diluted for a mouth wash or throat gargle.

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[1] Murphy, F. G.: Circumcision of the Tonsil, Jour. Iowa State Med. Soc., 1915, v, 328.

The sputum, being as likely to communicate disease as is that from tuberculous patients, or even more so, should receive the same antiseptic care as does that of tuberculosis. The patient's mouth, excretions from the nose, and the nurse's hands and contaminated clothing or gauze should be treated in the manner so well understood in tuberculosis.

GENERAL CONSIDERATIONS

Although pneumonia has been considered a self-limited disease tending to recovery, this can hardly now be said to be generally true. The sthenic type of pneumonia which does tend to recovery, with one or more lobes distinctly involved, is now not so frequent as a less circumscribed pneumonia, or an asthenic type with a low temperature and without much tendency to self-limitation and, as the statistics show, not a great tendency to recovery. The crisis which should introduce recovery means, according to Hektoen,[1] the destruction of the pneumococci in the lungs and blood. This, he says, is accomplished by phagocytosis and by extracellular digestive processes. Therefore, the greatest defense against pneumonia is a production of leukocytosis and of antibodies in the blood. Such patients as rapidly die of a toxemia have this blood defense in insufficient amount. When this defensive process has been produced in sufficient amount to destroy the pneumococci rapidly, the recovery is by crisis; when it is in sufficient amount to destroy them only slowly, the recovery is by lysis, and this latter form of recovery is the one which we now more frequently see.

If the patient does not die of the acute onslaught of the germ by incombatable toxemia, or by exhaustion from a later general toxemia, or from a migration of the pneumococci to the meninges, his survival or death depends on the ability of his heart to withstand the disease. Willson[2] states that his postmortem findings have shown, in every fatal case of pneumonia, a coincident attack on the heart muscle and a more or less destructive myocarditis; he thinks it likely that "every heart that weathers the pneumonic storm sustains similar lesions, of milder degree perhaps, yet from which it never fully recovers." This finding emphasizes the part that the heart plays in the disease of pneumonia.

Rohdenburg and Vander Veer[3] believe that pneumococci are not infrequently present in the spinal fluid in pneumonia, even when there are no distinct meningeal symptoms. It is quite possible that a slow-going pneumococcic meningitis without distinct meningeal symptoms may be the cause of some deaths that have been attributed to toxemia, that is, deaths of patients that have insomnia, delirium and high temperature without more distinct meningeal symptoms.

It has been shown by Dochez and Gillespie[4] and confirmed by Dochez and Avery[5] that lobar pneumonia may be divided into four groups by immunologic tests on animals. These latter investigators do not believe that the virulent types of pneumococci are often found in the mouths of healthy persons who have not been directly exposed to pneumonia. The germs frequently found in the mouth belong to the fourth group of pneumococci, those of low virulence, which are, however, responsible for about one fifth of the cases of pneumonia. In patients who have the more virulent type of pneumococcus the disease will be prolonged if this virulent type is found long in the mouth of the patient. Generally, after a certain number of days the virulent type of pneumococcus has disappeared and perhaps is replaced by a nonvirulent type. On the other hand, these observers often found in the mouths of the assistants and nurses the virulent type of pneumococci which they had acquired from their patients. Such nurses and attendants are certainly active carriers of this infection, and may infect others even if they develop sufficient immune bodies from such vaccination, which it really is, to prevent the occurrence of the disease in themselves. Pneumonia, therefore, seems to be, in 80 per cent. of the cases, a contact disease. Consequently, the necessity of making it a reportable disease and surrounding each case with all the preventive care that is used in other contagions is self-evident.

There is no specific treatment for pneumonia; no one treatment can be guaranteed either to abort or to shorten the disease. Some years ago veratrum viride, pushed to its cardiac depressant action, was thought to be of great benefit. More recently lauded treatments have been large doses of quinin, of salicylic acid, of potassium iodid, and of quinin and urea hydrochlorid; probably there are other drugs that have been stated to be of marked benefit. The success from these drugs must be considered more or less accidental, and but few followers of these treatments have been able to obtain the success of their founders.

That occasionally pneumonia may be aborted must be acknowledged, as the pneumococcus is found in the mouth without pneumonia occurring; hence the germ may enter the respiratory tract, causing congestion, and still the disease might abort. Doubtless many supposed aborted cases, however, were congestions of the lung in which the pneumococcus was not present.

That venesection was at one period of considerable value in pneumonia when the disease was constantly sthenic, the patient was sturdy and had a surplus of respiratory strength, is doubtless true. This treatment has apparently at times saved life. Occasionally, in an overpowering onslaught of this infection, in a strong, plethoric man, with rapid congestion and consolidation of one or both lungs, venesection may be valuable today. Such cases are becoming more and more rare.

Venesection, veratrum viride, aconite, and large doses of the coal-tar products are all more or less in disrepute on account of the almost assured heart weakness that a patient with pneumonia will develop sooner or later. Consequently, the physician dislikes to think that he may have hastened this heart failure by his treatment. The trend of the treatment of severe acute disease is the trend of civilization. The dire blood lettings, profuse vomitings, severe catharsis, then the cardiac depressants, then the coal-tar antipyretics, then the starvation, and lastly the use of alcohol to depression have all given way to the change in humanity due to civilization. The strenuous life that we lead has caused the heart and circulation to be less and less able to withstand disease and less and less able to stand severe radical treatment. Consequently, harsh methods tend to prostration and a fatal outcome in pneumonia. Conservation of energy is now the watchword in this disease.

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[1] Hektoen, L.: The Journal A. M. A., Jan. 24, 1914, p. 254.
[2] Willson, R. N.: The Journal A. M. A., Sept. 19, 1914, p. 981.
[3] Rohdenburg, G. L., and Vander Veer, Jr., A.: The Journal A. M. A., April 10, 1915, p. 1227.
[4] Dochez, A. R., and Gillespie, L. J.: The Journal A. M. A., Sept. 6, 1913, p. 727.
[5] Dochez, A. R., and Avery, O. T.: Jour. Exper. Med., 1915, xxi, 146.

(To be continued)

DOSAGE OF CALOMEL

Dr. Nathan B. Eddy, Standish, N. Y., writes:

> In The Journal (Oct. 2, 1915, p. 1183) in the department of Therapeutics under the heading, "Acute Diarrhea," it is said, "This foolish one-tenth-grain-dose-of-calomel-every-hour fad should be given a decent burial." Allow me to object.
>
> We have just been having here a considerable number of cases of acute diarrhea, apparently due to the defective water supply. The same general treatment was used as outlined in the article in question, except that calomel was given in divided doses, one-tenth grain in children, one-quarter grain in adults, usually at half-hour to one-hour intervals.
>
> The apparent result was that less calomel was needed for the desired effect, and, perhaps more important, where vomiting was present, the divided doses were better retained than larger single doses. Single doses were used in some cases.
>
> It seems to me there is still a place for divided doses of calomel, the article to the contrary.

There is probably no doubt that in selected cases divided doses of calomel may act satisfactorily, but it is rare that divided doses will act better than a single dose in amount carefully selected to fit the case. The criticism concerning the small-dose-of-calomel fad was aimed at the great frequency with which calomel is thus administered in hospitals in postoperative cases, without regard to the condition of the stomach or intestines, and to all young children who need a cathartic or have any disturbance whatever, and to most adults who have some intestinal disturbance. A frequent consequence of the administration of small doses of calomel, especially in postoperative cases, is nausea, vomiting, and also many times an irritation of the duodenum which lasts several days.

It takes many hours for calomel to cause purging. When it is time for the first two or three doses to cause such action, many other doses on the one-tenth-grain plan are on the way. If protracted looseness of the bowels is desired, this may be good treatment. On the other hand, even though it cannot be denied that calomel in small doses frequently repeated has a certain amount of antiseptic or germicidal action in the intestine, as is claimed, it still would seem that some other antiseptic, as phenyl salicylate (salol), would be better and safer.

The success of small doses of calomel recorded by the correspondent is not questioned. It is still urged, however, that such treatment can do harm, and it is to be deplored that calomel in divided doses is given thoughtlessly and as routine treatment without individualizing the patient and the object of treatment.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

BETANAPHTHYL SALICYLATE. — Betanaphtholis Salicylas. — Betan. — $C_6H_4.OH.CO.O.(C_{10}H_7)$. — The salicylic acid ester of betanaphthol.

Actions and Uses.—Betanaphthyl salicylate undergoes no change in the stomach, but is split up into its original compounds when it reaches the intestinal tract by the pancreatic juice and intestinal secretions. It is believed to act as an intestinal antiseptic and, being excreted in the urine, to act in a similar way in the bladder. (See general article on Naphthol Compounds, N. N. R., 1915, p. 210.)

It has the antirheumatic properties of salicylic acid. It is said to be useful in intestinal fermentations, catarrh of the bladder, particularly gonorrheal cystitis, rheumatism, etc.

Dosage.—From 0.3 to 0.5 Gm. (4 to 8 grains) in cachets, milk or emulsion.

Non-proprietary preparation: Betanaphthyl Salicylate, M. C. W.—Manufactured by the Mallinckrodt Chemical Works, St. Louis, Mo.

Betanaphthyl salicylate is obtained by heating betanaphthyl-sodium and sodium salicylate with phosphorus oxychloride at from 120 to 130 C.

It is a white, shining crystalline powder, colorless and tasteless, melting at 93.2 C. It is insoluble in cold or hot water or glycerin, soluble with difficulty in cold alcohol or turpentine, easily soluble in boiling alcohol, in ether, in benzene, and in warm linseed oil. In the cold it is not changed by acids or alkalies of moderate concentration. When heated with alkalies it is decomposed into its constituents, which, if the solution be acidulated, will crystallize.

It is distinguished from salol by its higher melting-point and by the production of a brownish-green color, when a trace of nitric acid is added to its yellow colored solution in pure sulphuric acid. It burns on platinum foil, leaving no residue (absence of fixed mineral impurities). If 1 Gm. of betanaphthyl salicylate be shaken with 30 Gm. of boiling water and filtered through a moistened filter, the filtrate should not have an acid reaction (absence of salicylic, hydrochloric or phosphoric acid), nor should it after cooling show a crystalline deposit (salicylic acid or betanaphthol); nor should it become turbid on the addition of silver nitrate (chlorides or phosphates) or barium nitrate (absence of sulphate), nor should it give a violet color with solution of ferric chloride.

Proprietary Preparation:

BETOL.—A name applied to betanaphthyl salicylate.

Manufactured by Merck and Co., New York.

Classification of Tropical Diseases

Escomel publishes in the *Cronica Medica,* 1915, xxxii, 150, a study of blastomycosis in man in Peru and Bolivia. It is accompanied by eight illustrations of two typical cases, and he declares that there is unwarranted confusion in the nomenclature of tropical diseases, especially in Peru and Bolivia. Cases have been grouped as uta, espundia, buba, etc., when in reality all these tropical diseases of the skin and mucous membranes should be classified as leishmaniasis, with or without flagellates, syphilis, tuberculosis, pain, or blastomycosis, "the latter constituting," he remarks, "the most extensive and the cruellest chapter of pathology in our tropical region." The dictionaries define blastomycosis as saccharomycosis, that is, any disease condition due to a yeast-fungus. In his two cases the skin around the mouth and the mucosa of the upper air passages were mainly affected.

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SATURDAY, OCTOBER 30, 1915

THE ANTIFERMENTS OF THE BLOOD

The Abderhalden test for the presence of specific enzymes in the blood, which has frequently been referred to,[1] has awakened interest not only in the possibilities of practical application which it represents but also in its relation to the underlying principles of immunity. Even a cursory review of the literature of the subject will indicate that Abderhalden's views have not gone unchallenged and his contentions have not remained without contradiction. The differences have ranged from the complete denial of the phenomena themselves to the mere expression of doubt as to the validity of their interpretation.

It will be recalled that according to Abderhalden the injection of foreign proteins of any kind into the blood leads to the prompt formation and appearance in the blood of enzymes which can digest proteins of the sort introduced, but not any other kinds. In the case of pregnancy, for example, it is postulated that placental protein finds its way into the maternal circulation. As a result, the blood serum of the pregnant woman or other mammal acquires the property of digesting proteins prepared from placental tissues. This fact has been applied to the detection of pregnancy. In a similar way a comparable serum test for the detection of cancer has been devised with protein derived from carcinomatous tissue. The underlying postulate in all these cases is that the body can generate new enzymes which will attack only certain native proteins.

Jobling[2] and his collaborators at the Vanderbilt University, Medical Department, in Nashville are among those who take exception to this assumption of the genesis of specific enzymes, and they seek to explain the phenomena in a quite different manner. It is known that the blood may contain not only proteolytic enzymes but also antienzymes. Protein-digesting ferments are frequently liberated from cells such as the white corpuscles of the blood, but their digestive capacity is inhibited by the presence of antiferments in the blood. Proteolytic enzymes are present in the blood under a variety of conditions, but they are not specific and they become evident only when the antienzyme has been removed. According to Jobling and others, normal human serum rarely contains strong proteolytic enzymes and therefore does not give a positive Abderhalden reaction. On the other hand, serums of pregnant women, of patients with pneumonia, or with cachexia due to certain causes do contain ferments and will give positive Abderhalden reactions. Such tests can be obtained with all human serums containing much proteolytic ferment, regardless of the disease from which the patient is suffering, not only with placental tissue but also by removal of the antitrypsin by suitable methods. In the case of the pregnancy test a positive reaction is due to the adsorption of the antienzyme by the placental tissue used or by the bacteria. The enzyme is merely permitted thus to act on the unprotected serum protein. The digestive reaction, as several investigators have insisted, is exerted, in all cases of positive test, on the serum itself, rather than on the foreign substance added.

Extensive investigations have shown that a variety of ether-soluble substances or products derived from them can act as ferment-inhibiting agents. This is particularly true of soaps of some of the fatty acids. Jobling and Petersen[3] have shown that they can be prepared from the tubercle bacilli and tuberculous caseous material. They suggest that the production of the latter in tuberculosis must be partly due to the presence of substances which inhibit the action of the enzymes set free as a result of the disintegration of the cells. Further experiments have shown that it is the fatty acids of the unsaturated type which are endowed with the antitryptic power. In caseous material from tuberculous lymph glands and from caseous pneumonia, ferment-inhibiting substances were also identified as compounds of unsaturated fatty acids.

The association of the unsaturated carbon bonds with the antitryptic power has been made even more likely by the fact that treatment with iodin or hydrogen peroxid, which changes the desaturation of the fatty acids, also destroys their antiferment activity. Jobling and Petersen relate these facts to the action of iodid in tuberculosis. Caseous areas often may be present in the lung, but unless they open into the air passages, tubercle bacilli may be absent from the sputum. If iodids are now given, the antiferments are destroyed, proteolysis can proceed, and the caseous matter begins to soften and is more likely to rupture into the bronchi so that bacilli are then discharged with the sputum.

With the establishment of the contention that the activity of fatty acid derivatives (soaps) as ferment-inhibiting agents is dependent on the degree of unsaturation and "iodin value" of their fatty acids, has come the attempt to discover whether all antitryptic agencies in the body are of this lipoidal character. It is now known that the antitryptic power of serum is almost entirely removed by extraction with an organic solvent such as chloroform or ether. Furthermore, serums become far more toxic when their antifermentative potency is thus destroyed, perhaps because the enzymes in them are then given full scope to produce poisonous digestion products from the unprotected serum proteins. Applications of the principle involved to other problems in immunology will suggest themselves.

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[1] A Biologic Diagnosis of Pregnancy, editorial, The Journal A. M. A. May 25, 1912, p. 1604; The Blood Test for Pregnancy, Dec. 7, 1912, p. 2073; The Present Status of Abderhalden's Serodiagnosis, Aug. 16, 1913, p. 493; Abderhalden's Test in Cancer, Oct. 18, 1913, p. 1461.

[2] Jobling, J. W., and Petersen, W. F.: A Study of the Ferments and Antiferments of the Body and Their Relation to Certain Diseases, Bull. Johns Hopkins Hosp., 1915, xxvi, 356.

[3] Jobling, J. W., and Petersen, W.: Jour. Exper. Med., 1914, xix, 239 ff.

CAMPHOR, NATURAL AND SYNTHETIC

It is reported that the first, and, so far, the only productive camphor plantation in the United States (that at Satsuma, Florida) distilled its second year's crop this spring.[1] The yield is said to be satisfactory. Smaller plantations in various parts of Florida will soon come into bearing. This is the result of a government campaign begun twelve years or so ago. It is expected that more and more land will be set out in camphor, and that this country may soon (perhaps within a decade) be independent of foreign camphor producers.

Before the camphor monopoly becomes a page of forgotten history, some writer with an eye for the romance of actuality should record its life-and-death struggle against the synthetic camphor industry. The camphor of commerce is now obtained chiefly from Japan and the island of Formosa, to both of which regions the camphor laurel (*Cinnamomum camphora*) is indigenous. After taking possession of Formosa, Japan gradually brought under control the fierce head-hunting tribes that had previously made camphor gathering almost impossible there, and in 1899 made the industry a government monopoly, which in 1903 was extended to Japanese camphor. The Japanese captured the world's camphor market, reaping, it is said, huge profits, which reached their climax in 1906-1907, when camphor brought as high as $80 per picul of 130 pounds.[2] Meanwhile, a rival industry was growing up in Germany. In 1870 it became known that synthetic camphor could be manufactured from oil of turpentine. This was converted: (1) into pinene hydrochlorid; (2) into camphene; (3) into isoborneol, and (4) into camphor.[3] In 1905, the growing importance of camphor in the production of celluloid and other substances stimulated the first important attempt to produce synthetic camphor for the market. The idea captivated the imagination of chemists, and the production of synthetic camphor became one of those crazes which blast hopes and wreck fortunes. Over two hundred patents were taken out; by 1908 the synthetic camphor industry, favored by temporary business conditions, was able to deal a serious blow at the Japanese natural camphor trade. The Japanese rallied, however, and, by underselling wherever their trade was threatened, regained control of the market. In 1909 the German synthetic camphor industry, though not killed, was so crippled (being also hampered by the fluctuations in the supply of turpentine oil) as no longer to endanger Japanese supremacy.[4] On account of our plentiful supply of turpentine oil, the manufacture of synthetic camphor has been regarded as a promising field for enterprise in this country. American turpentine oil ranks next after the French as a base for synthetic camphor, in the opinion of German manufacturers.

The chemical formula for natural and synthetic camphor is the same, $C_{10}H_{16}O$. The two substances are best distinguished by the polarized light test. Natural camphor from the camphor laurel[5] rotates polarized light to the right, whereas synthetic camphor, which is composed of dextrorotatory and levorotatory camphor, is optically inactive. This opposite rotation in two bodies identical in the number and kinds of atoms in the molecule is supposed to indicate a reverse arrangement of atoms or atomic groups, so that the two isomers correspond to each other like the right and left of a pair of gloves. In many instances this reverse structure is accompanied by an as yet inexplicable difference in medicinal activity. Thus, when synthetic epinephrin was first placed on the market, it was found to have but half the clinical activity of natural epinephrin. Natural epinephrin is levorotatory; the synthetic product then marketed was optically inactive, being a mixture of dextrorotatory (*d*) and levorotatory (*l*) epinephrin. When their attention was called to the differences between natural and synthetic epinephrin, the manufacturers of the latter were able to produce a satisfactory article by separating out and discarding the *d*-substance, which was only one fifteenth as powerful as the *l*-product in its effects on the blood pressure.

A similar gradation in the effects of levorotatory, inactive and dextrorotatory camphor has been reported,[6] *l*-camphor in massive doses strongly stimulating the central nervous system of frogs, the optically inactive (synthetic) camphor producing a less marked reaction, and the *d*-camphor (the natural product) a still weaker one. The *l*-camphor is said to be more toxic than *d*-camphor.[7] The present war, by cutting off from Germany the supply of Japanese camphor, has naturally stimulated among German clinicians an interest in the possibility of substituting artificial for natural camphor in medicinal use. The government therefore recently ordered clinical tests made. Synthetic camphor, used externally and in moderate doses internally, has been reported as having the same effects as natural camphor.[8] The published clinical reports, however, are few and the details are somewhat meager. The announcement of a manufacturer that synthetic camphor has been fully established as equal in medicinal value to natural camphor therefore appears premature. The substitution of synthetic camphor for the natural product in medicinal use seems unwarranted where no necessity exists, at any rate, until the discrepancies in the evidence have been cleared up. Even Levy and Wolff,[8] who report having found the former a satisfactory substitute for the latter product, warn against using more than 1 gm. in a single dose, on account of the greater toxicity of the artificial substance.

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[1] Our Beginnings in Camphor, Scient. Am., Jan. 16, 1915, p. 71.

[2] Camphor Industry in Foreign Countries, Dept. Comm. and Labor, Bur. Man., Spec. Cons. Rep., 1910, xliii, Part III.

[3] Thorpe's Dictionary ot Applied Chemistry, Vol. I, art. Camphors, p. 619.

[4] Report for 1909 of the Elder Merchants of Berlin, quoted in Camphor Industry in Foreign Countries (Note 2).

[5] A natural camphor is known which, though otherwise identical with ordinary camphor, rotates polarized light to the left. This *l*-camphor occurs in the volatile oil of feverfew (*Pyrethrum parthenium*) and in the oil obtained from the fresh twigs and leaves of *Artemisia nana*. (Thorpe's Dictionary of Applied Chemistry, Vol. I, art. Camphors, p. 620.)

[6] Langgaard, A., and Maass, T. A.: Therap. Monatsh., November, 1907, p. 573, quoted by Bachem, C.: Med. Klin., April 11, 1915, p. 425. Sassen (Inaug. Diss., Bern, 1909, also quoted by Bachem) was unable to confirm these observations. Langgaard and Maass found but slight differences in the effects of the different forms of camphor given in moderate doses; all the effects produced were on poisoned animals. Grove (Jour. Pharmacol. and Exper. Therap., January, 1910, p. 445), in experiments on frogs and white rats, found that the pharmacologic action of the three kinds of camphor differed not in kind, but merely in degree. Mammals were about three times as susceptible as frogs to the action of all forms of camphor.

The pharmacologic evidence with regard to camphor is confused and contradictory, and the clinical evidence is naturally still more so. On the subject of the clinical value of natural camphor there are many diametrically opposed opinions. While in Europe camphor is widely used for its circulatory actions, especially in threatened cardiac failure, certain English and American observers[9] have been unable to detect any action from camphor which would justify reliance on it as a cardiac stimulant. Further observations are much to be desired.

THE MANAGEMENT OF DIABETES

Last week's issue of The Journal[10] contained a brief historical survey of the purpose which has permeated some of the methods of dietotherapy in diabetes, particularly those which have involved the use of considerable amounts of carbohydrate-containing foods. As is so often the case in medicine, the intent of some of these procedures has been either misunderstood or not taken into consideration at all by those who have attempted to apply them to the human patient, and the results have frequently been unexpected failures. Many physicians have inaugurated the "oatmeal" treatment in the regimen of a diabetic without appreciating that its field of usefulness is admittedly limited, and that it represents, not a permanent sort of dietary, but a vigorously and intelligently instituted temporary mode of therapy intended to develop an increase of carbohydrate tolerance and to diminish a severe impending acidosis and ketonuria. None of the "cereal treatments" were originally intended to be permanent unvaried dietary procedures. A careful study of the recommendations of those who proposed them would have dispelled the false claims and irrational practices.

The warning to insist on an intelligent appreciation of the aim and method alike of any new procedure in therapy may not be amiss in relation to the treatment of diabetes by prolonged fasting—a method advocated by Dr. F. M. Allen,[11] now of the Rockefeller Institute of Medical Research. It is the more timely because a fundamental factor in the new plan consists in a larger share of education for the patient and a smaller element of nursing or hospital life.

A competent American student of diabetes has succinctly summarized the intent of the new procedure as follows: Fasting and a low diet have long been known, but it is only fair to give Allen the credit, first, of seeing the therapeutic significance of inanition in a severe case of diabetes; second, of proving on diabetic dogs that prolonged fasting would render them sugar-free, and, third, of having the courage of his convictions and applying this principle to human diabetics.[12] The ideal of treatment in this disease is a sugar-free and acid-free urine. Present experience indicates that the glucosuria in cases of even the severest type of diabetes may with advantage be cleared up by one initial fast. The necessary duration may sometimes be as long as eight or ten days. Under these conditions, contrary to the general impression, the severe acidosis of diabetes is markedly reduced. Allen has expressed the situation by saying that, broadly speaking, freedom from glucosuria seems attainable in all cases of uncomplicated human diabetes before there is danger of death from starvation.

Heretofore the fasting in cases of diabetes has been of brief duration. The loss of body weight has usually been feared as a dangerous depletion of reserve energy; and in the presence of severe acidosis, carbohydrates, though poorly tolerated, have been depended on to bring relief from this condition. In the milder types of diabetes the usual measures used in diabetic therapy, namely, restriction of carbohydrate or protein and brief fasting, if necessary, suffice to keep the patients sugar-free and in good condition. Such measures notably fail in the severer types. The fundamental significance of Allen's treatment, involving a suitable initial fast, lies in the belief that if glucosuria and hyperglycemia are prevented, the damaged internal function of the pancreas, on which the utilization of sugar ultimately depends, is protected, and rest becomes possible. Structural losses cannot be repaired; but it is reasonable to assume that if there is a "functional" element in the etiology of human diabetes, a complete rest of the weakened function may both permit and facilitate recovery.

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[7] Pari (Sull' azione fisiologica delle canfore isomere, Gazz. d. osp., March 15, 1908; quoted by Levy and Wolff, Note 8) found *l*-camphor thirteen times as toxic as *d*-camphor. Grove (Note 6) found dextrocamphor three-fourths as toxic for frogs as the levo form, while the inactive camphor occupied a middle position.

[8] Levy, Margarete, and Wolff, Walter: Camphertherapie mit künstlichem Campher, Therap. d. Gegenw., March, 1915, p. 88. Kaufmann, R.: Zur Anwendung des synthetischen Kampfers in der Dermatologie, München. med. Wchnschr., March 2, 1915, p. 319.

[9] See, for instance, Heard and Brooks (Am. Jour., Med. Sc., February, 1913, p. 238), who in clinical trials failed to obtain any effect from doses as large as 50 grains injected subcutaneously in oil.

[10] Dietotherapy in Diabetes, editorial The Journal A. M. A., Oct. 23, 1915, p. 1463.

[11] Allen, F. M.: Studies Concerning Diabetes, The Journal A. M. A., Sept. 12, 1914, p. 939; Boston Med. and Surg. Jour., Feb. 18, 1915; Prolonged Fasting in Diabetes, Am. Jour. Med. Sc., 1915, cl, 480. Joslin, E. P.: Present-Day Treatment and Prognosis in Diabetes, ibid., p. 485. Hill, L. W., and Eckman, Rena S.: The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital, Boston, W. M. Leonard, 1915.

[12] Joslin, E. P.: Present-Day Treatment and Prognosis in Diabetes, Am. Jour. Med. Sc., 1915, cl, 485.

The policy of Allen's method involves "prompt and lasting freedom from glucosuria and acidosis" not only in mild and incipient cases but also in all diabetic patients, even the severest. This represents a far more radical treatment than any hitherto proposed. The avoidance of acidosis means the elimination of the necessity of administration of objectionable alkalies often given in very large doses. The danger of coma is correspondingly reduced. The subsequent carefully selected diet is intended to maintain the advantage of freedom from intoxication at any cost. Therefore, instead of attempting to increase the weight of the somewhat depleted patient and maintain it at the highest possible level, as has so often been attempted, the aim is to keep the weight low in the belief that the reduction is beneficial to the diabetic. Any gain which brings back glucosuria or ketonuria must be checked. From this point of view, it becomes necessary on the return to restricted diet to test the patient's tolerance not only to carbohydrate but equally well to fat and protein, and to keep within it. During the fasting periods, alcohol may be given until the ketonuria disappears. This is not absolutely essential, though alcohol appears to be valuable and does not produce glucosuria.

Although it is perhaps too early to grow unduly enthusiastic with respect to the success of the treatment by initial fasting, enough favorable reports have been recorded to designate the outlook as one of promise. Dangerously weak and emaciated patients have borne the fasting with apparent benefit, "giving the impression that they have been suffering more from intoxication than from lack of nutrition." Many of the dangers which suggested themselves have not arisen or have been successfully managed by those who have tested the method. After all, under any dietary plan the most important feature is to educate the patient so that he can carry out a dietary scheme with intelligence. Until the physician himself knows foods as well as he knows drugs, it is useless to expect dependable results from those in his care. Too often he is hopelessly bewildered when there is need of suggesting a "diet list." Green corn and celery, bananas and cucumbers are all in the same vegetable category in his mind. A radical treatment which removes polydipsia, secures relief from polyphagia and makes the patient feel better is always welcomed by the individual; but the treatment cannot be expected to succeed unless it can be intelligently prescribed.

Aside from the advantages of comfort and simplicity, the ultimate prognosis of diabetes on the basis of the new treatment must depend on the question whether diabetes is an inherently progressive disease or "the simple weakness of a metabolic function." Rest and restoration may succeed in one case; repair may fail in the other. Joslin has come to feel that coma no longer represents the culmination of diabetes, but that it is an avoidable accident. Whatever the ultimate outcome, Allen's treatment is believed, in his own words, to remove the glucosuria and acidosis more quickly and surely than has been the practice heretofore, and to enable patients to do better when these symptoms are removed than when they are allowed to continue. Any plan which holds out prospects like these for severe diabetes deserves to be studied carefully, to say the least.

LUMBAR PUNCTURE IN DELIRIUM TREMENS

The belief is becoming more or less general that the final factor in the production of delirium tremens is a marked increase in the pressure of the spinal fluid. Schottmüller and Schumm[1] found a marked elevation in the pressure of this fluid in 80 per cent. of the cases of acute alcoholism examined by them, and in one instance they drew as much as 100 c.c. with no unfavorable reaction. Steinebach[2] found a similar condition in 75 per cent. of patients with alcoholic delirium, and in the remainder there was a relative increase in the pressure of the fluid. That this increased pressure may be responsible for the delirium and is not merely a condition which accompanies chronic alcoholism is indicated by the fact that increased pressure is not found in alcoholics before or after an attack of delirium tremens, nor do habitual drinkers who are not suffering from acute alcoholism or who have not had delirium show an increased pressure. Further, in animals killed during a state of acute alcoholism, Braun[3] has demonstrated an internal hydrocephalus and an inflammatory infiltration of the pia. Finkelnburg[4] found, in dogs which had been given from 2.3 to 3.3 c.c. of alcohol per kilogram of weight, a maximum increase in the spinal fluid pressure of 72 per cent. This increase began from twenty to thirty minutes after the animal became intoxicated, reached its greatest height in from one and one half to three hours, and remained high for several hours. He believes that similar conditions obtain in acute alcoholism in man, and that the headache, hyperesthesia of the skin, dizziness and other nervous phenomena following a debauch are due to this increased pressure and to the internal hydrocephalus which accompanies it.

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[1] Schottmüller and Schumm: Nachweis von Alkohol in der Spinalflüssigkeit, Neurol. Centralbl., 1912, xxxi, 1020.

[2] Steinebach, R.: Ueber die Zerebrospinalflüssigkeit and über die Wirkung der Lumbalpunktion beim Delirium potatorum, Deutsch. med. Wchnschr., 1915, xli, 369; abstr., The Journal A. M. A., May 8, 1915, p. 1620.

[3] Braun, cited by Bumke: Die exogenen Vergiftungen des Nervensystems, Handbuch der Neurologie von Lewandowsky, 1912, iii.

[4] Finkelnburg: Experimentelle Untersuchung über den Einfluss des Alkohols auf den Hirn-Rückenmarksdruck, Deutsch. Arch. f. klin. Med., 1904, lxxx, 130.

If delirium tremens is due to increased pressure, the lowering of the tension by lumbar puncture should cause an improvement in the patient's condition. In this regard Steinebach's results are to the point. In every case the delirium grew milder; frequently it ended entirely. The disorientation as to time and place usually remained for a while. In two instances the delirium returned. Following a second puncture, an increase in the pressure was again found and the delirium soon abated. In the total series of eighteen cases, the average duration of muscular unrest following lumbar puncture was from three to four hours, and of delirium, twenty-four hours. In thirty-three cases in which lumbar puncture was not done, the average of the restless days was four, and of the delirium, five days. Thus, through lumbar puncture the duration of delirium was shortened 60 per cent. and the restlessness 75 per cent. This series of cases was punctured during the first twenty-four hours of delirium. Of the cases that were punctured on the second day following the onset of the delirium, improvement occurred less rapidly. Here the average duration of restlessness was from six to seven hours, of mental confusion twenty-four hours, and of delirium, eighty hours.

The manner of action of lumbar puncture in delirium tremens has been thought to be the same as that described by Quincke for puncture in acute serous meningitis. If the interventricular pressure reaches a certain point, the usual channels of escape for the spinal fluid become occluded. Then, by lumbar puncture, the hypertension is released and healing begins. Certain facts, however, make another explanation necessary. First, lumbar puncture works equally well in cases which show only a relative increase in pressure. Second, Steinebach found that after the withdrawal of the spinal fluid in these cases, the reinjection of from 15 to 20 c.c. of physiologic salt solution gave even more beneficial results. These facts indicate that there is probably some toxic irritant present in the spinal fluid. Accepting this view, the best treatment of delirium tremens is a spinal puncture which releases the pressure and removes part of the toxic substance and a dilution of what remains by the injection of salt solution.

The nature of this toxic substance is not known. In approximately 80 per cent. of these studied cases, alcohol or one of its derivatives has been demonstrated in the spinal fluid by the iodoform crystal test. Finkelnburg has shown experimentally that alcohol reaches a higher concentration and remains for a longer time in the spinal fluid than in the blood. While this may play a rôle in the increased pressure associated with acute alcoholism, it does not in the production of delirium, because delirium frequently begins during a period of total abstinence, and in such cases no alcohol can be demonstrated in the spinal fluid. Alcohol is apparently one of the substances which has an affinity for nervous tissues. It is secreted by the choroid plexus into the cerebrospinal fluid, but its presence there is a result of large amounts of alcohol recently consumed and is not the final factor in the production of delirium.

The most important therapeutic effect of lumbar puncture in delirium is stopping restlessness and muscular exertion, since that minimizes the chances of cardiac failure. The best results seem to occur in pneumonia when early puncture is made, and here a sparing of exertion is, of course, essential.

THE KIDNEY AND SUGAR EXCRETION

The average normal sugar content of the blood may be expressed, in round numbers, as 0.1 per cent. of glucose. Although the kidney cells are continually bathed with a sugar solution of this concentration, none of the carbohydrate passes them so as to reach the urine. There are other substances which may enter the blood stream in minutest doses — in quantities far smaller than those represented by the circulating sugar — yet they promptly make their appearance in the kidney secretion. As soon as the glucose concentration in the blood is slightly raised to the point commonly designated as hyperglycemia, sugar is likely to appear in the urine. Here is a group of undoubted facts that are not easy to explain. If all readily diffusible substances that find their way into the circulation could be found in the renal secretion, as various inorganic salts and urea are, this feature would be easy of interpretation. If it could be demonstrated convincingly that certain substances fail ordinarily to get into the urine because the renal cells are impermeable to them as they seem to be for colloids like the proteins, this, too, could readily be understood. But the so-called threshold phenomenon — the fact that glucosuria is dependent on a more or less pronounced rise in the concentration of a substance ordinarily present in the blood at all times — has been a stumbling block for a diversity of physiologic hypotheses.

One of the first contributions from the newly equipped James Buchanan Brady Urological Institute of the Johns Hopkins University and Hospital[1] offers an explanation of the problem in what appears to be a tenable and demonstrable form. The authors, Peirce and Keith, remind us of two unquestioned facts, namely, that the kidney uses a relatively large amount of oxygen, and that glucose is one of the main sources of energy in the body. It is therefore very probable, they argue, that the kidney normally oxidizes a certain amount of glucose. Hence, even if the boundaries of the renal cells are permeable for this sugar, not all of the glucose that penetrates into the cell will reach the lumen of the glomerulus or kidney tubule. The assumption is accordingly made that sugar normally gains entrance into the kidney cells in proportion to its concentration in the blood. There is no contention that the cell boundaries are in any way impermeable or permeable with difficulty to sugar. During its passage through the cell, some of the glucose is oxidized, as we might expect, and if not too much has entered, it will be oxidized in its entirety and none will appear in the urine.

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[1] Peirce, G., and Keith, A. M.: The Excretion of Sugars by the Kidney, Proc. Soc. Exper. Biol. and Med., 1915, xii, 210.

Are there any facts in corroboration of this hypothesis? We may cite a few instances contributed by Peirce and Keith: The hourly oxygen requirement of the kidneys has been determined approximately by physiologists. It is found to be of a sufficient magnitude to produce complete oxidation of all the sugar which the kidneys might be expected to excrete if they were completely permeable to sugar. Again, if the kidney cells are actually permeable to sugar, which they in turn burn up, then the sugar content of the renal vein should be lower than that of the arterial blood entering the kidney. This, likewise, is found to be true. Finally, Peirce and Keith are finding that only the sugars which are oxidized by the body will show the so-called threshold phenomenon. They venture the added statement that if the kidney is permeable for a sugar when and only when its concentration in the blood rises beyond a certain level, that sugar is oxidized by the kidney. Carried to its logical consequence, this may be interpreted to mean that any substance which finds its way through the kidneys into the urine, only when its concentration in the blood rises above a certain level, belongs to compounds metabolized by the renal tissue. We shall await further demonstration.

The Autonomic System.—In the average healthy individual there is maintained an equilibrium between these two systems, the autonomic and sympathetic, subject to all the physiologic variations and physical needs of the body. This balance is kept up through the constant stream of stimuli arriving by the nerve paths and also by the direct chemical actions on the system, of hormones from the internal glands, or elsewhere. The points of possible intervention are so innumerable and the variety of stimuli is so great that it seems hopeless ever to be able always to diagnose accurately either the point or nature of the intervention. In marked variations from the normal, one finds many cases which show a pronounced tendency to an over or under action of one or the other system; and by keeping in mind the symptoms of hypertonus or hypotonus of the sympathetic or the autonomic system one finds many individuals who may be classed either as having a vagotonic or autonomic constitution or a sympathicotonic constitution.—J. W. McIntosh, M.D., *Canad. Med. Assn. Jour.*, September, 1915.

Current Comment

OSTEOPATHS AND THE HARRISON LAW

As anticipated, the federal government is having much difficulty in the administration of the Harrison law, owing to the fact that there is no uniform standard as to what constitutes the practice of medicine in the different states. Not only the definitions and provisions of the statutes, but also the decisions of various courts of last resort differ widely on this point. In some states, osteopathy is included in the practice of medicine; in other states, it is legally distinct. The dilemma of the Treasury Department is apparent from its conflicting rulings. Treasury Decision 2232, recently issued, revokes Treasury Decision 2172 and substitutes the following ruling: "Osteopaths should be permitted to register and pay special tax under the provisions of the act of Dec. 17, 1914, provided they are registered as physicians or practitioners under the laws of the state and affidavit is made in application for registration on Form 678 as required by Treasury Decision 2215 of June 10, 1915." This form is the one used by all physicians, and contains a statement sworn to by the applicant that he is practicing medicine at the time of making application. The intent of the Treasury Department in this ruling is obvious. If the ruling had provided for the registration of osteopaths in those states in which they are legally recognized as physicians, there would be no ground for criticism. The inclusion of the term "or practitioners," however, leaves the entire question open to argument. What does the Treasury Department mean by "a practitioner?" This might include Christian Scientists, clairvoyants, seventh sons of seventh sons, and every other fad or form of quackery. But the decision is of slight importance, after all. Suppose osteopaths are allowed to register under the Harrison law. What of it? Such registration will not give them the right to practice medicine, unless they are given this right by the law of the state. Registration under the Harrison law will not confer any right to practice medicine not given by the statutes of the state.

THE DISCOVERY OF ETHER ANESTHESIA

In a recent review of the controversy over the priority of the discovery of ether for anesthetic purposes, Dr. Allen J. Smith[1] has presented, in facsimile, the documentary evidence bearing on Dr. Crawford W. Long's work. Altogether there are eleven pages of photographic reproductions of letters and attestations of various kinds, including particularly the page from Dr. Long's account with James Venable, a patient who permitted Dr. Long, March 30, 1842, to administer ether to him. This was done with the understanding that when Venable had become unconscious, the surgeon was to remove one of two small tumors (wens) on the back of his neck, which, because of apprehension of pain, he had declined to have removed previously. There was the further understanding that if the first tumor was removed without pain under ether anesthesia, then the surgeon was to remove the second. June 6, accordingly, the second operation was performed, permission to do it serving as a demonstration of the success of the first operation. The patient was charged $2 each for "extracting the tumor" and 25 cents each time for the ether. This item from Dr. Long's account book is certified under the hand and seal of P. F. Hinton, the clerk of the Superior Court of Jackson County, Ga., as being "a correct copy of an original entry made in his book for medical services for the year 1842 by Dr. Crawford Long." As C. F. Jackson of Boston, the only other person whose claims for the honor of the discovery of ether anesthesia merit consideration, did not communicate his ideas on the subject to any one until 1843, and then merely verbally to a number of medical friends, and did not suggest it until 1845 to Dr. W. T. G. Morton, who applied it successfully in 1846, the dates in the ether priority controversy are thus cleared up. The other question sometimes discussed, whether or not Dr. Long really appreciated his great discovery, and the assertions often made that he failed to make it known or abandoned the use of ether anesthesia, are all answered by these reproductions, which show very clearly that he continued to use it and to demonstrate its efficiency in spite of opposition on the part of members of the profession around him who could not bring themselves to recognize what a great discovery had been made. The originals of these documents are in the custody of Mrs. Taylor of Athens, Ga., a daughter of Dr. Long. The photographs are deposited in the archives of the University of Pennsylvania, School of Medicine, of which Dr. Long was a graduate. Dr. Smith's reproduction of them in his article[1] has made it possible for practically any one to consult the original documents in the case.

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[1] Smith, Allen J.: Old Penn, Oct. 2, 1915.

SOCIAL INSURANCE IN CALIFORNIA

The appointment by the governor of California of a commission to study social insurance, and the appropriation of $20,000 for the purpose, is an evidence of the growing interest in this subject. The commission, consisting of five members, is not only directed to study social insurance systems at home and abroad, but is also empowered to recommend schemes for adoption by the state. California has just included occupational diseases within the scope of its workmen's compensation act, and the next logical step is the introduction of an insurance scheme to care for all sickness among wage earners. The more efficient medical care which a system of health insurance would provide for the workers of California is as greatly needed as it was in Great Britain. With the initiation of medical benefit under the British compulsory insurance system, many persons for the first time were able to afford the luxury of medical attention, and for the first time physicians were able to treat disease in its incipient stages among the industrial population. English physicians are expressing their surprise at the mass of suffering which previously was uncared for. The failure of many persons in this country at present to receive medical care constitutes the best argument for a change to the more effectual provision for medical attention offered by health insurance. At this time, when attention is being focused on these forms of insurance new to this country, the American Association for Labor Legislation, after three years of careful study, has prepared the draft of a health insurance bill which, it is announced, will be introduced into several legislatures next winter. This activity justifies the prophecy, previously made by The Journal, that the enactment of workmen's compensation laws would lead to new measures for both health and accident insurance.

DR. JAMES TAGGART PRIESTLEY—A FESTSCHRIFT

In commemoration of his forty years of practice, Dr. James Taggart Priestley, of Des Moines, has been honored by the issuance of a special number of the *Journal of the Iowa State Medical Society,* styled a "Festschrift." It has been done under the auspices of the Medical Library Club of Des Moines. Dr. Priestley well deserves this honor. As is said editorially in the Iowa journal, "the man who can live a generation or more in the sharpest competition, and retain the affection of his associates, is indeed entitled to expressions of the highest regard as distinctly his own. It is delightful to feel that honors gained by manly struggles for the rightness of things may come at a time of mental and physical well-being, and not after the recipient has passed to a state of indifference." Dr. W. L. Bierring gives a brief historical sketch of Dr. Priestley's illustrious great-great-grandfather, Joseph Priestley, the discoverer of oxygen, who, it will be remembered, spent the last ten years of his life at Northumberland, Pa., continuing the work in science which he had carried on in his native England. Dr. Priestley has well maintained the traditions of his family as a scientist, a man of character and strong individuality, and a leader in his sphere of action. In his long career as a practitioner in Des Moines, his impress has been for the uplift of the science and art of medicine, and for the betterment of fraternal relations in the profession itself. This number of the Iowa state society journal is a credit to those who conceived, as well as to those who carried out, the idea — and to the state society itself. It is splendid from a mechanical standpoint, and decidedly creditable in its contents.

HOSPITAL NOISES

The inhabitant of a large community who is without the experience of a temporary residence in one of its hospitals feels a sort of humanitarian pride in the now familiar signs, "Hospital Street — Make No Unnecessary Noise!" A brief stay in some of these institutions is sometimes sufficient to convince one, however, that the faults of others often seem more patent than our own which are nearer at hand. This applies all too often in particular to the subject of hospital noises, which, unfortunately, have not yet everywhere received the degree of consideration and correction which they demand. Few persons who have not given serious thought to the matter will realize the endless sources of noise, which is never soothing to a patient, and not infrequently is the occasion of intense psychic irritation to even the most docile inmate of a municipal health institution. Dr. Byam Hollings[1] of the Massachusetts General Hospital has recently pointed out some of the unappreciated noise factors, which will be recalled by the initiated through the mere mention of a word or two. Doors and elevators are rarely noiseless; windows and floors may creak and reverberate; chairs and ward utensils are famed for squeaks and rattles; the slam of dishes is rarely soothing, and the sound of bells and buzzers never reaches an immune auditor. To all of these and many other varied disturbances must be added the multitude of sounds and noises which are traceable to the human element—nurses, orderlies, porters, employees, visitors, physicians and patients themselves. Dr. Hollings reports that in a routine day more than 3,500 persons passed through a doorway in the main corridor of one of the buildings of the Boston hospital. It is thus easy to see how noise can be created. How to minimize it is a timely problem in every institution.

A LOSS TO THE PUBLIC HEALTH SERVICE

As mentioned in our news columns, Dr. John F. Anderson has resigned the position of director of the Hygienic Laboratory of the U. S. Public Health Service to accept that of director of a commercial biologic laboratory. The Public Health Service has sustained other similar losses recently: Dr. M. J. Rosenau, Anderson's predecessor, resigned to accept the professorship of preventive medicine and hygiene at Harvard; Drs. Reid Hunt and Worth Hale left the service to accept the positions of professor and assistant professor of pharmacology, respectively, at the same institution. It may seem discouraging that the Public Health Service should thus be deprived of the services of able men at the period of their greatest usefulness; at the same time, it is gratifying to realize that educational institutions, as well as some private manufacturing concerns, appreciate the value of such men. While occurrences like these must be discouraging to those who are interested in seeing the Public Health Service successful in its splendid scientific research work, it is a consolation to realize that the service is developing men whose work is appreciated.

TETRACHLORETHANE

Several months ago, attention was directed to the occurrence of an unusual illness among the workmen in some of the aeroplane factories of Great Britain.[2] As a rule, the varied symptoms included a general malaise and drowsiness, followed by more or less severe toxic jaundice. An investigation has revealed that this untoward condition is due to intoxication with tetrachlorethane or acetylene tetrachlorid ($CHCl_2 \cdot CHCl_2$). This substance is well known to industrial chemists, and also goes under the trade name of Cellon. Because of its solvent action on cellulose acetate, acetylene tetrachlorid is a constituent of the product used to coat the wings of aeroplanes. A study of its toxicology shows that it has a decidedly harmful influence on the liver and the kidneys. By ordering the proper ventilation of the workrooms and insuring the efficient removal of the toxic vapors, the dangers from this source can be eliminated.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Personal.—Dr. Eugene D. Bondurant, formerly Dean of the University of Alabama, School of Medicine, Mobile, who was operated on last June for duodenal ulcer, has entirely recovered and has resumed practice in Mobile.——Dr. Abijah B. Bennett, Opelika, was struck by an automobile October 10, and sustained serious injuries.

GEORGIA

Drug Victims' Hospital to Close.—It is announced that the Atlanta City Hospital for Drug Victims will be closed November 1. During the existence of the institution, about 150 drug addicts have been treated and pronounced cured.

Personal.—Dr. James S. Greenleaf, Macon, fell from the second story window of his office, October 13, but was not seriously injured.——Dr. Mather M. McCord, Whigham, as the result of a competitive examination, has been appointed full time county health officer of Floyd County.

New Board Officers Elected.—At a meeting of the Georgia State Board of Medical Examiners held October 13, officers were elected as follows: Dr. Richard E. Hinman, Atlanta, president; Dr. Frederick D. Patterson, Cuthbert, vice president; Dr. Charles T. Nolan, Marietta, secretary treasurer.

IDAHO

Examination Required.—Word from the secretary of the Idaho State Board of Medical Examiners states that an examination is still required for the license to practice in that state. It appears that a report to the contrary has been published somewhere and several applicants have sent in their diplomas thinking that they could secure registration by so doing. An examination is essential.

New Officers for Idaho Society.—The twenty-third annual meeting of the Idaho State Medical Association was held at Lewiston, October 13 to 15, forming a part of the triennial joint meeting of the state medical associations of Idaho, Washington and Oregon, and the following officers were elected: president, Dr. Truman O. Boyd, Twin Falls; vice president, Dr. Oscar C. Carssow, Lewiston; secretary treasurer, Dr. Edward E. Maxey, Boise (reelected); and journal trustees, Drs. Robert L. Nourse, Boise, and John N. Alley, Lapwai. Twin Falls was selected as the next place of meeting.

ILLINOIS

Districting the State.—Secretary C. St. Clair Drake of the State Board of Health announces that Illinois will soon be divided into 2,600 districts with a registrar of vital statistics for each district, for the purpose of putting into operation the new state vital statistics law.

Personal.—Dr. Wilfred H. Gardner, Bloomington, is on duty in a British war hospital in London.——Dr. Louis J. Bechtold, Belleville, is ill with tetanus in St. Elizabeth's Hospital in that city.——Dr. John C. Helper, Benbow City, who has been suffering from anthrax, was reported out of danger, October 21.——Dr. Harmon E. Price, Clinton, is reported to have closed his office and discontinued the practice of medicine preparatory to leaving for California in November.——Dr. James A. Kleinsmid, Aledo, who was seriously injured in an automobile accident, October 5, is slowly improving.——Dr. Hugh A. Kelso, Paxton, was operated on in St. Luke's Hospital, September 29.

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[1] Hollings, Byam: Hospital Noises and How to Minimize Them, Mod. Hosp., 1915, v, 226.

[2] Poisoning by Tetrachlorethane, Miscellany, The Journal A. M. A., Feb. 27, 1915, p. 766.

State Tuberculosis Society Elects Officers.—At the seventh annual meeting of the Illinois State Society for the Study and Prevention of Tuberculosis held in Danville, October 22 and 23, the following officers were elected: president, Dr. George T. Palmer, Springfield; vice presidents, Drs. Charles W. Lillie, East St. Louis, and Frank D. Rich, Joliet; treasurer, Mr. David R. Forgen, Chicago; and executive committee, Drs. James W. Pettit, Ottawa; Ethan A. Gray, Chicago; Theodore B. Sachs, Chicago; Lewis C. Taylor, Springfield; William A. Evans, Chicago; Mr. George W. Perkins, Chicago, and Mr. Herbert W. Mathews, Pekin.

Chicago

Hospital to Close.—It is announced that the Maimonides (Kosher) Hospital will close November 1, on account of lack of financial support. The hospital is said to have debts amounting to about $100,000.

Personal.—Dr. French S. Cary has been appointed assistant professor of urology and urological surgery, College of Medicine, University of Illinois.—Dr. William S. White, who was operated on at the Evanston Hospital for appendicitis and the removal of gallstones, recently, is reported to be doing well.——Dr. Jabez D. Hammond, who has been ill at his home for several weeks, is reported to be improving.——Dr. Oscar Dodd has been elected president of the Illinois Charitable Eye and Ear Infirmary.——Drs. Duro Guca and Leo M. Czaja have returned after a year in Serbia.

Memorial for Mrs. Preble.—Friends of Dr. and Mrs. Robert B. Preble have undertaken to form a memorial fund for a philanthropic purpose yet to be determined, to express their sorrow over the death of Mrs. Preble, and their sympathy for Dr. Preble and his family. Mrs. Preble had been actively interested in the work of raising funds for the Chicago Collegiate Bureau of Occupations, a bureau which has for its object the securing of positions for women with college training and was also interested in the philanthropic work of the Chicago Women's Club. Any wishing to assist in this work are invited to send checks or inquiries to Mrs. Charles L. Meeks, 5321 Greenwood Terrace.

INDIANA

Dispensary Charges Small Fee.—The Indianapolis City Dispensary, presumably a free dispensary for the indigent, has now decided to charge a fee of 10 cents each for bottles or containers supplied with medicine in the drug department, to those who are able to pay. The fee is entirely voluntary and medicine will not be refused individuals who produce satisfactory evidence of their inability to pay this fee.

Personal.—Dr. Claude C. Crum, Jeffersonville, has been appointed surgeon to the Jeffersonville plant of the American Car and Foundry Company.——Dr. Stephen L. Egart, roentgenologist at the Indianapolis City Hospital, has resigned to take effect, December 15.——Dr. Albert J. Irwin, Goshen, who has been ill for two weeks, has recovered and resumed practice.

Centennial Committeemen Selected.—The following new centennial celebration committees have been announced by the Indiana Historical Commission: committee on medicine, Drs. General W. H. Kemper, Muncie, chairman; William R. Davidson, Evansville; John G. Jones, Vincennes; Joseph D. Heitger, Bedford; William H. Stemm, North Vernon; Joseph H. Weinstein, Terre Haute; Oliver J. Gronendyke, Newcastle; W. Burrette Kitchen, Indianapolis; Frederick A. Tucker, Noblesville; Otis B. Nesbit, Valparaiso; Godlove G. Eckhart, Marion; Elmer E. Morgan, Fort Wayne, and Angus C. McDonald, Warsaw. Committee on hygiene and public health: Drs. William F. King, chairman, Indianapolis; Charles S. Bosenbury, South Bend; Charles A. Zinn, Frankfort; Eric A. Crull, Fort Wayne; Herman G. Morgan, Indianapolis; W. D. Thurber, Indianapolis; Porter H. Linthicum, Evansville; Henry B. Shacklett, New Albany; Charles C. Wert, Covington; Harry J. Thompson, Laporte, and Prof. J. C. Sanders, Columbia City.

IOWA

Tuberculosis Foes Organize.—The Iowa Association for the Prevention of Tuberculosis was organized in Des Moines, October 4, and the following officers were elected: president, Dr. William W. Pearson, Des Moines; vice presidents, Gov. Charles W. Clark, Dr. Walter L. Bierring, Des Moines, and Mrs. Charles Saunders, Council Bluffs; secretary, Dr. John H. Peck, Des Moines; treasurer, C. H. Stevenson, Des Moines, and assistant secretary treasurer, Dr. Herbert V. Scarborough, Oakdale.

Hospital Notes.—Mine workers of Iowa have purchased the old building of the Drake University Medical School, Des Moines, and will use it for a hospital for sick and injured miners and also will use it as a headquarters for their first aid teams.——Marengo is attempting to raise $20,000 for the building of a municipal hospital.——The Cedar Valley and May hospitals, Charles City, have incorporated under the name of the Cedar Valley Hospital. The institution is to be opened with equal rights to all physicians and surgeons of Floyd County.

Distinguished Visitors to Fort Madison.—At the meeting of the Fort Madison Medical Society, October 8, the guests of honor were Dr. William J. Mayo, Rochester, Minn., who spoke on "Surgery of the Spleen"; Dr. Victor C. Vaughan, University of Michigan, Ann Arbor, who delivered an address on "Infection and Immunity"; Dr. Richard H. Harte, Philadelphia, who spoke of "Typhoid Perforation"; and Dr. Donald C. Balfour, Rochester, Minn., who read a paper on "Gastric Ulcers." A reception and banquet were held in the Masonic Hall during the afternoon.

Personal.—Dr. Ernest T. Kegel, Iowa City, county physician of Johnson County, fractured his left leg below the knee while cranking his automobile, recently.——Dr. George L. Day, Lone Tree, is reported to be critically ill at a hospital in Iowa City.——Dr. Henry Matthey, Davenport, has been appointed surgeon in chief of the Military Hospital at Brounsberg, East Prussia.——Dr. Ella Blackburn, physician in charge of the women patients at the Iowa Hospital for the Insane, Mount Pleasant, is said to have been dismissed by the State Board of Control, October 5, as the result of an investigation made by the board of charges filed against the institution by Dr. Amelia A. Dickinson, Iola, Kan., a former intern.——Dr. Wilton W. McCarthy, Des Moines, who was seriously injured in an automobile accident several weeks ago, has returned to his home convalescent from the Methodist Hospital.——Dr. Clara B. Whitmore, Sioux City, started for Shanghai, China, October 4. to take up her new work as surgeon and gynecologist to the Margaret Williams Hospital, Shanghai.——Dr. Walter A. Matthey, Davenport, is under treatment in the Mercy Hospital for streptococcus infection of the left hand contracted recently during an operation.——Dr. Charles H. Cogswell, Cedar Rapids, after a sojourn in Egypt, has decided to return to France and enter the hospital service of the French army.——Dr. Edward R. Ames, Morrice, was seriously injured recently in a collision between his automobile and another motor car.——Dr. Mark F. Boyd, Iowa City, has succeeded Dr. Charles S. Woods, Iowa City, resigned, as state epidemiologist and superintendent of the department of preventive medicine in the medical department of the University of Iowa.

MARYLAND

Civic Club Formed.—A meeting of physicians of Baltimore was held at the Medical Library, October 8, to organize a physicians' civic club, the idea of which is to familiarize physicians with the newer forms of city government.

Memorial Scholarship Fund.—The friends of the late Prof. David Streett, Baltimore, have suggested the establishment of a memorial scholarship in his name at the University of Maryland School of Medicine, for worthy but indigent medical students.

Health Officials Visit Sydenham.—Health Commissioner John D. Blake and Dr. William T. Howard, Jr., the new assistant commissioner, made their first visit of inspection to Sydenham Hospital, the municipal hospital for infectious diseases, to acquaint themselves with the workings of the institution.

Insane Negroes to be Transferred.—The authorities at the Crownsville State Hospital, Dr. Robert P. Winterode, superintendent, have notified the supervisors of city charities that they will transfer about 200 negroes from the insane department at Bay View Asylum to the Crownsville State Hospital, the transfer to take place on or about October 28-29. This means that practically all the negro insane will be removed from this institution and cared for at a state hospital.

Personal.—After a year spent in France caring for the wounded, Dr. Roades Fayerweather has returned to Baltimore. In response to a request of the French officials, Dr.

Fayerweather talked little of conditions in France, but told of the hospital at Pau. where he spent most of his time as the head of the American Red Cross unit.——Dr. John F. Spearman, who has been stationed at the Red Cross Hospital at Glewitz, Germany, has returned to Baltimore.——Dr. Richard P. Strong, director of the International Sanitary Commission in Serbia, reached New York, October 4, on the *Duca degli Abruzzi.* He reports that more than 100,000 deaths from typhus occurred during the present outbreak.——Dr. Frank J. Powers has succeeded Dr. George L. Wilkins, Baltimore, who had been for more than fifteen years physician to the city jail.——Dr. James A. Nydegger has been appointed a member of the Board of Visitors and Governors of St. John's College, Baltimore.

MASSACHUSETTS

Ether Day.—The sixty-ninth anniversary of Ether Day was observed October 16 at the Massachusetts General Hospital. Dr. William Williams Keene, Philadelphia, delivered an address on "The Dangers of Anesthesia" and during the day demonstrations were carried out at the hospital from 10 a. m. to 1 p. m.

Personal.—Dr. Benjamin H. Metcalf, Winthrop, has arrived home after an automobile trip from Winthrop to the Panama Pacific Exposition, San Francisco, in which his machine carried five passengers, baggage and equipment.——Dr. Edward H. Nichols, who recently returned from France, delivered an address before the metropolitan district branch of the Massachusetts Dentists' Society, October 11, on "War Surgery in France."——Dr. Timothy J. Sullivan, Somerville, has been appointed medical attendant for the employees in the postal service.

Changes in Harvard Faculty.—Dr. Martin J. English has resigned as fellow in pediatrics; Dr. Raymond B. Parker as alumni assistant in obstetrics; Dr. Cyrus H. Fiske as assistant in biological chemistry; Dr. Clarence C. Little as research fellow in gynetrics, and Dr. Thomas Ordway as instructor in medicine in Harvard Medical School.——The board of overseers of Harvard College has appointed Dr. Marshall Fabian assistant professor of pathology in the medical school; Dr. Edward A. Doisy assistant in biological chemistry, and Dr. Samuel E. Chiu, Austin, teaching fellow in biological chemistry.

Question of Cures Ruled Immaterial.—In the trial of Francis F. Davies and George J. La Plant, chiropractors, in the supreme court at Springfield, for practicing medicine without a license, attempts were made by the defense to introduce evidence to show that "cures" had been effected. These questions were ruled out as immaterial. Judge Irwin stated that the question of cures was not at issue and it made no difference if the men performed miracles. He declared the question at issue was whether or not the men had engaged in the illegal practice of medicine as charged. The defendants were fined $500 each. This trial is thought to establish definitely the legal status of chiropractic in Massachusetts. The supreme court in the Zimmerman case decided a few months ago that chiropractic was the practice of medicine and the present case has decided that it is not simply massage. Its followers, therefore, are subject to the requirements of the medical practice act.

MINNESOTA

Physicians' Building Planned.—Plans have been prepared on Second Avenue, Minneapolis, between Sixth and Seventh streets, for a twelve-story building to be used by physicians. The building will cost about $1,000,000.

Dermatologists Organize.—The Minnesota Dermatological Society was organized at a meeting held in Minneapolis, October 19, members being present from Minneapolis, St. Paul, Duluth and Rochester. Regular meetings will be held four times a year alternately in St. Paul and Minneapolis.

Personal.—Dr. Bert R. Karn, Ortonville, was operated on for appendicitis, October 11, at the Grand View Hospital, Ortonville.——Dr. Louis S. B. Robinson has resigned as assistant superintendent of the Minnesota State Sanatorium for Consumptives and will return to his practice in St. Paul in November.——Dr. Joseph Nicholson, Brainerd, was operated on for appendicitis, recently.——Dr. Owen J. Evans, Minneapolis, was operated on at Hill Crest Hospital, October 9, for osteomyelitis of the left femur.

MISSOURI

Petition for Quarantine of Syphilitic.—Probably a unique instance in the campaign against venereal diseases is the issuing of an injunction in Springfield to quarantine a woman afflicted with syphilis. The health commissioner submitted a petition to the court for such an injunction, and the court, of which the judge is the Hon. Arch A. Johnson, granted his petition and the woman was placed in a hospital and compelled to take treatment. The text of the petition follows:

IN THE CIRCUIT COURT OF GREENE COUNTY, MISSOURI.
DIVISION NO. 2, SEPTEMBER TERM, 1915.

Edwin F. James, City Health Commissioner, Plaintiff }
vs.
Margaret Dale, Defendant }

Plaintiff states that he is the Public Health Commissioner of the City of Springfield and as such is charged with the care and responsibility of the health of the citizens of said city.

Plaintiff states that the defendant is an unmarried female of the age of about twenty years and is a resident of said City of Springfield, Missouri.

Plaintiff states that the defendant Margaret Dale is now infected and has for sometime past been infected with a venereal disease, to-wit, with the disease commonly known as syphilis.

Plaintiff states that defendant is a woman of bad repute and plies her vocation of a common bawd and habitually offers herself and her body for sexual commerce in the said City of Springfield and at other points in Greene County, Missouri, and is now exposing herself in said county on the banks of James River for sexual commerce, and as plaintiff is informed and believes, is now engaging in such sexual commerce with divers persons to plaintiff unknown.

Plaintiff states that by reason of the premises the defendant is a menace to the health and morals of the community and her unrestrained freedom and acts of sexual commerce constitute her a public nuisance and a menace to the people of said county and City of Springfield.

That by virtue of the laws creating the office now held by plaintiff, he is in law charged with the maintenance of good health and is charged with the duty of keeping said City free and clear of contagious and infectious diseases and is charged with the duty of safe-guarding said City and its inhabitants from disease and death.

Plaintiff states that unless his prayer herein be granted he is remediless at law and no action in law will afford plaintiff an adequate or full and complete remedy at law.

Plaintiff states that for the safe-guarding of the health of the community defendant should be quarantined for said disease and should be restrained from plying her vocation and should be restrained and placed under such charge as will prevent the spread of such disease.

Wherefore, Plaintiff prays that a temporary writ of injunction issue commanding that she be limited to her movements to a certain specified quarter and that she be placed under the care of a competent physician until she be purified and cleansed of such disease.

Edwin F. James, Plaintiff.
By T. J. Delaney & Perry T. Allen, his attorneys.

NEW YORK

Insane Hospital Changes.—Dr. John C. Feltz, assistant to the medical director of the State Hospital for the Insane at Schenectady, N. Y., has resigned and will make his home at Gettysburg, Pa., and has been succeeded by Dr. Edgar B. Funkhouser.——Dr. Hibbert R. Roberts, Rochester, N. Y., has been appointed assistant physician to the Dannemora State Hospital for the Insane.

No Danger of Anthrax Epidemic.—The State Industrial Commission has contradicted the rumors that there is danger of an epidemic of anthrax in this state. According to the records of the agricultural department anthrax was reported in animals in fifteen counties in 1913, in sixteen counties in 1914, and in ten counties thus far in 1915. Aside from the cases reported in the three metropolitan districts, six cases with two deaths have been reported from other counties.

Lay Cornerstone at Letchworth Village.—The laying of the cornerstone of the new attendants' home at Letchworth village for the feebleminded, October 19, marks another step in the progress of this institution. On this occasion. the president of the board of directors, Frank A. Vanderlip, announced that $750,000 had thus far been expended on permanent improvements for the village and that the total cost would be about $3,500,000. Governor Whitman laid the cornerstone and in his address announced his policy of dealing with the increasing number of insane persons in this state. He recommended the establishment of five new dispensaries as an aid to the home treatment of incipient insanity in connection with the hospitals for the insane at Buffalo, Binghamton, Middletown, Utica and Willard. In the hospitals already having dispensaries, he unfolded plans for an extension of that line of work. Through special efforts of the hospital commission last year the number of patients on parole was increased by 439. Each patient cared for at home represents a saving of $208 for the state.

New York City

Memorial to Dr. Flint.—At a meeting of the faculty of Cornell University Medical College October 15, a memorial to Dr. Austin Flint was read and adopted. This memorial sets forth the achievements of Dr. Flint as a scientist, teacher and orator.

Society for Care of the Aged.—The New York Geriatric Society was recently organized with the object of studying diseases of advancing years. Dr. Robert Abrahams was elected president; Dr. Edward P. Swift, vice president, and Dr. Ignatz L. Nascher, secretary.

Greater New York Medical Association.—At the meeting of the Medical Association of the Greater City of New York held in DuBois Hall of the New York Academy of Medicine, October 18, Dr. E. Bosworth McCready, Pittsburgh, read a paper entitled "Paedology and Its Possibilities; the Study, Treatment and Education of Children Who Require Special Attention," illustrated by lantern slides.

Personal.—Dr. Vernon O. Heddens sailed for France as assistant surgeon with a hospital unit, October 16.——Dr. Merrill N. Foot, Richmond Hill, returned October 5 on the *Rochambeau*, after several months on duty with Mrs. Harry Payne Whitney's Hospital at Juilly.——Dr. Mary M. Crawford, Brooklyn, has returned after nearly a year of service with the American Ambulance Hospital near Paris.

Cornell Medical College Opening.—Cornell University Medical College entered on its eighteenth year with an excellent enrollment. Dr. John A. Hartwell, president of the Cornell Medical Society, presided at the opening exercises, at which addresses were made by Mr. Arthur F. Cratzer, representative of the senior class, and Dean William M. Polk, who spoke on the "Advance in Modern Medicine."

No More Horse Ambulances.—All horse drawn ambulances used in the service of the city hospitals in Manhattan and the Bronx, including Bellevue, Gouverneur, Harlem and Fordham hospitals, have been withdrawn from service and replaced by motor ambulances. Some of the horses just retired have been in the service twenty years and will be transferred to the city's inebriate farm at Warwick, N. Y. Both efficiency and economy will result from this change.

Request for Census Granted.—It has just been announced that Mayor Mitchell has granted the request of Commissioner Sigismund S. Goldwater for a census of Manhattan to be taken by the police following the election. This step has resulted from the failure of the state census board to furnish the department with any satisfactory figures from the state census of last spring. The department's calculations, hitherto generally accurate, have shown 600,000 more persons in the city than the number indicated by the state census board. If a large discrepancy is found between the figures obtained and those of the state census board, a census of the other boroughs will also be taken.

Report on Laboratory of Health Department.—At the special request of Commissioner Sigismund S. Goldwater, the medical societies of the counties of New York and Kings appointed a committee last May for the purpose of investigating the diagnostic laboratories of the department of health. A report based on this investigation has just been submitted to the health department. It states that containers and supplies are sometimes lacking at the different stations; that specimens are not collected after 4 p. m. and that transportation facilities to and from the department are slow and often burdensome. The investigating committee mentions the need of additions to the present staff, and advises that incubators be operated in certain boroughs for diphtheria cultures and a collection made at a later hour than is now customary. It suggests further the operation of several automobiles for the purpose of collecting specimens and carrying supplies.

NORTH CAROLINA

Personal.—Dr. Robert Crawford, Rock Hill, has returned after a service of about one year in Germany with the Red Cross.——Dr. Benjamin F. Royal, Morehead City, has been appointed a member of the board of directors of the Eastern Hospital for the Insane, Goldsboro, succeeding Dr. W. E. Headen, Morehead City, resigned on account of ill health.

Hospital Notes.—The contract for the Edgecombe Central Hospital has been awarded by the county commissioners to a firm of contractors in Sanford for $10,693.——Drs. Byrd Charles Willis and Edmund Simpson Boyce announced that they have taken over the management of the Parkview Hospital, Rocky Mount. Drs. J. P. Whitehead, Ivan P. Battle, Richard H. Speight, Jr., Emil B. Quillian and Joe P. Speight will continue their connection with the hospital as before and Drs. George Ben Johnston and A. Murat Willis, Richmond, Va., will continue as consulting surgeons on the staff. ——The Baby Hospital in the Bear Annex to the James Walker Memorial Hospital, Wilmington, closed September 29 after a very successful season in which fourteen babies were under treatment, ten of whom were returned to their parents recovered, two died and two were still under treatment at the time of the closing of the institution. The management hopes to have a building of its own by May 1 of next year.

PENNSYLVANIA

Personal.—Dr. William S. Wheeling, Spangler, is ill in the Spangler Hospital with appendicitis.——Dr. David H. Bemis, West Middletown, is reported to be ill with bronchitis.——Dr. John G. Thomas, Newton Square, is reported to be critically ill as the result of a bite of a poisonous insect. ——Dr. Warren E. Forsythe has been placed in charge of the health service of the Pennsylvania State College.——Dr. Daniel P. Maddox, Chester, has been reappointed a member of the Medical Bureau of Medical Education and Licensure.

Philadelphia

Funds for Negro Hospital.—More than 200 workers started October 19, on a ten-day campaign to raise $150,000 for the Lincoln Memorial Hospital for negroes.

Lip-Reading Clinic Opened.—The first lip-reading clinic was held at the Polyclinic Hospital, October 12, under the instruction of Dr. G. Hudson Makuen. Clinics will be held at the hospital every Tuesday, Thursday and Saturday afternoon, from 2 to 3 o'clock.

Reception to Surgeon-Generals.—A reception was given October 15 by the Medical Club of Philadelphia at the Bellevue-Stratford, in honor of Rear Admiral William C. Braisted, Surgeon-General, U. S. Navy, and Surgeon-General Rupert Blue, U. S. P. H. S.

Personal.—Dr. William G. Spiller, assistant professor of neurology in the University of Pennsylvania, was elected professor of neurology, October 18, succeeding Dr. Charles K. Mills, resigned, and elected emeritus professor of neurology.——Dr. Eileen Giles has been appointed physician in charge of the Alto Pass (N. C.) Hospital.——Dr. Melvin M. Franklin has been elected orthopedic surgeon to the Philadelphia General Hospital, to succeed Dr. Gwilym G. Davis, resigned after fourteen years' service.——Dr. J. Torrance Rugh has been elected professor of orthopedic surgery in the Woman's Medical College.——Dr. John W. West was recently elected president of the Ohio Society.——Dr. Michael G. Wohl has resigned as pathologist to the Howard and Samaritan hospitals to take charge of the pathological laboratory of the Nicholas Senn Hospital, Omaha.——Dr. John M. Baldy has been reappointed a member of the State Bureau of Medical Education and Medical Licensure by Governor Brumbaugh.——Dr. Henry A. Strecker has been appointed chief medical inspector of the Bureau of Health, to succeed Dr. Charles A. Groff, resigned.——Dr. Florence C. Child has been appointed medical inspector of the organization of Child Hygiene.

TEXAS

Hospital Opened.—The joint City and County Hospital, Wichita Falls and Wichita County, was opened to patients, October 15.

Upholds Vaccination Law.—After two years of litigation the supreme court of Texas has upheld the right of school boards to compel the vaccination of children before they will be allowed to enter the public schools. This decision was rendered in the case of Dr. A. D. Zucht against the San Antonio School Board, mention of which was made in The Journal at the time the action was begun.

CANADA

Hospital News.—The offer made several months ago by Dalhousie University, Halifax, N. S., to supply a hospital for overseas service has been accepted by the Canadian Militia Department. The following have offered to man that hospital: Drs. John Stewart, J. G. MacDougall, George M.

Campbell, J. R. Corston, L. M. Murray, E. V. Hogan and A. G. Nicholls. It is possible that the hospital will go to Alexandria, Egypt.——No. 6 Stationary Hospital supplied by Laval University is now up to full strength. It may leave for the front any day. The commanding officer is Lieut.-Col. G. E. Beauchamp; Majors J. O. D. LaCroix, J. P. Décarie and Georges Bourgeois; Capt. J. A. Lussier; Lieuts. J. U. Gariepy, J. de G. Joubert, J. E. Lorrain, L. D. Collin, Henri M. DuHamel.

Ontario Medical Commission.—The University of Toronto and the Ontario Medical Association presented their views to the Ontario Medical Commission during the past week. For the university, President R. A. Falconer was the chief speaker. He stated that every man who wants to practice the art of healing should have the proper medical training. If he wants to improve on that and become an osteopath, or chiropractor, well and good. President Falconer believed the university had a duty to perform to the public in preparing doctors for the world and was emphatic in his views regarding the danger of allowing men unlearned in medicine to practice at will. He pointed out that any modern school for medical practitioners was kept up at great expense to the community, and it was worth it, because, once prepared, a doctor gave long service to the community.——Replying to a question of the commissioner, Dr. Clarke, superintendent of the Toronto General Hospital, stated he did not favor osteopaths and chiropractors being allowed the privilege of treating patients in the hospitals, under existing conditions. He pointed out that all the medical students of the University of Toronto finish their training in the hospitals and only those can be allowed in who have proper medical training.——Dr. Harry B. Anderson, president of the Ontario Medical Association; Dr. R. A. Reeve, Toronto; Dr. Charles Sheard, Toronto; Dr. Howitt and McKinnon of Guelph, and others spoke for the Ontario Medical Association.——The chiropractors were also given a hearing.——Next week the commissioner announced he would take evidence under oath. The Academy of Medicine, Toronto, will be represented by several speakers or witnesses, who will deal with military surgery and sanitary science, life insurance examinations, surgery, bacteriology, etc.

Personals.—Word comes from England that Lieut.-Col. Walter McKeown, M.D., Toronto, stationed at Folkstone, England, has been appointed president of the Medical Pension Board. It is likely this refers to Canadian soldiers, although it is understood that the University of Toronto Base Hospital with which Dr. McKeown was attached had gone to the Mediterranean and was stationed in Sicily and would most probably be used in connection with the campaign in Serbia.——Dr. John M. Robb, Blind River, Ontario, has been selected as the conservative candidate for the Ontario legislature for Algoma.——Dr. Hugh A. Farris, Lake Edward, Que., has been appointed medical superintendent of the St. John County (N. B.) Sanatorium.——Dr. Joseph A. Leduc, Montreal, has been appointed head physician of the Foundling Hospital of the Grey Nunnery, in succession to the late Dr. Isiäe Cormier.——Capt. George R. Philip and Reginald S. Pentecost, Toronto, have been gazetted to the rank of majors.——Lieut.-Cols. Geo. S. Rennie, Hamilton, and Lorne Drum, Ottawa, have been promoted to temporary colonels. Both are serving abroad.——Dr. William Mann, Winnipeg, is temporary medical officer of the twenty-third reserve battalion, at present in England.——Col. Robert J. Blanchard, Winnipeg, is the president of the permanent board at Moore Barracks Hospital.——Dr. A. C. Scott, Indian Head, Sask., has been appointed to the medical staff of the Canadian forces in England.——Drs. George A. Ings and Frank H. Newburn, Calgary, Alta., have been gazetted majors in the Royal Army Medical Corps.——Dr. James W. Richardson, formerly of Calgary, has been appointed surgeon-specialist in the Imperial Army.——Major Charles A. Peters, M.D., Montreal, has been gazetted lieutenant-colonel.——Lieut.-Col. Archibald E. Ross, Sutherland, Sask., has been appointed assistant director of medical services of the first Canadian division.

GENERAL

Southern Medical Association to Meet.—The annual meeting of the Southern Medical Association will be held in Dallas, Texas, November 8 to 10. The general convention meetings will be held in the City Hall auditorium.

Ohio Valley Physicians to Meet.—The seventeenth annual convention of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. E. Otis Smith, Cincinnati. The headquarters of the association will be at the hall of the Evansville Business Association.

Pediatrists Organize.—The Central States Pediatric Society was organized in Chicago, October 15, and the following officers were elected: president, Dr. Borden S. Veeder, St. Louis; vice president, Dr. Olin W. Rowe, Duluth, Minn.; and secretary-treasurer, Dr. Clifford G. Grulee, Chicago. The next meeting will be held in St. Louis.

Alumni Election.—On October 16 the Massachusetts General Hospital Alumni Association held its annual meeting and banquet in Boston and the following officers were elected: president, Dr. Elbridge G. Cutler, Boston; vice presidents, Drs. Walter Channing, Brookline; George K. Sabine, Brookline, and William S. Thayer, Baltimore; and secretary-treasurer, Dr. Byam Hollings, Boston.

Return from Typhus-Stricken Serbia.—Four American physicians who have played a prominent part in combating typhus fever in Serbia, arrived in Boston on the *Cretic* last week. They include Dr. Louise Taylor Jones, Boston; Dr. Thomas W. Jackson, Washington, D. C., who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia; Dr. Joseph R. Thompson, Cleveland, and Dr. George W. Mellon, Beaver, Pa.

First Aid Treatment for Workmen.—At the convention of the National Association of Industrial Accident Boards and Commissions, held in Seattle, September 30 to October 2, quicker and more adequate medical treatment for injured workmen was vigorously advocated. Dr. Raphael Lewy, New York City, declared that of the 6,000 cases of injury he had examined in the past year 18½ per cent. had developed infection as the result of the lack of timely and expert treatment.

Railway Surgeons Meet.—At the annual meeting of the American Association of Railway Surgeons held in Chicago, October 12 to 15, the following officers were elected: president, Dr. Frank T. Fort, Louisville, Ky.; vice presidents, Drs. John M. Dodd, Ashland, Wis.; Edward H. Griswold, Peru, Ind., and Charles P. Frantz, Burlington, Iowa; and treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa. Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., read a paper before the association on "Intent and Purpose of the Interstate Quarantine Regulation."

Convention of Southwestern Physicians.—The Medical Association of the Southwest held its tenth annual meeting at Oklahoma City, October 11 to 13, under the presidency of Dr. Jefferson D. Griffith, Kansas City, Mo. Fort Smith, Ark., was selected as the meeting place for 1916, and the following officers were elected: president, Dr. Joseph D. Becton, Greenville, Texas; vice president, Dr. Edward H. Martin, Hot Springs, Ark., and secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla. (reelected).

Mississippi Valley Medical Association Meeting.—The forty-first annual meeting of the Mississippi Valley Medical Association was held in Lexington, Ky., October 19 to 21, under the presidency of Dr. Hugh Cabot, Boston. Indianapolis was selected as the next place of meeting and the following officers were elected: president, Dr. Willard J. Stone, Toledo, Ohio; vice presidents, Drs. Channing W. Barrett, Chicago, and Carl Lewis Wheeler, Lexington, Ky.; secretary, Dr. Henry Enos Tuley, Louisville, Ky. (reelected); and treasurer, Dr. Samuel C. Stanton, Chicago (reelected).

Conservation of Life.—The keynote of the Safety First Federation of America in Detroit, October 19 and 20, was the conservation of life, limb, health and property. Among the means to this end recommended by the association, are, the enactment of laws prohibiting the sale of dangerous weapons and explosives; the supply of free antitetanus serum by state and municipal authorities to be so placed that it can be conveniently and quickly obtained; the prohibition of the sale of firearms; the prohibition of common drinking cups and roller towels, and of spitting in public places and on sidewalks; the establishment of public baths in cities and the medical and dental inspection of school-children.

Bequests and Donations.—The following bequests and donations have recently been announced:

Children's Seaside Home of Atlantic City, N. J., $1,000; St. Timothy's Hospital, Philadelphia, $15,000, to endow three free beds in memory of Samuel L. Robeson, Sr., and Hannah W. Robeson, Samuel L. Robeson, Jr., and Louise Robeson, and Thomas A. Bradley and Mary A. Bradley, respectively, and $5,000 to the Home for Incurables, Philadelphia, for the endowment of a free bed in memory of Samuel L. Robeson, Jr., and Louise E. Robeson, by the will of Sarah J. Robeson.

Kansas University School of Medicine, $30,000, by the will of Dr. Joseph L. Porter, Paola, Kan.

Boston Floating Hospital, $25,000, to be known as the Nellie Ingalls Hodges fund, by the will of Walter William Hodges, Brookline, Mass.

Pennsylvania Hospital, Philadelphia, about $50,000, for the endowment of three beds in memory of her son Robert Hane Pile, by the will of Elizabeth Pile.

Polyclinic Hospital, Philadelphia, for a free bed as a memorial to Charles Baeder; St. Luke's Hospital and Northern Home for Friendless Children, Philadelphia, each $5,000, by the will of Julia Baeder.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga prize for 1915 has been awarded Dr. Joshua E. Sweet, Philadelphia, for his essay entitled "The Surgery of the Pancreas," and that the next award of the prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made July 14, 1916, provided that an essay, deemed by the committee of awards to be worthy of the prize, shall have been offered. Essays may be on any subject, but must not have been published. They must be typewritten and if in any language other than English, it must be accompanied by an English translation, and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1916. Each essay must be unsigned, but must be plainly marked with a motto, and be accompanied by a sealed envelope bearing outside the motto of the paper, and within, the name and address of the author. The successful essay, or a copy of it, is to remain in the possession of the college and other essays are to be returned on application within three months after the award of the prize.

LONDON LETTER

London, Oct. 8, 1915.

The War

THE OPENING OF THE MEDICAL SCHOOLS

The medical schools are opened this session under very unusual circumstances. The war has not only depleted the staffs and the students already in the schools, but has also limited the number of entries. The only London school which is able to record an increase in the number of students entering this year is the London School of Medicine for Women, where the increase is a record one, in consequence of the great demand for women physicians brought about by the shortage of men resulting from the demand of the army. In many of the schools the usual opening address was dispensed with. At Charing Cross Hospital, Dr. R. M. Burrows, principal of Kings College, said that the colleges and hospitals of London had done yeoman service in putting their students and their apparatus entirely at the service of the government and the nation during the war. At King's College a class for the training of munition workers was started, and it had proved the model for other classes instituted in the London County Council Polytechnics. Universities, colleges and hospitals in London and throughout the kingdom had placed the brains of their scientists at the service of the special problems of the moment. It was for the universities to show that they could make their education flexible. While they should welcome every opportunity to do definite war work, they had also to lay stress on the general principle that no nation went under except through a lack of brain power, and that financial and military successes were, after all, as much dependent on education as literature or science.

At the Leeds medical school the opening address, on "Science and War," was delivered by Sir William Osler, who treated the subject in his usual historical and literary manner. The following is a picture given by him of a huge British hospital camp "somewhere in France" containing thousands of beds: "The inner lining of the tents was of a colored Cawnpore material with attractive patterns. More beautiful wards cannot be imagined, so rich and varied in coloring. And to the call of country and humanity are men and women from all parts of the English-speaking world, seasoned old veterans of the Army Medical Corps, consultants from London and Edinburgh, specialists of distinction, general practitioners, men from Australia and Canada looking after their special hospitals, with units of our brothers from Harvard University and from Chicago. Some of these groups, as that from McGill University, Montreal, have brought over a complete staff, with nurses and orderlies and all the necessary apparatus for a 1,040-bed hospital. Other Canadian university units have come from Toronto, Kingston, Laval and Dalhousie. At home the members of these staffs are busy teachers and practitioners. The nurses have come from all parts of the empire, and two groups from the United States." Dealing with the subject of the war and international science, he said that to one who is by temperament and education a follower of Sir Thomas Browne and free from the "common antipathies" and "national repugnances," one sad sequel of the war will be, for this generation at least, the death of international science. "An impassable intellectual gulf yawns between the Allies and Germany, whose ways are not our ways and whose thoughts are not our thoughts."

At the London School of Medicine for Women, Dr. Florence E. Willey said that the lack of labor which is being increasingly felt on all hands has opened the doors of various industrial pursuits to women who had long desired such an outlet for their energies, and has come as a call to service to others who had never before awakened to any need to use their talents for the common weal. The summons to women to fill up the ranks has come from all kinds of professions and trades, but in none perhaps is the demand more urgent than in the medical profession, and that for many reasons, immediate and future. The ever-increasing number of medical men and women employed in military service abroad, together with the number employed in either whole or part time military service at home, has taxed the resources of the medical profession to the utmost, for in these ways the war has directly absorbed the services of many thousands of physicians. But in more indirect ways the war is creating a future need which threatens to be very serious indeed. Young men who would now be entering on a training for some professional career are enlisting for naval or military service, and thus the supply of medical students in the men's schools is seriously diminished, and this means for years to come decreasing numbers of men in the profession of medicine. If men are to answer the call of their country at this crisis they cannot make good this deficiency; hence women must; and that they are willing to do so is made clear by the doubling of the usual entry to the London School of Medicine.

BERLIN LETTER

Berlin, Sept. 28, 1915.

Personal

September 23, Professor Waldeyer celebrated his fiftieth professorial jubilee. At the time of his appointment he was a professor of pathologic anatomy in Breslau, and not until 1872, when he was called to Strassburg, was he appointed professor of normal anatomy. October 6 he will celebrate his seventy-ninth birthday.

Prof. Ernst Neumann, formerly director of the pathologic institute in Königsberg, and a well-known authority on diseases of the blood, celebrated the sixtieth anniversary of his doctorate, September 24. On the same day Professor Knauff of Heidelberg, formerly ordinary professor of hygiene and medical jurisprudence, celebrated his eightieth birthday.

Professor Neufeld, division chief at the Institute for Infectious Diseases at Berlin, has been appointed Geheimer Medizinalrat. Since Löffler's death he has been acting director of the institute, a position he will probably fill until after the war, as there is no probability of securing a successor to Löffler's position at this time. All the hygienists and sanitarians are in the field and cannot be persuaded to return to civil work at this time. Furthermore, there is not much choice, because of the scarcity of men from whom a selection may be made. Naturally, one would have to consider Professor Kolle, ordinary professor in Bern, and Professor Uhlenhuth, ordinary professor in Strassburg. Professor Pfeiffer of Breslau and Professor von Wassermann, the two most prominent bacteriologists to be considered for this position, are disinclined to accept the appointment. Wassermann must also be considered a probable successor to Ehrlich, although I do not believe that he will leave his position at the Institute for Experimental Therapy in Berlin.

Professor Schmidt-Rimpler, formerly ordinary professor of ophthalmology died at Halle, September 23, aged 77. While a student, he was a favorite of Albrecht von Graefe, and in 1863, when he completed his examination, he was made assistant at von Graefe's private clinic. In 1864 he took part in the war against Denmark; later he entered general practice and was appointed on the staff of the medical division of the Charité, and in 1866 he again took the field against Austria. When Graefe established his own service in the Charité in 1868, Schmidt-Rimpler was appointed his assistant. Von Graefe died in 1870, and Schmidt-Rimpler conducted the clinic until a successor was appointed, as he himself had received a call to Marburg. He remained at Marburg until 1891, then went to Göttingen, and in 1901 was called to Halle. He remained in active service until last year, and took an active part always in the development of ophthalmology, contributing many hundreds of articles on the subject. These appeared in current literature and also as a part of collaborated works. His best-known publication was a textbook on diseases of the eye and ophthalmoscopy, which was published in English, Italian, Russian and Japanese. He was also very much interested in the question of shortsightedness among schoolchildren.

The Commandments Governing the Relations of the Public with the Doctor

The medical society of Frankfort has elaborated ten commandments or rules to govern the relations of the public to the doctor. These rules have been printed and the doctors are asked to distribute them among their patients and to post them in their waiting rooms. The rules are as follows:

1. Do not call the doctor unnecessarily for trivial illness, and do not wait too long in the case of serious illness or until the illness has reached such a stage of severity that it is imperative to call the doctor. Much valuable time may be lost by delay in securing medical assistance.

2. If your condition permits, consult the doctor during his office hours and do not ask him to come to you. Some examinations can be made only in the doctor's office, where certain instruments which cannot easily be transported are kept.

3. If you have decided that you will call the doctor, inform him to that effect before he leaves his home to make his calls; that is, before 9 o'clock in the morning. The doctor must lay his plans for the day's work ahead of time, and if you wish to assure yourself of an early visit, send in an early call.

4. Do not ask the doctor to call at a certain hour, but leave the time for making a visit to him, if your case is not urgent or not an emergency case which demands an immediate response to your call. The doctor is never master of his time, and it is very difficult for him to make a visit at a certain time. The business man should not expect his doctor to time his call at the noon hour when the former can leave his business and be at home. If he cannot consult the doctor during office hours, he should go home and remain there until the doctor can come to see him.

5. Do not ask the doctor to come immediately when it is not necessary. Such a visit, being an emergency visit, is combined with great inconvenience and loss of much time, as it interferes with other work. At the same time, other patients who should be visited first are slighted thereby.

6. Never call the doctor at night except in an emergency case. The doctor is human, and like every other man must have his rest. A tired, worried and overworked doctor, one who is frequently disturbed in his sleep, naturally cannot render such efficient service to his patient as he could if his rest were not broken so much.

7. On Sunday the doctor should be allowed to rest. No demand should be made on his time, except when his services are absolutely needed.

8. If a doctor is needed to answer an emergency call, please do not notify more than one man at the same time. If, in the confusion of the moment, more than one doctor has been called, countermand multiple calls as soon as possible.

9. When the doctor is expected, please have everything ready for him so that time will not be lost. Above all things, do not expect the doctor to wait to see you, but have your room and yourself in readiness to receive him. Have water, soap and towel in readiness for him, likewise pen and ink and anything else that might be needed by him, to avoid delay.

10. Do not detain the doctor unnecessarily during his office hours. Other patients are waiting to see him, each in his turn, and lost time may be a valuable item for them. Furthermore, other patients are awaiting the doctor at their homes. Female patients should be prepared to submit to any examination with as little loss of time as possible, and be so dressed that they can leave the office quickly and without the assistance of a maid.

PARIS LETTER

PARIS, Oct. 7, 1915.

The War

THE OPERATION OF THE MEDICAL SERVICE DURING THE RECENT BATTLES

M. Justin Godart, assistant secretary of the medical service in the war department, has gone to inspect the working of the measures adopted to assure the rapid transportation and the suitable distribution of the wounded after the recent battles of Champagne and Artois. In an interview he said that on the battlefield automobiles have been multiplied and have come up to the first aid posts whenever this was possible. The sojourn of the wounded on the field has been reduced to the minimum. By agreement with the railway companies, the average speed of the medical service trains has been from 30 to 45 kilometers (from about 18½ to about 28½ miles). Moreover, these trains have not remained more than an hour at the stations. The wounded have arrived in Brittany twenty-four hours after the receipt of their wounds; in Paris fourteen hours after; in Fontainebleau sixteen hours.

M. Godart declared that many operations had been performed in surgical automobile ambulances under excellent conditions. As things are, however, it seems that these ambulances play an ill-defined rôle. When kept moving too exclusively, they do not render sufficient service; when left in one spot they merely duplicate the service of the fixed ambulance units. Something else is required: operation and sterilization rooms, without surgical staff, coming to the aid of incumbered units.

The assistant secretary finds the general hygienic conditions excellent. Tetanus has almost disappeared. Gaseous gangrene has greatly diminished. The hygienic condition of the troops is equally good. Strict orders have been given for the removal of filth and refuse and its incineration, for the disinfection of buildings and for the suppression of flies. Soldiers in camp do not sleep directly on the ground, but always on raised beds of brush. The medical officers of the regiments are directed to obtain the cooperation of the municipalities for strict sanitation within municipal limits at all costs. Laundry wagons with driers permit the perfect cleansing of the soldiers' linen. Thanks to these measures, diseases which were so destructive in previous wars at present play an insignificant rôle.

SCHOOL BUILDINGS UTILIZED AS HOSPITALS

An arrangement has been concluded between the minister of public instruction and the assistant secretary of the medical service by which a certain number of school buildings, utilized up to the present as hospitals, have been or soon will be restored to their use as schools. All these changes are being made with the sole design of reconciling the demands of the national defense and the welfare of the wounded with the interests of education. In no region has the number of beds for the use of the wounded been diminished, the restoration of the school buildings having been made possible by the substitution of other buildings, the creation of new hospitals or the expansion of existing hospitals. The minister of public instruction has given specially definite orders for the disinfection of the buildings thus returned to normal use, so that the pupils may find them in perfect hygienic condition.

THE REPORT OF THE AMERICAN RELIEF CLEARING HOUSE

The semi-annual report of the American Relief Clearing House, of which I have mentioned the activities in previous letters (THE JOURNAL, Aug. 28, 1915, p. 213 and Sept. 18, 1915, p. 1042), has just been published.

The total number of boxes received by the central committee of the American relief, coming from all parts of the United States, exceeds 15,000. Of these, 1,500 are from the American Red Cross, of which the central American committee is the official representative in France. Among the other American organizations which have contributed are the Lafayette Committee of New York, which gave 750 boxes and bales, containing 25,000 outfits, or a total of 505,000 useful articles for the soldiers at the front; the American Girls' Aid Society, which gave 2,000 boxes, containing more than 100,000 pieces of clothing for the refugees; the American Commission of Aid for Belgium (the Hoover Commission) which gave 1,000 boxes of clothing; the War Relief Committee, which contributed 6,000 boxes and bales; the Vacation War Relief, which gave about 900 boxes; and so on without mentioning a large number of private donors. All these supplies have been transported from New York to France without expense, thanks to the courtesy and generosity of the Compagnie générale transatlantique. The gifts, composed of the greatest variety of objects, represent an estimated value of 10,000,000 francs ($2,000,000). The supplies have been distributed directly by the central committee, with the aid of the French government, to more than 600 hospitals and medical institutions; to about 500 workshops and aid organizations of all kinds situated in all parts of France; also to the soldiers at the front. During one of the particularly active months of summer, there were sent to about fifty prefects about 62,000 pieces of clothing for the civilian population of their respective departments.

The American Central Committee, admirably seconded and counseled by its adjunct French, Belgian, Russian, Italian and Serbo-Montenegrin committees, whose members are the official representatives of their respective governments, foresees numerous and urgent needs springing from the coming winter campaign, and, with its correspondent organization at New York (The War Relief Clearing House for France and Her Allies), is preparing to send numerous new gifts and subscriptions from all parts of the United States.

INCREASE IN THE PRICE OF MILK

The report has lately been published in several journals that the milk supply of Paris is about to be cut off. This is not quite correct. Paris is still being supplied, but on certain days the milk arrives late, for the milk trains have had to yield the right of way to military trains. But, although milk is not going to be lacking in Paris, the price is without doubt going to rise. To supply a city the size of Paris, whose daily consumption amounts to about a million liters (over 250,000 gallons) of milk, a very complicated organization is required. Moreover, the scarcity of labor in the country, the increase in the price of fodder, the sale of a large number of cattle for slaughter, the high price at which they sell and the fact that the dairy regions of the north are invaded—all this has tended to reduce the production and to increase the price of milk.

PERMANENT MISSION OF PROPHYLAXIS

By a decree of the minister of war, a permanent mission of prophylaxis in the zone of the interior has been created under the presidency of the assistant secretary of the medical service for the duration of the war. It comprises: Dr. Baillard, the medical inspector general; Dr. E. Roux, director of the Pasteur institute; Dr. Laveran of the Pasteur institute; M. Brissac, director of Public Charities and Hygiene in the interior department; Dr. Simonin, professor in the Ecole d'application de médecine et de pharmacie militaires du Val-de-Grâce; Dr. Pottevin, member of the Conseil supérieur d'hygiène publique de France.

DISTURBANCES OF THE ARTERIAL CIRCULATION IN RELATION TO WAR

At a recent session of the Académie des sciences, Dr. Moutier read an interesting paper on this subject. All persons whom Moutier has been able to observe after return from the battlefield since the beginning of the campaign present a radial hypotension. In all, the radial tension falls rapidly from the normal 15, to a very inferior figure, which generally varies between 7 and 10. In subjects who before their departure present generalized hypertension, the return of the radial tension to normal is observed, or even, more frequently, a lowering to below normal. This radial hypotension is the consequence of a peripheral vasodilatation, dependent on and compensatory to an internal vasoconstriction. By applications of d'Arsonval high frequency currents locally applied at the abdomen, the arterial circulation is regularized and the radial tension becomes normal again.

Disturbances of arterial circulation are frequently observed at the region of a limb which has sustained a traumatism of war, when they are not observed in the limb on the opposite side. This is manifest when the lesion is in an arm. In the latter case in the injured limb one finds a tension different from that in the uninjured limb; sometimes the tension is higher, but more frequently it is lower; the radial pulse in certain cases may even be imperceptible. A return to normal is observed not only as a result of a local abdominal application, but also after a local high-frequency application at the level of the junction of the limb.

Moutier believes that these disturbances of arterial circulation may have considerable influence on the course and perhaps even on the production of many diseases and complications observed in victims of war (frozen feet, certain atrophies, and retardation of cicatrization or of osseous consolidation).

Marriages

Charles Alexander Balkwill, M.D., Grafton, Wis., to Miss Emma Marie Pinkham of Hillsdale, Mich., October 12.

Lucius Boardman Morse, M.D., to Mrs. Margaret Shepperd Kemper, both of Hendersonville, N. C., October 7.

Eben Wesley White, M.D., Castle Rock, Wash., to Miss Elinor Mae Hibbard of Walla Walla, Wash., October 5.

Alan Richard Welch, M.D., Smithfield, Ill., to Miss Mabel Lee Hinckle of Hinckle, Va., at Cuba, Ill., October 11.

John George Breslin, M.D., Charlestown, Boston, to Miss May Evelyn Taber of Dorchester, Boston, October 6.

Wallace William Smith, M.D., Springfield, Mo., to Carlie Bell Souter, M.D., of Chicago, October 14.

William Gilliam Kennon, M.D., to Miss Elizabeth Thompson, both of Nashville, Tenn., October 12.

Wilbur Paul Rickert, M.D., East Millville, N. J., to Miss Bertha Watkins of Vineland, N. J., recently.

Simon Eugene Driskell, M.D., Alachua, Fla., to Miss Ethel Jones of Jones' Mill, Ala., June 17.

John Hamilton Taylor, M.D., to Miss Jessie Schucraft, both of Chattanooga, Tenn., October 12.

Albert Abrams, M.D., to Mrs. Blanche Schwabacher, both of San Francisco, September 28.

Frederick Johnson Corey, M.D., to Miss Ethel Henninger, both of Havana, Ill., October 6.

Theodore B. Templin, M.D., Gary, Ind., to Miss Gladys Ohbano of Chicago, October 2.

Percy Raymond Pierson, M.D., Readstown, Wis., to Miss Madge E. Starr, September 27.

Curtis Clyde Eves, M.D., to Miss Glodean Smith, both of Philadelphia, October 16.

Horace Gray, M.D., Boston, to Miss Katherine Meeker of Chicago, October 16.

Deaths

John C. Price, M.D. University of Pennsylvania, Philadelphia, 1893; aged 44; a Fellow of the American Medical Association; formerly roentgenologist to the State Hospital, Northern Anthracite Coal Region and Moses Taylor Hospital, Scranton, Pa.; chief medical inspector of the Division of Hygiene and Engineering of the Department of Labor and Industry of the State of Pennsylvania, Harrisburg; a specialist on vocational diseases; died at his home in Camp Hill, Harrisburg, October 13, from nephritis.

James Benjamin Shepherd, M.D. Jefferson Medical College, 1855; aged 81; surgeon of the Fifth Virginia Cavalry, C. S. A., during the Civil War; since 1870, a resident of Texas; physician and surgeon to the Texas Military Institute, Austin; and later assistant superintendent to the State Insane Hospital in that city; for thirty-four years a resident of San Antonio; died at his home in Alamo Heights, San Antonio, October 11.

Wallace Ernest Parkman, M.D. University of California, San Francisco, 1896; aged 41; of San Jose, Calif.; a member of the Association of Military Surgeons of the United States; for ten years acting assistant surgeon, U. S. Army, with service in the Philippine Islands, during which he was a member of the squad which captured Luis Aguinaldo; died at the Garden City Sanitarium, San Jose, October 5, from chronic nephritis.

William Noyes, M.D. Harvard University Medical School, 1885; aged 58; a member of the Massachusetts Medical Society, American Neurological Association and American Medico-Psychological Association; formerly superintendent of the Boston Insane Hospital and clinical instructor in mental diseases in Harvard Medical School; died at his home in Jamaica Plains, Boston, October 20.

Elmer Ellsworth Ferguson, M.D. Rush Medical College, 1897; from 1900 to 1912 proprietor and chief surgeon of The Dalles Hospital, but for two years a resident of Hood River, Ore.; died at his summer home, October 11, from a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent while suffering from melancholia.

Samuel Gordon Todd, M.D. Trinity Medical College, Toronto; Queen's University, Kingston, Ont., 1890; aged 46; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; of Oshkosh, Wis.; a well-known specialist on diseases of the eye, ear, nose and throat; died at his home in Oshkosh, October 13, from pneumonia.

Andrew J. Smith, M.D. Central College of Physicians and Surgeons, Indianapolis, 1886; aged 83; who served in the United States Navy during the historic trip of Commodore Perry to Japan and was later an assistant surgeon in the Army with Civil War service; a practitioner for more than half a century; died at his home in Indianapolis, October 15, from cerebral hemorrhage.

George W. Daniels, M.D. Kentucky School of Medicine, Louisville, 1877; aged 67; a member of the Indiana State Medical Association; a veteran of the Civil War, and president of the Regimental Association of the One Hundred and Twenty-Third Indiana Volunteer Infantry; until two years ago a resident of Sweetsers, Ind.; died at his home in Marion, Ind., October 8.

Ethbert B. Emory, M.D. Homeopathic Hospital College, Cleveland, 1881; aged 66; a Fellow of the American Medical Association and an esteemed practitioner of Winfield, Kan.; died in his sanatorium in that city, October 13, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent and of unsound mind.

Lewis Attwood, M.D. Kansas Medical College, Topeka, 1904; aged 36; of Topeka, Kan.; a specialist on diseases of the eye, ear, nose and throat; formerly a practitioner and druggist of Meriden, Kan.; was instantly killed October 16, when a Union Pacific motor car on the Blue Valley branch plunged through a bridge into a flooded creek near Randolph.

Adolph Kessler, M.D. University of Berlin, Germany, 1855; aged 82; a member of the Medical Society of the State of New York; formerly a member of the board of coroners of New York County and assistant sanitary superintendent of the Board of Health of the Bronx; died at his home in New York City, October 19, from senile debility.

Homer G. Newton, M.D. New York University, New York City, 1863; aged 79; one of the founders of the Brooklyn Eye and Ear Hospital, and an early ophthalmologist and otologist of Brooklyn; surgeon of U. S. Volunteers during the Civil War; died at his home in Shelburne, N. Y., October 11.

John Leon Parker, M.D. University of Michigan, Ann Arbor, 1899; aged 44; consulting surgeon to the Charles City (Iowa) Hospital; local surgeon of the Illinois Central Railroad and a member of the board of Education of Charles City; died suddenly in his office in Charles City, October 14.

John Marshall Kellogg, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 75; for many years a practitioner of Orange, N. J., but later connected with a preparatory school in New York; died at his home in East Orange, N. J., October 18, from cerebral hemorrhage.

Warren David Kleppinger, M.D. Medico-Chirurgical College of Philadelphia, 1913; aged 26; a Fellow of the American Medical Association; chief of the house staff and pathologist of the Allentown (Pa.) Hospital; died in that institution, October 9, from carcinoma of the pancreas.

Calvin Brice McKeown, M.D. Medical College of the State of South Carolina, Charleston, 1878; aged 63; a member of the South Carolina Medical Association; until three years ago a practitioner of Fort Lawn, S. C.; died at his home in Chester, S. C., October 11.

John D. Jordan, M.D. University of Louisville, Ky., 1872; aged 69; a member of the Arkansas Medical Society; formerly president of the board of education and a well-known physician and druggist of Eureka Springs, Ark.; died at his home in Antlers, Okla., October 7.

Herbert Augustine Morse, M.D. University of Michigan, Ann Arbor, 1866; aged 70; formerly a Fellow of the American Medical Association; for many years a practitioner and druggist of Batavia, N. Y.; died at his home in that city, October 15, from angina pectoris.

James P. Frame (license, Missouri, 1883), aged 78; formerly president of the Lewis County (Mo.) Medical Society and president of the Bank of Ewing, Mo.; a veteran of the Civil War; died at his home in Ewing, October 2, from diabetic gangrene.

Stanislas Alcide St. Amour, M.D. Ecole de Médecine et de Chirurgie, Montreal, 1886; aged 52; of Cheboygan, Mich.; a member of the Michigan State Medical Society; died in St. Luke's Hospital, Chicago, October 19, from cerebral hemorrhage.

Edmond G. Scruggs, M.D. Medical College of Georgia, Augusta, 1858; aged 84; formerly a member of the Medical Association of Georgia; a practitioner and druggist of Warrenton, Ga.; died at his home in that place, August 15, from nephritis.

Benjamin F. Hall, M.D. Louisville (Ky.) Medical College, 1877; aged 62; of Rock Island, Ill., and Davenport, Iowa; a specialist on diseases of the eye, ear, nose and throat; died in the Augustana Hospital, Chicago, October 17.

George Haner, M.D. New York University, New York City, 1877; aged 67; formerly a member of the Medical Society of the State of New York; died at his home in Farmersville, N. Y., July 2, from cerebral hemorrhage.

William Miller Baird, M.D. Bellevue Hospital Medical College, 1877; aged 66; of Atlanta, Ga.; formerly a member and speaker of the house of representatives of New Jersey; died at the home of his son in Baltimore, October 10.

Nathaniel Cope Miller, M.D. University of Pennsylvania, Philadelphia, 1870; aged 67; a Fellow of the American Medical Association; died suddenly at his home in Stroudsburg, Pa., about October 10, from disease of the kidney.

George W. James, M.D. University of Nashville, Tenn., 1867; aged 74; a Confederate veteran, for many years a practitioner of Humboldt, Tenn.; died while making a professional call in that place, October 14.

William John McNaul, M.D. Jefferson Medical College, 1894; formerly a Fellow of the American Medical Association; for twenty years a practitioner of Kensington, Philadelphia; died at his home, October 15.

George W. Crosby, M.D. Missouri Medical College, St. Louis, 1870; aged 69; formerly a member of the Arkansas Legislature and a practitioner of Heber Springs; died at his home in that place, about October 14.

Samuel W. Craig, M.D. Cincinnati College of Medicine and Surgery, 1869; aged 74; a veteran of the Civil War; for thirty years a druggist of Cincinnati; died at his home in Mt. Auburn, Cincinnati, October 4.

John W. Williams, M.D. University of Louisville, Ky., 1887; aged 62; a member of the Kentucky State Medical Association; died at his home in Clay City, Ky., October 13, from carcinoma of the stomach.

Thomas Jefferson Box, M.D. Tulane University, New Orleans, 1891; aged 59; formerly a Fellow of the American Medical Association; died at his home in Torras, La., July 4, from heart disease.

David Henry Van Nuys, M.D. Jefferson Medical College, 1864; aged 81; for fifty-one years a practitioner of Falmouth, Ind.; died at his home in Anderson, Ind., October 15, from bronchial pneumonia.

Gentry Guy Fisher, M.D. University of Nashville, Tenn., 1909; aged 27; formerly of Dibrell, Tenn.; of Bokchito, Okla.; died at his home in that place, October 10, from typhoid fever.

Lawrence Orr McCalla, M.D. College of Physicians and Surgeons, Baltimore, 1893; aged 52; a retired practitioner of Starr, S. C.; was shot and killed by his wife's nephew, October 9.

Simeon King Fisher, M.D. University of Louisville, Ky., 1884; aged 61; a member of the Kentucky State Medical Association; died at his home in Milton, Ky., June 25, from diabetes.

Edouard Tourigny, M.D. Laval University, Quebec, 1904; aged 42; of Aurora, Kan.; died at St. Albert, Warwick Parish, Quebec, Canada, July 13, from pulmonary tuberculosis.

John David Shepherd, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 67; died at his home in Meadville, Mo., August 11, from general nervous breakdown.

Willard Knowlton Dyer (license, Massachusetts, years of practice, 1894), aged 64; a practitioner of Boston for thirty-two years; died in a hospital in Boston, October 18.

William Beatty, M.D. University of Toronto, Ont., 1880; aged 65; for nearly thirty-five years a practitioner of Dunlap, Iowa.; died at his home in Omaha, October 13.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

The following letter from Mr. Roland B. Woodward, Secretary of the Rochester (N. Y.) Chamber of Commerce, reached THE JOURNAL office October 14. It was dated September 15, but bore the Rochester postmark of October 13. Mr. Woodward, in answer to an inquiry, hopes that THE JOURNAL will "find it worthy of publication."

> "*To the Editor:*—In 'Medical News,' Volume LXV, Number 11, page 961, top of the page and second column, you have an editorial comment on an incident connected with an address on 'Patent Medicine Frauds,' before the meeting of the American Public Health Association in Rochester.
>
> "It seems to me that the article is in bad taste and is thoroughly unfair in its suggestion. You say: 'Doubtless it was this spirit that a few years ago inspired the Secretary of the Chamber of Commerce of Rochester,' *et cetera.* You do not say *how many* years ago; neither do you name the Secretary of the Chamber of Commerce of Rochester; neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber.
>
> "I have served as Secretary of the Rochester Chamber for nearly seven years — which is more than 'a few years.' The inference to be drawn from your comment is that the *present* Secretary of the Chamber of Commerce of Rochester wrote the testimonial representing the Chamber, in order to not 'hurt local industries, no matter how fraudulent, how subversive of the public good, how dangerous to the public health, so long as the industry brings money to the town.' You evidently don't know the Rochester Chamber of Commerce nor the City of Rochester.
>
> "What I have said concerning the Secretary of the Chamber of Commerce may apply equally to the 'Postmaster of Rochester,' and, so far as I know, to 'the President of the Rochester Herald Company.'
>
> "It is such editorials as yours, expressing half-truths, permitting of wrong inferences and endeavoring to slander an entire community, which make honest men hesitate to align themselves with an association or organization that, in its opposition to what it deems an evil, loses its sense of fairness and sanity."

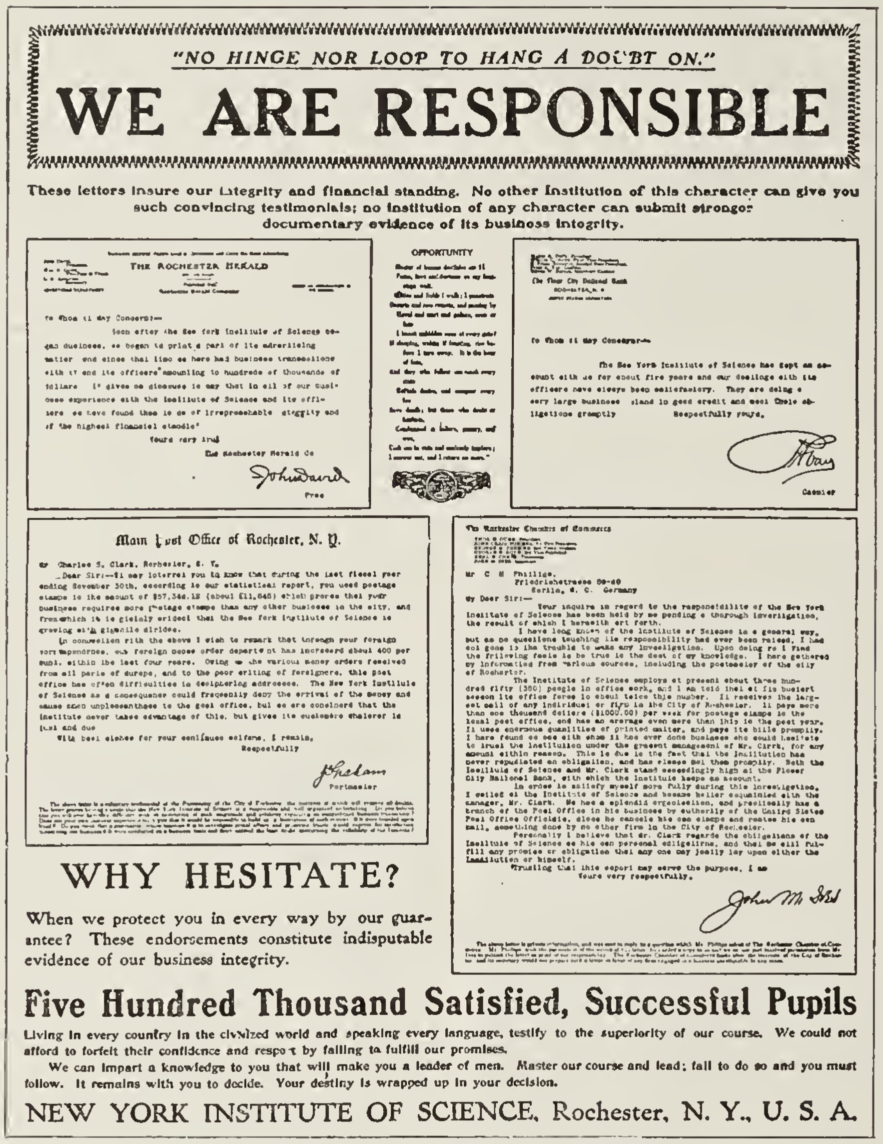
The editorial comment to which Mr. Woodward refers appeared in THE JOURNAL for September 11 under the title "Local Industries and the Soft Pedal." It is to be regretted that this comment strikes Mr. Woodward as "in bad taste" and "thoroughly unfair in its suggestion." After going over the matter with a good deal of care and giving due weight to Mr. Woodward's criticism, THE JOURNAL still remains unconvinced that it has done either the City of Rochester, the Rochester Chamber of Commerce, or its secretary any injustice. One statement in Mr. Woodward's letter is, evidently, based on a misconception of the facts:

> ". . . neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber."

The facts: Mr. Ives' letter was written to a Mr. Phillips in reply to a question which Mr. Phillips *asked, not of Mr. Ives, but of the Rochester Chamber of Commerce,* about the fraudulent "New York Institute of Science." The "New York Institute of Science" not only reprinted Mr. Ives' letter as an endorsement, but emphasized the fact that this letter represented the views of the Chamber of Commerce rather than the views of a private individual by adding:

> "The Rochester Chamber of Commerce looks after the interests of the City of Rochester, and its Secretary would not prepare such a letter in favor of any firm engaged in a business questionable in any sense."

In view of the above facts, THE JOURNAL was certainly justified in assuming that a letter written by the Secretary of the Chamber of Commerce, on the stationery of the Chamber of Commerce, in answer to an inquiry addressed to the Chamber of Commerce, represented the views of the Secretary of the Chamber of Commerce. Mr. Woodward says further that what he has mentioned regarding the Secretary of the Chamber of Commerce may apply equally to the "Postmaster of Rochester," and, so far as he knows, also to the "President of the Rochester Herald Company." Once more, the facts: The letter reproduced by the "New York Institute of Science" was written on the stationery of the "Main Post Office of Rochester, N. Y.," and was signed "J. S. Graham, Postmaster." Likewise the letter from the President of the Rochester Herald Company that the "institute" reproduced in its advertising was written on the stationery of the *Rochester Herald* and signed "The Rochester Herald Co., John David, Pres."



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These letters insure our integrity and financial standing. No other Institution of this character can give you such convincing testimonials; no institution of any character can submit stronger documentary evidence of its business integrity.

WHY HESITATE?

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Living in every country in the civilized world and speaking every language, testify to the superiority of our course. We could not afford to forfeit their confidence and respect by failing to fulfill our promises.

We can impart a knowledge to you that will make you a leader of men. Master our course and lead; fail to do so and you must follow. It remains with you to decide. Your destiny is wrapped up in your decision.

NEW YORK INSTITUTE OF SCIENCE, Rochester, N. Y., U. S. A.

A reduced facsimile of a sheet, three square feet in size, sent out by the New York Institute of Science, in its attempt to impress the public with its responsibility and honesty. It contained reproductions of four letters written in 1903. One was from the president of the Rochester *Herald,* who states that the "Institute of Science and its officers" are "of irreproachable integrity." The cashier of the Flour City National Bank, Walter B. Duffy, President, testifies that the bank's dealings with the New York Institute of Science "have always been satisfactory." The secretary of the Rochester Chamber of Commerce defended this fraudulent concern by stating that it employs 350 people, uses more than $1,000 worth of postage stamps each week and "pays its bills promptly." The fourth letter, from the postmaster of Rochester, praised the "institute" and stated that he was convinced that the institute "gives its customers whatever is just and due." The New York Institute of Science, commenting on the postmaster's letter, says: "Do you think that a postmaster, whose business it is to investigate postal affairs and prosecute frauds, would express his satisfaction concerning our business if it were conducted on a fraudulent basis and there existed the least doubt concerning the reliability of the institute?"

Mr. Woodward's statement that we "evidently do not know the Rochester Chamber of Commerce nor the City of Rochester" may be true. We do know, however, that for years two of the most widely exploited and fraudulently advertised "patent medicines" in the country have emanated from the City of Rochester, and we understand that the fortunes amassed from the sale of these products are, today, invested extensively in other Rochester projects. We know, further, that for many years Rochester has been the headquarters of a syndicate of fraudulent mail-order concerns that have fleeced people not only of the United States, but all over the world. Fraud after fraud has been started by this syndicate, flourished rankly and has gone out of existence only when the accumulated experience of the public has nullified the power of its advertising or when the United States Post Office Department has issued a fraud order against it and denied it the use of the mails. What has Rochester done about it?

LAIRD'S RHEUMATISM FORMULA

During the past week or two, physicians in various parts of the country received a circular letter from one Madison R. Laird, Des Moines, Iowa. Mr. Laird's specialty, as indicated by his letterhead, is "Investments." Possibly Mr. Laird may have found the medical profession somewhat susceptible to inducements that are sometimes held out by those in his line of business. At any rate, he came to the profession, *via* the circular letter, with an offer to sell a prescription for "rheumatism" that was "really amazing" in the "prompt results" to be obtained:

> "*Dear Doctor:*—HAVE YOU A PRESCRIPTION THAT REALLY DOES GIVE RELIEF FOR YOUR CASES OF RHEUMATISM?
>
> "If you have not, please read this carefully.
>
> "For some time I have known of a prescription that is particularly efficient and reliable for the treatment of rheumatic ailments, being especially effective and prompt in rheumatic fever. . . ."

And much more to the same effect. Mr. Laird claimed that he had used it himself "for rheumatism and lumbago" and obtained "complete and almost immediate relief." Also, he confided, some of his relatives "have found it equally effective." In spite of his firm faith in the power of his remedy and his apparent belief that the medical profession had nothing as good to offer suffering humanity, Mr. Laird was, it seemed, unwilling to give the public the benefit of his "secret" but was perfectly willing that physicians should give the public the benefit of it—after Laird had been paid for it!

> "Believing this valuable prescription should be known to every doctor, I have decided to sell it to as many as care to send for it.
>
> "I will send you this prescription, with full directions, for $2.00."

One of the physicians who received the Laird circular and sent it in to THE JOURNAL was Dr. W. L. Wilson of Hinsdale, Ill. Dr. Wilson was asked to cooperate with THE JOURNAL in giving the profession and the public the benefit of Madison R. Laird's marvelous prescription to the extent of sending Laird his check for $2.00, for which THE JOURNAL would reimburse him. This Dr. Wilson did and in due time sent both the "prescription" and a letter he received from Laird to the Propaganda Department generously stating that he is "glad to contribute the $2.00 to the cause of advancing the department's work." The "rheumatism formula" was a typewritten affair and disclosed a typical, old-time, shotgun prescription of the polypharmacy period; probably the old prescription-files of half the drug stores in the country contain similar monstrosities. Here it is:

Compound Syrup Sarsaparilla	2 ounces
Wine of Colchicum Seed	1 ounce
Tincture Guaiac	1 ounce
Potassium iodid	120 grains
Sodium Salicylate	60 grains
Rochelle Salts	1 ounce
Water	4 ounces

COMPOUNDING.—Dissolve the dry ingredients in the water. Mix liquids separately, adding Tincture Guaiac last. Combine the two mixtures, shaking well together.

DIRECTIONS.—Shake well before taking. One teaspoonful in half glass of water three times daily, before or after meals.

Accompanying this marvelous "formula" was a letter to Dr. Wilson in which Laird said:

> "I wish to thank you for your letter; it is one of a very few I have received. [A compliment on the profession's intelligence.—ED.] Several of the others have been 'roasts' of a sarcastic or amusing character. Some of these learned men have actually been insulted to receive such a proposal from a 'layman.'"

Laird further said that for years he had "been an interested reader of medical subjects, and for a layman have a very good knowledge of medicine." He also modestly acknowledged that his "long service as a civil engineer and contractor" had made him "a very good first aid surgeon." The letter closed with a description of the marvelous results obtained from the use of this formula in a case of tabes.

> "Six months ago this man was almost helpless from Locomotor Ataxia, could hardly walk, did not dare raise his eyes above the level and was entirely lost in the dark, could not find his way home after nightfall."

After using Laird's "rheumatism" medicine:

> ". . . he reported that he could go anywhere he pleased day or night without getting lost and the dizzy symptom had entirely disappeared. He has wonderfully improved mentally and bodily and is entirely another man."

The lesson this anecdote conveys to Mr. Laird is, "We sometimes stumble on facts that surprise us and this is one of them." How true! Equally axiomatic it is that we sometimes stumble on fancies that amuse us—and this is one of them.

Correspondence

The Proper Preparation of Food, and the Proposed Founding of Training Schools for Cooks in Connection with Established Medical Colleges

To the Editor:—A letter written by me to a medical journal, dated May 4 last, which discussed the question of human alimentation and proper food preparation in public places, brings up a question of vital concern and therefore appropriate for careful consideration in the ultimate hope that there may be brought forth a generation of cooks fitly prepared by scientific training for their important work. The suggestion was made that the training schools for nurses, and the revolution thus wrought in that line of work, furnished a fair parallel to what was possible in the dietary and culinary service rendered to the public in hotels, clubs, restaurants and the like, and that adequately equipped medical colleges should undertake to provide this educational and dietetic service.

The contention in the letter named was that the physical aspect of people, as seen in city streets, supports the view that there is something wrong in the general manner of food preparation by public caterers, and a single paragraph of this letter will be quoted in illustration:

> Stated generally, the appearance of the crowd in the street tends to confirm this view, not one in five looking either healthy or happy. The facial complexions of persons of all ages and conditions—anemic, chlorotic, icteric, cachectic, in many forms and every degree—would be shocking if not so common as scarcely to arouse comment, and seem to point to a deeply rooted cause or causes operating adversely at the very basis of nutrition and producing effects that are ultimately recognizable by observing medical men in profound disorders of the entire digestive and assimilative tract; among which may be named dyspepsias and diarrheas, indigestion, intestinal inertia, cancers and constipation, hepatitis, appendicitis, colitis and the like.

In THE JOURNAL, May 22, 1915, Graham Lusk discussed the preparation, proper proportioning and serving of foods, especially in connection with a catering concern that has a chain of such establishments in all large cities in this country; and while it may be said that the calories computation is perfect on paper, yet in actual everyday working the ignorance, inadequacy or inadvertence of the cook will nullify every provision, and this conclusion has been reached only after repeated patronage tests of the establishments belonging to the system that is operated in this city.

My criticism of the local catering concern in question would be directed toward the methods of handling the starches served, the half-baked breads and pastries and poorly cooked vegetables—the meats, stews, soups, etc., being as a rule better cooked but often spoiled by overseasoning.

In reply to an inquiry by me as to the possible remedy, Lusk said:

> I think that instruction along proper food lines might be taken up by the dispensaries of medical schools. The medical schools, however, could in my judgment scarcely establish schools of cooking; that should be a part of the curriculum of every public school. I remember in the course in the School of Mines at Columbia which I took you work with small cupel furnaces assaying ores during a period of four months,

giving knowledge which never can be forgotten. It seems to me that cooking schools of the public schools might be associated with municipal lodging houses and the product of such cooking schools could be sold at very nearly cost. Every girl should be taught how to prepare simple foods in a cleanly and proper manner, with full regard for the nutritive value of the article involved.

The public bread supply in St. Louis is a palpable reproach in respect of both integrity and decency; when fraud in half-baking, short-weight or loading the loaf with moisture is not in evidence, foul-fisted handling in delivery is to be seen in every direction. My suggestion would be that instead of the city government attempting to regulate the business of public bread production by legislative penalties, the better way would be for the city regularly to produce a loaf standardized in every respect of weight, quality, baking, price, etc., and by publication inform bread-buyers of those producers who fall below the standard in their goods, and if the people wished counterfeit stuff they would then buy with their eyes open. Years ago bread was baked at the poorhouse for the supply of other institutions that was of uniformly fair quality, and doubtless the same could be done again. In Canada the dominion government relies solely on publicity as a check on the sale and use of misbranded or adulterated goods that enter into household consumption by the inspectors making purchases in the open market; the results of analyses, special findings, etc., then being published, and a well-informed people soon learn to put the frauds out of business.

George Homan, M.D., St. Louis.

Transverse Incision in Operation for Appendicitis

To the Editor:—Since the publication of my paper on this subject (The Journal, Sept. 11, 1915, p. 939), my attention has been called to the fact that the incision at the outer side of the sheath of the rectus, which is an essential part of the transverse incision, was first proposed and described by Dr. Robert Weir in the *Medical News,* Feb. 17, 1900, p. 241. Dr. Weir proposed this as an extension of the McBurney incision, but described definitely the incision in both the anterior and posterior sheaths of the rectus, and the drawing of the rectus back into its sheath. I scarcely understand the mental process which caused me to omit giving Dr. Weir full credit for this important part of the procedure. Like many others, I had practically abandoned McBurney's incision, using chiefly the vertical incision, which is now, I believe, more used than any other. The transverse incision, with Weir's technic at the inner side, is destined by reason of its natural advantages, if properly studied and understood, to become the operation of choice.

A. E. Rockey, M.D., Portland, Ore.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ODOR OF URINE IN PARALYSIS OF VESICAL SPHINCTER

To the Editor:—I have an incurable case of paralysis of the vesical sphincter, and I am anxious to give something to eliminate the foul odor of the urine in this case. What do you suggest?

W. Burnett Weaver, M.D., Miamisburg, Ohio.

Answer.—It is uncertain from the question whether the foul odor complained of is due to decomposition of the urine within the bladder from infection or simply to the decomposition of the urine after it escapes. In the former case it would be necessary to overcome the infection if possible, and it is difficult to give a definite line of treatment for a specific condition when the specific condition is not known. Hexamethylenamin in sufficient doses will prevent or rather retard the decomposition of the urine, provided the urine is of acid reaction, but it will have practically no effect on a foul decomposed alkaline urine, nor is there anything known which, taken by mouth, will entirely eliminate the foul odor in such conditions. If the urine is kept acid in reaction and hexamethylenamin given to delay its decomposition, by scrupulous cleanliness, the odor may be reduced to a minimum.

BOVINE AND HUMAN TUBERCULOSIS

To the Editor:—Will you direct me to the latest literature on bovine tuberculosis as it affects human beings?

E. R. Van der Slice, M.D., Kearney, Neb.

Answer.—The following is a list of references to articles on this subject:

Park, W. H., and Krumwiede, C.: Relative Importance of Bovine and Human Types of Tubercle Bacilli in Different Forms of Human Tuberculosis, *Jour. Med. Research,* December, 1911; ibid., September, 1912; abstr., The Journal, Jan. 27, 1912, p. 306; Oct. 5, 1912, p. 1322.

Establishment of the Exact Significance of Bovine Tubercle Bacilli in Human Disease, editorial, The Journal, Feb. 17, 1912, p. 482.

Eagle, R. T.: Tuberculous Cow, *Texas State Jour. Med.,* July, 1912.

Fraser, J.: Possible Test in Differentiation Between Human and Bovine Types of Tubercle Bacillus, *Brit. Med. Jour.,* Nov. 23, 1912; abstr., The Journal, Dec. 21, 1912, p. 2287.

Bertarelli, E.: Transmission of Bovine Tuberculosis to Man, *Gazz. d. osp.,* Nov. 26, 1912.

Bertarelli, E.: Italian Contributions to the Study of the Relations Between Human and Bovine Tuberculosis, *Gazz. d. osp.,* Dec. 1, 1912.

Keiller, V. H.: Relative Importance of Human and Bovine Tuberculosis Infections in Man, *Texas State Jour. Med.,* December, 1913.

Wankel, J.: Differentiation of Human and Bovine Tuberculosis by Means of Theobald Smith's Reaction Curve, *Deutsch. med. Wchnschr.,* Dec. 11, 1913.

Calmette, A.: Rôle de la tuberculose bovine dans la contamination de l'homme; la question du lait, *Ann. de med.,* Paris, 1914, i, 253.

Ravenel, M. P.: Bovine Tuberculosis, *Illinois Med. Jour.,* June, 1914.

Raw, N.: Human and Bovine Tuberculosis: Treatment by Special Kinds of Tuberculin, *Jour. State Med.,* July, 1914; abstr., The Journal, July 25, 1914, p. 354.

McCleave, T. C.: Relation of Bovine Tuberculosis to Early Tuberculosis in Children, *Am. Jour. Dis. Child.,* September, 1914, p. 210; abstr., The Journal, Sept. 26, 1914, p. 1135.

Beitzke, H.: Fatal Case of Bovine Tuberculosis in Man, *Berl. klin. Wchnschr.,* Aug. 17, 1914; abstr., The Journal, Oct. 3, 1914, p. 1239.

Brooks, H.: Effects of Heredity in Bovine Tuberculosis, *Am. Jour. Med. Sc.,* November, 1914.

BRAN BREAD

To the Editor:—Heretofore I have been inclined toward constipation. Recently I have been eating bran bread, which helps considerably. Can you give me the formula for making this bread? Please omit name.

X. Y., Fort Wayne, Ind.

Answer.—The following is suggested for bran bread: Prepare the two following mixtures:

2 cups of wheat flour
2 cups of graham flour
2 cups of bran flour
1 teaspoonful salt
½ cup sugar
1 level teaspoonful baking powder

2 cups milk
1 cup molasses
1 egg
2 level teaspoonfuls of soda
¼ cup hot water
1 cup raisins

Thoroughly mix the foregoing liquid and solid mixtures, and bake in a moderate oven for one hour. This makes two loaves.

THE DOCTOR'S BAG

To the Editor:—Some time within the past two years I saw an article in The Journal regarding a list of articles which the general practitioner should carry in his bag in order to make a diagnosis. Can you give me any reference to it?

H. Bryan, M.D., Shanghai, China.

Answer.—The article is entitled "The Doctor's Bag," published in the Miscellany department of The Journal, Feb. 27, 1915, p. 767.

REFERENCES TO RHUS

To the Editor:—I am doing a little research work on the rhus group, including sumach, ivy, etc. Can you direct me to the literature on the subject?

J. A. Van Der Hulse, M.D., Akron, Ohio.

Answer.—A very complete bibliography on the poisonous species of rhus, by L. E. Warren, will be found in the *Midland Druggist and Pharmaceutical Review,* 1910, xliv, 149, 218 and 288. Since then Dr. von Adelung has published an important paper in the *Archives of Internal Medicine,* February, 1913, p. 148.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, November 9-11. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Kansas June Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 8, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 22, of whom 21 passed and 1 failed; 25 candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1914)	82, 84
Rush Medical College		(1915)	89
University of Kansas		(1915)	81, 82, 82, 83, 86, 86, 87, 88, 89, 89, 90
Kansas City Hahnemann Medical College		(1915)	77
John A. Creighton Medical College		(1915)	85
University of Oklahoma		(1915)	81, 81, 85, 86
Jefferson Medical College		(1912)	78
	FAILED		
Kansas City Hahnemann Medical College		(1915)	*

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.		(1911)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1889)	Iowa
Hering Medical College		(1909)	Illinois
National Medical College, Chicago		(1898)	Illinois
Northwestern University		(1911)	Illinois
University of Illinois		(1914)	Illinois
State Univ. of Iowa, Coll. of Med.		(1912)	Iowa
Hospital College of Medicine, Louisville		(1904)	Oklahoma
Kentucky School of Medicine		(1907)	Indiana
University of Louisville		(1910)	Missouri
Tulane University of Louisiana		(1913)	Louisiana
Medical School of Maine		(1910)	Maine
Barnes Medical College		(1909) (1911)	Missouri
Ensworth Medical College		(1911)	Nebraska
Kansas City Hahnemann Medical College		(1910)	Missouri
St. Louis Medical College		(1882)	Missouri
St. Louis University		(1913)	Illinois
University Medical College, Kansas City		(1913)	Missouri
Washington University, St. Louis		(1913)	Illinois
John A. Creighton Medical College		(1914, 2)	Nebraska
University of Nashville		(1882)	Missouri
Wisconsin College of P. and S.		(1905)	Wisconsin
University of Edinburgh		(1905)	Missouri

* No grade given.

District of Columbia July Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 13-15, 1915. The total number of subjects examined in was 17; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 30, of whom 22 passed and 8 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University		(1913) 78.7; (1915)	76.1, 83.5, 84.4, 87.6, 87.8, 88.5, 89.6.
George Washington University		(1912) 78.2; (1915)	78.2, 80.1, 81.8, 81.9, 82.7, 83.2, 84.5, 90.1.
Howard University		(1914) 78.8; (1915)	75.9
Johns Hopkins University		(1914) 89.3; (1915)	78.3
College of P. and S., Boston		(1905)	83.3
	FAILED		
George Washington University		(1915)	72.2, 74.4
Howard University		(1914)	70, 72, 72.3
University of Michigan Medical School		(1894)	70.3
Fordham University		(1913)	72.3
University of Munich		(1912)	71.4

Book Notices

Educational Hygiene from the Pre-School Period to the University. Edited by Louis W. Rapeer, Ph.D., Professor of Education, Pennsylvania State College. Cloth. Price, $2.50 net. Pp. 650, with illustrations. New York: Charles Scribner's Sons, 1915.

The rapid expansion of the general field of preventive medicine is well illustrated by the publication of this book, covering the entire subject of educational hygiene from the preschool period through the university. The amount of ground covered precludes the possibility of its preparation by a single writer. Professor Rapeer has therefore undertaken to act as editor, each chapter being contributed by a recognized authority. After an introductory chapter by the editor, the public health movement is discussed by Dr. E. H. Lewenski-Corwin, secretary of the Health Committee of the New York City Academy of Medicine; health and heredity by Dr. Davenport of the Carnegie Institution; home hygiene for children by Dr. Ernest B. Hoag of Leland Stanford Jr. University; rural school administration by W. I. Larson, state inspector of rural schools of Wisconsin; open air and open window schools by Sherman C. Kingsley, director of the Elizabeth McCormick Memorial Fund; rural school sanitation by A. C. Monahan of the United States Bureau of Education, etc. The result is a book of thirty-three chapters, each written by a specialist. As only eight of these chapters are prepared by physicians, the book presents the point of view of the educator rather than the sanitarian and should, for this reason, be especially valuable to physicians interested in school hygiene, as offering an opportunity to acquire the point of view of the educator. Of the six chapters on medical supervision of schools, only one, that on medical supervision of the exceptional child, is written by a physician, the other five presenting the point of view of the teacher, the psychologist and the trained nurse rather than that of the physician. The illustrations, charts and diagrams used are numerous and add materially to the value of the work. Some of this illustrated material might perhaps be omitted without injury. Inasmuch as many of the practical problems discussed are still in the experimental stage, however, it is perhaps better to be diffuse rather than dogmatic. In the present stage of development of school hygiene, this book will prove a valuable contribution to the literature of the subject.

The Book of the Fly. A Nature Study of the House-Fly and Its Kin, the Fly-Plague and A Cure. By G. Hurlstone Hardy, with an Introduction by Halford Ross. Cloth. Price, 80 cents. Pp. 124, with illustrations. New York: Rebman Company, 1915.

One of the most important and far reaching developments of the modern scientific study of preventable diseases is the rôle of insects in the spread of disease. As a result, interest in the appearance, characteristics and habits of all insects which come in contact with man has been greatly stimulated. After centuries of close association with the common fly, we are just beginning to learn how little we know about him. Major Hardy's book is perhaps the most complete, from the standpoint of the naturalist, of anything that has so far been published. Evidently his interest in the subject has been lifelong, as the reader is told in the first chapter that, when barely more than 9 years old, he visited an aunt who was a veritable examplar of genteel breeding and propriety after the early Victorian pattern. She seriously reprimanded the child for cruelty in feeding the garden spiders with flies, which were, according to the aunt, "poor innocent creatures made by God for a useful purpose." To this admonition, the child replied that the devil made the flies and that God made the spiders to eat them. While this may not be an adequate explanation for the existence of the flies, it at least accounts for the spiders.

The average reader will be surprised to know that there are in Great Britain nearly 3,000 species of flies, of which 200 are exceedingly common and widely distributed. The characteristics, habits and distinguishing peculiarities of the more important species are described, their dangers as disseminators of disease discussed, and various methods for their control and extermination proposed. While little new matter is brought out under the latter heads, the discussion of the different species, their appearance and the variation in their personal habits is interesting and instructive.

Descriptive Catalogue of the Medical Museum of McGill University. Arranged on a Modified Decimal System of Museum Classification. Edited by Maude E. Abbott, B.A., M.D., Curator. Part 4, Section 1, The Hemopoietic Organs. Catalogue and Didactic Introductions by Oskar C. Gruner, M.D., Pathologist to the Royal Victoria Hospital, Montreal. Cloth. 1915.

McGill University has begun cataloguing the specimens in its large medical museum. A volume representing the portion of this catalogue on the hemopoietic organs has recently been received. Although it will be the fourth volume in the order of the museum classification, it is the first to appear in print. The book was arranged and edited under the personal supervision of Sir William Osler by the Oxford University Press, the cost having been met by funds raised by the medical alumni and friends of McGill University. The term "catalogue" scarcely does the book justice; it is more than that. In fact, it deals in a comprehensive manner with a subject which has not heretofore been attempted, and marks another step in the evolution of objective teaching. A series of specimens has been carefully selected illustrating each of the four subjects dealt with in this volume. For example, eighteen pages are devoted to conditions of bone marrow, thirty pages to lymph nodes, over 100 pages to the spleen and the splenic capsule and the balance of the book to the thymus gland. Each section is provided with a short introduction giving a brief review of the general pathology of the subject, which enables the reader to appreciate any departure from normal conditions. A number of blank pages after each subject have been allowed for subsequent additions. Altogether the book contains 203 pages and is illustrated by twelve elaborate plates. In the preparation of the book the author has carefully observed uniformity of arrangement, logical sequence of material, careful chronicling of macroscopic and microscopic details and a faithful coordination of clinical and pathologic data. Of particular value to those who are developing other museums is the elaborate scheme set forth in this book in numbering museum specimens, by which their proper classification is permitted. An examination of the book enables one to appreciate its great value in medical education, and it will be an important and useful addition to any medical library.

Miscellany

Government Reports on Wages and Hours of Labor

The Bureau of Labor Statistics in Bulletins 177 and 178 gives detailed analyses of wages and hours of labor in the hosiery and underwear industry, 1907 to 1914, and in the boot and shoe industry for the same period. These reports are of particular interest to physicians because of the relation of earnings and hours of labor to the health of the workers. The reports also give data on whole-time employment in these industries, which has an important bearing on questions of unemployment and the distribution of labor. In the underwear and hosiery industry it was found that the average full-time weekly earnings of the employees in 1914 were 2 per cent. higher than in 1913, 8 per cent. higher than in 1912, and 12 per cent. higher than in 1911 or 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 3 per cent. lower than in 1912, and 5 per cent. lower than in 1911 or 1910. The tendency, as will be seen, has been for wages to rise and for the hours of labor to become fewer. This affects to some extent the total earnings, and it was found that the increase in full time weekly earnings between 1910 and 1914 was not so great as in rates of wages per hour. The tables in the report set out all of this matter in detail. One table shows that in 1914 the average full time weekly earnings of males in ten occupations of the hosiery and underwear industry varied from $8.45 for certain lines of work to $22.31 as a maximum. The average full time weekly earnings of females for the same year in twenty-three occupations varied from $6.80 to $10.87.

In the boot and shoe industry the average full time weekly earnings in 1914 were the same as in 1913, 8 per cent. higher than in 1912, 6 per cent. higher than in 1911, and 9 per cent. higher than in 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 2 per cent. lower than in 1912, and 3 per cent. lower than in 1911 or 1910. The average earnings per hour for 1914 were 1 per cent. higher than in 1913, 9 per cent. higher than in 1912, 10 per cent. higher than in 1911, and 12 per cent. higher than in 1910. In this industry, as in that of the hosiery and underwear, owing to the reduction of hours, the increase in full time weekly earnings between 1910 and 1914 was not so much as in rates of wages per hour, thus affecting to some extent the total earnings. In 1914 the average full time weekly earnings of males in twenty-seven specific occupations varied from $15.37 to $27.68. In the same year the average full time weekly earnings of females in ten specific occupations varied from $9.12 to $13.14. On the whole, in both of the industries mentioned, the total earnings, notwithstanding the reduction in hours of labor, have been increased. It was found in eighty-three boot and shoe establishments in 1914 that the average loss of days during the year, aside from holidays, was eight days. No satisfactory comparison in this respect with other years is made on account of lack of data, the work of securing the information and many other considerations entering into the exact figures.

These reports indicate that in the cases of women employees the minimum wages are considerably below the amount considered by various investigation commissions in different parts of the country to be adequate for healthful and comfortable living, and the maximums mentioned do not much exceed the minimum requirements. In the cases of the men, the figures seem to be adequate, but, of course, do not take into consideration the fact that many wage earners are the heads of families in which there are a number of individuals depending on them for support of a kind which would insure sufficient nourishment, proper housing and living conditions to say nothing of provision for education or a few of the luxuries.

The Smoke Nuisance

O'Connor (*Popular Science Monthly*) remarks that the economic argument is the one commonly regarded as final on the smoke question. He thinks that a more powerful indictment may be drawn up under four heads, namely, the effect on (1) building materials, (2) meteorologic conditions, (3) vegetation and (4) health. 1. Apart from the soiling of surfaces, destructive of artistic effects from color contrasts, smoke helps to destroy stone and metal by the acid products of the combustion of coal. This action is especially marked on any stone containing calcium or magnesium carbonates. Metal work in a smoky city like Pittsburgh, moreover, lasts only half as long as in one free from smoke. 2. There are fewer hours of sunshine, and the sunshine is less intense in smoky cities than in those that are free from smoke. 3. Gases and smoke have an injurious effect on vegetation. Soot inhibits plant growth by the corrosive effect of the contained acid and also by blocking up the stomata and impeding transpiration, by coating leaves, thus reducing the intensity of sunlight and affecting the assimilation of carbon dioxid. 4. The results of medical investigators tend to show that smoke greatly increases the incident severity and mortality of acute diseases of the air passages; pneumonia and bronchitis increase directly as smoke increases. The purification of the atmosphere should therefore receive the same attention as pure food and pure water are receiving, for it is just as important.

Infant Mortality in Bavaria

In spite of all the efforts made to lessen the infant mortality in Bavaria, the death rate is higher now than before. During 1914, 38,467 children under 1 year of age died, as against 36,805 during 1913. There were 21,570 male children and 16,897 female children. Of the children born in 1914, 19.3 per cent. died, as against 18.2 per cent. in 1913; 21 per cent. of the male children and 17.4 per cent. of the female children died. More than one-third of the children that died during the first year of life were not more than 1 month old. About one-half died before the end of the third month. Most of the deaths occurred during August and September. The highest infant mortality by percentages occurred in the smaller communities.

Medicolegal

The Power of a Trial Court to Order Physical Examinations

(*State ex rel. Parmenter vs. Troup* (*Neb.*), *152 N. W. R. 748*)

The Supreme Court of Nebraska says that it is seldom that it is called on to determine a question of more importance or on which there is so clear and determined a difference of opinion among the courts of last resort in the several states, as that of the power of a trial court under any circumstances to order a party to submit his or her person to expert examination. The Supreme Court of the United States has been divided on the question, and has presented both sides of the controversy in an opinion and a dissenting opinion, the latter by Mr. Justice Brewer, and concurred in by Mr. Justice Brown. While the courts of last resort of nearly a dozen of the states of the Union have refused to indorse the reasoning of Mr. Justice Brewer, and have given reasons of undoubted force and clearness for such refusal, the courts of at least twenty of the states have reached his conclusion, in favor of the power in question.

Although the precise question here presented, whether the trial court has under any circumstances the power to order such an investigation, has perhaps never been directly and definitely considered and determined by this court, there are several cases in which expressions have been used that might be considered as indicating the opinion of the court as to the policy of the Nebraska law, and, since the case of Stuart vs. Havens, 17 Neb. 211, was decided thirty years ago, the trial courts have generally exercised such power. It has also been understood by the courts of other states that this court has decided that the trial courts have such powers, and their decisions class Nebraska among the states so holding. In view of this long-established practice in the state, and that there must otherwise often be a failure of justice, the court concludes that it should recognize this power of the trial courts. In other words, it is held that, in an action for damages caused by injuries to the person, the trial courts have power to order an expert examination of the person of the party injured, when the circumstances of the trial make it necessary to do so and no substantial harm can result therefrom. Such examination will not be ordered unless it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without.

It is possible that, in some instances, a delicate and sensitive lady may suffer and endure a great wrong and injustice rather than present her cause for a public investigation to any court which would require her to allege in her petition and detail in her testimony facts in regard to the condition of her person which her sense of delicacy would forbid her doing. In such case she must elect, before bringing her action, whether she will bear the ills she has or fly to others that she knows not of. In bringing her action she must declare in public fashion the conditions to be investigated, and the law requires that in any legal investigation of facts the best evidence available must be produced. She may decline to present such conditions for investigation; but if she does bring them before the court, she cannot dictate the means of investigation by selecting such expert witnesses as she may have reason to suppose have opinions favorable to her cause, and rejecting those that might form contrary expert opinions on ascertaining the facts. In modern times the medical profession has the benefit of skilful women physicians, and ordinarily, other things being equal, such physicians ought to be preferred when reasonably practicable, if desired by the woman to be examined. If such an application is made for the purpose of embarrassing or coercing the plaintiff, the trial court will be quick to discover that purpose, and will order it only under conditions above indicated, and when it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without it.

Sufficient Evidence of Promise to Pay for Operation

(*Thomas vs. Boruff* (*Calif.*), *148 Pac. R. 226*)

The District Court of Appeal of California, Second District, affirms a judgment in favor of the plaintiff, a surgeon, who sued in his own behalf and as the assignee of another surgeon, a Dr. Southworth, for services rendered in performing an operation on one Henry Caystile, a brother-in-law of the defendant. The court says that the evidence tended to prove that, while Dr. Southworth had theretofore treated Mr. Caystile, he was not under employment by him at the time the operation was performed; that the defendant asked him to perform it, and the defendant, on being told by Dr. Southworth that the latter had spoken to Dr. Thomas regarding the matter, personally requested him to perform the operation, and said: "I want you to give him all the service that is possible, every attention, and I will foot the bills." On the morning when the operation was performed, in conversation with both the plaintiff and Dr. Southworth, the defendant said to the former, "I suppose you have called me in here for the purpose of having me say that I will pay for these services. Well, you boys go ahead and fix him up the best you can, and I will pay the bill." On the plaintiff telling the defendant that the operation was necessarily attended with great danger and uncertainty, he replied, "Go ahead and do the best you can for him." Another witness testified that the defendant said to the plaintiff to do the best he could for the man, and he (the defendant) would pay the bill. Not only did this testimony strongly tend to establish an original promise on the part of the defendant to pay for the services, both of the plaintiff and of Dr. Southworth, but the testimony of the defendant himself was corroborative of this view. His testimony was that, on Dr. Southworth requesting him to "stand for the expense," he said, "Yes, I will stand for the bill if you will allow me to select the man to operate," to which Dr. Southworth replied, "Well, I have selected a man and Henry wants me." "I know he does," said the defendant, "he prefers to have you, but I will not pay the bills on your account." To this Dr. Southworth answered, "I have secured Dr. Thomas; he is a good man," to which the defendant replied, "Go ahead, if he wants you; go ahead." This evidence might very properly be construed as a waiver of the defendant's wish to name the operator as a condition of paying the bill. Conceding that, even if the defendant had not promised to pay the bill, the plaintiff and Dr. Southworth might nevertheless have rendered the service, it was sufficiently clear, the court thinks, that before the performance of the operation the defendant made an original promise to pay the expense, and that the plaintiff and Dr. Southworth relied on such promise.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Southern Medical Association, Dallas, Tex., Nov. 8-11.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

(Concluded from page 1397)

The Function of the Tonsil

Dr. Marcus Radvin, Evansville: The function of the tonsil is still a mooted question. Some authors believe that it secretes an antitoxin and furnishes moisture for deglutition. The last statement I believe is partly true, for I have seen several patients who complained of dry throats for months after their enormously hypertrophied tonsils had been removed. The close relationship that often exists between acute articular rheumatism and acute tonsillitis has been observed for many years. At times the joint and throat symptoms are simultaneous in their onset. Endocarditis and pericarditis not infrequently follow even very mild attacks of acute tonsillitis. Chorea may be present, with or without cardiac or arthritic symptoms. Acute, subacute or chronic parenchymatous nephritis are beginning to be looked on as possible sequelae of tonsillar infections. The relation of the tonsil to cervical adenitis seems to be well established clinically. Its relation to pulmonary tuberculosis has been noted by a sufficient number of careful observers. The tonsil bears some relationship to hyperthyroidism. I have heard of two cases of acute appendicitis which followed closely streptococcic tonsillitis. Is the voice sometimes injured by the operation, as the public seems to believe? Specialists who have had a considerable experience with professional singers guardedly admit that for a short time after the operation there is an alteration in the voice, followed in a few months by marked improvement, so much so that higher and more melodious tones were attained than before the operation, and they advise that singers should be cautioned to abstain from singing for a while, or to sing only in low registers. If alteration of the voice is permanently noted, it is due to injury of the pillars and adhesions, which hinder the mobility of the throat musculature.

DISCUSSION

Dr. William S. Tomlin, Indianapolis: I have had some experience in operating on tuberculous patients. In these cases the tuberculous process had seemed to be in the lung, the patients having previously had a slight temperature elevation and complained of being below par. In half a dozen of these cases I have removed the tonsils with most gratifying results. There has been improvement in general health, and the patients were able to leave the sanatorium. I have also had some experience in goiter cases, which in two was very satisfactory; but in two other cases, tonsillectomy did not seem to have any effect on the goiter.

Dr. C. Norman Howard, Warsaw: With regard to removing the tonsils in singers, I have come to the conclusion that it is not the removal of the tonsils but the damage to the pillars that makes the trouble. In every case in which we remove the tonsils, it should be done only because we know definitely that in that particular instance the patient will be better with them out.

Dr. F. V. Overman, Indianapolis: A man who treats most of the famous singers in the East insists that after a voice is placed while the singer has his tonsils, their removal invariably changes the timbre of the voice.

Dr. George W. Spohn, Elkhart: In hyperthyroidism, the literature tells us that patients grow worse on removal of the tonsils. According to some, there is a certain relationship between the ovaries in woman and the tonsils. Whether or not this is true, I do not know; but men working along the line of internal excretions say that it is. I cannot imagine that I would remove the tonsils to cure hyperthyroidism.

Dr. L. C. Cline, Indianapolis: I see an evidence of the profession coming around to a sane position on the question of tonsils and adenoids. They have run riot, until the public has been educated to the point where people come to a specialist and demand that their tonsils be removed, even without an examination. There are tonsils which do not need to be removed. Large, hypertrophied tonsils which are an obstruction ought to be removed, and also some of the tonsils which probably produce quinsy. The point I want to make especially is that there is a lot of this work of removal of tonsils being done which is absolutely wrong and unnecessary. We must examine our tonsil patients and treat them as we do patients with other conditions.

Dr. Lafayette Page, Indianapolis: I have had some very successful results with tonsillectomies in singers, some asserting that their voices were improved by the operation. Others have said that there is difficulty in getting the tones for a certain length of time, but after a year or two I have not seen a single case in which the quality of the voice has not been restored.

Dr. A. E. Bulson, Fort Wayne: The sooner we arrive at the conclusion that every case is a law unto itself, the better it will be for us. Not only must the tonsil be studied in every case, but also the patient as a whole. We have all had patients with repeated attacks of rheumatism who report themselves as improved or well following the removal of the tonsils, and some of them did not look very much infected either. On the other hand, we have had patients with rheumatism who did not recover following tonsillectomy, because the infection was elsewhere in the body.

Dr. C. J. Adams, Kokomo: Loeb asserts that there is no direct connection between the tonsillar glands and the apices of the lung.

Dr. Marcus Ravdin, Evansville: In operation on singers, Hudson Makuen favors tonsillectomy within the capsule. Leaving the capsule separates the pillars. It is the fossa tonsillaris, and not the tonsil, that affects the voice. The lymph supply of the tonsil is of great importance—greater than the blood supply. If we demonstrate that the tonsil has no direct connection with the cervical glands and other lymphatics, then the whole theory of the tonsil as an atrium of infection is wrong, and we are slaughtering tonsils for nothing. The latest German literature demonstrates the connection of the tonsils with the deep cervical glands, and again the deep cervical glands communicate with the lymphatic branches of the bronchial glands, forming a direct lymphatic connection with the apices of the lung.

Chronic Suppurative Mastoiditis, Accompanied by Intracranial Pressure: Case Report

Dr. Edwin J. Lent, South Bend: Man, aged 57, with negative family history, at age of 17 was struck on the head with a baseball bat, and had pneumonia at age of 22. A few years later he fell from a barn, a distance of about 25 feet, lighting on feet and buttocks in a sand pile. Sharp hemorrhage from right ear and nose occurred. He has had a foul-smelling discharge from right ear since childhood, without history of exanthems preceding. No treatment followed except an occasional washing. He has had a great deal of headache for the past ten years, especially during last two years, the pain being located chiefly in the vertex and radiating toward the frontal region. Examination disclosed external canal full of foul-smelling pus, eardrum practically destroyed and middle ear full of granulation tissue and polypi. Hearing reduced to watch contact. No tenderness over mastoid. Transillumination of mastoid cells showed bone to be eburnated. Caloric and rotary tests negative. Pulse 72, temperature 98.6. Vision 6/7 in both eyes. No evidence of choked disk. Tentative diagnosis of chronic mastoiditis with either extradural or intradural abscess complicating, was made. Operation advised, but refused. Patient continued to work.

Eight days after examination he fell on the street twice on his way to work. The next day he developed a paralysis in left arm and leg, and was taken to hospital. At this time cerebration was slow; urine and feces involuntary; severe pain in left temporal region and vertex; paralysis of left arm and leg; reflexes lost in left foot, normal in right; pupils equal in size; ocular movements slow. Temperature 98.6, pulse 70, full and firm. Drowsy most of the time. No neck rigidity. Operation on following day. Whole middle ear thrown into one large cavity, thoroughly curetted and dried. Eustachian tube burred out. Close inspection did not disclose any opening in floor of skull, except a small one which was made during excavation into antrum. This was enlarged, cavity flushed out with normal salt solution, and dura carefully inspected. It was not bulging. Incision then continued from upper angle to vertex; skull bared and a second button removed. In upper half of opening the dura was clearly bulging and looked pathologic. Drainage tube was inserted after dura was incised, and about 6 ounces of straw-colored fluid mixed with chocolate-colored débris evacuated. The day following operation the patient had fairly good use of left arm and leg; had some pain in the head. Continued in this condition for five days, when he became somewhat restless and noisy. Five days after operation complete paralysis of left arm and leg again ensued. Two days later he developed convulsive seizures, about fifteen minutes apart. March 15, five weeks following operation, drainage from the brain cyst was still continuing in large quantities. Much care had been exercised to keep the wound from becoming infected. At this time the nurse was directed to use no more caution, and the wound was deliberately allowed to become infected, as it was believed that by this time the brain tissue was well walled off. A smear was made from the pus, and an autogenous vaccine prepared, and given. The discharge began to lessen materially, and in twenty days had entirely ceased. The patient is now in good health.

DISCUSSION

Dr. John F. Barnhill, Indianapolis: I doubt very much that the car had any relationship whatever to the brain cyst. It seems to me that the diagnosis in this case was made on too few symptoms, although the subsequent events proved that it was correct. As to the infection of the cyst, I do not know any precedent for it. It was very extraordinary, but the patient is well, and we never can speak against that sort of thing effectively. But I believe that if Dr. Lent were treating another similar case, he would be just as careful not to infect as he was in this case, although the infection possibly caused the closure of the cyst, just as a curettement might have done. But the dissection of the cyst, freeing it entirely from the brain cavity, would probably have done it at an earlier date than by the infection of the cyst wall.

Dr. George F. Keiper, Lafayette: This case brings up the question, How many brain cysts are due to trouble within the middle ear?

Dr. Edwin J. Lent, South Bend: This patient apparently had a general cerebral involvement. Whether or not there was meningeal irritation I do not know. The temperature never went above 99; pulse was from 70 to 80. The man was apparently normal, with this meningeal irritation and the focal symptoms going on. This case teaches that we should look for these symptoms and cysts once in a while. As Dr. Barnhill said, if I had another case of this kind to deal with, a smaller cyst, I would attempt to dissect it out.

The Defenses of the Upper Respiratory Tract and Their Preservation

Dr. Walter N. Culmer, Bloomington: The natural defenses of the body are essential and inherent elements of each involuntary act. The respiratory function of the nose is controlled by defensive means that involuntarily serve to maintain the proper amount, quality and physical conditions of the air entering the breathway. Adequate ventilation of the nasal chambers, sinuses and postnasal space serve to maintain, on the one hand, the useful purpose for which the defenses operate, and, on the other hand, to sustain the integrity of the mucous membrane in the remote parts of the nasal cavities. Further down in the upper respiratory tract is a collection of lymphoid tissue whose relationship to the surrounding parts and to the economy in general has not been accurately determined. In order to preserve these natural defenses it is necessary to know the conditions that prevent their successful operation. A knowledge of the physiologic defenses reveals the fact that the relation of the upper respiratory tract to the development and growth of the body is so intimate that a study of the local changes, without noting at the same time the constitutional requirements of the individual, will often accomplish very little. One of the most forward steps in the direction of the preservation of these defenses is the medical inspection of schoolchildren.

DISCUSSION

Dr. Paul B. Coble, Indianapolis: It is essential to good health and the general well-being of the individual that the upper respiratory tract be kept in the best possible condition. Much good can be accomplished by the medical inspection of schoolchildren in many instances.

Dr. W. S. Tomlin, Indianapolis: This paper deals with the basic principles of our work. Take, for instance, children with defective tonsils, which are interfering with the child, and in which we are sometimes asked how early they should be removed. My impression is that they should be removed as early as they give trouble. Regarding operative work in the nose, my position is a little different from that of most operators. I make submucous resections as early as 8 years of age, and would feel inclined to make them even earlier if the condition were sufficiently pathologic to demand more nasal space.

Dr. Walter N. Culmer, Bloomington: My object was to bring out a little more clearly the importance of the interrelationship of disturbances in the nose and throat with those in other parts of the body. I do not care to do septal and middle turbinal operations until after puberty, or until puberty, at least.

Chronic Suppurative Ethmoiditis

Dr. William S. Tomlin, Indianapolis: The diagnosis of chronic suppurative ethmoiditis to be effective must develop as far as possible the causative factors, nature and extent of the pathologic condition and its bacteriology. Displaced and supernumerary cells, abnormal or unusual relationships of the cells to each other and to surrounding structures, and dehiscences in so far as possible, all depending largely on the roentgenogram, are integral parts of a working diagnosis. Extension of ethmoid cells beyond the capsule in the frontal, orbital, maxillary, sphenoid and middle turbinate structures are not uncommon in suppurative cases, and not only serve to continue the processes before operation, but also may be the most important factors in determining the whole course of the case. Transillumination gives some information, especially of the maxillary and to a lesser extent the frontal sinuses; but is not so dependable as well-interpreted roentgenograms, which perhaps should not be omitted in any case. Stereoscopic plates have served to improve the interpretations, and are of the most signal advantage in cases with circumscribed involvement. The treatment of chronic suppurative ethmoiditis is essentially surgical. Vaccines have not given the satisfaction expected of them. Without operation no benefit whatever has been observed by me.

DISCUSSION

Dr. Joseph D. Heitger, Bedford: Rest of the diseased part, ventilation and drainage constitute three great principles of surgery, and in the nose we obtain the first by the application of the latter two. One should examine the visual field in all accessory sinus diseases, as there is often associated an enlargement of the blind spot, ring and central scotomas.

Dr. John F. Barnhill, Indianapolis: I look on the ethmoid as one of the most complicated pieces of anatomy in the human system. The brain is close above, the eye externally and the nose internally, with all its suppurating cavity emptying near by. The interior of this capsule is filled with two sets of large vessels, and the cells often extend abnormally up into the frontal sinus, extending posteriorly and overhanging frequently the sphenoidal sinus, and enveloping the optic nerve. It is our duty to know as much about the anatomy of the ethmoid cells as it is possible to know before we attempt this kind of surgery. I look on it as the most difficult of all surgery. As surgeons, we work too often under cover about the larynx, the ear and the sinuses. We ought to take the cue from the general surgeon and work in the open.

The Blood-Clot Dressing in Closing the Wound in Operations for Simple Mastoid Abscess

Dr. K. K. Wheelock, Fort Wayne: In thirteen consecutive operations for simple acute mastoid abscess I have closed the wound primarily, employing the coagulated blood as a dressing for the dead spaces in the exenterated mastoid. These thirteen patients had a necessary detention in the hospital of ninety days. This would show an average of six and one-third days for each case; all left the hospital at the end of seven days except one, and she left on the sixth day. This patient developed a mild attack of erysipelas on the fourth day, but the mastoid wound was not invaded. In another case, a young woman with a nursing baby developed a double mastoid abscess with suppuration from both ears. Her mastoids were exenterated and closed with catgut sutures over a blood-clot dressing. She left the hospital on the seventh day.

DISCUSSION

Dr. J. O. Stillson, Indianapolis: The same rule holds good with regard to this question of blood-clot dressing as holds good in surgery anywhere—each case is a law unto itself, and must be considered in that light. In acute cases, in which it is desirable to shorten the treatment, when there is no necrosis of bone, we all like to get healing by first intention, and I think that this method would probably be of value. But in cases of long sickness due to bacterial invasion, I do not think the process of treatment would be entirely satisfactory.

Dr. W. A. Hollis, Hartford City: I have used this blood-clot dressing in one case, with such satisfactory result that I am persuaded to use it again. It seems to me that if infection should occur, it would be a simple procedure to clean the cavity out and pack it in the usual way.

Dr. A. E. Bulson, Fort Wayne: The strange thing to me is that after having been introduced and carried on by some prominent operators for nearly fifteen years, this method is not more popular. The first case in which I used the blood-clot dressing was so successful that I thought it was ideal. In the second case in which I used it, the patient nearly died with infection. My third patient also had infection, and so I consulted some of my confrères with regard to their experiences. I found that their experiences had been very similar to mine—that some of the cases were very satisfactory, and when satisfactory it was ideal, but that occasionally they had infections, and that, in their judgment, it was a rather dangerous procedure.

Dr. John F. Barnhill, Indianapolis: My experience with this method has been similar to Dr. Bulson's; the failures were abominable, and the successes were brilliant. In the streptococcic infections and cases in which the wound must necessarily be very large, because the cells are extensive, it is hazardous to use this method in a certain percentage of cases, and we cannot tell beforehand. I use the modified blood-clot dressing in nearly all of my acute cases. It shortens the process of healing several weeks, as a rule, the average in my last hundred cases being something between two and three weeks. By the modified blood-clot dressing I mean putting in a small cigaret drain to carry away any infection that may be in the center of the clot.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

(Concluded from page 1484)

Pyelitis in Infancy and Childhood

Dr. Fred E. Ross, Erie: This condition is an acute infection of the urinary tract which may become chronic, and is almost always protracted in its course. It would seem that its supposed infrequency is due to its nonrecognition, as many cases hitherto differently diagnosed have been shown to be pyelitis. The infecting organism is most often the colon bacillus. While the route of infection is not known in all cases, a direct route from the ascending colon to the right kidney by way of a chain of lymphatics is suggested in many instances. Diagnosis rests on microscopic examination of the centrifugalized sediment of a sample of urine or on a series of such examinations. While most cases run their course uninfluenced by treatment, I use either alkaline diuretics to render the urine alkaline, or rather large doses of hexamethylenamin.

Albumin was found in the urine in 50 per cent. of my twelve cases.

DISCUSSION

Dr. George E. Holtzapple, York: This condition should be borne in mind as the possible cause of irregular, obscure fever, general debility attended by pallor, loss of appetite and gastro-intestinal disturbances in children. It may or may not be associated with cystitis, and a differential diagnosis is not always easy. Pain in pyelitis may simulate appendicitis, and I have seen a case of this kind brought to the hospital for operation. It is of paramount importance to discover the pyuria and determine the nature of the infection. The pediatrist should be alert lest a possible case of the condition be overlooked.

Dr. J. P. Crozer Griffith, Philadelphia: In every case of an infant with irregular temperature in which the cause is not absolutely clear the urine should be examined. The diagnosis is then readily made. I have had four or five cases of this disease under my care at one time.

Medical and Surgical Treatment of Tuberculous Peritonitis

Dr. Theodore J. Elterich, Pittsburgh: Since Koenig in 1884 proposed laparotomy as a cure for tuberculous peritonitis, surgery seems to have taken the place of medicine and claims an almost exclusive right for its intervention. It has never been shown, however, that laparotomy has had a specific influence in increasing the resistance to the tubercle bacillus. The most prominent symptom of the disease is ascites. While the pleural cavity may be tapped without danger, the needle in abdominal puncture for the relief of ascites may penetrate adherent intestinal walls. The medical treatment consists in hygienic, dietetic, local and internal therapeutic measures. Heliotherapy is warmly advocated in all forms of tuberculosis by Dr. Rollier of Switzerland. In visceral tuberculosis the results are said to be excellent. My own experience with the medical treatment, although limited, is gratifying.

Morbidity and Mortality From Certain Communicable Diseases of Childhood as Influenced by Public Health Control

Dr. B. Franklin Royer, Harrisburg: The total morbidity of any communicable disease is always greater than the reported figures, because of influences beyond public health control. The only true index of the communicable diseases of childhood is the death rate, because certificates of death must be issued. The morbidity of typhoid fever is well tabulated. From a total of 24,471 cases in 1906 the number of typhoid cases declined to 7,547 in 1914. Measures influencing the incidence of typhoid fever have an even greater effect on the mortality of diarrhea and enteritis. Deaths from measles have shown a general tendency to decline under the measures imposed by the public health authorities. This is also true of deaths from diphtheria. The number of deaths from whooping cough is cut in half. Scarlet fever has not shown the same tendency to decline. Until more is known of etiology and of the communicability of the disease, we may not hope for the best results. Educational work perhaps counts more, except sanatorium care, than any other line of public health work in the reduction of tuberculosis.

Significance of Cardiac Pain

Dr. David Riesman, Philadelphia: Causes of pain in the region of the heart may be classified as cardiac and extracardiac. Among the latter, dyspepsia, herpes zoster, pleurisy and pleurodynia are most common. Of the cardiac causes, myocardial weakness is of great practical importance, as it may be overlooked because murmurs are often absent. In addition to aneurysm and pericarditis as causes of cardiac pain may be mentioned angina pectoris and aortitis.

DISCUSSION

Dr. Lawrence Litchfield, Pittsburgh: Of two cases of which I have knowledge, one patient had been attended by the best men in the country and finally died from an anginoid attack without any one ever having told her that the cardiac pain was grave. The other case was of the type presenting pain in both arms. The cardiac disease was not regarded as serious, but the man died within a month in an anginoid attack.

Dr. James E. Talley, Philadelphia: In cases in which you suspect angina pectoris, the less you find wrong with the heart on examination, the surer you may be of your diagnosis. In a large series of cardiovascular and cardiorenal cases, about 500 in all, there were thirty-five of genuine angina pectoris; one third succumbed to an acute anginal attack and two thirds to gradual cardiac death.

Dr. S. Solis Cohen, Philadelphia: Two very important points in this discussion are syphilitic aortitis, and so-called pseudo-angina. Syphilitic aortitis is often mistaken for angina, the syphilitic nature is therefore overlooked, and the patient is allowed to get into a much worse condition than need be. I have observed many cases of so-called pseudo-angina in which the pain occurs without structural lesions in the myocardium, coronary arteries or the aorta, in which on proper recognition and treatment the pain may disappear and the patient live, as in one case under my observation, for more than twenty-five years.

Dr. Robert N. Willson, Philadelphia: There are two distinct types of true cardiac pain, the dull heavy pain of distention and dilatation, and the sharp cutting pain of aortic valve and aortic disease. It is questionable whether angina may properly be included under cardiac pain. I believe there is no such entity as pseudo-angina pectoris. The cardiac nervous mechanism, including the ganglions of the auricles and of the coronary sinus under the influence of nicotin, show definite signs of disease, and I believe that here eventually will be found the real seat of angina. If so, it will again become permissible to speak of angina as cardiac pain.

Treatment of Myocarditis

Dr. James M. Anders, Philadelphia: Treatment must be varied in accordance with the lesions and the dominating cause when ascertainable. When this cause is rheumatism, antirheumatic measures must be persevered with and the heart carefully guarded by stimulants. Modification of the antirheumatic treatment may be indicated by cardiac weakness. Digitalis is harmful when the myocardium is the seat of an acute inflammatory degeneration. In all forms of severe acute myocarditis prolonged, absolute rest is enjoined. When syphilis is the causal factor, intensive antisyphilitic treatment may be curative. In chronic myocarditis, the exclusion of chronic valvulitis is exceedingly difficult and often impossible after murmurs have appeared in chronic myocarditis. It is obvious that everything tending to throw strain on the myocardium must be avoided. In the treatment of the stage of compensation, gentle exercise that will not tax the physiologic reserve force of the already weakened myocardium should be encouraged, but fatigue is to be avoided. While there is no sovereign remedy for chronic myocarditis, in cases dependent on syphilis, mercury and salvarsan in alternation may be beneficial. The intravenous administration of the salvarsan, however, should not be employed. In diet, a low protein content, from 60 to 70 gm. daily, especially if nephritis be associated, is indicated instead of the average of 120 gm. The intake of flesh foods, strong stock soups and legumes should be minimized, and all articles causing intestinal fermentation in the individual case must be eliminated. My practice is to formulate a diet on these suggestions, adding about 60 gm. of fat, and modifying the dietary as indicated in individual cases. A suitable change of air may be beneficial in selected cases. Mineral springs may be useful, but these waters must be used cautiously. Carbonated baths are beneficial in appropriate cases. Symptomatic indications in this stage must be met in accordance with therapeutic principles. In the management of the stage of insufficiency, physical and mental rest are imperative and will in some cases overcome the dilatation; in others rest must be supplemented by the use of a cardiac stimulant to overcome passive visceral congestions and restore the compensatory mechanism of the heart. The untoward effect of prolonged rest may likewise be minimized by resistance exercises carefully conducted by a skilled operator. Digitalis if administered should be given cautiously in small doses combined with an arterial relaxant. In decided failure of compensation I have found most useful a combination of strychnin, $\frac{1}{40}$ grain; caffein citrate, 1 grain, and spartein sulphate, $\frac{1}{4}$ grain. Venesection may be useful in excessive hypertension in threatened apoplexy. Saline purgatives are beneficial. Diet here is of much importance. The digestible proteins may be freely allowed, with the exception of those rich in purin bases. The fluid intake should be lessened, especially when edema is present.

DISCUSSION

Dr. David Riesman, Philadelphia: The term "myocarditis" is rather loosely used when applied to acute diseases. Chronic myocarditis is never a single process. The functional and structural changes in the vessels, lymphatics, arterioles and viscera should be studied from the functional and anatomic standpoints. In the treatment of acute myocardial degeneration, the essential point is food. When milk is given as the sole diet, lactose should be added. We must adapt the patient's life and activities to the capacity of the heart as nearly as we can determine that capacity. Unfortunately, we have no definite test for the functional capacity of the heart. When compensation is once lost, rest and digitalis are the main remedies.

Inadequacy of Ordinary Methods of Disinfecting Typhoid Stools

Dr. Edgar M. Green, Easton: Reports received from about thirty hospitals throughout the state show that most of the institutions are disinfecting stools with chlorinated lime or phenol (carbolic acid) or some of the composite commercial disinfectants, while the period of time allowed for disinfection varied from a few moments to an indefinite period. Pathologic experiments show that such disinfection is useless. Steam sterilization can be made complete in a typhoid stool in from twenty to thirty minutes. The method is both thorough and economical, and should be insisted on in all hospitals. At present not more than 16 per cent. of our hospitals are using this method. In private practice where steam is not available, the well broken up stool should be exposed to a 6 per cent. solution of commercial formaldehyd for at least two hours, or else the stool should be treated with a cupful of commercial unslaked lime and hot water. This will generate enough heat to kill the pathogenic organism.

Hemoptysis in Pulmonary Tuberculosis and Its Treatment

Dr. Elmer H. Funk, Philadelphia: Among 373 patients with advanced pulmonary tuberculosis in the department for diseases of the chest of the Jefferson Hospital, hemoptysis was present in 164, or 44 per cent. Among 167 patients traced to the end, hemoptysis was noted in ninety instances, 54 per cent. The extent of the lesion does not bear a direct relation to the occurrence of hemorrhage; it may be the first or last symptom of the disease. The frank hemorrhages early in the disease probably result from the rapidity with which the tuberculous lesion erodes the vessels before they become thrombosed and occluded, as ordinarily they do in advance of the lesion. Rupture of aneurysmal dilatation of vessels within the cavity or embedded in its wall is probably the important factor in the profuse hemorrhage late in the disease. We have grouped pulmonary hemorrhage under: (1) frank profuse hemorrhage; (2) small and mild hemorrhages; (3) persisting hemorrhages, and (4) blood-streaked sputum. The expectoration of blood-streaked sputum ought to be given as careful thought as the profuse frank hemorrhage. There is noted at times what might be called an epidemic of blood spitting in a group of consumptives, and we are at present conducting a series of observations in this connection. In the treatment of hemoptysis in pulmonary tuberculosis, individualization is the keynote of success. Rest is by far the most important therapeutic procedure. Diet depends largely on the severity of the hemoptytic attack. Drugs play a minor, though if judiciously used, an important part in the therapy of hemoptysis. We are inclined to the belief that emetin is of distinct value in hemoptysis in which there is a tendency to repeated small hemorrhages or in cases suggesting capillary bleeding. The use of drugs to lower general blood pressure and for their action on the pulmonary circulation has not availed us much. We have discarded the time-honored ice bag on the chest. In cases in which blood gushes from the mouth, ligatures should be placed around the extremities, exerting just sufficient pressure, however, to retard the venous return and not to obstruct the arterial inflow. When the bandage is removed it should be done gradually. Persistent bleeding which fails to respond to the usual methods calls for a consideration of the therapeutic use of artificial pneumothorax. It is of vital importance, particularly in protracted cases, to secure free movements of the bowel daily, provided positive contraindications are absent. Evacuation is best accomplished by the salines, and of these preferably by magnesium sulphate.

DISCUSSION

Dr. C. R. Phillips, Harrisburg: From our observations at State Tuberculosis Dispensary 13 from March 1, 1908, to March 1, 1915, in a series of 5,700 cases diagnosed as tuberculosis pulmonalis, we concluded that about as many persons die from tuberculosis without having had hemorrhages as those who have; that hemorrhages are as likely to occur early in the disease as late; and that dispensaries and sanatoriums reduce the frequency of hemorrhage. In only 21 per cent. of the cases did hemorrhage occur after coming under our care. Hemorrhage per se cannot be considered; it is only a part of a vast clinical and pathologic picture, the significance of which depends on the accompanying conditions.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

The President, Dr. Alfred L. Gray, Richmond, Va., in the Chair

Roentgenographic Diagnosis of Metastatic Malignancy in the Lung

Drs. A. B. Moore and R. D. Carman, Rochester, Minn.: We examined 71 positive cases; average age of patients, 45½ years; average time since primary growth was noticed, three years and three months. The distribution of the primary focus was: breast, 20 cases; thyroid, 8 cases; soft tissues of forearm, 11 cases; kidney, 5 cases; soft tissues of neck and face, 5 cases; uterus, esophagus, prostate and testicles, 2 cases each, and 1 case each in the hard palate, larynx, suprarenal and sigmoid. In 59 cases the pathologic report was: carcinoma, 40, and sarcoma, 16; hypernephroma, 3 cases. Fourteen patients showed metastases in other organs besides the lungs, the most frequent being the liver, bones and brain. In 42 cases the primary growth was removed, with 19 local recurrences. Cough was the most common symptom, being present in 32 of the 71 cases. Dyspnea was present in 30 cases; pain in 14 cases, and pleural effusion, 12 cases, the fluid being bloody in 10. Only 16 patients gave evidence of pulmonary trouble. Loss of weight was not a marked clinical feature, being very indefinite in most cases. The roentgenographic findings were very positive, the manifestations appearing as clear-cut circumscribed areas of increased density.

Pulmonary Tuberculosis

Dr. Kennon Dunham, Cincinnati: The abnormal densities in the linear markings found in tuberculosis of the lung are due to tubercles situated along the bronchial tree. These tubercles when quite small break into the bronchus, forming minute microscopic cavities, the bronchus being a natural drainage tube of these cavities. Thus the spread of tuberculosis is along the bronchial branches, and until large cavities are formed, the lesion is limited to this particular distribution by means of its natural drainage tube, and not by a fibrous wall, as has been stated. The subsequent spread of the lesion is not from one small branch to its neighbor, but it goes back and extends along another main trunk or bronchus, either an adjoining bronchus or one lower down.

Roentgen Findings in Pulmonary Tuberculosis

Dr. Frank S. Bissell, Minneapolis: The interwoven appearance of pulmonary striae, described by Dunham, is a characteristic sign of pulmonary tuberculosis. It was present in 63 consecutive cases in which a positive constitutional reaction to tuberculin was obtained. In 12 negative cases (tuberculin test) the network was absent in 10 and typical in 2. The total number of lung cases examined and not diagnosed clinically was 111. A Roentgen diagnosis of pulmonary tuberculosis was made in 64 cases, sustained by clinical diagnosis in 38, and partially sustained in 8 cases. Thirteen cases reacted to tuberculin; the diagnosis was made by animal inoculation in 1 case, and by necropsy in 2 cases; by finding the bacilli in the sputum in 5 cases; by physical signs considered positive in 17, and by physical signs considered doubtful in 8 cases. Eighteen cases were unsustained by final clinical diagnosis, with symptoms not explained by any diagnosis in 13 cases, and extensive fibrosis or evidence of an inactive process in 5 cases. The total number of cases not diagnosed as tuberculosis by the Roentgen ray was 47, one of which was later shown to be tuberculosis. In 46 cases the negative Roentgen diagnosis was sustained by the clinical diagnosis. Therefore, the Roentgen ray has given the term "early diagnosis" a new meaning.

DISCUSSION ON PAPERS OF DRS. MOORE AND CARMAN, DUNHAM AND BISSELL

Dr. W. F. Manges, Philadelphia: We should not expect to see small pulmonary lesions except with the aid of the stereoscope. Some clinicians are of the opinion that we cannot show these lesions. I think this is due to the fact that they have not seen some of this good work, because it has been shown conclusively that the Roentgen ray can detect these lesions sooner than can be done by clinical methods. Recently I saw a patient who had been advised to have an operation for gastric ulcer. I examined him roentgenographically and found his stomach normal. I made fluoroscopic plates of his chest, and found the apices of both lungs densely infiltrated with small dense spots showing everywhere, the pleura much thickened. I did not believe, however, that it was an active tuberculosis, but even at that it was worth while knowing that these lesions were there, and if I had not incidentally made the examination of the lungs a part of my examination, this evidence would have gone undetected. Dr. Moore's paper indicates the necessity for more careful routine examination in all cases. Cancer cases should be examined in this way before any operation is performed, in order to determine whether metastases are present, not only in the lungs, but elsewhere, because if there are metastases it is useless to operate for the primary carcinoma. If there are none present, it is well to know it for the sake of record, if the patient should return later with a recurrence.

DR. GEORGE E. PFAHLER, Philadelphia: The diagnosis of pulmonary carcinoma should receive more attention. It would be well for surgeons to examine every patient before operation, especially those who show evidence of glandular involvement. Several surgeons in Philadelphia make it a rule to send these patients to me for Roentgen examination. In many cases referred to me for postoperative treatment I have found evidence of pulmonary disease. The early signs of pulmonary carcinoma are very much like those of pulmonary tuberculosis. Sarcoma is entirely different. I have seen a number of cases in which I could not make a differentiation between carcinoma and tuberculosis. In many cases of carcinoma of the lung secondary to breast cancer, the lesions are more marked on the side of the primary tumor in the breast than on the opposite side. Of course, carcinoma elsewhere in the body may cause pulmonary metastasis. We must search carefully for those areas of increased density. Some of these cases are primary in the lung.

DR. RUSSELL H. BOGGS, Pittsburgh: I have examined a few cases of pulmonary carcinoma in which the primary lesion is in the bone. I think most of these cases are of the scirrhous type of carcinoma.

DR. P. M. HICKEY, Detroit: I should like to call attention to one point in the diagnosis of carcinoma of the lung, and that is the tendency of the infiltrating lines to extend across the lower part of the right lung. That is due to the interlobar infiltration between the middle and lower lobes. The presence of these lines, when they are well defined, is suspicious of malignant disease. The first infiltration in cases secondary to carcinoma of the breast is in the pleura. At the necropsy little nodules are found in the parietal pleura, extending along in rows like drops of wax. They give very characteristic Roentgen shadows, which should be studied stereoscopically.

DR. S. B. CHILDS, Denver: The early stages of pulmonary tuberculosis can be detected on the roentgenogram. The lesion shows in the form of areas of increased density around the root of the lung. These areas are so small that they cannot be detected by clinical examination.

DR. H. W. DACHTLER, Toledo, Ohio: The Wassermann test may explain some of these cases of râles all over the lung without evidence of tuberculosis. I have found that to be true in a number of cases. I always make roentgenograms of all patients operated on for carcinoma of the breast, and have found this to be of value in checking up later, when these patients return with a recurrence. As to the direction of travel of the infection: I always thought it was out along the peribronchial gland, but I am not so certain about that now. Infection usually follows the lymph stream, and I have seen cases in the last few years in which there were definite tubercles along the axillary region, with no evidence of infection in the hilus.

DR. JAMES T. CASE, Battle Creek, Mich.: I have had a case in which the diagnosis of lung cancer was based on the presence of a single, small, rounded shadow, at the level of the nipple, the shadow resembling those pointed out by Dr. Moore. I made stereoscopic plates and they showed plainly that this was the nipple shadow. This might be a source of error. For several years I have made a stereoscopic chest examination of every patient about to be operated on for carcinoma of the chest, in order to be forewarned as to the presence of metastasis, and as a matter of record for future comparison, if a patient should return with symptoms suggesting metastatic involvement.

DR. DAVID R. BOWEN, Philadelphia: A boy was operated on for sarcoma of the forearm. A recurrence was treated with the Roentgen ray, and the boy apparently recovered, although he remained in the hospital. He was the sort of individual who never failed to complain when he did not feel well, but this time he made absolutely no complaint, in spite of the fact that when we made a Roentgen examination of his chest we found a marked metastasis in the lung.

Fluoroscopic Bronchoscopy

DR. GEORGE W. GRIER, Pittsburgh: Fluoroscopic bronchoscopy is indicated only when the foreign body is located in the bronchus or other structure which is inaccessible to the bronchoscope. In such cases the extracting forceps can be projected beyond the end of the bronchoscope, grasping the foreign body and removing it under the direction of the fluoroscopist.

Intensive Deep Roentgen Therapy

DR. GEORGE C. JOHNSON, Pittsburgh: This method is capable of producing rapid destruction of superficial malignancy without pain in from one to three sittings, even in such locations as the eyelid. Postoperative radiation should be carried out conscientiously over a wide area beyond the apparent limitations of the disease, and sufficient radiation must be employed to insure the complete sterilization of the tissues. Often the area treated is not sufficiently large, and many malignant cells lying in the tissues beyond the reach of the ray survive and the result is an early recurrence. Deep Roentgen therapy will also produce quickly and painlessly and safely an artificial menopause in various gynecologic conditions.

Roentgen Observations on the Duodenum

DR. JAMES T. CASE, Battle Creek, Mich.: I saw one case of carcinoma of the duodenum at about the papilla of Vater. In two other cases a diagnosis of pancreatic tumor was made, differentiating it from gallbladder disease. I have seen four cases of true diverticula of the duodenum occurring in the pars inferior, and three cases of dilatation of the ampulla of Vater. One case was complicated by multiple diverticula of the colon, and in two cases there were multiple diverticula of the jejunum.

Treatment of Epithelioma

DR. J. H. EDMONSON, Birmingham, Ala.: In treating cutaneous malignant disease I begin with fulguration, cauterization or coagulation. This destroys the most superficial and a great number of the deeper cells. It renders the field immediately accessible to treatment, and it closes the metastatic channels. Following this I expose the neoplasm to the unfiltered ray, thoroughly protecting the neighboring tissues. The next day I repeat the treatment, including about one-half inch of the surrounding tissues. If there is any evidence of the growth after the reaction subsides, I repeat the treatment. If not, I give a light treatment only to destroy any cells that may have escaped.

Effect of Moderate Doses of Opium Derivatives on Gastro-Intestinal Tract

DR. HENRY K. PANCOAST, Philadelphia: Observations were made on a series of eleven persons getting morphin and one heroin habitué. With one exception there was a decided lack of uniformity in the effects produced in different individuals. Small doses produced more marked effects than large doses. Females appeared to be more susceptible than males. In the stomach a rather high spasmodic hourglass contraction is observed rarely, but we have not seen it near the pylorus, as described by others. In some instances the stomach may show no appreciable change from the normal. In most cases there is more or less pyloric spasm, increased peristalsis, and a decided prolongation of the emptying time. In the small intestine, morphin causes decreased motility almost uniformly, apparently as a result of a lack of propulsion and not of spasm. When marked, it is most noticeable in the upper bowel. The effect on the large bowel is variable and probably of little consequence. Oral administration produces practically the same effect as subcutaneous injections.

(*To be continued*)

COLORADO STATE MEDICAL SOCIETY

Forty-Fifth Annual Meeting, held at Denver, Oct. 5-7, 1915

The President, Dr. George B. Packard, Denver, in the Chair

Five Cases of Relapsing Fever, Originating in Colorado

Dr. Charles N. Meader, Denver: We have had five patients and probably a sixth who have been ill with precisely the same train of symptoms. The outstanding features are, in brief, slight prodromal weakness and malaise; abrupt onset of fever accompanied by intense headache, chiefly occipital, with severe loin and leg ache; nausea or vomiting with constipation; marked prostration, and a high fever of 102.5 to 104.8 F. running a definite course of two or three days and ending by an abrupt crisis, the fall being accompanied by profuse sweating. There is, further, a recurrence of similar attacks to the number of three or four at rather definite intervals. Convalescence from the single attacks is rapid and is marred only by a slow return of muscular strength. The striking point on physical examination in the two cases seen during the height of the attacks has been a pulse which is weak out of all proportion to the apparent severity of the disease, due probably to a slight cardiac dilatation, with a moderately enlarged and tender liver and spleen. Of the laboratory findings, the appearance and disappearance of a considerable amount of albumin and large numbers of fine hyaline casts in the urine are strikingly rapid. The normal or diminished leukocyte count, accompanied by a fall in the proportion of polymorphonuclears and a rise in the transitionals during the attack, with a slightly increased white count, and a return to normal cell proportions in the intervals, is noteworthy. The feature of the blood examination, which is the criterion of diagnosis, is, of course, the demonstration of the spirochetes. This was accomplished in smears stained by the usual Wright stain in two cases. Spirochetes could never be found in the intervals between attacks. There seems, then, little room to doubt that these cases represent a small local outbreak of relapsing fever.

DISCUSSION

Dr. Henry Sewall, Denver: I see no reason why we should not have an endemic focus started in Colorado which would be very serious to the people whom we invite in the summer. The disease may become endemic, but by a very little precaution we can avoid that. Our health authorities should communicate with the central quarantine authorities. It is time for action.

Dr. William T. Councilman, Boston: These blood diseases can spread only through the medium of some agent which outside of the body conveys the parasites in the blood to some other person. We have a striking example of that in malaria. We must not only have the parasite which is the cause of the disease, but we must also have some other parasitic organism to convey the disease. So far, we have been very fortunate in regard to those diseases because the parasites which are within the blood have been brought to this country or from other countries where the two parasites are endemic. We have a blood parasite brought to us again and again, but so far we have been very fortunate in that the parasite which conveys the disease, either a tick or a louse or some other agent, has not, as a rule, found a suitable environment in this country. We have had striking examples of that in regard to sleeping sickness. Sleeping sickness was brought to this country by Africans, and they died in this country; but the disease was not recognized, and there was never occasion for the spread of the disease, because the fly, which was the necessary agent for the reproduction of the disease, was not brought to this country.

The Effects of High Altitudes on Cardiac Affections

Dr. A. Zederbaum, Denver: The heart is endowed with a wonderful recuperative power, and with an unexcelled faculty of adjusting itself to situations and circumstances. This adjustment is often given better facilities in high altitudes than in the lowlands. There are conditions of the heart which strongly contraindicate residence in a high altitude, but they are not many, and should be studied carefully in each individual case before a final judgment is pronounced.

DISCUSSION

Dr. G. Walter Holden, Denver: It has been my observation for the last seventeen years in Colorado that there is little or no change in the heart conditions in cases I have met in my special work with tuberculosis. The cases run practically the same course in this altitude as they do at sea level. If patients come out here early with an aortic stenosis, with pericardial or pleuritic adhesions, they are bound to have trouble. They have to be extremely quiet for a long time, and their exercise and muscular movements should be controlled. That applies to patients residing at sea level as well as to those living in Denver.

Dr. O. M. Gilbert, Boulder: Ordinarily, I say to people that about 98 per cent. of what you hear about the serious effects of high altitude on heart disease is simply imaginary, based on some preconceived notions, and the other 2 per cent. is real; but one of those realities may be a mitral stenosis.

Dr. A. S. Taussig, Denver: If a patient has a moderately good heart muscle, regardless of the character of the lesion, we are safe in saying that that patient can come to a high altitude and be benefited thereby. Physicians in the East are not able to form a proper idea of the influence of high altitude on account of two things: first, from a lack of personal experience and, second, from their own negligence in sending patients to a lower altitude after they find seriously damaged hearts. I do not believe any practitioner in the East can obtain an adequate idea of what high altitude will do in cardiac cases.

Immunity in Tuberculosis

Dr. Gerald B. Webb and Dr. G. Burton Gilbert, Colorado Springs: Experimenting for some years with minimum lethal doses of tubercle bacilli, we find that virulent cultures probably vary somewhat, but in general ten bacilli inoculated subcutaneously will produce tuberculous disease in guinea-pigs. We have not yet found any safe method of injecting a single minimum lethal dose to produce infection in guinea-pigs without producing a spreading infection in these animals. We have injected these doses with immune blood platelets, with immune lymphocytes and with immune serum, yet infection has resulted in many cases. We have excised the local lesions early, and we have caused local lesions in strips of skin anchored only at one end to the guinea-pig, but too frequently we have found disease has spread beyond to neighboring lymph nodes. We have succeeded in producing safely some immunity to tuberculosis when we have inoculated very small numbers of tubercle bacilli of moderate virulence, gradually increasing these numbers. With the most virulent cultures, however, even this cannot be achieved, as infection will take place. We are at present attempting to isolate a culture of tubercle bacilli which will be virulent enough in these small progressive numbers to produce immunity in guinea-pigs without producing infection.

Tuberculosis of the Kidney

Dr. Oliver Lyons, Denver: Evidence obtained by palpation should be accepted with caution. For example, a diminution in the size of the kidney, due to cicatricial contraction subsequent to caseation, may lead the physician into error, particularly if the healthy kidney has undergone compensatory hypertrophy. The patient may or may not present the general character of tuberculosis elsewhere in the body. In the average case anemia, wasting and cachexia are not observed for many months or even years. Sweating, chills and fever are signs of secondary infection, and are due to the absorption of toxins after suppurative processes have begun. In this case the loss of weight, appetite and strength may be very marked. The main reason for the failure of early recognition of renal tuberculosis lies in the fact that we are not on the outlook for it.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

October, XXXVI, No. 10, pp. 467-516

1 Problems of Public Health Education. C. E. A. Winslow, New York.
2 Public Health Nursing as Community Service. K. B. Whitmore, Albany.
3 Id. E. P. Crandall.
4 *Form of Reflexes in Chorea; Technic of Elicitation; Studies in Neurologic Technic No. 4. W. B. Swift, Boston.

4. **Form Reflexes in Chorea.**—Swift urges that the form of the reflex in chorea calls for four precautions in elicitation. *A.* The relation of the reflex to the choreic contraction demands a number of trials. *B.* The less frequency found in the milder forms demands that in mild cases more trials are necessary, and in severe cases less trials, usually ten trials, rarely twenty-five or fifty. *C.* As a choreic contraction has more time to occur in a reflex describing a large arc, choose reflexes with long pendulums, as the knee-jerk and triceps. *D.* As choreic contractions increase their frequency with efforts to control them, precede each test with the instruction to "hold still." In a word, Swift would make numerous trials, the more the milder the case, on reflexes with long swings, knee-jerk and triceps and precede each test with the order to "hold still." Then watch for the form of the reflex response, which a choreic contraction may turn into a jerk, a flop, or a wabble.

Archives of Pediatrics, New York

September, XXXII, No. 9, pp. 641-720

5 *Cubic Air Space for Institutional Bottle-Fed Infants. T. S. Southworth, New York.
6 *Prophylactic Vaccination for Varicella. S. Rabinoff, New York.
7 Physical Examination of Heart in Children. J. E. Talley, Philadelphia.
8 *Birth Fractures of Humerus from Wards of New York Lying-In Hospital. E. D. Truesdell, New York.
9 Modern Children's Pavilion (Abraham Jacobi Division for Children of German Hospital, New York). A. L. Goodman, New York.

5. **Cubic Air Space for Institutional Infants.**—In the hope of securing some definite data of value and authority on this subject Southworth sent a questionnaire to each member of the American Pediatric Society. Thirty-three answers containing sufficient data to incorporate were received from pediatricians who reported on forty-nine hospitals and institutions containing infants. The majority (twenty-one in number) of the hospitals and institutional wards for infants from which reports of cubic air space were received provide 1,000 cubic feet and upward of air space for each inmate, and only five reported 600 cubic feet or less. Even with 1,000 or more cubic feet of air space, free ventilation is deemed highly important, and as the space decreases such free ventilation becomes more and more imperative. No allowance of cubic air space is at present made for the necessary attendants in wards. Reduced cubic air space means less square feet of floor space and less separation between cribs, with proportionately increased opportunity for the spread of cross infections. There is a growing belief that even with free ventilation separation of the beds plays as important a rôle as cubic space. Such adequate separation, however, is only attainable with large cubic air space. The majority of pediatric physicians believe that infants should have as much cubic air space as adults, if not more, and this is especially true of bottle-fed infants, because they are more susceptible to infection, suffer in their nutrition in confinement, and notoriously do badly in all except the best equipped institutions. Even with a liberal allowance of cubic air space free and abundant ventilation is of equal importance. In addition, provision for roof-gardens, porches and sun parlors is advisable, if not imperative. The mere presence of windows does not of itself constitute ventilation but their proper use must be provided for. A low minimum of cubic space established by law, without definition of what constitutes efficient ventilation, and without enforcement, Southworth believes may be more harmful than beneficial, and constitute a virtual license to overcrowd in ill-ventilated wards.

6. **Prophylactic Vaccination for Varicella.**—During an epidemic of varicella in the wards of the Hebrew Infant Asylum during the winter just passed, Rabinoff tried out prophylactic vaccination. In the majority of instances it was necessary to use material directly and immediately from either the vesicles or the pustules. The method used was similar to that of Kling, except that instead of multiple punctures small scarifications were made on the arm to be vaccinated. In none of the vaccinated cases was there any evidences of systemic disturbance. Among 142 susceptible children, 114, or about 75 per cent., developed varicella. In the group of seventy-six vaccinated children there were only six cases, or about 8 per cent. of the total number. Of these six cases, two developed on the day following vaccination, two seven days later, one nine days and the last ten days later. In other words, all the cases among the vaccinated children developed within the incubation period of the disease, which is about sixteen days. Rabinoff is convinced that in this epidemic the vaccinations undoubtedly limited the spread of the disease.

8. **Birth Fractures of Humerus.**—Twenty-four fractures in twenty-one infants were collected by Truesdell. All have been followed to their final outcome, roentgenograms and clinical examinations having been made at intervals in each case until this had been determined. In a few cases the deformity was extreme; in every case there was some. In no case has the roentgenogram failed to show a uniformly progressive elimination of the deformity. Of the twenty-four fractures, seventeen occurred during version with breech extraction, four during simple breech extraction, and three in vertex presentations, difficulty having been experienced in extracting the anterior arm, either because of narrowing of the pelvic outlet, or of the size of the child. In three cases the fractures were double, and of the twenty-one infants, seventeen survived. In all cases but one the line of fracture was practically transverse, a typical pipestem fracture, the site of fracture being at or near the center of the shaft of the bone, just below the insertion of the deltoid muscle. In one case, a shoulder presentation, a fillet had been applied to the prolapsed arm and traction maintained on this during the version, causing some twisting or torsion of the extremity. In this one instance the line of fracture was oblique.

The prevailing deformity was an external angulation attributable directly to the action of the deltoid, and quite excessive in a few cases. A second variety of deformity was a lateral displacement, the fragments lying parallel, but more or less separated. Overriding of the fragments was not noted in any case, nor was displacement in an anteroposterior direction. Each fracture was accompanied by a well marked wrist-drop, due to some injury to the musculospiral nerve at the time of fracture, since the paralysis was immediate and so not likely due to accumulation of extravasated blood or callus inclusion. The paralysis gradually disappeared during the first three or four weeks in the majority of the cases, and in none was evidence of it observed after the end of the sixth week. In one case the fracture was complicated by an Erb's birth palsy of the same arm. The repair of the fracture was as prompt in this as in the other cases, the bone finally uniting with a moderate degree of external angulation. The treatment of these fractures varied from time to time. A V-shaped splint cut from thin wood, deeply crotched at one end to fit the axilla, and applied to the inner side of the arm and flexed forearm, was employed, with good results.

Boston Medical and Surgical Journal

October 14, CLXXIII, No. 16, pp. 565-602

10 *Analysis of Three Hundred and Eight Cases of Typhoid in Children. K. G. Percy, Boston.
11 Therapeutic Value of Occupation for Insane. E. L. Haines, Boston.
12 Teaching of Applied Therapeutics at Tufts Medical School. F. H. McCrudden, Boston.

13 Workmen's Compensation Act and Physician. H. J. Cronin, Cambridge.
14 *Method of Testing Gastric Secretion by Use of Self-Closing Dredge. A. M. Burgess, Providence, R. I.
15 Sunshine; Its Neglected Analgesic-Sedative Action. J. Bryant, Boston.
16 Neuroma of Ulnar Nerve; Analysis of Case. J. B. Ayer, Boston.

10. **Typhoid in Children.**—In compiling these statistics Percy procured percentages from the total number of records which mentioned the point desired. Fever was noted in the histories in 82 per cent. Headache was a marked symptom in 57 per cent. Malaise was present in but 38 per cent. Vomiting occurred as a definite symptom in 26 per cent. Twenty-five per cent. of all patients gave a history of abdominal pain. Diarrhea is mentioned but sixty-two times, 21 per cent. Nosebleed occurred in 17 per cent. of this series, and of those, 78 per cent. within the first week of the disease. Constipation was a common symptom. Cough was noted in 8 per cent. Percy obtained a record of positive family history in sixty-six, or 23.7 per cent., while 76.6 per cent. gave no known contagion. The spleen showed enlargement to palpation on entrance in 68 per cent. of cases and was noted as enlarged to palpation in 79 per cent. of all cases some time during their stay in the hospital. Rose spots were noted ninety-four times in 280 careful records, or 33 per cent. at entrance and a total of 57 per cent. sometime during the course of the disease.

Widal's test was done on 280 patients of this series. On admission 80 per cent. were positive; 13.2 per cent. more were positive during their stay; 7.8 per cent. were negative. White blood cell count was done in 258 patients at or within three days of admission. Of these 14 per cent. were below 5,000; 57 per cent. were between 5,000 and 10,000; 29 per cent. were between 10,000 and 15,000. Fifty-one cases, or 67 per cent., either at entrance or within the first ten days gave positive diazo reactions. Blood cultures were done in seventeen cases only of this series. Twelve cases, or 70 per cent., were positive. Relapses occurred in sixty cases of 300 records in which the patients stayed in the hospital until discharged well, or in 18 per cent. of this series. Five patients had two relapses. Hemorrhages of the intestines occurred in four patients one of whom died and another of whom had as the apparent etiology a severe purpura with hematuria. There were no cases of perforation of the bowel. Complications were noted in 102 cases, or one third of this series. This series shows a mortality of 2.9 per cent. in 306 cases.

14. **Testing Gastric Secretion by Use of Self-Closing Dredge.**—Burgess' method consists of the use of a capsule, which is so constructed that it automatically closes as it leaves the stomach, and thus protects its contents from contamination.

Bulletin of Johns Hopkins Hospital, Baltimore

October, XXVI, No. 296, pp. 341-366

17 Important Contributions to Clinical Medicine During Past Thirty Years from Study of Human Blood Pressure. T. C. Janeway, Baltimore.
18 Elusive Mobility of Breast in Case of Retromammary Cyst. W. S. Halsted, Baltimore.
19 *Case of Foot-and-Mouth Disease in Man. P. W. Clough, Baltimore.
20 Method for Study of Morphology and Reproduction in Filamentous Organisms. T. R. Boggs and M. C. Pincoffs, Baltimore.
21 Study of Ferments and Antiferments of Body and Their Relation to Certain Diseases. J. W. Jobling and W. F. Petersen, Nashville, Tenn.
22 Antagonism Between Lactic-Acid and Spore-Bearing Organisms in Milk. W. S. Kiester, Baltimore.

19. **Foot-and-Mouth Disease in Man.**—The clinical picture presented by Clough's patient was that of a mild febrile infectious disease, characterized by the appearance of an erythema and a superficial vesicular eruption over the mucous membrane of the mouth and on the skin of the hands and feet; by salivation; by swelling, burning and parasthesias of the affected parts, with subsequent desquamation; and by healing of the ulcers without scar formation. The disease was present at the time in cattle in the neighborhood of Baltimore, and infection by means of milk or cream was possible, though it could not be demonstrated. Experimental proof of the nature of the disease by animal inoculation could not be obtained. Nevertheless the clinical picture was so characteristic that the diagnosis seemed reasonably certain. Treatment consisted of mouth washes of potassium chlorate and permanganate, and the application of skin lotions to relieve the itching. On the seventh day some of the exudate scraped from the vesicles in the mouth was inoculated into the mouth of a young dog after scarification of the mucous membrane. No lesion developed.

California State Journal of Medicine, San Francisco

October, XIII, No. 10, pp. 375-414

23 Nerve Injuries; Their Influence on Period of Disability. T. G. Inman, San Francisco.
24 Relation of So-Called Strained Back to Disability Following Industrial Accidents. S. Hyman, San Francisco.
25 Traumatic Neuroses in Relation to Industrial Accidents; Prognosis and Treatment. W. F. Schaller, San Francisco.
26 Some Remarks on Industrial Insurance Work. M. E. Rumwell, San Francisco.
27 Internal Medicine in Relation to Industrial Accidents. R. Bine, San Francisco.
28 Fracture Records; National Effort Toward Standardization. T. W. Huntington, San Francisco.
29 Use of Carbon Dioxid in Dermatology. E. D. Lovejoy, Los Angeles.
30 *Relation of Certain Urinary Findings to Prognosis on Pulmonary Tuberculosis. J. C. Cummings, Sacramento.
31 Infection; Its Prevention and Treatment. Results in Five Hundred Traumatic Cases. C. Dederer, Los Angeles.
32 Scope and Limitations of Psychiatric Clinic in San Francisco. E. C. Reid, San Francisco.
33 Pulsating Exophthalmos Treated by Slow Occlusion of Common Carotid Artery with Neff Clamp. S. D. Brazeau, Spokane.

30. **Relation of Urinary Findings to Pulmonary Tuberculosis.**—The pavilion for tuberculous patients at the Sacramento County Hospital has an average of from twenty to thirty inmates, nearly all of whom have advanced lesions. This group seemed to offer a good opportunity for checking up the urochromogen and diazo tests clinically and not infrequently pathologically as well. During his service Cummings examined 100 patients. In making the so-called urochromogen test the technic of Weiss was used. In 100 successive admissions of patients suffering from pulmonary tuberculosis only fourteen could be given a favorable clinical prognosis. In no case considered as "favorable" from a clinical standpoint did the so-called urochromogen reaction appear in the urine. In seven of the fourteen cases (50 per cent.) clinically considered "favorable" a positive diazo reaction was obtained. In thirty-nine of eighty-six (45 per cent.) clinically unfavorable cases the urochromogen test was positive while in fifty-three (61 per cent.) the diazo test was positive. Seventeen of 100 patients died in six months. Of these seventeen, eleven (65 per cent.) showed a positive urochromogen, and thirteen (76 per cent.) a positive diazo while ten (59 per cent.) showed both. Of seventeen patients showing a positive urochromogen test with a negative diazo (a combination considered especially ill-omened by Weiss) none has died to date. Of thirty-nine patients having a negative urochromogen and a positive diazo, five have died.

Cleveland Medical Journal

August, XIV, No. 8, pp. 533-580

34 Cases of Hemorrhagic Conditions in Infants. J. Phillips, Cleveland.
35 Treatment of Syphilis of Central Nervous System. O. P. Bigelow, Cleveland.
36 J. W. Mueller, on Transfusion — Retrospect. T. Sollmann, Cleveland.
37 Clinical Experience with Capsicum, Potassium Bitartrate and Terebene. H. F. Biggar, Cleveland.

Delaware State Medical Journal

August, VI, No. 9, pp. 1-32

38 Some Clinical Suggestions from Recent Work on Carbohydrate Metabolism. L. Hamman, Baltimore.
39 Elementary Electrotherapeutics. M. Marshal, Jr., Milford.
40 Static Electricity. H. J. Stubbs, Wilmington.
41 Wayside Notes on Tuberculosis. A. Robin, Wilmington.
42 Dietetic and Medicinal Treatment of Eczema in Children. D. Rossman, Wilmington.
43 Iritis and Cyclitis; Report of Case of Metastatic Gonorrheal Kerato-Iritis. W. O. LaMotte, Wilmington.

Georgia Medical Association Journal, Augusta

October, V, No. 6, pp. 127-148

44 Gonococcemia. W. L. Champion, Atlanta.
45 *Second Infection of Syphilis; Wax in Bladder Causing Stones. T. E. Blackshear, Macon.
46 Small Fibrous Prostate. A. L. Fowler, Atlanta.
47 Improved Method of Draining Bladder after Prostatectomy. G. E. Ballenger and O. F. Elder, Atlanta.
48 Papilloma of Bladder; Report of Two Cases. M. L. Boyd, Atlanta.
49 Unique Case in Gunshot Wounds. J. G. Standifer, Blakely.

45. **Second Infection of Syphilis.**—September, 1914, Blackshear's patient consulted him for a sore on the penis. This proved to be a chancroid, which healed up promptly under local treatment. Blackshear saw him again three months later. He then presented a typical sore of ten days' duration. Period of incubation uncertain, owing to various exposures. This lesion on examination by dark field illumination, showed the presence of *Spirochaeta pallida,* and the diagnosis of syphilis was made. He had a moderate degree of inguinal adenitis. The patient stated that he had contracted syphilis three years before; had been given three intravenous injections of salvarsan. At that time he presented a typical case of syphilis, stiff joints, swollen glands, headache, throat symptoms and a beautiful eruption.

Journal of Cutaneous Diseases, New York

October, XXXIII, No. 10, pp. 667-730

50 *Pemphigoid Eruptions Following Vaccination. W. H. Mook, St. Louis.
51 Primary Syphilis of Tonsil. C. M. Smith, Boston.
52 Trichloracetic Acid and Its Uses in Dermatology. C. N. Davis, Philadelphia.
53 Tuberculosis of Tongue. W. Blancard, New York.

50. **Pemphigoid Eruptions.**—The cases in Mook's report were all primary vaccinations. The lesions showed a predilection for certain areas, localizing around the mouth, neck, extremities, and especially the joints. He states that the pemphigoid variety may appear as small vesicles, resembling chickenpox and smallpox, or as papulovesicles, and may become pustular. The bullae are usually clear and tense on normal skin, though they may be on inflamed and eczematoid areas of great variety in sizes, forms and configurations in the same individual. Hemorrhagic bullae are frequent. Circinate and concentric rings of bullae are marked features. In some cases the central bulla is hemorrhagic, with concentric, serous vesicles and bullae and not necessarily intercommunicating. Others have a tendency to the production of large, gyrate patches of peculiar inflammatory areas, resembling mostly eczematoid dermatitis. The period of incubation may vary from three to four days to four months. A majority of the cases vary from three to five weeks. The benign cases are manifested by smaller bullae. Mouth lesions may or may not be present, and there may be slight or severe febrile disturbance. They may terminate in complete, uncomplicated recovery in a few weeks, or recur as a vesicular or bullous eruption, in crops, over a period of years as a true or pseudodermatitis herpetiformis. The vegetating and scar-forming varieties are fortunately rare. All of the cases have a rise of temperature at the onset or during the course of the disease.

Inoculation experiments were negative in two monkeys, a calf, several guinea-pigs and rabbits. Blood cultures from a fatal case and two recovered cases were negative under aerobic and anaerobic conditions, on agar and blood serum medium. Numerous cultures from various bullous lesions yielded ordinary staphylococci and some of them were sterile. Smears from one case showed diplococci, but the culture from this case showed staphylococci and the guinea-pig inoculated was negative. A mild or marked leukocytosis occurred early in all of the cases, continuing in two of the fatal ones and disappearing in those recovering or having a tendency to relapse. The eosinophilia appeared in the later stages, though it was not constant. The disease begins as a primary lesion, namely, the vaccination, followed by mild or severe constitutional involvement, with a multiformity of lesions involving the skin and mucous membrane, and running a short, acute, or chronic course sometimes over a period of years, and in many is fatal.

Kentucky Medical Journal, Bowling Green

September, XIII, No. 10, pp. 405-470

54 Bilateral Dermoid Cysts of Ovary. A. H. Barkley and H. G. Herring, Lexington.
55 Management of Interrupted Pregnancy. J. L. Atkinson, Campbellsville.
56 Eclampsia. C. T. Thomas, Lebanon Junction.
57 Complete and Incomplete Tonsillectomy. J. H. Hester, Louisville.
58 Physician's Faith in God. J. W. Crenshaw, Cadiz.
59 Dysentery of Ileocolitis. E. T. Riley, Trenton.
60 Inversion of Uterus; Report of Case. G. C. Rankin, Walton.
61 Pyloric Obstruction. W. A. Bryan, Nashville.
62 Skin Grafting; Report of Cases. W. Bach, Jackson.
63 Pertussis Vaccine as Prophylaxis; Report of Its Use as Such. S. C. Frankel, Louisville.
64 Some Practical Considerations in Regard to Eugenics. C. Pope, Louisville.
65 Acute Dysentery in Adult. T. E. Craig, Colesburg.
66 Typhoid. J. V. Stark, Kirksey.

Medical Record, New York

October 16, LXXXVIII, No. 16, pp. 639-680

67 Fluoroscopic Screen and Roentgenogram Plate in Diagnosis of Medical and Surgical Lesions of Alimentary Tract. C. W. Perkins, New York.
68 Excision of Fistulous Tract in Treatment of Fistula in Ano. C. Savini, New York.
69 *Treatment of Typhoid with Typhoid Vaccine Administered Intravenously. H. I. McWilliams, New York.
70 Syphilis of Lung; Report of Case. M. T. Easton, Peoria, Ill.
71 Maternal Instinct Factor in Prenatal Development of Epileptic Type of Nervous Constitution. R. G. MacRobert, New York.
72 Sustained Failure in Problem of Tuberculosis. M. E. Lapham, Highlands, N. C.

69. **Typhoid Treated with Typhoid Vaccine.**—A review of the literature by McWilliams shows that more than 550 cases treated in this manner have been reported in the literature. In more than half of these cases the disease was cut short, the patient having been saved from one to several weeks of fever. McWilliams believes that a few deaths must undoubtedly be attributed directly to the injections of vaccine. However, this is likely to occur with any new and radical method of treatment. As the contraindications and dosage are better understood, such deaths should become extremely rare. No one type of vaccine seems to possess any great superiority over other types with regard to treatment. The proper dosage for intravenous injections appears to be from 100 to 250 million bacilli. The injection of the vaccine calls forth first a marked leukopenia and several hours later a high-grade leukocytosis in typhoid patients. Variations in the number of polynuclear leukocytes are responsible for these changes, the lymphocytes remaining relatively constant. The eosinophil cells undergo an increase shortly after the injection. The various types of vaccine call forth similar changes in the blood picture.

Missouri State Medical Association Journal, St. Louis

October, XII, No. 10, pp. 433-474

73 Discrimination in Use of Methods to Produce Surgical Anesthesia. E. Fischel, St. Louis.
74 Hodgkin's Disease. G. Ives, St. Louis.
75 Progress in Obstetrics for 1914. F. T. Van Eman, Kansas City.
76 *Factors of Safety in Goiter Operations. V. P. Blair, St. Louis.
77 Surgery of Goiter. R. Hill, St. Louis.
78 Byways of Medicine. E. C. Wittwer, Mountain Grove.
79 Organization of National and Local Forces in Campaign against Cancer. C. E. Lakeman, New York.
80 *Lobar Pneumonia. O. Putman, Marceline.

76 and 80. Abstracted in The Journal, June 26, pp. 2160 and 2161.

New York Medical Journal

October 16, CII, No. 16, pp. 785-832

81 Rectal Fistula. J. R. Pennington, Chicago.
82 Exciting of Cardiac Reflex in Treatment of Enlargement of Heart and Aorta. M. Solis-Cohen, Philadelphia.
83 Acid Autointoxication Accompanying Hyperemesis of Pregnancy; Report of Case. E. E. Cornwall, New York.
84 New Growths of Prostatic Urethra in Relation to Tuberculosis: Report of Cases. P. S. Pelouze, Philadelphia.
85 Identity of Peculiar Traits and Neuroses. A. Stern, New York.

86 Creatinin as Test for Renal Function. A. K. Detwiler and M. L. Griffith, Omaha.
87 Pituitary Disease. W. Timme, New York.
88 Some Uses for Xylol in Dermatology. J. E. Lane, New Haven, Conn.
89 Obesity and Its Treatment. F. A. Cummings, Providence, R. I.
90 Schick Test. J. Zuckerman, New York.

Ohio State Medical Journal, Columbus

September, XI, No. 9, pp. 549-604

91 Thymus Gland. G. Dock, St. Louis.
92 Some Newer Conceptions of Surgery of Stomach and Duodenum. G. W. Crile, Cleveland.
93 Treatment of Enuresis by Psychotherapy. W. Ravine, Cincinnati.
94 Some Etiologic Factors in Connection with Contraction of Syphilis. H. N. Cole, Cleveland.
95 Case of Mastoiditis with Complications and Discussion of Value of Blood Cultures in Aiding Diagnosis. F. W. Alter, Toledo.
96 Should Public Schools be Closed when Epidemic Develops? F. G. Boudreau, Columbus.
97 Intra-Abdominal Injury from Slight Trauma. F. C. Herrick, Cleveland.

South Carolina Medical Association Journal, Anderson

September, XI, No. 9, pp. 271-303

98 Diagnosis of Incipient Tuberculosis. N. B. Edgerton, Columbia.
99 Consideration of Pericolic Membranes; Report of Seven Cases. J. H. Taylor, Columbia.
100 Modern Hospital Laboratory. T. R. N. Wilson, Greenville.
101 Bogie of Intestinal Autointoxication. G. M. Niles, Atlanta, Ga.

Southern Medical Journal, Mobile, Ala.

October, VIII, No. 10, pp. 833-920

102 Importance of Vital Statistics Legislation in South. W. J. Harris, Washington, D. C.
103 How Virginia Secured Place in Registration Area. W. A. Plecker, Richmond, Va.
104 Vital Statistics — Basic Principles of Organization. F. L. Watkins, Jackson, Miss.
105 Preparation Necessary for Putting into Operation Vital Statistics Law. H. H. Shoulders, Nashville, Tenn.
106 Prenatal Responsibility of Parents for Children. M. M. Carrick, Dallas, Texas.
107 Lumbar Puncture in Diagnosis and Treatment. F. H. Smith, Abingdon, Va.
108 Antitubercle Serum as Aid in Treatment of Tuberculosis. T. J. West, Makaweli, Kauai, Hawaii.
109 Technic of Cystoscopy in Women. M. J. Gelpi, New Orleans.
110 Trephining for Relief of Increased Pressure of Cerebrospinal Fluid. R. M. Harbin, Rome, Ga.
111 Operative Treatment of Closed Fractures of Patella. C. M. Remsen, Atlanta, Ga.
112 *Splenectomy in Pernicious Anemia; Report of Case. C. A. Penrose, Baltimore.
113 New Technic in Administering Salvarsan. J. H. Carter, Memphis, Tenn.
114 Gasoline, Iodin and Alcohol in Surgery. J. W. Alsobrook, Plant City, Fla.
115 Impacted Watermelon Seeds in Rectum. C. E. Marlette, Hayneville.
116 *Amyl Nitrite in Chloroform Poisoning. J. S. Gilman, C. J. Devine and T. M. Barber, Richmond, Va.
117 Arthritis Associated with Infections of Nose and Throat. J. Bordley, Baltimore.
118 Vernal Conjunctivitis in Negro. D. Roy, Atlanta, Ga.
119 Straight, Direct Laryngoscopy and Esophagoscopy; Report of Cases. R. H. Johnston, Baltimore.

112. **Splenectomy in Pernicious Anemia.**—A review of the literature has convinced Penrose that splenectomy is of unquestionable service in selected cases of pernicious anemia. In his case while the enlargement of the spleen was a most favorable indication for operation, the lack of regenerative forms in the blood made him dubious. The fact that this patient had put forth all his power for recuperation a year before was also against him. At that time a splenectomy would possibly have been of greater value. In all cases, Penrose says, it would seem wiser to perform, as was done in this case, a transfusion of blood, from a carefully selected donor, at the time of the operation. In this patient there was practically no surgical shock, and in all probability, while the splenectomy did not save him, his life was somewhat prolonged by the transfusion.

116. **Amyl Nitrite in Chloroform Poisoning.**—The results obtained by the authors indicate that the inhalation of amyl nitrite definitely increased the dose of the chloroform solution required to cause the death of the animals.

Surgery, Gynecology and Obstetrics, Chicago

October, XXI, No. 4, pp. 403-540

120 *Symposium on Renal Infections. Errors in Diagnosis of Renal and Ureteral Calculus. H. Cabot, Boston.
121 *Postoperative Renal Infection. G. G. Ward, Jr., New York.
122 Renal Pain; Diagnostic and Clinical Significance. J. B. Squier, New York.
123 *Bladder Function after Confinement and after Gynecologic Operations. F. J. Taussig, St. Louis.
124 *Laboratory Diagnosis of Chronic Infections of Urinary Tract in Women. A. H. Curtis, Chicago.
125 Errors in Diagnosis of Renal Infections. A. L. Chute, Boston.
126 *Shock and Hemorrhage; Experimental Study. F. C. Mann, Rochester, Minn.
127 Left-Sided Appendicitis; Report of Case and Classification of Literature. J. H. Schrup, Dubuque, Ia.
128 Congenital Intestinal Anomalies. M. G. Sturgis, Seattle.
129 *Fibrin as Hemostatic in Cerebral Surgery. E. G. Grey, Boston.
130 Essential Uterine Hemorrhage. S. H. Geist, New York.
131 *Abderhalden Reaction in Malignant Tumors, Pregnancy and Angiosclerosis. C. Goodman and S. Berkowitz, New York.
132 Study of Irregular Kidney Vessels as Found in One Hundred and Eighteen Cadavers. R. R. Rupert, Chicago.
133 *Treatment of Hand Infections from Economic Viewpoint. H. E. Mock, Chicago.
134 *Hysterical Joint Neuroses. C. W. Rand, Chicago.
135 Carcinoma of Rectum. L. L. McArthur, Chicago.
136 Mortality and Prognosis in Operative Treatment of Cancer of Rectum. C. B. Davis, Chicago.
137 End-Results of Series of Three Hundred Operations on Gallbladder. J. J. Buchanan, Pittsburgh.
138 Gonorrheal Ureteropyelitis; Report of Two Cases Treated by Injections of Antimeningitic Serum. M. L. Boyd, Atlanta, Ga.
139 Rectovesical and Enterovesical Fistula. J. H. Cunningham, Jr., Boston.
140 Duodenojejunostomy with Exclusion of Uppermost Jejunal Loop for Angioma of Duodenojejunal Junction and Upper Jejunum. E. Beer, New York.
141 Simple and Satisfactory Closed Ether Apparatus. L. G. Bowers, Dayton, Ohio, and L. F. Ross, Richmond, Ind.
142 Technic and Experimental Application of Hard Rays for Deep Roentgenotherapy. L. G. Cole, New York.
143 Case of Intersigmoid Retroperitoneal Hernia. J. C. Black, Regina, Saskatchewan.
144 *Intra-Abdominal Use of Oxygen. G. K. Collier, Sonyea, N. Y.

120. **Errors in Diagnosis of Renal Calculus.**—The following rules for avoiding errors are laid down by Cabot: In all cases of abdominal pain of a chronic or recurring type, in cases of backache, lumbar or sacro-iliac joint strain and lumbago, careful repeated examinations of the urine, including a microscopic examination of the sediment in all cases whether albumin is present or not, and of a catheter specimen in all female patients, should precede positive diagnosis. In most of these cases in which the symptoms warrant the consideration of operation, roentgenograms are essential. The evidence presented by the Roentgen ray alone is insufficient to warrant operation in most cases of stone in the kidney or ureter. Possibility of error by mistaking other foreign bodies should be excluded by the use of the ureter catheter, stereoscopic plates, injected roentgenogram, or the wax-tipped catheter. In any case in which the symptoms suggest ureteral calculus and a doubtful shadow appears in the roentgenogram, if the ureter cannot be catheterized on repeated attempts or the catheter is arrested at the same point on various occasions, the decision for or against operation must be made on the apparent gravity of the symptoms. In cases with symptoms suggesting stone in the kidney, with a normal urine, a negative roentgenogram and an unobstructed ureter, the wax-tipped catheter will not infrequently lead to a correct diagnosis and will be likely to fail only in the cases in which the stone lies in a dilated calix and is therefore out of reach of the catheter.

121. **Postoperative Renal Infection.**—Ward believes that postoperative renal infection is more frequent than has been formerly appreciated, owing to the fact that in many cases it is overlooked on account of the mild character of the infection, the severe types being comparatively rare. Vesical irritability occurring after operation may be an important precursory sign of renal infection, and therefore should not necessarily be attributed to a cystitis caused by carelessness. Ward says that a study of the urine will show the probable type of the disease present, and thus be a guide to the treatment. He advises that a careful study of the pathologic con-

dition of the kidney should be made at the operation in order that nephrectomy may be avoided if possible.

123. **Bladder Function After Confinement.**—While there are all gradations of deficiency in bladder function after confinement and operation, Taussig says, that for practical purposes patients may be divided into four groups: 1. Those who show at such times no appreciable change from normal micturition. Those who, although able to void spontaneously, do not for a day or two empty their bladder completely. Those who require catheterization one or more times in the first few days, but are then able to void without further trouble. Those with prolonged interference of bladder function. The character and duration of the operation or labor, the form and amount of the anesthetic, the age of the patient, the nervousness of the individual and the degree of sensitiveness of her bladder mucosa, are all factors that to a greater or less degree come into play in introducing urine retention; and the object should be to regulate the therapy so far as possible in accordance with the probable factors in each case.

124. **Laboratory Diagnosis of Chronic Renal Infections.**—Curtis advises that the source of even small amounts of pus in the urine should be investigated. He believes that persistent pyuria in the absence of a gross bladder lesion is almost invariably due to kidney disease. In those frequent cases with bladder irritability which yield clear, bacteria-free urine, cultures from the traumatized urethral canal, or from introduction of a probe into Skene's ducts, may demonstrate the cause of infection. When bacteria are widely scattered or grow with difficulty, a mixture of the urinary sediment with blood followed by the making of a large number of ascites-blood-agar tubes of high dilution, results in conditions favorable for the development and isolation of the bacteria present. The chief lesions in urinary tuberculosis are usually renal. In obscure cases, laboratory diagnosis is facilitated by potassium iodid, tuberculin, kidney massage, limitation of liquids, repeated examinations of fresh specimens after high power centrifugation, Petroff's cultures, and injection of series of medium-sized guinea-pigs. Curtis is of the opinion that there is seemingly a tendency to lay undue stress on functional urinary tests at the expense of careful routine examination.

126. **Shock and Hemorrhage.**—The data from experiments reported by Mann may be summarized as follows: In a normal dog 66 per cent. of the blood can be obtained from the femoral artery and 10 per cent. from the heart, making a total of 76 per cent. which can be secured, leaving 24 per cent. in the tissues. In an animal in which the cervical cord is sectioned, producing medullary vasomotor paralysis, 54 per cent. of the blood can be obtained from the femoral artery and 12 per cent. from the heart, a total of 66 per cent., leaving 34 per cent. in the tissues. In an animal in which blood pressure is depressed practically to zero by an overdose of ether, 46 per cent. of the blood can be obtained from the femoral artery and 13 per cent. from the heart, making a total of 59 per cent., leaving 41 per cent. in the tissues. In an animal in which the viscera have been exposed until the clinical signs of shock are present, but in which the vasomotor reflexes are as active or even more so than in the normal condition, only 28 per cent. of the blood can be obtained from the femoral artery and 11 per cent. from the heart, making a total of 39 per cent., leaving 61 per cent. in the tissues.

Mann concludes that the clinical signs of shock which appear after section of the abdomen and exposure of the viscera are due to a loss of circulatory fluid. This loss of fluid is not dependent on any primary impairment of the medullary vasomotor center and takes place at a point beyond the control of the vasomotor mechanism. The causes for this loss of fluid are apparently the same as those which determine the accumulation of fluid in any other irritated area and produce the signs of inflammation. The nervous system probably plays no greater part in the former case than in the latter. The condition is made grave when the viscera are exposed because of the great vascularity of the tissues involved.

129. **Fibrin as Hemostatic in Cerebral Surgery.**—Grey suggests the use of sheep's fibrin for controlling hemorrhage in certain types of intracranial surgery. After washing the fibrin repeatedly it is allowed to stand in distilled or tap water for twenty-four hours or longer until all of the enmeshed red blood cells have been laked. After placing the fibrin (previously divided into smaller pieces) into a roomy glass jar containing normal salt solution, the mouth of the latter is covered with cotton and gauze and sterilized. The sterilization softens the fibrin and thus facilitates its absorption by the tissues. It is now ready for use. In this form the fibrin will keep for months. When dipped into a physiologic salt solution and pressed against bleeding points with a sponge or a wisp of dry cotton, fibrin was found to control the hemorrhage even better than wet cotton. The soft and pliable nature of this substance made it adhere to rough and smooth surfaces alike. The difference between fibrin and cotton in this respect was clearly shown when pledgets of each material were pressed over bleeding spots and then removed again after a lapse of a minute or two. Fibrin was found to adhere to the underlying structures much more firmly than cotton. This fact probably accounts for the more efficient hemostasis noted with the former when larger vessels were dealt with.

131. **Abderhalden Reaction in Malignant Tumors.**—In cancer Goodman and Berkowitz examined the blood of sixty-four patients. They obtained positive reactions in fifty-eight. In all of the fifty-eight patients the positive diagnosis of malignancy was confirmed later by clinical, operative, or postmortem evidence. Of the remaining six patients, three are still under observation. In a large series of pregnancy tests, the results were uniformly satisfactory. In a series of cases of angiosclerosis, the authors obtained positive reactions with artery and in several instances with suprarenal substrata. In a series of thyroid transplants they have been able in seventeen instances out of twenty-three to show positive reactions with suprarenal, and in two instances a positive reaction also with pancreas, but only one positive reaction with spleen. All of the specimens of blood taken from animals following the transplantation of organs with the use of blood vessel suture reacted positive with the substrate artery.

133. **Economic Treatment of Hand Infections.**—The treatment of hand infections, in order to give the best results from every viewpoint, Mock holds, must include the proper preventive measures, especially the prophylactic use of tincture of iodin and the early reporting of all minor injuries; the treatment of hand infections as a serious surgical condition from their inception, and whenever indicated the adoption of hospital treatment early; the proper and early diagnosis of the type and nature of infection and the exact location of the pus. Mock advises a proper incision of the abscess in order to establish adequate drainage and yet not spread the infection to other spaces.

134. **Hysterical Joint Neuroses.**—Rand's patient was subjected to sudden trauma, falling on her right hip. The obsession of some severe injury possessed her. She was unfortunately examined before a large body of physicians, in a case in which a diagnosis of fracture of the neck of the femur was made, and its symptoms, prognosis and treatment, discussed. Only after repeated negative Roentgen-ray examinations and the stormy manifestations of her hysterical attack was the condition of true joint neurosis established. The fact that function returned as soon as the patient's confidence was gained supported this diagnosis.

144. **Intra-Abdominal Use of Oxygen.**—Collier has used oxygen intra-abdominally in twenty-five laparotomies, and the results have been most favorable in all. The lessening of shock, the absence of nausea and vomiting and the early recovery from the anesthetic have been the most marked features of its use, and he has not in any case seen any untoward effects. The absorption of the oxygen is quite rapid, and even though there might be some apparent embarrassment of the respiration due to overdistention of the abdomen, Collier has never felt that this was an element of

fear, owing to the rapid absorption of the gas. The distressing postoperative results, so often seen, have been eliminated in those cases in which oxygen has been used, and Collier believes there will be a more widespread use of this valuable adjunct of the surgeon.

Texas State Journal of Medicine, Fort Worth

September, XI, No. 5, pp. 259-312

145 Geographic Distribution of Plague and Its Menace to United States. W. C. Rucker, Washington, D. C.
146 Epidemiology of Pellagra. K. H. Beall, Fort Worth.
147 Better Health in Public Schools. F. J. Slataper, Houston.
148 Trachoma; What Is It That We Should Be Mindful Of It? W. A. Rape, Victoria.
149 New and Apparently Successful Method for Therapeutic Use of Typhoid Vaccine. I. S. Kahn, San Antonio.
150 Diagnosis of Pancreatitis; Report of Cases. H. L. McNeil, Galveston.
151 Study of Venereal Diseases J. B. Shelmire, Dallas; S. J. Wilson, Fort Worth, and F. C. Walsh, San Antonio.
152 Colloidal Gold Reaction of Lange in Spinal Fluid. E. F. Cooke, Houston.
153 Syphilis and Spinal Fluid. J. J. Terrill, Temple.
154 Intraspinous Use of Salvarsanized Serum. W. L. Allison, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

July, III, No. 1, pp. 1-204

1 *Relative Therapeutic Value in Malaria of Cinchona Alkaloids. A. C. MacGilchrist.
2 Presence of Leishmania in Peripheral Blood of Cases of Kala-Azar in Assam. F. P. Mackie.
3 New Hemogregarine Found in Pigeon's Blood. F. de Mello.
4 *Two Tests for Syphilis Dependent on Lecithin Content of Serum. H. C. Brown and K. R. K. Iyengar.
5 Simple and Convenient Water Bath for Use in Hemolytic Experiments. H. C. Brown.
6 Bursate Nematodes from Indian Elephant. C. Lane.
7 Falcaustra Falcata Investigation of Oxysoma Falcatum von Linstow, 1906. C. Lane.
8 Lepisma Saccharina (?); Its Life History and Anatomy and Its Gregarine Parasites. J. W. Cornwall.
9 Arneth's Index and Antirabic Treatment. J. W. Cornwall and S. R. Iyer.
10 Studies in Flies. Chetotaxy and Pilotaxy of Muscida and Range of Their Variability in Same Species. P. R. Awati.
11 Bacteriology of Dysentery in Madras Lunatic Asylum. M. K. Pai.
12 Malignant Melanomata; Especially Those Occurring on Heel and Sole of Foot; Report of Cases. W. H. D. Stevenson.
13 Some Anophelines from Arabia and Mesopotamia. S. R. Christophers and K. Chand.
14 Anopheles Brevipalpis Roper, and Description of Its Egg and Larva. C. Strickland.

1. **Cinchona Derivatives Inquiry.**—The main object of MacGilchrist's investigation was to determine the relative therapeutic value of the more important cinchona alkaloids and their derivatives. The five alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin and the two quinin derivatives, hydroquinin and ethylhydrocuprein (optochin) were examined and their relative therapeutic value was determined in the following order, hydroquinin being the most and quinoidin the least effective: (1) hydroquinin hydrochlorid; (2) cinchonin sulphate; quinin sulphate; quinidin sulphate, for all practical purposes of equal value. If any difference, cinchonin is superior to quinin and quinidin is inferior. (5) optochin hydrochlorid; (6) cinchonidin sulphate; (7) quinoidin. As regards unpleasant by-effects of these alkaloids, buzzing in the ears was most frequently associated with quinin and quinidin; amblyopia, with quinin and cinchonin; diarrhea with cinchonin if administered for over a week; and nausea with quinoidin, cinchonidin, even in large doses, caused no unpleasantness of any kind.

The first notable effect of these alkaloids is to arrest sporulation; sporulating forms are the first to disappear from the peripheral blood. Small rings and, somewhat later, half-grown parasites are the next to become rare and disappear. The last forms discoverable in the blood are full-grown schizonts and gametes. The natural protective forces of a person in relatively good health greatly aid the antimalarial action of these alkaloids. At certain stages of development the parasite is more resistant to these alkaloids than at other stages; and, to effect a complete disappearance of the parasite from the peripheral blood, the vulnerable stage in the cycle of development must be reached. It would appear that the minimal lethal doses for the vulnerable stage of the benign tertian, malignant tertian, and quartan parasites are, respectively, about 0.1, 0.15 and 0.2 gm. per 70 kilogram of patient's weight. The dosage being sufficient, the average number of hours required to cause a disappearance of parasites from the peripheral blood is roughly proportionate to the duration of the life cycle of each parasite, the number of hours required in any individual case depending on the period required for the parasite to reach a vulnerable stage in its developmental cycle.

A curious but important fact discovered in this investigation is the smallness of the dose of quinin which is able to free the peripheral blood of asexual parasites, and is possibly able to check the production of gametes. It is rare indeed in practice to give such small doses to patients. The dose usually given being, therefore, generally sufficient, or more than sufficient, in cases in which one has failed hitherto is obviously in the duration of treatment. To a patient in whom gametes have developed it would appear that quinin should be administered daily for a period equal to the lifespan of the individual gamete if there is to be any prospect of curing and disinfecting that patient. If malarial patients were really cured and disinfected, malaria would become a rare disease. There is reason to believe that gametes are produced only when the asexual forms of the parasite are becoming exhausted or are exposed to inimical surroundings, as a last defense against total extermination. Ordinary doses of cinchona alkaloids have little influence on crescents when once these are fully developed in the peripheral blood; but they apparently (1) check the production of crescents if administered before these bodies have appeared in the peripheral blood, and (2) greatly shorten the period during which these bodies, having made their appearance during treatment, can be found in the peripheral blood.

Parallelism or harmony between laboratory and hospital results is marked in the case of the five natural alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin; but is entirely wanting in the case of the two synthetic derivatives of quinin, hydroquinin and optochin, indicating that artificial products are more liable to show differences between in vitro and clinical results, as they are not so stable as the natural alkaloids. Improvements in the manufacture of cinchona derivatives, for use in malaria, suggested by the results of this investigation, are as follows: (1) to obtain a bark containing as little quinoidin as possible; (2) to extract quinin for use as such and for the manufacture of hydroquinin; (3) to issue the remaining alkaloids as residual alkaloid, which should contain as little quinoidin as possible, but have a high percentage of quinin, cinchonin and quinidin combined.

4. **Tests for Syphilis.**—The first of the tests worked out by Brown and Iyengar is dependent on the fact that when an aqueous solution of platinum chlorid is added to an alcoholic extract of normal serum, a much heavier precipitate is produced than in the case of an extract of syphilitic serum. They have tested 230 serums by this method and have found that the results follow, with few exceptions, those obtained by the Wassermann reaction and by Fleming's modification; moreover they have found a closer agreement between their test and the Wassermann reaction than they have been able to obtain when comparing the latter with Fleming's modification. The second test is the natural consequence of the first. If one of the properties of lecithin differentiates a syphilitic from a normal serum, the other should do so also. In other words, the capacity of activating cobra venom should be different in the two serums. The authors have tested fifty-five serums by this method and consider that the results bear out the conclusions obtained by their platinum chlorid test.

Journal of Tropical Medicine and Hygiene, London

September 15, XVIII, No. 18, pp. 205-216

15 Nile Boils in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

Lancet, London

September 25, II, No. 4804, pp. 685-738

16 *Treatment of Typhoid by Stock Typhoid Vaccine. H. W. Wiltshire and A. R. N. MacGillycuddy.
17 Nervous Furring of Tongue and Disturbed Taste. J. Goodhart.
18 Pleomorphism of Meningococcus. A. Lundie, D. J. Thomas and S. Fleming.
19 Neurasthenia Gastrica. J. C. McClure.
20 Case of Multiple Exostoses with Hereditary History. R. Cox.
21 Transmission of Malaria in Northern France. J. H. Dible.
22 Case of Syphilitic Nephritis Treated by Salvarsan. N. Macdonald.
23 Relapsing Febrile Illness of Unknown Origin. J. H. P. Graham.
24 Case of Influenzal Meningitis. C. V. Boland.
25 Testing of Disinfectants. S. Rideal and J. T. A. Walker.

16. **Stock Vaccine in Treatment of Typhoid.**—The cases quoted by Wiltshire and MacGillycuddy are a consecutive series of fifty in which two or more doses of vaccine were given. Seven of these patients died, giving a mortality of 14 per cent. Six of the fatal cases were complicated by severe bronchopneumonia; the seventh died from perforation which occurred at a time when vaccine had certainly reduced the general typhoid toxemia. In all cases the clinical diagnosis was confirmed by bacteriologic means. In forty the bacillus typhosus was obtained by blood culture. In seven it was isolated from the feces. The remaining three patients were uninoculated men who gave a positive Widal reaction, and in two of these the strength of this reaction was found to increase during the course of the disease.

The fifty cases are divided into classes as follows: Class 1, vaccine did harm, 6 cases (12 per cent.); Class 2, vaccine without effect, good or ill, 12 cases (24 per cent.); Class 3, vaccine did good, 32 cases (64 per cent.). Class 1: In three of these cases the harmful effect was due to doses being given with too short an interval (forty-eight hours) between them. They all recovered, the harm done being quite slight. Class 2: (*a*) In five cases the vaccine received a good trial, but appeared to have no effect. As regards general severity of disease, or the stage at which the vaccine treatment was started, these cases did not differ from many in which the vaccine has done good. In all of them, however, the treatment was coincident with a steady increase of bronchitis or bronchopneumonia. Class 3: Group A. Twenty-four cases (48 per cent. of the whole series) showed definite improvement which started after the first or second dose of vaccine, and was continued. Group B. Five cases (10 per cent. of the whole series) showed no improvement from the first two doses of vaccine, but were definitely improved by doses following these. Group C. In one case vaccine was not used until the later stages of the initial fever. Group D. In two cases the initial doses gave good results, but later doses (in one case the third, in the other the fourth) appeared to coincide with the beginnings of intercurrent relapses, which ran an unmodified course. The stock vaccine used was supplied by the Royal Army Medical College.

The authors urge that the treatment should be started as early as possible with an initial dose of 250,000,000. A reasonable suspicion that a patient is suffering from typhoid is sufficient indication for commencing vaccine treatment. The treatment is quite harmless to patients who may subsequently be proved not to be suffering from typhoid. An interval of three days should be given between doses. Shorter intervals are not well tolerated. When a longer interval is given, if four days the dose should not be increased, if over four days the dose should be reduced. Great care must be used in dosage if secondary infections of the lung are present. If possible, the typhoid vaccine should be combined with a vaccine suitable for the secondary infection. Doses should be continued for ten days after the temperature is normal as a preventive against relapse. Preventive inoculation exerts slight, if any, influence on subsequent vaccine treatment.

Sei-I-Kwai Medical Journal, Tokyo

September, XXXIV, No. 9, pp. 45-48

26 Report of One Hundred and Sixty-Three Cases of Uterine Fibroid. M. Yamasaki.
27 Roentgen Ray Shadow in Pulmonary and Pleural Diseases. S. Segawa.
28 Injection of Salt Solution in Tinnitus. K. Matsumoto.

Archives Mensuelles d'Obstét et de Gynécologie, Paris

August, IV, No. 8, pp. 289-336

29 *Rupture of Pregnant Uterus; Three Cases. L. Meyer (Copenhagen).
30 *Origin of Jaundice in the Newly Born. F. Bang (Copenhagen).

September, No. 9, pp. 337-368

31 Origin of Stimulus for Mammary Secretion. P. Zuloaga (Valladolid).
32 Embryologic Study of Double Monster. (Anadidyme Monocéphalien.) A. Keilin.

29. **Rupture of the Uterus During Pregnancy.**—In the three cases reported by Meyer the women had borne several children before and the pregnancy was at term or within eight weeks of term. The symptoms of the rupture were not characteristic, merely indicating some serious lesion in the abdominal cavity requiring prompt laparotomy. The only cause that could plausibly be incriminated for the rupture was a curetting of the uterus three years before in one case and, in the second, expression of a macerated six-months' fetus the year before. The tear in the uterus in both these cases was long and jagged. In the third case a small round hole was found in the fundus of the uterus, suggesting possible attempts at criminal abortion although such were denied. The round ligaments and vessels of the uterus indicated a somewhat infantile development, and this might have been responsible for the rupture. Sudden intense pain at stool was the first sign of trouble.

30. **Origin of Jaundice in the Newly Born.**—Bang's article is practically the same as the one summarized in these columns Aug. 7, 1915, p. 566.

Bulletin de l'Académie de Médecine, Paris

September 14, LXXIV, No. 37, pp. 275-306

33 Wounds of the Hands. (Considérations sur les blessures de la main par les petits projectiles et les opérations complémentaires qu'elles réclament.) E. Delorme.
34 Bradycardia from Heart Block in Boy of Nine. (Bradycardia vraie par dissociation totale auriculo-ventriculaire.) A. d'Espine and Cottin (Geneva).
35 The Paratyphoid Micrococcus n. sp. A. Sartory and P. Lasseur.
36 Localization of Projectiles in the Tissues. (100 localisations de projectiles par le compas radio-chirurgical de C. Infroit.) C. Infroit.

Journal d'Urologie, Paris

September, VI, No. 4, pp. 409-504

37 *Degenerated Condition of Leukocytes in Urine as Early and Reliable Sign of Urogenital Tuberculosis. (Signe de Colombino pour le diagnostic rapide de la tuberculose uro-génitale.) E. Micheli (Padua).
38 Fibromyoma of the Prepuce in Scar of Syphilitic Ulcer. E. A. Delfino (Genoa).
39 *Pyelography in Eighty Cases. T. Plotkin.
40 *Cancer of the Prostate; Two Cases. C. Perrier (Geneva).
41 *Access to the Kidney. (Les voies d'abord du rein.) G. Marion.

37. **Early Diagnosis of Urogenital Tuberculosis.**—Micheli expatiates on the ease, simplicity and reliability of what he calls Colombino's sign, that is, the discovery in the sediment of the urine of deformed leukocytes along with a few red cells. In two cases reported, this first suggested tuberculosis as the cause of the symptoms. No tubercle bacilli could be detected, but the polynuclear leukocytes and some of the mononuclears showed the most remarkable shapes, the edges as if gnawed and fringed. No characteristic lesions could be found, but treatment as for tuberculosis of the bladder soon brought marked improvement and examination later revealed traces of tuberculous granulations.

39. **Pyelography.**—Plotkin gives fourteen pyelograms with an accompanying description, saying that complications developed in three of the eighty cases in which he applied pyelography in Joseph's service at Berlin. One patient had severe colic after the injection of the silver salt solution, and had to be kept in bed for twenty-four hours. Another had mild colic, and in the third case there was fever and much agitation for four hours. The pyelography was done on outpatients, as a rule, and the catheter was always narrow enough to permit reflux of any excess of fluid. If catheterization causes pain or hemorrhage, no attempt should be made at pyelography. In skilful hands the latter is free from danger, he declares. It is merely a simple rinsing out of the pelvis.

40. **Cancer of the Prostate.**—The hardness of the tumor in the prostate was the only sign that suggested malignant disease in one of Perrier's two cases. In the other the cancer had softened and broken down until the palpation findings were approximately normal. In one case there were also hard presacral lymph glands. In one case there was metastasis in the corpora cavernosa. If a catheter is not tolerated, suprapubic cystostomy gives the most relief with inoperable cancer of the prostate.

41. **Modes of Access to the Kidney.**—Marion's study of the various technics for exposing the kidney is accompanied by ten illustrations.

Presse Médicale, Paris

September 16, XXIII, No. 43, pp. 353-360

42 *Extraction of Projectiles in the Lungs. G. Marion.
43 *Atypical Sunstroke. (De l'insolation.) C. Lian.
44 Experimental Pharmacologic Study of Colloidal Gold. H. Busquet.

42. **Extraction of Bullets and Scraps of Shell from the Lungs.**—Marion has been surprised at the ease with which he extracted intrapulmonary projectiles in all but one of the twenty-seven cases in which he attempted it. In the one case that failed he had neglected fixation of the lung before opening the pleura. In two cases the projectile was in a pus pocket that had opened into the air passages; in three others it was found in a pus pocket which there had been nothing to suggest beforehand. All the patients promptly and completely recovered. Each case is described in detail.

43. **Atypical Sunstroke.**—Lian reports three cases in which men working several days in the sun gradually developed the syndrome of meningeal irritation, symptoms of subacute meningitis bringing the men to the hospital by the end of the week. The intense headache, vasomotor disturbance and slowing of the pulse were accompanied by extreme depression and slight fever. The clear fluid spurted under pressure on lumbar puncture. In one case there was stupor for twenty hours and slight stiffness of the neck. Another atypical form of sunstroke was encountered in one soldier who had been digging for several hours in the sun. There was sudden and acute dilatation of the heart, with extreme arrhythmia. The man was a robust farmer and was sweating freely when attacked by this cardiac form of sunstroke. Lian tested the heart functioning in a number of soldiers known to have slight cardiovascular derangement, and found that the myocardium showed signs of weakness after prolonged exposure to the sun. Complaints of progressively increasing headache during exposure to the sun should suggest the slow meningeal form of sunstroke, while symptoms on the part of the heart call for heart stimulants, and possibly a purge, with nothing by the mouth but water at first and then milk.

Berliner klinische Wochenschrift

September 13, LII, No. 37, pp. 961-988

45 *Hemorrhagic Aplastic Anemia. (Aleukia haemorrhagica.) E. Frank.
46 *Intraneural Injection of Antitetanus Serum at First Local Symptoms. A. W. Meyer.
47 Brain Lipoid as a Hemostatic. A. D. Hirschfelder (Minneapolis).
48 Perforation of Aortic Aneurysm into the Trachea. C. Hart.
49 Localization of Projectile in Tissues. (Das Aufsuchen des Fremdkörpers durch den Arzt nach Lokalisation.) W. Salow. (Zur Röntgenstereoskopie.) W. Salow.

45. **Aplastic Anemia.**—The affection which Frank calls aplastic (aregenerative) anemia-panmyelophthisis develops as hemorrhagic purpura which continues a steadily progressive course until the patient succumbs to the anemia in the course of a few weeks or months. In 11 of Accolas' 19 cases the age was under 30; Türk's 2 patients were a girl of 18 and a boy of 12, and Kleinschmidt's patient was a girl of 4½. Frank reports in detail a case in a woman of 33. She had contracted syphilis fourteen years before but was apparently in perfect health when given an additional mild course of mercury and salvarsan. Eight days after its conclusion the hemorrhagic purpura developed and progressed to a fatal termination in fifteen days. In this, as in all the cases on record, the small numbers or total absence of blood platelets was a striking feature of the cases. The affection seems to be a primary leukomyelotoxicosis, with secondary anemia partly from the loss of blood and partly myelophthisic anemia. It is quite distinct from pernicious anemia. Without examination of the blood, the cases would usually be classed as sepsis. The "hemorrhagic aleukia," as he also calls it, opens the portals to septic infection. It may develop as an ulcerating or necrotic throat or mouth trouble; in his case there was buccal periostitis. The sepsis is merely an accident in the course of primary toxic destruction (aleukia) or overproduction (aleukemia) of myeloid tissue.

46. **Intraneural Injection of Antitetanus Serum with Local Tetanus.**—Meyer calls attention to his success in aborting tetanus by an intraneural injection of antitetanus serum into the trunk nerve of the limb, above the injury, when the slightest tendency to twitching or contracture became evident in the limb. These local symptoms long precede the systemic and general symptoms, and a prompt intraneural injection may arrest the further spread of the tetanus and restrict it to the limb involved and cure it there. He impresses on the soldiers in his charge the necessity for watching for twitching and contracture of a muscle in the limb, and the importance of immediately notifying the physician.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 4, XLV, No. 36, pp. 1121-1152

50 *Deforming Osteochondritis of the Hip Joint in the Young; Five Cases. G. A. Guye and H. J. Schmid. Concluded in No. 37.

September 18, No. 38, pp. 1185-1216

51 Present Status of Bacteriotherapy. J. L. Burckhardt.
52 *Sulphur Disinfection. L. Klocmann.

50. **Juvenile Deforming Osteochondritis of the Hip Joint.**—Guye and Schmid give a detailed study of four cases of what they call Calvé-Perthes' disease, with the Roentgen-ray findings. The children were from 4½ to 8 years old, all boys, but they encountered later a fifth case in a girl of 6. The various features of the group of cases are tabulated for comparison. In all the cleft in the joint was abnormally wide as seen by roentgenoscopy. The head epiphysis was crushed down and deformed, the epiphyseal line irregular or no longer recognizable, or studded with spots and gaps. The neck was broader than normal and curved in all but one case. The future will decide whether tuberculosis has nothing to do with the affection as at present assumed by most writers on the subject. The head epiphysis seems to pass through four stages, first a flattening out and spreading over the neck, then a splitting into two or three fragments abnormally rich in lime, then a splitting of these fragments into numerous smaller fragments which have lost their lime, and, finally, a stage in which the head epiphysis disappears, or, if lime is given systematically some of the fragments may regain their consistency and strength.

Treatment should be based on the cause, which some think is incomplete and tardy ossification; and others ascribe it to some disturbance in the local circulation. In either case weight-bearing aggravates the condition, and immobilization is the logical treatment. The affection always tends to a spontaneous cure and operative measures are not called for. Extension of the limb, keeping the child in bed, relieved the pain and the complications rapidly subsided in their experience. General measures to strengthen the organism as a whole are important aids, sun-baths and massage in particular may prove useful. The contracture of the adductors disappeared completely under a month of bed rest and immobilization by extension in one case; another patient required eight months of treatment, but all finally were clinically cured and have no perceptible limp.

52. **Improved Technic for Sulphur Disinfection.**—Klocman has found that sulphur sterilization is much facilitated by adding potassium chlorate to make it burn more readily. He mixes about four tablespoonfuls of pulverized sulphur with an equal amount of $KClO_3$ and strews this on the bottom of the vessel. The sticks of sulphur are then placed on this and what is left of the mixture is poured on paper and this is placed between the sticks and the paper lighted with a match. The whole mass then burns quickly and completely.

Deutsche medizinische Wochenschrift, Berlin

September 16, XLI, No. 38, pp. 1117-1144

53 *Hodgkin's Disease with Eruption. (Lymphogranulomatose mit pemphigusartigem Ex- und Enanthem neben granulomatösen Hautknoten.) E. Hoffmann.
54 Starch-Agar Culture Medium for Cholera Germs. (Ein neuer Nährboden für die Cholera-Diagnose.) C. Lange.
55 Treatment of Typhoid with Vaccines. H. Reiter.
56 *Uremia. H. Machwitz and M. Rosenberg.
57 Differential Percussion Findings with Subphrenic Gas Abscess. L. Nyary.
58 Chemical Sterilization of Drinking Water. (Trinkwassersterilisierung mit Chlor.) F. Ditthorn.
59 Cyclopean Monster with Snout. (Zur Kasuistik der Zyklopie mit Rüsselbildung.) S. Durlacher.
60 *The Functions of the Spleen. (Die Funktionen der Milz.) H. Hirschfeld. Commenced in No. 37.
61 The Medical Officer with the Reserve Battalion. (Der Arzt beim Ersatz-Bataillon.) Torkel.

53. **Lymphogranulomatosis.**—In the first of Hoffmann's two cases a butcher of 37 had typical Hodgkin's disease accompanied by a skin affection suggesting pemphigus and evidently of toxic origin. This assumption was confirmed by the aggravation of the pemphigus as the glandular tumors retrogressed under Roentgen treatment. With hard Roentgen tubes, 20 X, and 2 mm. aluminum filter, all the lymphomas subsided, and also the infiltration in the skin. There was a mild recurrence four weeks later. A second similar course was followed by improvement again. The patient now, four months after he was first seen, feels quite well and the glands are all normal in aspect except for slight enlargement of some in the neck and axillae. A third course of Roentgen treatment has just been instituted including the spleen also. Roentgen treatment was promptly effectual likewise in the second case. The spleen was enlarged and there was eosinophilia reaching 30 per cent. Roentgen treatment also helped in some cases of fungoid mycosis. Tuberculous lymphomas did not retrogress so fast and transient fever developed, suggesting a tuberculin reaction.

56. **Uremia.**—Machwitz and Rosenberg have examined and applied various tests in 160 cases of nephritis in the last two years. The findings and deductions all confirm the advantages of classifying the uremia with nephritis as true uremia, uremia with convulsions, and the pseudo-uremia of arteriosclerosis. As a rule these types are distinct. True uremia is found with acute glomerular nephritis, and with secondary and genuine contracted kidney. The diagnosis is based on the high urea and residual nitrogen content of the blood and the indicanemia. Restriction of the amount of albumin in the diet is desirable in this form of uremia. Uremia with convulsions occurs most commonly in acute nephritis in the young. The prognosis is generally favorable. In treatment, lumbar puncture is the most important measure at our command. Pseudo-uremia is encountered with purely atherosclerotic affections of the kidneys. It is the result of atherosclerotic changes in the brain, and is distinguished from true uremia by there being no retention of nitrogen and no indicanemia. Treatment should be addressed to the atherosclerosis, aiming to arrest the progress of the arteriosclerosis and ward off heart failure. Stimulants for the heart may be necessary, and restriction of intake of fluids. Volhard lays great stress on this reduction of the amount of fluids taken, and it has proved surprisingly effectual also in their experience. The systolic blood pressure was up to 250 mm. mercury in some of these cases, and moderate amounts of albumin and casts of all kinds were found in the urine. The necropsy findings in a typical case described showed atherosclerotic changes in the brain ample to explain all the symptoms suggesting true uremia, even the epileptiform convulsions. This patient was a woman of 47 who had swollen feet for six months, and then an attack of unconsciousness for a few minutes. Six months later there was another attack, followed by headache, disturbances in vision and recurring convulsions for fifteen minutes at a time. There was pronounced excentric hypertrophy of the left ventricle but no albuminuric retinitis. There was no indican in the serum but 3 per thousand urea in the blood. No treatment was instituted except restricting the intake of fluids, and in four weeks the patient was free from all disturbances and had no further trouble for five months. Then the heart symptoms, edema, dyspnea and convulsions returned and fatal heart failure soon followed.

60. **Functions of the Spleen.**—Hirschfeld discusses in detail the various functions of the spleen as an organ for production of blood and for destruction of red corpuscles, for iron metabolism, and as regulator of the red corpuscle production in the bone marrow, and, finally, as an organ concerned in some way with digestion. It swells and becomes full of blood at the height of the digestive process. At the same time, he adds, none of these functions is indispensable; any one of them can be promptly assumed by some other organ, and there is no appreciable general disturbance after removal of the spleen in most cases. Exceptionally, however, persons are encountered who are unable to get along without the spleen and respond to splenectomy with a severe disturbance, polycythemia.

Medizinische Klinik, Berlin

September 12, XI, No. 37, pp. 1015-1038

62 Suppurative Pneumococcus Meningitis Consequent on Pneumococcus Appendicitis and Periappendicitis. H. Eichhorst.
63 Neurology in War. (Kriegsneurologische Erfahrungen.) C. Mayer.
64 Gas Phlegmons in the Wounded. Sackur.
65 Serotherapy and Prophylaxis of Dysentery. (Zur Ruhrbehandlung.) O. Bujwid.
66 Filaria in the Blood; Three Cases. (Ueber bisher unbekannte Filariablutbefunde bei gefangenen Russen.) M. Bockhorn.

Münchener medizinische Wochenschrift, Munich

September 14, LXII, No. 37, pp. 1241-1276

67 The Foreign Body Telephone. (Das Fremdkörpertelephon.) Holzknecht and Wachtel.
68 Technic for Colloidal Silver in Therapeutics. J. Voigt.
69 Arsenic Keratosis After Injection of Salvarsan. C. Philip.
70 Psychiatry in War. (Kriegspsychiatrische Begutachtungen.) W. Weygandt.
71 *Constricting Band in Treatment of Severe Grenade and Shrapnel Injuries. (Die Stauungsbehandlung schwerer Granat- und Schrapnellverletzungen.) E Sehrt.
72 Relapsing Fever. (Beobachtungen über Rückfallfieber.) F. Levy.
73 Trichinosis. Putter.
74 Operative Treatment for Abdominal Wounds in War. L. Basl.
75 Internal Ear Disturbance from Explosion of Shell Nearby. (Detonationslabyrinthosen.) R. Hoffmann.
76 Eczema Developing After Application of Pellidol Salve. A. Störzer.
77 Emergency Fixation and Extension with Sheets of Perforated Zinc. K. Fischel.
78 Emergency Artificial Leg. (Eine Notprothese für die untere Extremität mit Extensionsvorrichtung.) W. Katz.
79 Improved Technic for Plaster Casts of the Arms. (Zur Gipsverbandtechnik bei Schussfrakturen der oberen Extremität.) O. S. Meyer.
80 Cleaning the Hospital Trains. (Ueber Reinigung der Lazarettzüge bei der Linienkommandantur X Stettin.) Giese.

71. **Passive Hyperemia in Treatment of Shell Wounds.**—Sehrt has been much impressed with the benefit from a constricting band to the limb to induce Bier's stasis hyperemia. He has applied it in seventy-three cases of shell wounds, and found that it had an unmistakable effect in warding off general infection. It seemed particularly useful in this respect when it was applied at once after the injury, and kept up until a wall of granulations had been thrown up to protect the rest of the body. The results were particularly striking in cases of injury of large joints, even after suppuration had already set in. Preservation of function is the main advantage. The constricting band also seemed to aid in the delimitation of gas phlegmonous processes or even arrested the whole process. By the end of a few hours the pain from the lesion is abolished. The constricting band is applied in such a way that the pressure from the bandage is scarcely felt. It is left in place for six or seven days or longer, up to twelve days. The wound itself is left entirely unmolested except for a gauze covering.

Therapeutische Monatshefte, Berlin

September, XXIX, No. 9, pp. 477-532

81 Specific Treatment of Tuberculosis. (Die neueren Methoden der specifischen Tuberkulose-Behandlung und ihre experimentellen Grundlagen.) E. Toenniessen.

82 *Relations Between Internal Diseases and Disease of the Teeth. (Ueber die bei inneren Erkrankungen vorkommenden Zahnkrankheiten.) H. Euler.
83 Present Status of Treatment of Dysentery and Similar Intestinal Disease. (Neuere Erfahrungen in der Behandlung der Ruhr und ähnlicher Dickdarmkatarrhe.) E. Stoerk.
84 *Treatment of Aphthous Stomatitis. F. Göppert.
85 *Pain at Defecation. (Behandlung des Defäkationsschmerzes kleiner Kinder.) F. Göppert.
86 *Conservative Treatment of Large Inguinal Hernia in Infants. (Grosse Leistenbrüche des Säuglingsalters.) F. Göppert.
87 Inhalation of Eucalyptus Oil in Treatment of Excessive Bronchial Secretion in Children. F. Göppert.

82. **Relations Between Internal Diseases and the Teeth.**—That carious teeth may serve as portals of entry for tuberculosis and actinomycosis is a familiar fact. Euler had one case in which the track from the tooth to the tuberculous granuloma could be traced by the microscope, and a complete cure followed resection of the part of the jaw through which the track passed, and excision of the diseased lymph gland. Zilz has reported finding Much's granula in putrid fistulas at the root of teeth. Diphtheria bacilli have also been found in carious teeth in otherwise healthy carriers. Neuralgic pain in teeth may develop from hyperemic pressure as a feature of the menstrual period, especially the days just preceding menses. He warns dentists not to be misled by this to pull the tooth or do more than seek to allay temporarily the congestion and pain. Similar neuralgic pains may occur in the pregnant, but the main complaint is the rapid increase of caries during pregnancy. This may be due in part to the altered metabolism, to the changes in the composition of the saliva, or to neglect of proper dental care. The women may shrink from having teeth filled for fear of possible influence on the fetus from the pain endured. Euler adds that the fetus takes what it needs from the maternal organism and leaves to the mother the task of making up any deficit. It may be that the drain on her lime deposits may render the teeth more fragile and more susceptible to caries at this time. He reiterates that it is a mistake to assume that adults do not need lime for their teeth, and particularly during pregnancy.

He presents evidence that a special influence on the teeth may be noted in acute articular rheumatism, typhoid and influenza. Snoek even speaks of "acute rheumatism of the teeth." Pulpless teeth and also intact teeth may begin suddenly to ache during acute rheumatism or convalescence, and there may be phenomena of periodontitis. This may occur also in typhoid with no local findings to explain it. It is possible, however, that neglect of the usual care of the teeth during protracted diseases may cooperate in this. The influence of influenza on the teeth is still more pronounced. Besides the neuralgiform pains, there may be suppuration in the pulp or gum below.

In all these and similar diseases, care of the mouth is of prime importance, promptly calling in the dentist when the infection in influenza spreads to involve the pulp; which usually is not until the general infection is on the decline. It may be wiser to pull the tooth than let the patient continue to suffer. Weak heart action is liable to entail stasis in the peripheral circulation, and this is particularly liable in the teeth and may cause severe toothache, which may also occur from a similar cause in arteriosclerosis. The patients may clamor to have the tooth removed, but the disturbances will not be arrested by this but are liable to be aggravated, while there is especial danger of protracted bleeding and defective healing in just such cases.

Both the first and second dentition may be accompanied by gastro-intestinal disturbances. He maintains that teeth require the supervision and care of a dentist regardless of whether they belong to the first or second dentition; also that the first teeth, even if decayed, serve a useful purpose by keeping open a passage for the tooth to follow. With organic nervous disease there may be neuralgiform pains and anesthesia or paresthesia in the cheeks, lips and tongue; the teeth may drop out spontaneously; there may be atrophy of the alveolar process and necrosis of the jaw. In Misch's work on the borderland between medicine and dentistry he cites authorities to show that there is a possible connection between disease of the teeth and insanity; we know that cretins often have deformed teeth. Alveolar pyorrhea seems to require both a local irritation and a predisposition. Besides the dentist's treatment of the condition, the physician should attack the underlying predisposing factors.

84. **Treatment of Aphthous Stomatitis.**—Göppert thinks that the main point in treatment is to anesthetize the inflamed and sensitive mucosa so as to permit the child to eat. They often shrink from eating and even drinking until they actually suffer from inanition. He advises dusting the inside of the mouth with some anesthetic powder, without direct contact, as the child reclines, repeating this five or ten minutes before each meal and also at night if the pain keeps the child awake. Suggestion may be necessary to eliminate the child's fear that chewing or drinking will hurt.

85. **Pain at Defecation.**—Göppert introduces into the anus a suppository containing about 0.02 gm. of some mild anesthetic. This renders defecation painless whether the pains are due to actual organic lesions or merely the memory of such. After five or six days the suppository can be of plain cocoa butter. This treatment has always proved promptly effectual in his experience.

86. **Inguinal Hernia in Infants.**—Göppert does not approve of herniotomy for infants, and says that it is unnecessary as a rule. The hernia can be kept reduced and the elastic tissues soon practically close up the opening if a perineum X bandage is applied. It must be flannel or cambric, not gauze. The pressure can be increased by interposing a pad of cotton. The bandage can be changed once or twice a day. It answers the purpose as well for very large as for small hernias.

Zentralblatt für Gynäkologie, Leipzig

September 11, XXXIX, No. 37, pp. 651-666

88 *Appendicitis in the Pregnant. (Zur Kenntnis der echten Typhlitis und Perityphlitis in der Schwangerschaft.) R. T. Jaschke.

September 18, No. 38, pp. 667-682

89 Organotherapy of Amenorrhea. R. Köhler.

88. **Appendicitis in the Pregnant.**—Jaschke's case emphasizes anew that the high mortality of appendicitis in pregnant women is due to fatal temporization, the result of the fact that pregnant women shrink exceptionally from operations. When they at last accept the intervention, conditions then are beyond repair.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 19, XXXVI, No. 63, pp. 977-992

90 *Nervous Disturbances in the Tuberculous Without Direct Nerve Lesions. (Alterazioni nervose da tubercolosi extra-nervosa.) S. Mircoli.
91 Interval Before Development of Traumatic Appendicitis. (Circa i termini di tempo assegnati allo sviluppo dell'appendicite traumatica.) N. Federici.

90. **Nervous Disturbances in Tuberculosis.**—Mircoli discusses the nervous symptoms induced by the systemic intoxication and as reflexes from tuberculous organs. The old idea that the disease first starts in the apex has been long abandoned. The nervous system may be suffering from the action of toxins, generated in the primary focus, in lymph glands or serosa, long before the apex is involved. The nervous disturbances therefore may be among the earliest signs of tuberculosis. He relates the details of two cases of apparently ordinary neurasthenia in young men. The progress of the cases, however, revealed that the symptoms of the neurasthenia were the work of tuberculosis toxins, as a latent tuberculous focus became evident later. In another case a young woman had attacks of vomiting. The vomiting kept up for a week or so and then all was normal again for a month or two, but then the vomiting returned as before. Nothing could be found to explain it until, eighteen months later, a torpid tuberculous process became evident in one apex. Another patient had repeated hemorrhages from the air passages, stomach, nose and ear. Hysteria was incriminated until a tuberculous focus in the lung manifested its presence. In all such cases the active tuberculosis masquerades as simple neurasthenia or hysteria.

Another early sign on the part of the nervous system is the increased sensitiveness of the tissues on the side affected. Gasperini and Goldmann have established the connection between local hypersensibility (skin, muscles, bones and joints) and the site of a tuberculous lesion. The local muscle reactions are also liable to be exaggerated. This is most evident in the pectoralis and sternocleidomastoid muscles, as a rule. Neuritis, a tendency to polyneuritis, may be the first manifestation of a latent tuberculosis. In such cases the neuritis generally develops insidiously and affects the nerves connected with the pectoralis, deltoid, biceps or bronchial musculature. While the nerve trunks involved may present signs of inflammation or degeneration, the muscles between which they pass respond normally to all tests. This is a special feature of tuberculous nervous derangement. The spinal cord and the brain may suffer likewise from the tuberculous toxins, and the sexual organs may be abnormally stimulated while the normal inhibitions become less evident. He cites experimental data and observations on cattle testifying to the exaggerated erotic state liable to be induced by incipient tuberculosis.

There does not seem to be any parallelism between the extent of the tuberculous focus and the nervous disturbances. In fact, the latter are generally most pronounced in the earliest phases and in the walled off, sclerogenous, rather benign foci. The toxins in the closed foci are all taken up by the blood or lymph and none are cast off, as with an open lesion. Esquirol has recently reported that in the tuberculous insane, in his asylum, the mental derangement grew worse as the local tuberculous affections improved and vice versa.

Policlinico, Rome

September 26, XXII, No. 39, pp. 1298-1332

92 Psychologic Examination of Recruits. (Per l'applicazione di esami psicologici nell'esercito.) U. Loreta.
93 Chemical Sterilization of Drinking Water. (La purificazione dell' acqua con il cloruro di calce.) D. Ottolenghi.

Riforma Medica, Naples

September 25, XXXI, No. 39, pp. 1065-1092

94 Echinococcus Cyst in the Brain of Young Man Causing Cerebellar Syndrome and Paranoid Dementia. C. Todde.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIV, No. 1, pp. 1-216. German Edition. Last indexed July 24, p. 370

95 Antipyretic Action of the Earth-Worm. (Ueber die antipyretische Wirkung des Regenwurms und dessen wirksamen Bestandteil.) S. Nukada and B. Tanaka.
96 The Hair of the Chinese. (Rassenanatomische Untersuchungen an Chinesen. I.) T. Kubo.
97 Toxin of Silk-Worm Bacilli. (Ueber das Toxin von sog. Sotto-Bacillen.) K. Aoki and Y. Chigasaki.
98 The Precipitation Reaction in Silk-Worms. (Präzipitationsreaktion bei Seidenraupen.) K. Aoki.
99 Physiologic Fluctuations in Sugar Content of the Blood. K. Sakaguehi, T. Kasai and Kinyosai.
100 Lipoids in the Nerve and Glia Cells and Vessel Walls in the Central Nervous System. F. Shionoya.
101 Microscopic and Microchemical Study of Vegetable Detritus in Excrements of the Japanese. K. Kyuno.

Brazil-Medico, Rio de Janeiro

September 8, XXIX, No. 34, pp. 265-272

102 Profuse and Repeated Hematemesis from Varices in Esophagus and Stomach of Liver Origin. J. Froes. Commenced in No. 33.
103 The Leishmanioses in South America. (Subsidio para o estudo da physionomia clinica, classificação e synonymias das leishmanioses na America do Sul.) A. A. da Matta.

September 22, No. 36, pp. 281-288

104 The Flagellate Parasites of Mammals in Brazil. II. (Um novo parasito do homen.) R. da Fonseca.
105 *Nodular Mycosis of the Hair; Fourteen Cases. (Considerações sobre a piedra.) O. Torres.

105. **Nodular Mycosis of the Hair: Piedra.** — Torres describes this parasitic infection of the hair which attacks the young by preference, forming minute gritty nodosities along the hairs of the affected scalp. All his patients were promptly cured by application of a 5 per cent. alcoholic solution of salicylic acid after bathing or washing the hair. The alcohol cuts out the grease and as it evaporates the acid is deposited in a fine powder on the nodules. It never seemed to injure the hair in any way. Cultures of the parasite kept their virulence up to five months in his experiments.

Russkiy Vrach, Petrograd

XIV, No. 31, pp. 721-744

106 *Bacillus Pyogenes Albus Diphtheroides (Pseudodiphthericus) in Suppurating Gunshot Wounds. A. D. Pavlovsky.
107 *Poisoning from Asphyxiating Gases. N. A. Beloff.
108 Lead Deposits in Conjunctiva. A. I. Pokrovsky.
109 Lysoform in Erysipelas. V. A. Izvolskaya.

No. 32, pp. 745-768

110 *Experimental Chancroid in Rabbits. V. I. Terebinsky.
111 Foreign and Russian Mineral Waters. O. V. Verbitzky.
112 Influence of the Position of the Limb upon the Nerves in Gunshot Wounds. K. T. Wegner.

No. 33, pp. 769-792

113 *Early Signs of Exophthalmic Goiter. N. M. Popoff.
114 Suture of Vessels in Treatment of Aneurysms in the Present War. L. G. Stukkey.
115 *Bacteriology of Typhus Fever. M. S. Milman.
116 *Primary Carcinoma of the Lungs. A. V. Lavrinovieh.
117 Ear Lesions from Military Causes. B. I. Khoronjitzky.
118 Hard Chancre of the Lids. A. G. Dmitrieff.
119 *Tincture of Iodin in Internal Medication. M. A. Zaussailoff. Commenced in No. 21.

106. **Pus-Generating Diphtheroid Bacillus.**—In 200 cases of various suppurations in wounded soldiers Pavlovsky found the pyogenes diptheroid bacillus in 6 per cent. in pure cultures, and in 6 per cent. mixed with staphylococci. The microbe in question he described in 1909. It is usually located outside the cell; stains with the Gram, and resembles a diphtheria bacillus recently cultivated. It grows on agar in twenty to twenty-four hours at 35 C. and on Loeffler's serum, and does not liquefy gelatin. Guinea-pigs injected in the abdominal cavity with 1 c.c. of the bouillon culture died within from thirty-six to fifty-two hours, and the cultures from their liver and blood gave on Loeffler's serum the same diphtheroid cultures. Clinically there is suppuration with formation of grayish or whitish-gray pus, moderate fever (102 C.), and occurrence of fistulas, but the infection seems to be rather localized, the symptoms of systemic or general infection being mild. The prognosis is therefore good. Pavlovsky thinks that this microbe should be added to the group of those considered as the primary cause of suppuration.

107. **Gas Asphyxiation in War.**—Beloff treated fifteen soldiers poisoned with asphyxiating gases who came under his care four days after the onset of the poisoning. The symptoms were those of bronchitis (cough and slight dyspnea), accompanied by headache and loss of consciousness. The cases were rather mild; there were no blood changes, but the skin was dry and the conjunctiva pale. In one case only was the conjunctiva hyperemic. The heart beat was accelerated (96 per minute); the sounds were dull, with the second pulmonic accentuated. The appetite was poor, the temperature normal. Digitalis gave better results than expectorants, Dover's powder, etc.

110. **Experimental Chancroid in Rabbits.**—Terebinsky succeeded in inoculating rabbits in the scrotum with chancroid. Only those inoculations proved successful in which he artificially temporarily prevented phagocytosis. This he accomplished by causing on the animal's abdomen an artificial irritation with tincture of iodin. A small piece of gauze soaked in the latter was passed underneath the skin, after two cutaneous incisions had been made at a short distance from each other, so that the gauze passed from one incision to the other. The bacteriologic and microscopic examinations both showed that the inoculations were successful. The inoculation chancroids on the day following the inoculation showed very small bloody scabs, surrounded by slight redness or without any reactive changes. Pus was occasionally present. A typical chancroid showed on the fifth day, containing numerous streptobacilli. The latter are taken up by the nuclear leukocytes, marked phagocytosis thus taking place. By the eighth day the process of repair was in evidence and healing was complete by the tenth day in some. In others it took nineteen days to heal, the average having been two weeks.

113. **Early Signs of Exophthalmic Goiter.**—Popoff found in 33 per cent. of his cases of Graves' disease a sign which much resembles Graefe's sign. When the patient's eye is fixed at an elevated object which is gradually lowered, the eyeball and the lid normally move synchronously. Early in exophthalmic goiter, however, the upper lid becomes very irregular in its movements. It either gets ahead of the eyeball or lags behind. In some cases this lack of parallelism is to be observed only in the very beginning of the experiment, disappearing after repeated trials, which are followed by perfectly normal movements. Popoff looks on the described sign as a forerunner of Graefe's sign.

115. **Bacteriology of Typhus.**—Milman discovered in the blood of soldiers sick with typhus fever a diplobacillus which was nonmotile, Gram positive, and did not coagulate milk, or form indol, or ferment grape sugar, and did not split milk sugar. Inoculation of rabbits gave positive results, and the same diplobacillus was found in the blood and tissues. The twenty-four hour bouillon culture was injected hypodermically into a guinea-pig and rabbit. The former remained alive but developed an abscess on the spot of the inoculation, in which the diplobacillus was found in pure cultures. Cadavers also showed its presence. The agglutination test was hard to carry out in many cases, but it proved positive. Milman proposes to call the described microbe, the streptococcus exanthematicus because it very much resembles an ordinary streptococcus with the acquired property of inducing typhus fever pyemia.

116. **Primary Cancer of the Lung.**—In the course of 16,047 autopsies performed in one of the large hospitals of Petrograd, during the last ten years, primary carcinoma of the lungs was found sixty-one times, that is, in 0.38 per cent. Of the total cases of carcinoma the rate was 3.7 per cent. The age was from 45 to 60, the male sex prevailing (forty-two men, nineteen women). In about 46 per cent. there were no metastases. The correct diagnosis was made only in nineteen out of the sixty-one cases, the disease having been mistaken usually for pulmonary tuberculosis. The latter, however, was found frequently combined with carcinoma. Other diseases which were diagnosed instead were pleurisy, pneumonia or aortic aneurysm. The reason of the mistaken diagnosis was metastasis in the tracheal, bronchial, or clavicular glands, in the liver, kidneys, etc., which complicated the clinical symptoms, overshadowing those of the primary cancer in the lung. This was especially the case with secondary carcinoma of the liver and the stomach. The clinical signs of pulmonary carcinoma are usually cough, pain in the chest and dyspnea entirely out of proportion to the physical findings and very severe. Pleurisy with effusion was found with pulmonary carcinoma in 26.2 per cent. In eight cases it was hemorrhagic, in three purulent, and in five fibrinous. The temperature was elevated in half of the cases. The best diagnostic aid proved to be roentgenoscopy.

119. **Iodin Internally in Place of Potassium Iodid.**—Zaussailoff warmly recommends tincture of iodin as a substitute for potassium iodid in diseases like syphilis, rheumatism, gout and obesity. The dose is one drop given three times a day, and is daily increased by one drop to a dose. In many cases fifty drops were given three times a day without any of the by-effects which are so common with potassium iodid, and without any gastro-intestinal irritation. He used it in 352 cases, and gives detailed reports of twenty-four cases.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 11, II, No. 11, pp. 1399-1470

120 Early Symptoms of Organic Disease of the Central Nervous System. (De beginverschijnselen der organische zenuwziekten.) L. Bouman.
121 Food Value of Bran. (De voedingswaarde en het dietetisch gebruik van zemelen.) E. C. van Leersum.
122 *Heart Block in Exophthalmic Goiter. (Een zeldzame stoornis in de hartwerkzaamheid bij morbus Basedow.) D. de V. Reilingh.

September 18, No. 12, pp. 1471-1558

123 *Is Amenorrhea Necessary for Diagnosis of Extra-Uterine Pregnancy? G. C. Nijhoff.
124 Measurement of Small Amounts of Sugar in the Urine. (Over de bepaling van kleine hoeveelhelden suiker in urine.) S. Nagasaki (Japan).
125 Acute Yellow Atrophy of the Liver and Functional Tests of the Liver. (Acute gele leveratrophie en functioneele leverdiagnostiek.) C. L. de Jongh.
126 Radiotherapy in Gynecology. (Stralenbehandeling bij ziekten der vrouwelijke geslachtsdeelen—een aanwinst.) N. J. A. F. Boerma.
127 *Intoxication from Adalin. A. Nieuwenhuijse.

122. **Heart Block with Exophthalmic Goiter.**—The patient was a woman of about 45 who had long presented symptoms of exophthalmic goiter when signs of heart block became evident, and there were also indications of Adams-Stokes disease. The effect of treatment is discussed and also the light thrown possibly on etiology of each of these three affections by their coincidence in this case.

123. **Amenorrhea and Extra-Uterine Pregnancy.**—Nijhoff relates some convincing clinical experiences which demonstrated that an extrauterine pregnancy may be under way and rupture occur, even when the interval since the last menstruation is less than four weeks.

127. **Adalin Poisoning.**—Called to a young man absolutely unconscious, Nieuwenhuijse found symptoms like those of veronal poisoning, and an empty box that had contained adalin powders. The young man recovered under saline subcutaneously, stimulants and clearing out the stomach and bowels, but the symptoms were very severe while they lasted. The unconsciousness persisted for nearly sixty hours. The dose had been about 3 gm., namely, ten powders of 0.3 gm. each. It was taken on a friend's advice to relieve insomnia.

Ugeskrift for Læger, Copenhagen

September 23, LXXVII, No. 38, pp. 1509-1544

128 *Syphilitic Cardiovascular Disease. (Syfilitiske Hjertesygdomme.) A. Øigaard. Commenced in No. 37.
129 Treatment of Laryngeal Tuberculosis in Sanatoriums for Pulmonary Tuberculosis. T. Begtrup-Hansen.

128. **Syphilitic Cardiovascular Disease.**—Øigaard reports in detail fifteen cases of aortitis or myocarditis or both in persons known to have had a history of syphilis at some time. The Wassermann reaction was negative in ten and weakly positive in five. Treatment with heart tonics, iodid, morphin, etc., had given no relief, but all were benefited and some apparently cured by treatment for the syphilis. The lack of improvement under the usual measures first gave the clue to the syphilitic nature of the trouble. He has long warned that the symptoms of syphilis may subside before the Wassermann reaction becomes negative, and, on the other hand, that symptoms may recur later without the Wassermann accompanying them. The reaction-free recurrence requires treatment just the same as if the Wassermann were positive. He found further that by using twice or four times the amount of serum, it sometimes was possible to obtain a positive Wassermann reaction when otherwise it was constantly negative. In his group of fifteen cases, those with a positive Wassermann all had myocarditis. In a total of thirty-five cases the most intense reaction was in the patients with aneurysms; next came the cases with aortic insufficiency, then myocarditis cases with a weak reaction, and then the pure aortitis in which group all the cases were negative. In conclusion he says that treatment of syphilitic cardiovascular disease is not difficult, and the results may be more gratifying than in almost any other field.

Upsala Läkareförenings Förhandlingar

February 20, XX, Nos. 3-4, pp. 125-270. Last indexed Jan. 23, p. 380

130 Epidemiologic Research in Sweden. G. Wirgin.
131 Action of Maltase. A. Oehman.
132 Anatomy of the Senile Ovary in Rabbits. (Bidrag till ovariernas aldersanatomi hos kaninen.) M. Valberg.
133 *Innervation of the Thymus. A. Sjölander and A. Strandberg.
134 Curve of Acetone in Experimental Acidosis. G. Bergmark.

133. **Innervation of the Thymus.**—Six colored plates are given showing the anatomic conditions in regard to the nerves in the thymus region as examined on six human fetuses nearly at term. The innervation is double, and fibers from several nerves pass to the thymus.

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THE NEED OF FULL-TIME HEALTH OFFICERS *

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Public health has been demonstrated time and again to be a purchasable commodity. Its value is not generally appreciated, however, and the price is not cheap. Three requirements must be fulfilled before any improvement of sanitary conditions may be guaranteed to a state or a community. These cornerstones on which public health administration rests are:

1. Wise legislation.
2. Adequate appropriations.
3. Efficient health organization.

Behind the three must of course lie public sentiment to cooperate in the enforcement of the measures deemed advisable and make possible their success. In other words, this is the minimum price which any human collectivity, be it nation, state or community, must pay to conquer preventable diseases, and through better health gain increased prosperity.

As a matter of fact, public health organization in the United States has been a plant of slow growth and has been stimulated for the most part by epidemics. The many federal, state and municipal health laws placed on our statute books, having been enacted independently of each other and to meet some emergency of the time, lack uniformity, and not every section has been provided with a local health organization. Moreover, the funds provided to carry on public health work have not been generally sufficient for the purpose. For instance, the total amount appropriated for the work of the State Board of Health of Minnesota in 1915 represented but 0.0034 per cent. of the total revenues of the state based on the figures of 1912, and Minnesota is above the average in support of such work. In at least one state no funds were voted for this purpose.

The conditions in counties and townships all over the land are even worse, practically none of them having full-time health officials. In Kansas, for instance, there were no full-time health officials prior to 1915. The report of the Kansas Commission on Public Health emphasized how unsatisfactory are present conditions from the standpoint of efficiency. The total amount spent for salaries to health officers in the whole state did not reach $42,000, the highest salary paid being in Kansas City, $1,500 per annum, and the average salary being about $310. Naturally, all these officers were also engaged in private practice to gain a livelihood, and many of them held other offices, as coroners and as county or pauper physicians. In many cases it was admitted that politics controlled the appointments, and that it was not unusual to let the lowest bidder have the health office.

In Illinois also, with the exception of Chicago, and of the cities of La Salle, Oglesby, and Peru, which have joined forces, there are, so far as reported, no full-time local health officers. Furthermore, out of 614 cities, towns and villages within that commonwealth, which responded to requests for information, no specific appropriations for health purposes were reported by 425. Of the 189 remaining, 106 had paid health officers, some of whom received as low as $5 per annum.

From the above it is evident that there is opportunity for great improvement, and in my opinion this may best be brought about by the systematic development of local health organization and employment of full-time health officers who are properly equipped to undertake the special duties that should be required of them.

THE IMPORTANCE OF LOCAL HEALTH ORGANIZATION

Of late, special emphasis has been laid on the exercise of larger powers by the federal government in the public health domain. In consequence, the need of strengthening local health administration, especially in rural communities, has been in large measure overlooked, and this subject is only beginning to receive any attention commensurate with its importance.

In other words, while local health administration should be the strongest, in reality it is the weakest link in our chain of national defenses for disease prevention.

It is true that many large cities are well provided, and the reduction in morbidity and mortality rates for the country as a whole in the last twenty-five years is largely attributable to such metropolitan provisions. It must be remembered, however, that 52 per cent. of our total population is rural, that is, live in the country or in towns having less than 2,500 inhabitants. It is for this class that provision should be made.

The federal and state governments cannot be expected to act locally except in great emergencies, it being their function rather to exercise advisory and supervisory powers in respect to local matters. They should encourage the establishment of local health agencies, therefore, and cooperate with them after they are established, to the end that public health work shall be coordinated and conducted in large part automatically in so far as the individual citizen is concerned.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

DISSIPATION OF AUTHORITY TENDS TO RETARD DEVELOPMENT OF HEALTH ORGANIZATION

By lack of proper direction in the past, public sentiment has at times given rise to the creation of new and inexperienced bodies, and entrusted them with the performance of health functions independent of already constituted local health organizations. In consequence, there has been dissipation of authority and delay in properly coordinated health development. To take one conspicuous instance, we may cite the laws relating to tuberculosis. They show a tendency to create separate boards and commissions, and even to entrust semiofficial bodies with this distinctly public health problem. In Chicago, for example, "the control of this important communicable disease is not vested in the health department," although there is a close relationship between that department and the municipal tuberculosis board which does exercise this function.

In the interest of economy and efficiency, all purely public health activities of a community at least should devolve on the local health organization, and to scatter them will prevent or delay proper development.

By correlating local public health measures and requiring them to be performed under the direction of a responsible health authority, the community will benefit, and that official will have an abundance of work to keep him busy. If he is not so kept, or if the raising of his salary is a burden, then the size of the jurisdiction over which he has oversight is too small, and it should be enlarged by the joining together of two or more political units.

HEALTH JURISDICTIONS SHOULD BE SUFFICIENTLY LARGE TO SUPPORT FULL-TIME HEALTH OFFICERS

Since it is impracticable for many counties to maintain full-time health officers independent of the municipalities within their borders, it would seem especially advisable for these jurisdictions to pool their interests. What is needed are full-time health officers, and enough citizens should be grouped in each health unit to insure the full services of such a health official. Such services are surely as important to the county and municipality as are those of the sheriff, the recorder or the judge.

By such means will efficient local health administration become possible. Efficient local health organization is undoubtedly the secret of any eminence England and Germany may have had, if they actually had it, over the United States in public health matters.

While in Germany some years ago, I asked one of the highest public health officials what the Imperial Government had done to guard the Empire against the spread of cholera. He informed me that dependence had been placed on the local authorities, and that, while theoretically the Imperial Government had authority to assume control of measures to suppress epidemics, practically the exercise of this authority was unnecessary because of the efficiency of local health administration in that country.

With these precedents in the countries mentioned, and local health organization having been the first to be inaugurated and authorized long before state health organizations came into existence, it is singular that local health administration, especially in the interest of rural communities, has not been farther advanced.

RECENT LEGISLATION OF SOME STATES PROVIDES FOR FULL-TIME HEALTH OFFICERS

In the recent past, however, a notable change has occurred for the better. The employment of full-time health officers has been made by several states the keystone of their sanitary policy. Maryland, Massachusetts, New York, Pennsylvania and Wisconsin, and Porto Rico have incorporated this principle in their laws, the purport of which may be briefly reviewed.

The Maryland law divides the state into ten sanitary districts, each of which is placed in charge of a deputy state health officer. Massachusetts has provided for eight districts in charge of district state health officers; New York for twenty or more sanitary districts in charge of sanitary supervisors; the Pennsylvania law authorizes the state commissioner of health to apportion the state into ten districts, appointing to each district a health officer and the necessary assistants to supervise and control sanitary affairs, and in accordance with provisions of law, medical inspectors have been appointed for each county in the state by the State Department of Health; while the Wisconsin law provides for the division of the state into five districts, for each of which a deputy state health officer is to be appointed.

In Maryland, Massachusetts, and Wisconsin it is provided that these deputy state health officers must not engage in any other occupation during their term of office, and also that they will be removed from office only for causes affecting their efficiency or good behavior. In regard to their qualifications, the Maryland and Massachusetts laws require that these men must be physicians trained in sanitary science. The salaries specified in the laws vary from $1,200 to $2,500 in Maryland, not more than $3,000 in Wisconsin, and not more than $3,500 in Massachusetts.

We thus find in these laws recognition of the principle on which good health organization is based: employment of officers properly qualified to conduct sanitary work, with sufficient compensation to justify them in giving all their time to public service, and making this their life work.

The above legislation, however, provides only for state health officers, whose duties in respect to local matters are more or less of a supervisory character. As the laws express it, they are to keep informed of the work of local health authorities, and give these authorities such assistance as may be necessary. Their usefulness, therefore, must depend to a large extent on the existence of efficient local health machinery with which they may work. We are as a consequence back where we started, that is, to the need of strengthening purely local health organization if public health work is to progress as it should.

SOME PROGRESS HAS BEEN MADE IN EMPLOYMENT OF FULL-TIME LOCAL HEALTH OFFICERS

The desirability of this program has been admitted, if not given full effect, in some of the legislation enacted by the state mentioned above. The New York law requires that every city, town, or village shall appoint a competent physician to be a local health officer with a four-year term of office, whose compensation in municipalities having populations of 8,000 inhabitants or less shall be not less than 10 cents per capita, and not less than $800 per annum in municipalities having more than 8,000 inhabitants. In certain other states, similar attempts have been made to fix minimum compensations, but these were so small as to preclude the idea of their providing for full-time services.

In North Carolina, however, there are now not less than ten full-time health officers, and their number is increasing. In Massachusetts also, the well-known experiment of several towns combining to secure efficient health service has been successful.

The principle of properly qualified full-time health officers appointed by the local authorities with proper compensation and fixed term of office has also been embodied in legislation recently proposed in a number of states, among which may be mentioned Indiana and Kansas.

The Kansas bill proposed to divide the state into not more than thirty sanitary districts, consisting of one or more counties each. A district board of health was to be created and composed of representatives of the county or counties, and each municipality within their borders. Each board thus formed was to appoint a full-time health officer whose qualifications were to be determined by examination conducted by the chancellor of the State University. These district health officers were to be prohibited from engaging in other business, and, in consequence of the importance of their duties, were to receive a minimum compensation of $2,000 per annum. The tenure of office was to be dependent on faithful and efficient performance of duties, and the jurisdiction of these health officers was to extend throughout their respective districts unless any incorporated city therein might elect to maintain a full-time city health officer.

By the above means it was expected to establish sufficiently large health duties to insure the full-time employment and retention of efficient public servants. It is legislation having this last mentioned object that should be encouraged.

ABSTRACT OF DISCUSSION

Dr. James Adams Hayne, Columbia, S. C.: We believe in a strong central government in Columbia, the capital, in the management of the public health affairs of the state. Our idea of full-time health officers for a county is that they should be paid by the counties and appointed by and hold office at the pleasure of the State Board of Health. In that way we feel that we remove them from local influences and political entanglements. I am fully in accord with Dr. Kerr. The full-time health officer is most important in public health work. No man can serve two masters. A man doing public health work must at once separate himself from the medical profession, because he at once becomes antagonistic to the profession, that is, the general practitioner. The hardest work that any public health official has to do is to get active cooperation on the part of the general practitioner. The physician is the stumbling block of the public health work. He will not report contagious diseases unless compelled to do so by public opinion. As long as public opinion supports him in concealing his cases of contagious diseases he will continue to conceal them; because he loses his bread and butter if he offends his patients by reporting them to health authorities, subjecting them to the discomfort of having quarantine signs put on their houses, and interfering with their going in and coming out. The public is being educated and soon the doctor who does not report will lose his practice. Whenever we arrive at this condition, then we will get some sort of effective public health work. A physician practicing medicine and doing public health work at the same time is going either to fail as a general practitioner, because he will not have any practice, or will fail as a public health worker, because he will pay attention to his practice and not to his public health work. It is, therefore, absolutely essential to differentiate, and recognize that because a man is a doctor of medicine he is not a doctor of public health. This must be impressed on the public, as they will not realize it. I am certain that soon a man will not take an M.D. in order to be a doctor of public health. He will study the general medical course perhaps two years, but after that will specialize on public health work, which is a distinct branch of the medical profession, and should not require the degree of M.D. in order to practice it. Men who do public health work in future will be those who specialize on public health. They must have a certain field open to them after graduating, and this field must be made attractive by its emoluments.

In regard to the cooperation of physicians and acts originating with the physicians, in South Carolina the State Board of Health is the entire medical profession of the state, and constituted so by law. We have 750 members of the State Board of Health, and they appoint or elect an executive officer, and a man from each congressional district, making seven in all; so that any act of the State Board of Health in South Carolina, or any bill from the state board, must of necessity arise from the medical profession of the state. They elect this committee, and the committee passes regulations and so forth, and then the physicians themselves do not obey their own committee.

Dr. A. F. Gillihan, Oakland, Calif.: Dr. Hayne did not mention one thing which has forced itself on my attention since I have been in office; that is, as a full-time health officer I can visit other physicians' patients without raising one particle of jealousy on the part of those physicians. This would be absolutely impossible for a part-time health officer in general practice without causing a great deal of animosity, from the very natural fear that he might pick up an occasional patient for himself. The words "to engage in no other occupation" have been used by the speaker. I think this is a good way to express the sentiment. A man doing public health work should not do any other kind of work—should not practice a little on the side. He should not only be occupying his time legally with his position, but he should be morally and actually occupying his whole time with his position. When he is not working at his job he should be dreaming it.

Another condition I desire to mention is the defective administration of public health laws of the state. In California there are some four or five full-time men in charge of public health in municipalities. I am one of these. The State Board of Health can write requesting action on certain matters and I can say "thank you," and throw the communication into the basket. In other words, the State Board of Health of California, as it exists today, has comparatively no authority. It cannot enforce its legislation. I personally do not believe in a health administration consisting of individuals engaged in private practice sitting on a board of health, either in a city or in a state. I am in accord with the New York method and with the United States Public Health Service—whole-time men and whole-time jobs. I believe public health will be advanced only through an organization in which every member is responsible through proper channels to the head of the department. The state should be the central controlling unit; city and country districts mere subdivisions, amenable directly to state control; and finally the state amenable to the federal service. All employees should be on full time. Public health work should be organized along the lines of preventive medicine and not as today, in California, along the old lines of curative medicine. We should lock the door before the horse is stolen. The method in use today is to lock the door after the horse is stolen; in other words, the disease is here and epidemic before the State Board of Health comes in to correct it.

Dr. Adelaide Brown, San Francisco: In California we have a law that has been passed on by our supreme court, that any city can do better than a state law but it cannot do worse. So if the city of Oakland is doing better than the state law on all those points they do not need the state law to help. Governor Johnson has signed a bill giving to the State Board of Health $30,000 for two years for the establishment of a sanitary engineering department; and this we, as members of the State Board of Health, consider the most fundamental thing that could be done for the public health of the state, because water supply and sewage are two prominent questions to which no consulting engineer has time to devote. Governor Johnson signed a bill for the establishment of a bureau of tuberculosis, including a distribution to the counties of the state, that come up to the standard of the bureau in their care of tuberculous people, a per capita assignment. This will jack up the county hospital; and they need the treatment. The bureau of tuberculosis will control the distribution of that money. The hospital will have to take proper care of its tuberculous people before they will get any money from the state.

A very good vital statistics bill was finally passed, although it had fifty-seven changes before it got through.

An antivivisection bill went into the hands of the governor for signature with a pile of telegrams. It was vetoed on the criticism of it on legal grounds by two prominent men. Those of you who have to face antivivisection legislation ought to learn to attack it as soon as it gets to the legislature, and not wait until it gets to the governor.

We have now a milk law which requires general pasteurization of milk. Its enforcement is a matter of state duty.

We have also passed a law advising the use of the prophylactic treatment of ophthalmia neonatorum, and an appropriation for the drugs necessary. We have had also for two years the registration of nurses. Nurses cannot come up for state examination unless the course has been intellectually correct for the young women, and they have been housed correctly, and their course has covered what it should cover and really be an educational course.

The salary of the secretary of the State Board of Health has been increased, which is a recognition for able work. One speaker said that you had to dream public health. I asked a young physician who had a public health position in an adjacent town, a school position, "How many hours do you have to work?" She said, "My salary requires five hours' work a day, and I generally do seven." I think that is practically the proposition. As soon as you limit your day to office hours you cease to be a public health officer. We are taxed by what the work needs and not by any system of hours.

Dr. J. N. Force, Berkeley, Calif.: It is one thing to get the law, and another thing to get it enforced. Here in California we had pretty nearly enough milk law without this new one, but the burden of enforcing the milk law was put on a few inspectors of the state milk bureau and on the local health officers, and of course the milk law was not enforced. I believe with Dr. Kerr thoroughly in the great need of strengthening local health administration. Dr. Gillihan spoke about jealousy of the local health officer. As soon as the local physicians cease to be jealous of the health officer he is beneath contempt, that is, providing that he is engaged in competitive practice. Now, take an illustration of this jealousy. The local health officer says that before children may return to school they should come to his office for a sort of bill of health. Immediately people who are doing pediatrics in the town say, "Oh, the health officer is steering the children down to his office." A man may have the soul of an angel, he may be extremely high-minded in his motives, but just so long as he engages in general practice or even special practice, I maintain he is subject to that criticism, and he is going to get it from somebody. One way apparently of getting round the full-time requirement is to put in a certain working day, and at its close shut down that section of your mind which deals with the public service just as you would shut down your desk. That does not answer the problem, because competitors are going to be just as jealous of a man in the evening as in the morning or between 2 and 4 in regular office hours. It cannot be done on any split basis. The point of view of preventive medicine is entirely different from that of curative medicine. I tried to mix them. I found they would not mix, and I had to give up the practice end of it.

California got as far as having a bill introduced, printed, and referred to the Committee on Public Health and Quarantine, where it was quietly knifed. Some of the features in the bill were that the state should be districted and these districts should have in no case less than 20,000 inhabitants. To develop a population of 20,000 small counties might combine, or a small city might get enough people from the surrounding country. Large counties were not to be subdivided. These small divisions would be inside of the county. There might be deputy district health officers as well as district health officers; and those deputies might either be graduates in medicine or must have a degree in public health from a recognized institution of learning. We put the public health graduate alongside the doctor of medicine with public health training; not saying that he was either better or worse, but saying that there is now a place in the scheme of things for a deputy health officer, not necessarily a medical officer of health; that is still another function; but the health officer having the public health degree.

Dr. William Simpson, San Jose, Calif.: I think I can explain where Dr. Force seems to be at a loss. I am chairman of the legislative committee which at a meeting held in San Francisco decided to ask the withdrawal of the bill until the next meeting of the legislature, for the reason that the bill had not been presented to the committee prior to its introduction into the legislature, and it was then too late to get an opinion from the health officers of the state, as had been agreed at the Del Monte meeting. We were sure it could not pass in the exact form in which it was presented. Every member of the committee was in favor of the full-time health officer, but we felt, as was expressed at the Del Monte meeting, that the men who had been doing the work should have a voice in such important legislation. I am sure no bill can pass unless it allows the counties and districts to make their own appointments. As a part-time health officer I have not had the difficulties with the general practitioner of which many complain, perhaps because our practitioners feel that the health officer is handy to lay things on, and that as a consultant in contagious cases it saves his families an extra fee and relieves him of a trying responsibility.

In California with its cosmopolitan population your inspector's value depends on his knowledge of languages and his ability to explain and give directions in all the dialects there are. The main difficulties of the health officer are in the families in which no physician is called, and here, if he has their confidence, teachers are of great assistance, and probation officers and truant officers valuable in digging out suspected cases. With most parents there is no effort to conceal reportable cases. The child is not sick enough to have a doctor, but may return to school soon enough to infect the school unless a certificate is required in every case before a pupil is allowed to return. Every minute of every health officer's time should be given to his work, for it is because he is not giving it full time that he not only dreams of his work, but has nightmares as well. In framing laws for this purpose in California, or any other state, however, the power of appointing the local health officer must be left to the local authorities.

Dr. T. D. Tuttle, Seattle: Dr. Hayne spoke of the state having $54,000 and the city $150,000. That on the surface looks badly out of proportion, and undoubtedly is; but I have been trying to find out what health officers are paid in Washington. They will write me, "Our appropriation for public health work in our city or county is $250,000." Beautiful. What does that mean? It means what they call "public health work," garbage collection, sewage disposal, sanitary sewers and all that. It is not public health work. It is some of the branches of public health work, but not as we understand public health work. Our state appropriations are not as big as they appear in a great many places. One of the speakers said that the county health officer service is under the direction of the state board of health, and removable by the state board of health alone. That is nice. We have that in Washington. We proceed to remove some county health officer for failure to perform his duty, and call on the county commissioners to appoint his successor. Dr. Jones is removed. We receive a notice by next mail, "We beg to advise you that we have this day appointed Dr. Jones county health officer." Beautiful theoretically; tommyrot otherwise. Unless your state board of health has the appointing power, to a certain extent, you have absolutely no control. Let your county commissioners appoint if you want to; but let your state board of health say who in that locality is subject to appointment; and let the state board or other authority have the power to remove him, and when removed provide that he cannot be reappointed until his stigma has been removed by your approving power. Then your central body has a certain amount of control over your local body and cannot be rebuffed by the local body. Your central body says, "Mr. Mayor, your health officer has failed to perform his duty. We call on you to remove him." He is removed. "Thank you. We recognize your power to remove. We immediately reappoint him." I was for ten years or more thoroughly opposed to the idea of the nonprofessional health officer. Now I am not. I have been converted absolutely over to the other party. The medical man, the practitioner, is not going to help the health officer to a very great extent in eliminating disease. Why should he? Why should I, a practitioner, devote my time or a part of my time, or any of my time, we will say, to a town of 300 people without just recompense not only for that time but for the practice that I cut myself out of? What right have the people to ask the practitioner to help them cut out the practitioner's income? They have no right to it and they are not going to get it. Human nature in the physician is the same human nature that we find in the lawyer, the governor, the president or any other politician. I as an individual have no right to ask you as a physician to deprive your children of bread and butter in order that my children should not have the measles.

Dr. Otto P. Geier, Cincinnati: Dr. Kerr in his opening remarks said, "wise legislation, adequate appropriation and efficient health organization" were the three desiderata. From my experience as a volunteer in health work in our city I take it that one of the fundamentals has been omitted, because health administration cannot be efficient, no matter whether we have full-time health service or part-time health service, unless that service is free from political control. I believe that most counties, most cities, most states are suffering from poor health administration from the fact that they are under a miserable political control; where men with good intentions have their arms tied and their eyes blindfolded, rather than that they have not inherently good qualities and are ready to serve the public. In the direction of a full-time health service I believe that every man is made of good enough stuff, so that when he gives all of his time to the work he becomes efficient. Most men are intelligent enough, and the job itself brings enthusiasm with it, so that most men will succeed if they are given the opportunity and paid sufficient so that they can give whole service to the job. As to how to get the health service out of politics, that is a larger question which we can hardly cover; but I do believe that the medical profession is largely responsible for the fact that health service is jeopardized by political control. I find in moving about the country that very few county organizations are definitely and wholly in accord and working in harmony with the local health officer. They know not what he is doing, and they seem to care less. Now it does seem to me that the American Medical Association owes it to itself to evolve some sort of propaganda that will get the county society interested in the subject of health work, and that we are lamentably weak as a national organization in having failed to appreciate how that reflects on the medical profession, and how it lowers the dignity of the profession, not only in its public health work, but in private work. Nothing so brings the medical profession to full recognition in a community as good, efficient local health work. In Cincinnati up to 1909 the political organization had absolute control of our organization. The people were disinterested. All meat and milk and other inspection work done by that department was miserably done, and we were spending for a city of nearly 400,000, $55,000 a year. Since 1909 it has been under the domination of the medical men of that city. The medical men dictated nominations to the board of health that was created as the result of a pure milk crusade, and since then the board of health is above reproach, and there is not a suggestion of political interference in the board's work. And we have instead of a $55,000 appropriation, $110,000, and that is restricted to strictly health work. I believe with Dr. Kerr that the larger you make the unit the more forceful will be the work, because the more likely you are to get away from political interferences, and petty jealousies; and I think the department gathers a momentum and a dignity because of its size.

Dr. O. B. Nesbit, Gary, Ind.: When I hear health officers talk about lack of cooperation of physicians, I sometimes am inclined to blame the health officer. Unless your public health work originates in your medical society you are going to fail. The health officer who is daily in the newspaper doing his work is not going to get much cooperation from the medical profession. If his campaigns originate in the medical society, and he will get his medical society behind him, he can do anything. A health officer who does not get the medical society in his work is at fault, and can never be an efficient health officer.

Dr. J. W. Kerr, Washington, D. C.: It is a satisfaction to know that the section endorses the employment of the full-time health officer. Personally I think this is the great problem in this country today in so far as public health is concerned. Few of us realize this fact, notwithstanding there is a great national movement going on for the improvement of health and living conditions. The first laws in the country relating to public health provided for the establishment of local health agencies. The first federal law provided for the cooperation of the national government with local authorities. The first state laws delegated the powers of the respective states to localities, enabling them to establish local boards of health. The relation of the local, state, and federal authorities is therefore fixed; and whether we want to or not we have to recognize that relation. The fact that a particular locality is backward in public health matters does not relieve it of responsibility.

In the desire for larger things we have rather lost sight of the fact that over 52 per cent. of the population of this country live in rural sections, that in these sections lie the real public health problems of the present day, and that the need of public officers is greater in rural sections than in our cities—greater because it is not being met. We have not in the past placed enough dependence on local health organizations. When a society or an individual begins to stir up interest in public health matters, the first thing that is attempted is to establish a commission or agency different from the health department to carry out the work, and the proposed law that is introduced often makes no mention of the local health officer, but aims to establish a new health agency. I think the best example of this is in the tuberculosis laws, of which there has been a mass enacted in the last several years. In many instances the local health officers have not had imposed on them the responsibility for the prevention of tuberculosis, the disease that causes more deaths than any other in the country. This is not the case abroad. In Germany, for instance, they depend on local health organization in local matters. If we in this country expect to advance local health administration and to have it run smoothly so far as the individual is concerned, we must make it our first business to establish a sufficient local organization and give it a living relation with the state and national health organizations.

Predigested Foods.—Experiments of all sorts have been made with predigested foods, compressed foods and the like, but the normal digestion rejects them all. A certain bulk of food is needed to keep the stomach and intestines in order, and unless the juices and ferments required for digestion are called forth in the normal way, the amount secreted will be lowered beyond the point of good health.—J. B. Harrington, *Bulletin*, Kansas State Board of Health, September, 1915.

VARIATION IN THE PLATELET COUNT

ITS CAUSE AND CLINICAL SIGNIFICANCE *

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Remarkably little interest is taken in blood platelets by clinicians, so little in fact that I really hesitate to present a paper on this subject before the section. There are scarcely more than ten or twelve investigators working in this field at the present time, I believe. Nevertheless, platelets are very interesting and remarkable little bodies, and if time permitted me to enumerate some of the interesting facts and problems concerning them, I feel sure you would be convinced that they are worthy of more attention than they receive. This paper must be confined, however, to a brief report of clinical and experimental observations which are thought to throw new light on some of the factors which influence the number of platelets in the circulating blood. They should aid one, therefore, in drawing conclusions from the platelet count in clinical cases.

The platelet count is altered in a great number of diseases.[1] The alterations noted by different observers have been uniform in but few diseases; in fact, there are few lines of investigation in which opinions have been so divergent. One fact on which there is general agreement is that the count is reduced during the febrile period of acute infectious disorders, and increased during convalescence. This interesting change in the count was first observed by Hayem, and was referred to as a hematoblastic crisis. Hayem considered it an effort at blood regeneration. There are striking exceptions to the foregoing generalization. In Escherich's clinic I made a series of platelet counts in diphtheria—a good example of an acute infectious disease. The count was usually reduced during the febrile period of the affection (lowest count 3,000), and increased during convalescence (highest count 750,000). Occasionally, however, the findings were diametrically opposite to this; that is, the count was normal or increased during the febrile period (highest count 750,000), and normal or reduced during convalescence (lowest count 135,000).

In many chronic diseases the majority of observers have noted an increased count, and some have considered this a general rule. In Romberg's clinic I made a series of counts in tuberculosis—a good example of a chronic infectious disease. In harmony with the results of other writers, the count was usually increased, occasionally very much increased (highest count over 1,000,000). In two instances, however, it was very much reduced for several days (in one case to 55,000, in another to less than 1,000). Likewise in a series of observations made in nephritis, the count was often increased when an acute process was demonstrable or when there was marked evidence of renal insufficiency. Occasionally the count was very much increased (highest count 1,260,000). In one case, however, it was very much reduced (lowest count below 10,000).

One interesting feature has characterized the counts which I have made both in man and in animals. When the individual was normal and remained in a given environment, the count remained relatively constant. When the count was markedly increased or markedly reduced by pathologic conditions, it had a tendency to fluctuate. In Chart 1 is shown graphically the platelet count of four normal individuals in the same environment. During a period of eleven days, there was relatively little variation. It fell constantly between the limits of 200,000 and 400,000. In marked contrast to this is the extreme variability of the pathologic counts shown in Chart 2. In one, a case of advanced tuberculosis, the count varied from less than 1,000 to 720,000. In the other, a case of nephritis, the count varied from 350,000 to 1,400,000.

It is believed that the experiments to be reported subsequently throw light on the cause of these apparently errotic results.

EFFECT OF DIPHTHERIA TOXIN ON THE PLATELET COUNT[2]

Diphtheria toxin offered a most promising means of studying pathologic variation in the platelet count. In the first place, the platelet count is highly variable in diphtheria; in the second place, we might reasonably suppose that this variability is a direct result of the action of diphtheria toxin. For this reason, diphtheria toxin was introduced into rabbits in doses of different sizes and its effect on the platelet count noted.[3]

In Chart 3 are recorded the platelet counts of three rabbits following the injection of a dose of diphtheria toxin which caused death in from three to four days. In each case there was a rapid fall in the count. Necropsy showed degeneration of the marrow in high degree. The nuclei of a majority of the megakaryocytes were vacuolated or pyknotic.

In contrast to the foregoing are the results recorded in Chart 4. Here is shown the effect of sublethal doses of diphtheria toxin in three rabbits. The amount of toxin given in these experiments made the animals appear ill for several days. All recovered, however, and were lively throughout the remainder of the experiment. There was first noticed a marked rise in the platelet count. In one instance the count reached a height of 2,000,000. There was next noted a rapid fall in the count. In one instance the count reached the low level of 4,000. This was followed by a second rise in the count, which in one instance reached a height of 2,000,000.

Deduction.—Diphtheria toxin in large doses causes an immediate fall in the platelet count. This is presumably the result of a poisonous action of diphtheria toxin on the bone marrow. In sublethal doses it causes first a rise and later a fall in the count. The latter effect may be followed by a secondary rise in the count. In some cases the count does not descend below normal, so that the only effect actually observed is an increased count. These changes are believed to be due to an irritant effect of small doses of diphtheria toxin on the marrow or an irritant followed by a poisonous effect.

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* From the University of Kansas, School of Medicine, Rosedale, Kan.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Determann: Klinische Untersuchungen über Blutplattchen, Arch. f. klin. Med., 1898, p. 365. Helber, E.: Ueber die Zahlung der Blutplattchen im Blute des Menschen und ihr Verhalten bei pathologischen Zustanden, Deutsch. Arch. f. klin. Med., 1904, xxi, 316. Kemp, G. T.; Calhoun, Henrietta, and Harris, C. E.: The Blood Plates: Their Enumeration in Physiology and Pathology, The Journal A. M. A., April 7, 1906, p. 1022; April 14, 1906, p. 1091. Wright, J. H., and Kinnicutt, Roger: A New Method of Counting the Blood Platelets for Clinical Purposes, The Journal A. M. A., May 20, 1911, p. 1457.

[2] The platelet counts in these experiments have been reported in detail in a previous paper (Duke, W. W.: Causes of Variation in the Platelet Count, Arch. Int. Med., January, 1913, p. 100).

[3] Blood platelets in rabbits are more difficult to count than those in man. They are smaller and more variable in size and shape, and unless the ingredients of Wright's solution are balanced with care, the platelets will either clump or go into solution. The precautions necessary to obtain reliable counts have been mentioned in a previous paper (Duke, W. W.: Rate of Regeneration of Blood Platelets, Jour. Exper. Med., 1911, xiv, 265).

THE EFFECT OF TETANUS TOXIN ON THE PLATELET COUNT[4]

Because of the interesting results obtained with diphtheria toxin, tetanus toxin was tried. The counts recorded in Chart 5 were observed in three animals which received subcutaneously a large dose of a recently prepared solution of tetanus toxin (eight times the minimum lethal dose for a guinea-pig weighing 250 grams). Although this amount of toxin caused the death of one animal, and marked toxic symptoms in the other two, there was little change in either the platelet or white count. It hardly seemed worth while to pursue this line of work further.

Deduction.—These experiments are hardly complete enough to justify a sweeping conclusion concerning the action of tetanus toxin. At any rate, it may be said that its effect on the platelet count is not nearly so great as that of diphtheria toxin.

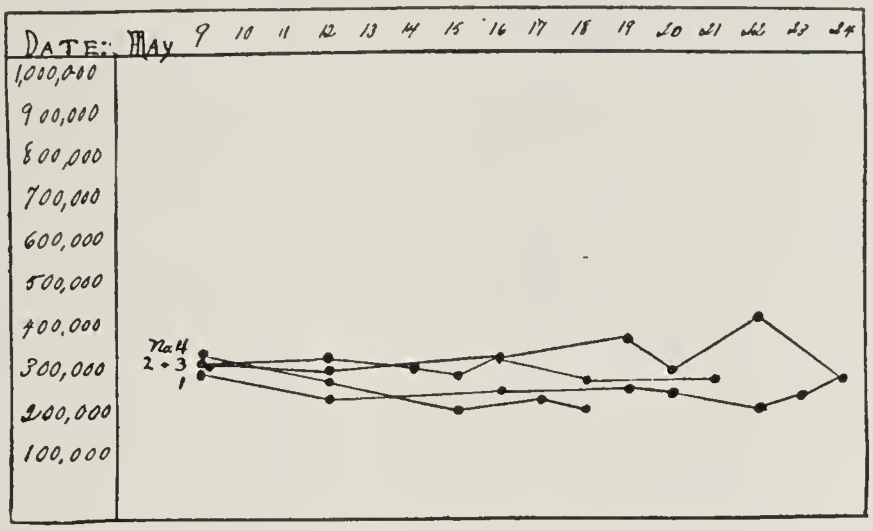

Chart 1.—Platelet count of four normal individuals in the same environment. Note the relatively slight variation of the counts during a period of eleven days.

THE EFFECT OF KILLED TYPHOID BACILLI ON THE PLATELET COUNT[4]

Killed typhoid bacilli were chosen for study because of the marked changes in the platelet count which occur in typhoid fever. It was hoped that some of the poisons which produce these changes might be present in the dead bacilli. Killed cultures were employed instead of living bacteria in order that the dose given could be definitely known and not modified by multiplication of bacteria in the animal. The resulting changes in the platelet count were definite and marked, but not so great as those which followed the use of diphtheria toxin.

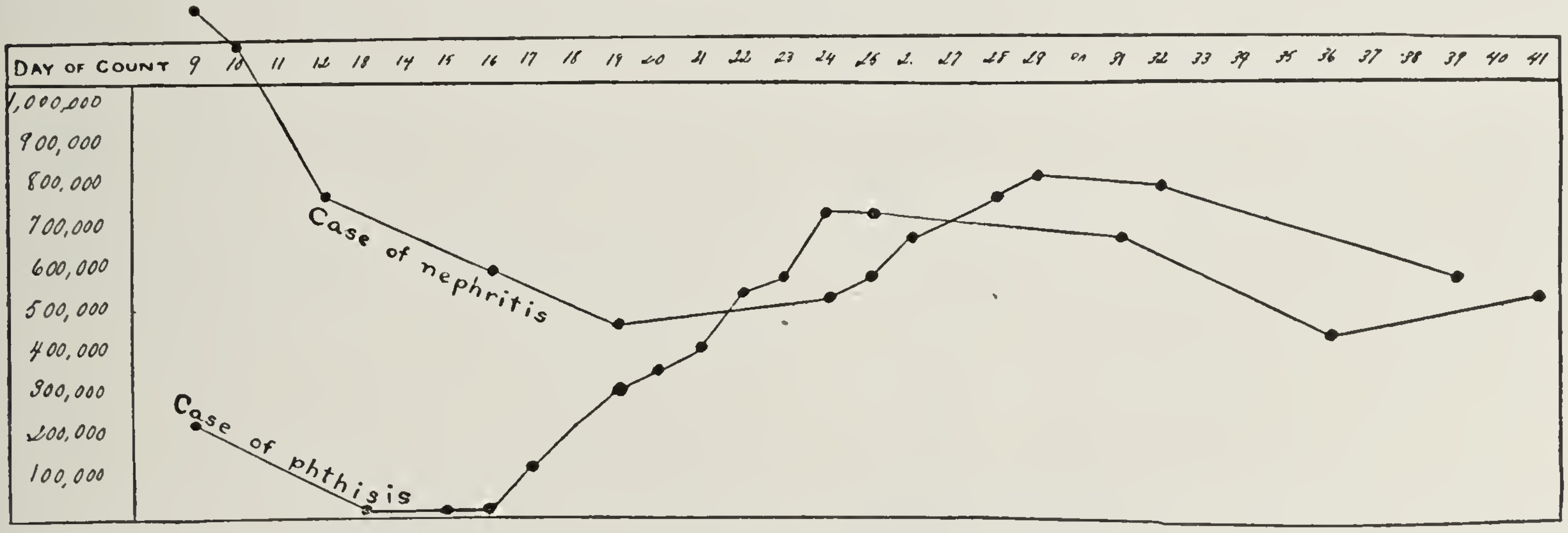

Chart 2.—Platelet counts in a case of tuberculosis and in a case of nephritis. These illustrate the variability of pathologic counts.

In Chart 6 are recorded the platelet counts of three rabbits which received subcutaneously 1,000 million dead typhoid bacilli, suspended in 1.5 c.c. of salt solution. The culture used had been obtained from a case of typhoid fever several months previously. The bacilli were obtained from a forty-eight-hour growth on agar-agar, were suspended in salt solution, and killed by heat (58 C. [136.4 F.] for one-half hour). The animals appeared ill for three days following the injection, but were lively and well throughout the remainder of the experiment. There was in each instance a definite rise in the platelet count which persisted for a few days. In one instance the count reached a height of 1,375,000.

In Chart 7 are recorded results showing the effect of 4.5 c.c. of the same suspension given intravenously instead of subcutaneously. The dose in this case was 3,000 million. Two of the animals were found dead the day following the injection. The one that lived appeared very ill for three days, but was lively and well throughout the remainder of the experiment. There was a marked fall in the platelet count (from 1,210,000 to 340,000) which persisted for a few days. This line of investigation did not promise to yield results of great interest and was discontinued.

Deduction.—The effect of killed typhoid bacilli on the platelet count is marked but not extreme or prolonged. Large doses given subcutaneously increase the count. Large doses given intravenously decreased the count for a few days in the one animal which survived this treatment. One might judge that large intravenous doses poison, and smaller subcutaneous doses stimulate the production of platelets.

THE EFFECT OF BENZOL ON THE PLATELET COUNT[3]

The effect of benzol (benzene, C_6H_6) on the platelet count was studied in both dogs and rabbits. L. Selling[5] had previously shown that benzol poisoning causes a reduction in the leukocytes in man and rabbits and concluded that this was a result of the degenerative changes he found in the bone marrow. It seemed that benzol might have an interesting effect on the platelet count also.

Twelve dogs were given subcutaneously several doses of from 2 to 40 c.c. of Merck's benzol. They all showed profound symptoms of poisoning and died in from four days to three weeks after the first injection. The platelet count fell rapidly in almost every instance. Little if any initial rise was noted. Typical experiments are summarized in Tables 1-4.

Necropsy showed in each instance a hyperemic degenerated bone marrow. The nuclei of most of the megakaryocytes were vacuolated or pyknotic.

Rabbits are not so severely poisoned by benzol as dogs, and are better adapted to this study. In Chart 8 are recorded results showing the effect on the platelet count of five 2 c.c. doses of benzol, given at intervals of twenty-four hours. There was first a marked rise in the count, which in one instance reached a height of 1,230,000. This was followed by a rapid fall in the count, which in one instance reached the low level of 56,000. One rabbit died and the other was killed. The bone marrow was degenerated in high degree. Few megakaryocytes were to be found.

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[4] These experiments are of little interest except as recounted here, and hardly justify a more detailed report.

[5] Selling, L.: Benzol als Leukotoxin, Beitr. z. path. Anat. u. z. allg. Path., 1911, li, 576.

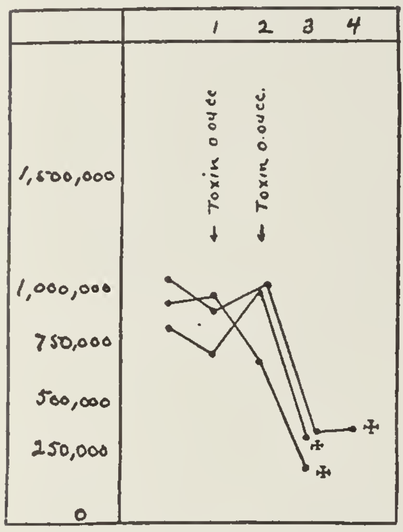

Chart 3.—Effect of diphtheria toxin on the platelet count of three rabbits in doses which caused death in from three to four days.

Chart 9 shows the effect of three 2 c.c. doses of benzol. This caused simply a rise in the count, which in one instance reached a height of 1,780,000. These rabbits showed no visible ill effects from the benzol. They remained lively and apparently well throughout the experiment.

Deduction.—Benzol given subcutaneously in large doses to dogs causes an immediate fall in the platelet count. In smaller doses it causes a lowering of the count, but the effect is not so rapid. This effect is believed to be a result of a toxic action of benzol on the bone marrow. Benzol given in large doses to rabbits causes first a rise and later a fall in the count. In smaller doses it causes a rise only. This is believed to be an irritant effect of benzol on the marrow or an irritant followed by a toxic effect.

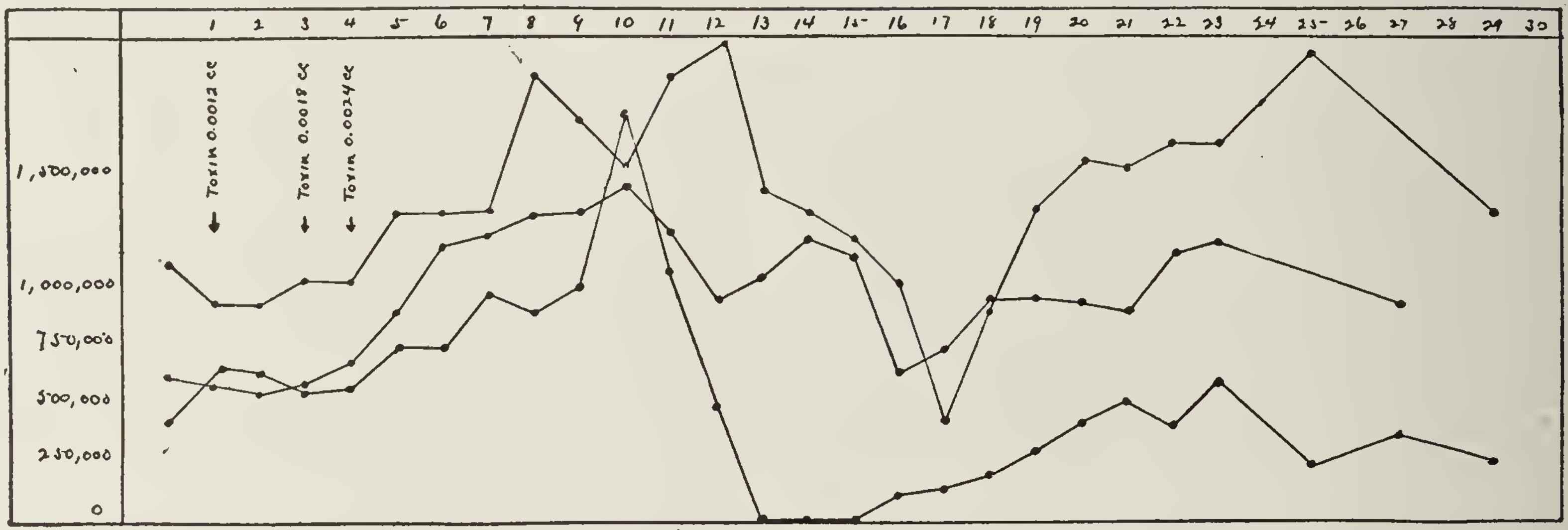

Chart 4.—Effect of sublethal doses of diphtheria toxin on the platelet count of three rabbits.

THE EFFECT OF THE ROENTGEN RAY ON THE PLATELET COUNT[6]

Heineke[7] found that intensive doses of the Roentgen ray cause a reduction in the leukocyte count and destruction of the parenchymatous elements of the marrow. It seemed possible that this agent might also have an effect on the platelet count.

Chart 10 shows the effect of an intensive dose of the Roentgen ray on the platelet count of three rabbits. (Exposure made at 13 inch anode distance with Coolidge tube, 2 mm. aluminum filter, 7 inch spark gap, one-half erythema dose with Hampson's pastille. Exposure repeated in two days with three-fourths erythema dose at skin.)

These were typical experiments. A similar result was obtained in six other cases. In every instance there was a marked fall in the platelet count. There was also a marked fall in the leukocyte count.

TABLE 1.—EFFECT OF BENZOL ON DOG 1

Date	Benzol c.c.	Platelet Count
April 11	10	248,000
April 12	15	....
April 13	..	46,000
April 14	Found dead	

TABLE 2.—EFFECT OF BENZOL ON DOG 2

Date	Benzol c.c.	Platelet Count
April 18	40	368,000
April 19	40	410,000
April 20	..	132,000
April 21	Found dead	

TABLE 3.—EFFECT OF BENZOL ON DOG 4

Date	Benzol c.c.	Platelet Count
April 20	..	280,000
April 21	10	250,000
April 22	..	85,000
April 23	..	116,000
April 24	Found dead	

TABLE 4.—EFFECT OF BENZOL ON DOG 5

Date	Benzol c.c.	Platelet Count
April 21	20	377,000
April 22	..	276,000
April 23	5	....
April 24	5	282,000
April 25	..	44,000
	Found dead	

Chart 11 shows the effect of a shorter exposure (one-fourth erythema dose at skin through 1 mm. aluminum filter). In each instance a rise eventually followed. One of the three rabbits had a very high count to begin with. In this case a rapid fall preceded the rise. A second dose of the same intensity caused in these rabbits a rapid fall in the count. In these experiments a leukopenia also appeared.

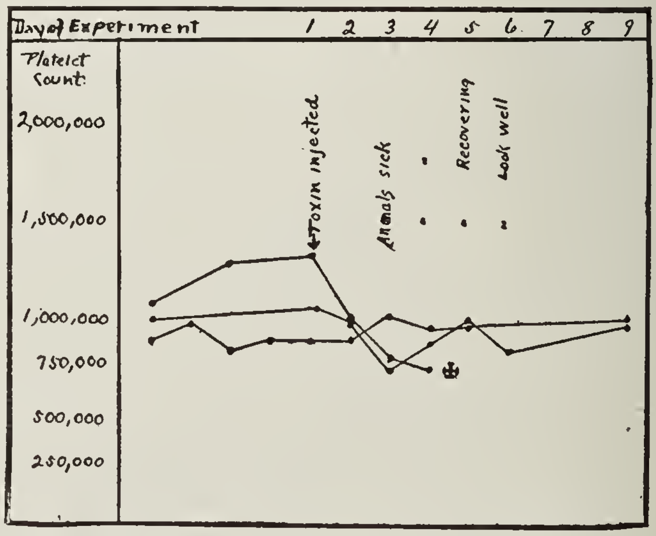

Chart 5.—Effect of large doses of tetanus toxin on the platelet count in three rabbits.

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[6] These experiments were carried out in collaboration with Dr. E. H. Skinner, and will be reported in detail subsequently.

[7] Heineke: Untersuchung über der Einwirkung der Röntgenstrahlungen auf der Knockenmark, nebst einigen Bemerkungen über die Röntgentherapie der Leukämie und Pseudoleukämie und des Sarkoms, Deutsch. Ztschr. f. Chir., 1905, lxxviii, 196.

Deduction. — The Roentgen ray in massive dose causes a fall in the platelet count. In smaller doses it causes a rise in the count.

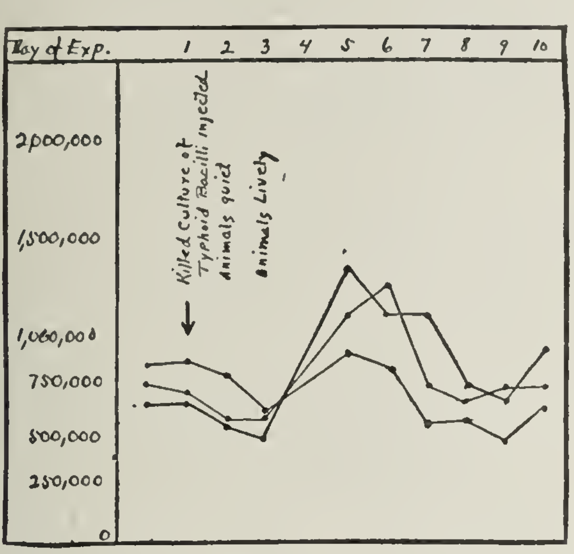

Chart 6.—Effect on the platelet count of 1,000 million killed typhoid bacilli given subcutaneously to each of three rabbits.

Heineke's experiments showing that the Roentgen ray in large doses is followed by degeneration of the marrow suggest that the foregoing results are the effect, respectively, of toxic and stimulating doses of the Roentgen ray on the bone marrow.

THE EFFECT OF TUBERCULIN ON THE PLATELET COUNT

Tuberculin was given subcutaneously or intravenously, in doses varying from 0.1 to 5 c.c. in eighteen experiments. It was hoped that some of the interesting changes in the platelet count observed in tuberculosis might be reproduced. Tuberculin caused a slight change in the platelet count in every instance. When injected subcutaneously it caused a rise in the count which persisted for a number of days. The effect, as a rule, was not great or prolonged, unless some complication, such as anemia or ulceration of the skin, developed. It seemed impossible to give subcutaneously a dose great enough to cause a fall in the count. This was accomplished in all of the six experiments in which tuberculin was given intravenously, but the lowering of the count was transitory (two days) and was quickly followed by a rise. Second doses, given from six to eight weeks after the first, caused a similar change. In Charts 12 and 13 are recorded six typical experiments.

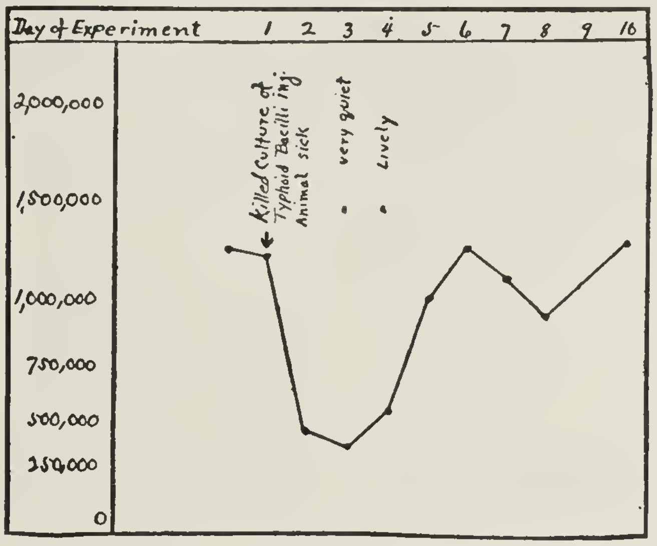

Chart 7.—Effect on the platelet count of 3,000 million killed typhoid bacilli given intravenously to one rabbit.

Deduction.—The effect of tuberculin on the platelet count is similar to that which follows the use of typhoid bacilli. It is marked but not great. Large doses given subcutaneously invariably cause a rise in the count. Large doses given intravenously cause a fall in the count which is quickly followed by a return to normal or a rise.

GENERAL SUMMARY AND THEORETICAL CONSIDERATIONS

The experiments reported here are believed to have disclosed several facts which can be applied to explain the behavior of the platelet count in certain types of diseases. *First of all, it may be stated that it was possible to reduce the platelet count by using a large dose of any agent which in smaller dose caused a rise in the count and vice versa.* The agents used were varied in character, namely, toxins, bacterial emulsions, a chemical poison and the Roentgen ray. Some of the agents used had a rapid and profound effect on the count (diphtheria toxin and benzol). Others had a smaller effect (the Roentgen ray, typhoid bacilli and tuberculin). One of them (tetanus toxin) had almost no effect, although the dose used killed one of three animals and caused toxic symptoms in the others. *The agents with which it was possible to produce the most rapid and extreme rises in the count, namely, diphtheria toxin and benzol, were also the ones with which the most rapid and extreme falls in the count were produced.*

These facts are in harmony, I believe, with the numerous well-known biologic observations concerning stimulants or irritants which act as poisons if employed in sufficient dosage. The most powerful stimulants are also the most powerful poisons, as a rule.

The foregoing generalizations may be employed in the following way to explain the changes in the platelet count in disease. It is believed that diseases in which the platelet count is effected directly by circulating poisons may be divided into two classes.

In the first class come diseases in which powerful irritants to the platelet-forming organs (such as diphtheria toxin and benzol) are elaborated. It is believed that, in diseases of this sort, both high and low counts frequently occur, and also rapid changes from high counts to low counts and vice versa. Some change in the count might be expected even in the mildest cases. That is, when the toxin has such a profound influence on the count, we should expect that a sufficient quantity would be formed in nearly every case, to have its irritant effect, at least. We should also expect that the irritant dose would be exceeded frequently so that the lowered counts would be found as often, or perhaps more often, in the average run of cases, than high counts. The first phase of Hayem's hematoblastic crisis (the fall during the febrile period of an acute disease), according to this view, would be the effect of a quantity of toxin which acted as a poison to the platelet-forming organs. The second

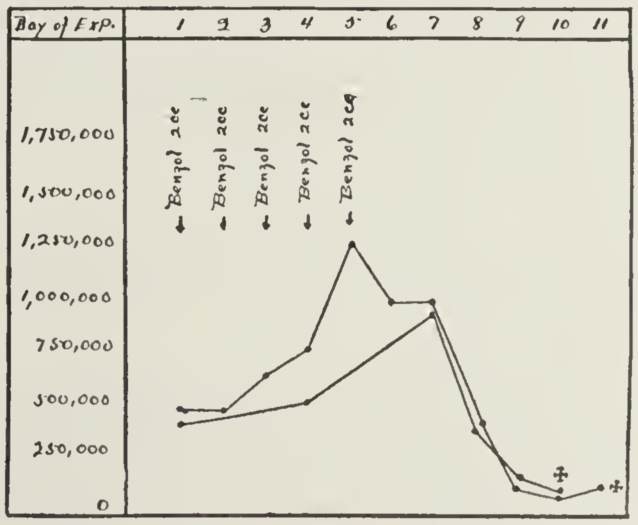

Chart 8.—Effect of five 2 c.c. doses of benzol in two rabbits.

phase (the rise during convalescence) would be a secondary rise after neutralization of the poison. This type of change is the rule in diphtheria—an excellent example of an acute infectious disease. The opposite type of change observed in diphtheria, that is, a rise during the febrile period followed by a fall during convalescence, is believed to occur when the toxemia is less intense. *A hematoblastic crisis would be the rule, then, in all acute diseases in which toxins or irritants are produced in the average case in quantity sufficient to act as a poison to the platelet-forming organs.*

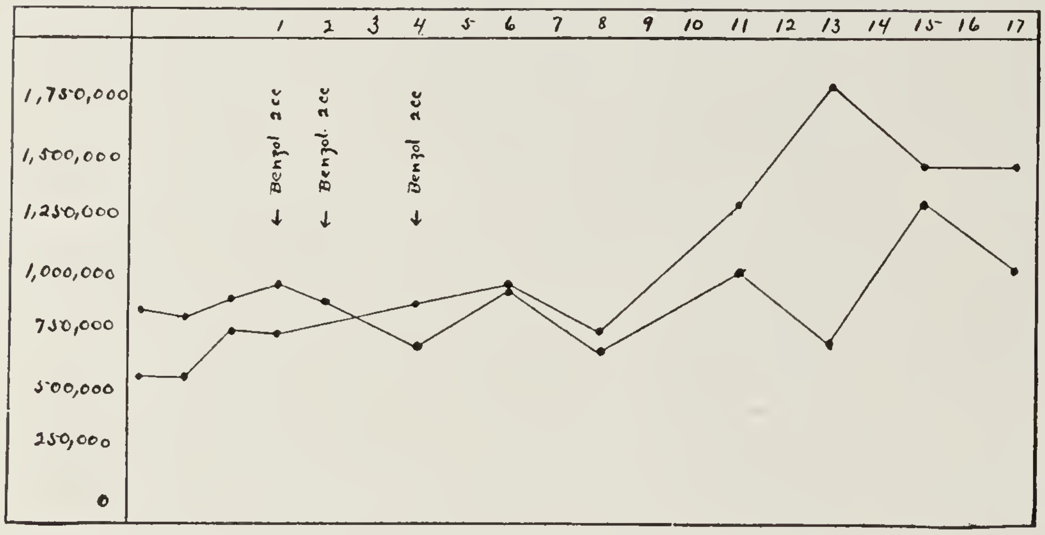

Chart 9.—Effect of three 2 c.c. doses of benzol on the platelet count in rabbits.

Chart 14, in which is shown graphically the effect of varying doses of diphtheria toxin on the platelet count in rabbits, illustrates graphically experiments which seem to be a substantial basis for these statements, and shows the extent to which the platelet count may vary in different grades of the same pathologic condition.

In the second class come diseases in which the irritants produced are mild. One might infer that the counts would here follow the same general law, but that the relative frequency of increased and decreased counts would be different. Increased counts in this case would be the rule. Perhaps a mild irritant, the effects of which could continue as an irritant for a prolonged period, would give rise to a greater increase in the count than the more powerful ones, the poisonous effects of which would appear more quickly. Low counts, the effect of an overwhelming dose, could occur, but would be less frequently observed than in the case of a stronger agent. Tuberculosis and nephritis would appear to be good examples of such a disease. Here the count is almost always increased, but is in rare instances reduced. The experiments with killed typhoid bacilli and tuberculin are thought to be imitations of this type of disease. It was easy to increase the count with these agents. A reduced count was brought about only by giving very large doses intravenously.

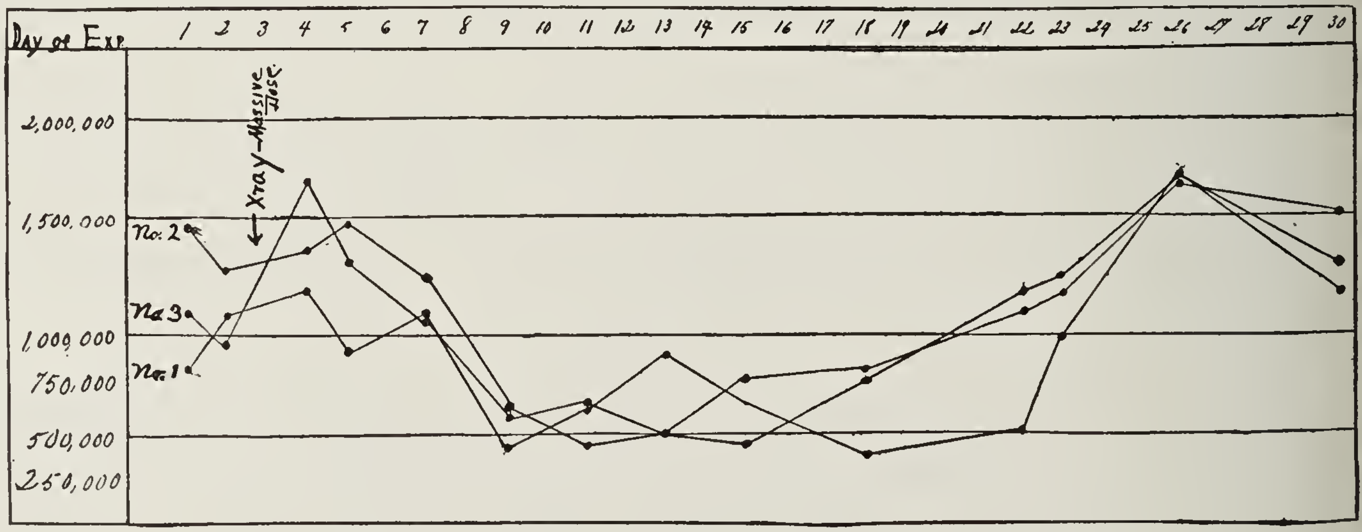

Chart 10.—Effect of an intensive dose of the Roentgen ray on the platelet count of three rabbits.

One might believe, and perhaps with reason, that there exist toxins which can have only a poisonous effect on the marrow, and can never increase the count. The existence of such, however, is not proved by these experiments.

There exist, without question, toxins which have very little if any influence on the count. Tetanus toxin is perhaps an example of this type.

Factors other than those noted above also modify the platelet count. It is difficult to say whether or not they may have played a rôle in some of the cases and experiments here reported. The very interesting observation has been made by Hayem, Gley and others,[8] that, following the injection of peptone, in dogs, the platelets tend to clump and can be found forming capillary plugs in the lungs, liver and other organs. Von Behring and others observed the same phenomenon during anaphylactic shock. I endeavored to find the degree to which the platelet count could be lowered in dogs by an intravenous injection of peptone. The count was lowered without question, but accurate counts were impossible on account of clumping of the platelets. Masses of 100 or more were observed. The day following the injection, the count had returned to normal—in fact, it became greater than normal. The tendency to clumping was no longer noticeable.

TABLE 5.—EFFECT ON THE PLATELET COUNT OF A DOSE OF HORSE SERUM GIVEN TO SENSITIZED RABBITS

	Rabbit A	Rabbit B
Count before injection of second dose of serum	1,320,000	1,610,000
Intravenous injection of horse serum	0.5 c.c.	0.5 c.c.
Anaphylactic symptoms	Very slight	Marked
Platelet count five minutes after injection	2,120,000	490,000
Six hours later.................	Animal well	Complete recovery
Platelet count..................	2,040,000	1,060,000

The experiments given in Table 5 show the change in the platelet count in two rabbits which received 0.5 c.c. of horse serum. Each had been sensitized by an injection of horse serum, nine weeks previously. Rabbit B displayed marked symptoms of anaphylactic shock. The platelet count in this animal was reduced for a short time, and a slight tendency to clumping was observed. Rabbit A displayed little or no evidence of shock. The platelet count was actually increased. No clumping was observed.

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[8] Gley: Compt. rend. Soc. de biol., 1896, iv, 44. Von Behring: Deutsch. med. Wchnschr., Oct. 15, 1914, xl, No. 42.

The experiments given in Table 6 are reported for comparison with the preceding. In these experiments, varying doses of horse serum were given intravenously to unsensitized rabbits. The changes are small.

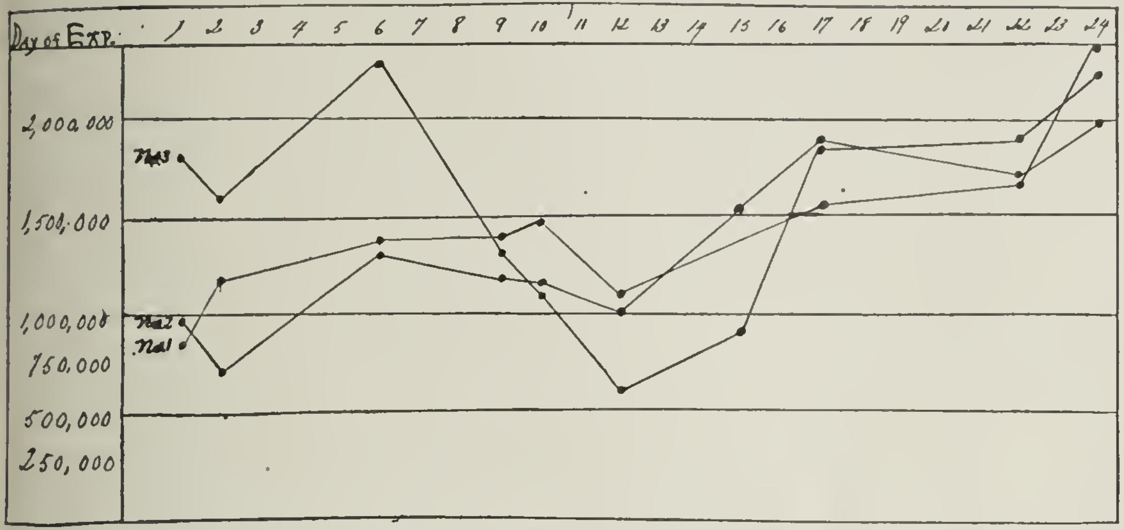

Chart 11.—Effect of a smaller dose of the Roentgen ray on the platelet count of three rabbits.

Other factors also modify the platelet count. Richardson[9] and others state that it is increased after hemorrhage. Kemp, Calhoun and Harris,[1] and Webb[10] find that it is increased by altitude. Rebaudi[11] reports a marked increase during pregnancy. Kemp, Calhoun and Harris state that it is higher in cold seasons than in warm seasons.

To conclude, it may be stated that evidently several factors play a part in modifying the platelet count in disease. This fact, however, does not conflict with a conclusion that, in many diseases, substances are formed which may act as either irritants or poisons to the platelet-forming organs, and, depending on the intensity of their action, may exert their influence either to increase the count or reduce it. If this conclusion is substantial, the apparently contradictory reports in the literature on platelet counts seem in reality harmonious.

CONCLUSIONS

It is believed that the experiments here reported may be employed to explain the behavior of the platelet count under pathologic conditions. Primarily, it may be stated that every agent with which the animals were treated, which exerted any marked influence on the platelet count, increased the count when small doses were used and reduced it when larger doses were given. The agents employed were varied in nature, namely, diphtheria toxin, benzol, the Roentgen ray, killed typhoid bacilli and tuberculin. Tetanus toxin, in the dose used, had very little effect on the count. It is reasonable to conclude, I think, that the foregoing agents in the smaller doses acted as irritants to the platelet-forming organs, and in this way caused a rise in the platelet count. In larger doses they acted as poisons, or first as irritants and then as poisons, and caused thereby a fall in the count, or a rise followed by a fall.

The experimental data harmonize with observations on the platelet count in the clinical conditions thus far studied. For example, in a large number of counts made by the writer in diphtheria, tuberculosis and nephritis, both increased and reduced counts were observed. A review of the literature shows that in most diseases in which the platelet count is profoundly altered, both increased and reduced counts have been observed. In the light of the foregoing experiments, these clinical observations would not appear contradictory. It is believed that in almost every disease in which the number of platelets is markedly influenced by circulating toxins or poisons, the count may be either increased or reduced according to the intensity and duration of their toxic action on the bone marrow. It must be added here that, as has been mentioned in the text, the platelet count may be influenced also by other factors, such as altitude, hemorrhage, peptone poisoning, anaphylaxis, and also by some of the so-called diseases of the bone marrow.

TABLE 6.—EFFECT OF VARYING DOSES OF HORSE SERUM ON THE PLATELET COUNT IN RABBITS

	Rabbit 1	Rabbit 2	Rabbit 3
Normal count	2,000,000	1,450,000	1,450,000
Horse serum	0.001	1 c.c.	5 c.c.
One hour after injection.	1,910,000	1,780,000	1,270,000
Twenty-four hours after injection	2,380,000	2,220,000	1,660,000

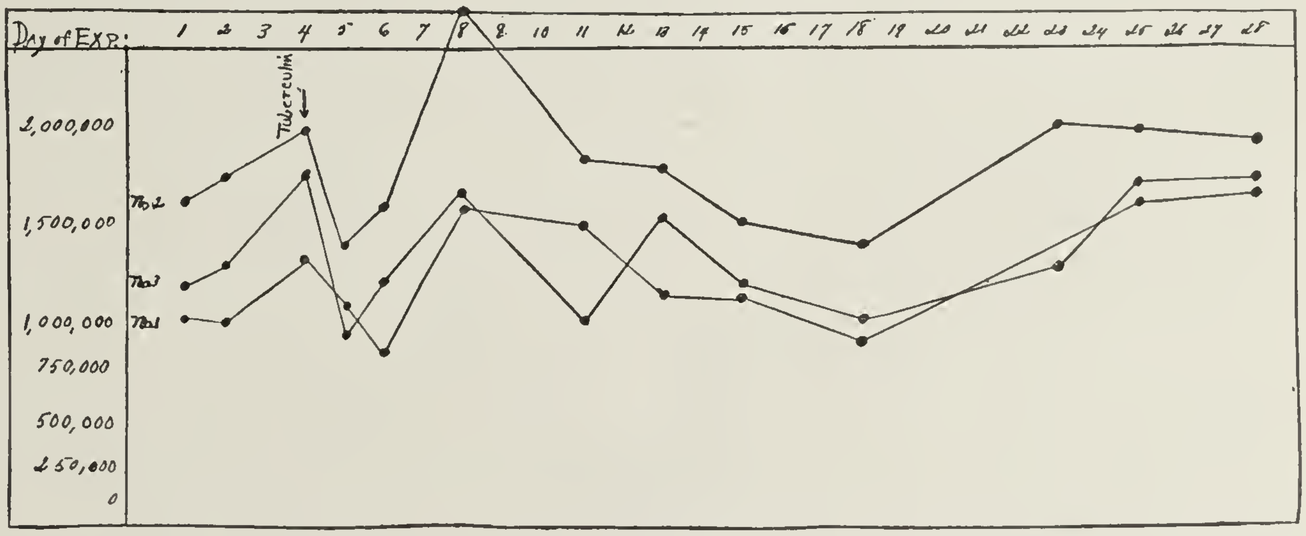

Chart 12.—Effect on the platelet count of 3 c.c. of Koch's old tuberculin given intravenously to three rabbits.

One other important generalization is possibly justified. In certain chronic diseases, tuberculosis and nephritis for example, the count is increased as a rule and reduced in rare instances only. In other diseases, diphtheria, pneumonia, and typhoid fever, for example, the findings are diametrically opposite; that is, the count is reduced as a rule and increased in rare instances. It is believed that in the former type of diseases (increased counts the rule), the platelet count is influenced by some mild irritant to the platelet-forming organs, such as killed typhoid bacilli or tuberculin, and that for this reason, an irritant effect is the rule, and a toxic effect, the result of an overwhelming dose, is not reached in the average case. In the latter type of disease (reduced counts the rule), the platelet count is believed to be influenced by some powerful irritant to the marrow, such as diphtheria toxin or benzol, so that the irritant dose is exceeded in the average case and a reduced count is the rule. The few cases showing an increased count are probably the milder ones in which the toxic dose is not reached.

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[9] Richardson, F. L.: The Effect of Severe Hemorrhage on the Number of Blood Platelets in Blood from the Peripheral Circulation of Rabbits, Jour. Med. Research, 1904, viii, 99.

[10] Webb, Gilbert and Havens: Blood Platelets: Some Studies in Connection with Altitude and Tuberculosis, Preliminary Report, Colorado Med. Jour., 1914.

[11] Rebaudi: Blood Platelets During Pregnancy, Labor, Puerperium and Menstruation and in the New Born, Am. Jour. Obst., 1907, p. 475.

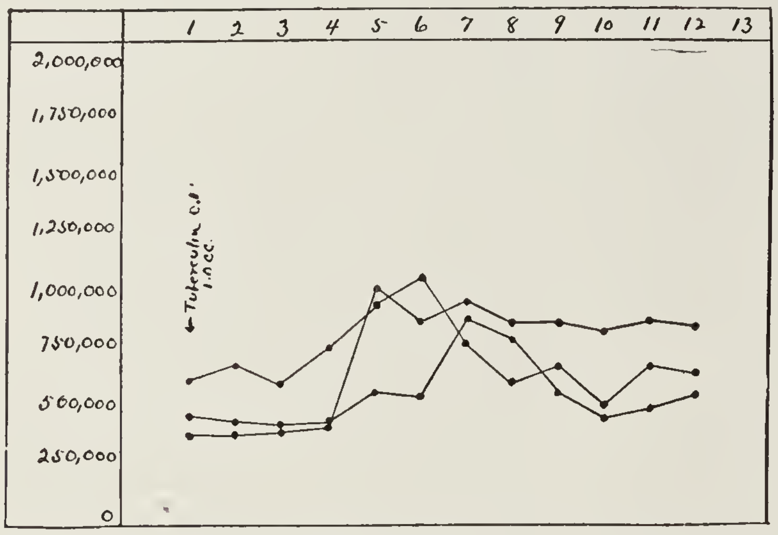

Chart 13.—Effect on the platelet count of 1 c.c. of Koch's old tuberculin given subcutaneously to three rabbits.

ABSTRACT OF DISCUSSION

Dr. Gerald B. Webb, Colorado Springs, Colo.: Dr. Duke's contribution is most welcome, inasmuch as blood platelets have been too little studied. In one case of miliary tuberculosis, and in one of a rapidly fatal tuberculosis following measles, we found the blood platelet count very low, whereas in almost every other case of tuberculosis both in human beings and in laboratory animals, we have found the numbers increased. Nature does not often increase elements without design. Thanks to Metchnikoff, we can now better understand the reason for a leukocytosis. More careful investigations should discover the reason for the increase, under certain conditions, of blood platelets. From our own experiments we have found that (1) blood platelets either contain or supply opsonin; (2) blood platelets are increased at a high altitude; (3) blood platelets can be increased by an artificial hyperemia of the marrow of long bones; (4) blood platelets are increased in carbon monoxid poisoning; (5) blood platelets appear to be increased in the early stages of measles; (6) blood platelets added to a minimum lethal dose of virulent tubercle bacilli do not constantly prevent infection.

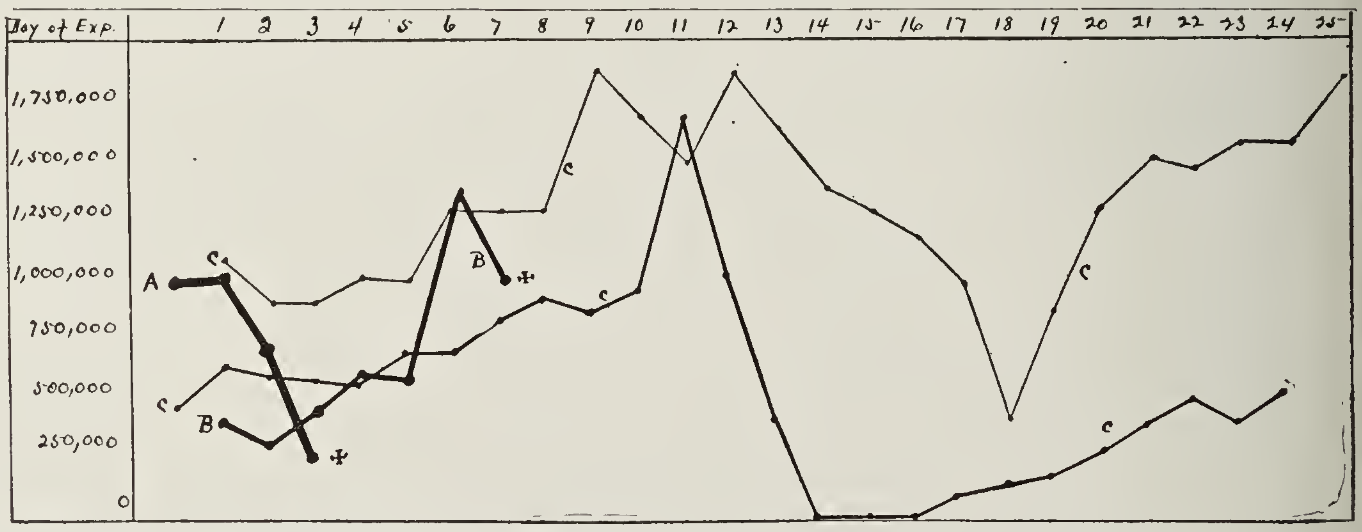

Chart 14.—Effect of diphtheria toxin in varying dosage on the platelet count in rabbits: (*A*) rapidly fatal dose; (*B*) smaller, but fatal dose; (*C*) sublethal doses.

Dr. S. H. Hurwitz, San Francisco: For a number of years investigators have been interested in the relationship existing between the formed elements of the blood and the factors of coagulation. Ever since the platelets were first recognized as distinct morphologic entities and not as disintegration products of leukocytes, the relationship of these elements to hemorrhagic diseases became a subject for investigation. Until recent years, however, we did not have methods available for studying the factors of coagulation and it was therefore difficult to find out what the relation of the formed elements of the blood to these factors was. At the present such studies have been made possible by the methods given us by Dr. Howell of Baltimore.

Stimulated by the observations on a patient with bleeding from the gums and purpura, with anemia and considerable reduction in the platelets, associated with a diminution in the circulating prothrombin, we attempted to reproduce this condition experimentally. Like Dr. Selling, we were able to produce by benzol injections in rabbits a picture of aplastic anemia with marked destruction of the marrow and a reduction in the formed elements, especially the leukocytes and blood plates. In some instances the blood platelets were reduced to 30,000 and associated with this drop there occurred a reduction in the circulating prothrombin. This observation is in harmony with the proof that blood platelets contain prothrombin, although it is unlikely that they are the only source of this factor. We were also able to follow the antithrombin and fibrinogen in these same animals. These two factors have been found to fluctuate little from the normal.

Dr. W. W. Duke, Kansas City, Mo.: The platelets surely must perform some very active function in the body, varying in number as they do under so many conditions. The observation of Dr. Webb that platelets contain opsonin is interesting indeed, and it would not be surprising if it were discovered that platelets play an active rôle in immunity. The observation of Dr. Hurwitz that blood in which the platelet count is reduced, contains less prothrombin than normal blood, is in line with what we might expect from the work of Morowitz and Bayne-Jones showing that platelets contain prothrombin. With these facts known, it is a little surprising to find that blood which is nearly free from platelets may clot with great rapidity. In a number of patients with purpura hemorrhagica and also in an animal with purpura hemorrhagica produced with diphtheria toxin, the platelet count varied from 10,000 to less than 1,000. The coagulation time of blood obtained from the ear was invariably normal. Platelets, without question, play an important rôle in stopping hemorrhage. It seems probable that they accomplish this through the rôle they play in the formation of thrombi. Platelets possess a property of rapidly adhering in masses to the wall of a blood vessel at points where the intima is injured, and these masses apparently form a nidus for the attachment of fibrin and the laying down of a thrombus. They do this, perhaps, by liberating their thrombin just at the point where it is most useful. Both platelets and fibrinogen seem necessary for the formation of thrombi, for if either is reduced nearly to a point of absence, bleeding from cuts is prolonged.

Dr. Webb's observation that the number of platelets may be increased by passive hyperemia is interesting and important. Dr. McKinley and I have tried this out in tuberculous patients at Dr. Webb's suggestion, and find as he did that the count can often be increased for a number of days in this way. It offers a very simple means for increasing the platelet count artificially. The Roentgen ray may be used in animals either for increasing or reducing the count. It is possible that some therapeutic application for this may be found.

THE INTESTINAL TRACT *

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BOSTON

Man's interest in the intestinal tract begins at birth and ends only with death. Through its long and tortuous canal pass the foods that supply the body, and here in its laboratory are carried on those complicated chemical and mechanical processes that allow these foods to be fitted for the use of the animal machine, and finally eject the unused portions. Anything interfering with any of these functions is a cause of discomfort, and even of death itself. Is it not natural, therefore, that those having the physical well-being of man in their care, should, from the earliest times, have sought to remedy bodily ills by medication applied to, or through, this channel, confidently hoping that all human disorders might thereby be cured. This hope and even belief still exists, filling the purse of the quack and "patent medicine" manufacturer, who today largely occupies the place of the sorcerer and medicine man of savage tribes.

Medication of some sort, then, was the only method for years, so far as we know, of treating the digestive tract. There were bold and not unskilful surgeons in the older civilizations, as witness the formidable operations on the skull and perhaps the brain, shown by the great number and variety of trephinings done with instruments of stone, found in Peru and elsewhere. These mummies and their bones have handed down their story through the centuries, and in them we can recognize the operative successes and failures as plainly as though these men were alive today, or perhaps on the necropsy table.

There is no such record, however, of operations on the intestinal tract; perhaps they were performed, but even in the mummy we find nothing to suggest it, though in the mummy have been found evidences of appendicitis. It is possible that in the prehistoric as well as in later days, torn or cut intestines protruding from a wound may have been sewed up and the patient cured.

The surgeon first operated on the beginning and the end of the intestinal tract, operations on the esophagus and rectum being done at a comparatively early date, but the peritoneal cavity was supposed to be such a dangerous region that few invaded it.

The real beginning of intestinal surgery was not more than fifty years ago, and step by step it has advanced until today there is not an inch of the canal or any of its appendages that has not been attacked. It may be well to briefly mention here some of the things that have already been accomplished.

Beginning with the esophagus, we find that the congenital or acquired malformations, like pouch, may be cured, sometimes by excision, sometimes without, strictures dilated, and malignant growths at least exposed to the view of the surgeon. Excision of such growths, however, is still in the early experimental stage and should not be attempted by the general surgeon. There is no organ more difficult to reach or more dangerous to operate on than the esophagus in the thorax. Some day, let us hope in the not distant future, excision of esophageal growths will be one of the recognized surgical procedures.

Certain surgeons who have had large experience in thoracic work, experienced in the technic of differential pressure, either by the use of the cabinet, or with intratracheal anesthesia, are working and experimenting in this field, and excision of the esophagus, in man, should be left in their hands for the present—enough has already been accomplished to show the probability of future success.

The stomach is certainly a most tolerant organ. For years it is generally either starved or overfed. It must receive and take care of all kinds of substances from milk to clay. It is tanned with tea, irritated by alcohol, tortured by drugs, alternately scalded and chilled, and yet it works on, doing its best though receiving the blame which should fall on its owner or the other organs. Some people complain of their "bad stomachs" all their lives, while in reality the poor thing is not at fault and is doing its best. Its great failing is that it is too sympathetic, reflecting the troubles of its neighbors.

It is also abused surgically without showing resentment. Being by nature a cleanly organ and not infested with the dangerous fauna and flora of the lower intestine, it is operated on with comparative impunity. Were this not true, the daily mortality from operative procedures, some good, some indifferent and many bad, would be enormous. It is cut into and cut out, it is stitched into faulty positions, puckered and drained, properly or improperly, but still the patient survives. Formerly, the would-be surgeon, just out of the medical school, began his operative experiments by amputating a breast, one of the most difficult of operations, by the way, if properly done, but now he is not satisfied until he has done something to a stomach.

In 1881 it was my great privilege to see Billroth do the first successful resection of the pylorus—that was really the beginning of gastric surgery as we know it today. Step by step it has advanced, until now there are few more brilliant results to be obtained by the skilful and judicious operator than in this field. Men are saved from years of suffering, invalidism and death itself by the surgeon who knows his business.

The question of the treatment of malignant disease of the stomach has been pretty thoroughly settled in the surgical mind, radical excision in early cases giving a fair percentage of cure with slight operative mortality. Excision of chronic ulcers is an accepted fact, and operations for pyloric stenosis, whether by the Finney operation or by gastro-enterostomy, give brilliant results. Duodenal ulcer has become a surgical disease in a great measure, the only question in the

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

choice of operation being that of excision or nonexcision of the affected area. In passing, mention should be made of the importance of a thorough examination of the gallbladder in all cases in which an operation is being done for pain or other symptoms in the right upper quadrant. We have all been disappointed after an apparently successful operation for well-marked duodenal ulcer to find on second operation that the symptoms were partly due to an inflamed "strawberry" gallbladder, or small, previously unrecognized, gallstones.

Having spoken of the gallbladder, whose troubles so closely resemble those of the intestinal tract itself, and for which they are often mistaken, I cannot forbear to touch on a question that has always interested me, namely, shall it be excision or drainage in cholecystitis. For years I advocated and practiced excision in the large majority of cases, until, persuaded by surgeons of larger experience than mine, I adopted drainage for a time, only to return with greater zeal to excision, feeling sure that my ultimate results would be better. The greater mortality of cholecystectomy is due, I am sure, to the fact that it has been done in the severer cases that could only be cured in that way. There is, however, no doubt that in inexperienced hands cholecystostomy is safer, and under such circumstances should be the operation of choice. Many of my former advisers today excise in a large proportion of their cases.

It should be borne in mind that in certain desperate cases of large perforations of the duodenum, when the condition of the patient is so bad that a prolonged operation will not be tolerated, simple drainage with gauze or a large tube, with no attempt at closure of the opening, will often save the patient's life, and the resulting fistula may close of its own accord.

With the small intestine the surgeon has less to do. Occasionally tumors are met, intussusception being one of the common ways of first disclosing their presence, but we may have that rare type of malignant growth, a lymphoid tumor, which may have become generalized before symptoms have called attention to its presence. Adhesions or kinks from acute inflammation are the chief source of danger in this region, and in acute obstructions above the cecum the question of gallstone ileus is always to be borne in mind.

Near the ileocecal valve, congenital or acquired peritoneal folds (the so-called Lane's kink), should always be looked for in operations in this region, for in the past many of the unsuccessful attempts to cure attacks of supposed chronic appendicitis were due to the failure to recognize this very common condition, which is so often the cause of severe ileal stasis.

And now we come to that much abused and vicious organ, the appendix. Probably more necessary operations on the appendix have been left undone, and more unnecessary operations have been done on it, than on any other organ in the body. The first symptoms of inflammation should be a reason for its removal, but too often are these symptoms mistaken. The retrocecal perforation of the appendix is often unrecognized until a rupture of the abscess causes a diffuse peritoneal infection, or, on the other hand, the innocent appendix is removed, and the offending fallopian tube, ureteral stone, gallbladder or Lane's kink is left behind. The surgeon should be careful and conservative in his diagnosis of the appendiceal trouble and radical in his treatment. It must always be remembered that the stomach is often blamed for trouble that really exists in the appendix.

The large intestine has been a fruitful field for much heated discussion and surgical adventure of late. Since the advent of the Roentgen ray, much has been learned and many mistakes have been made. It is safe to say that the old ideas of the positions of the abdominal viscera have undergone a great change in the last few years. Their positions and shapes are becoming better known, and what a short time ago were considered malpositions or malformations are now known to be but slight variations from the normal, if there is such a thing as a normal arrangement. The large intestine is a marked example of this rule; it never lies in the regular lines and curves as shown in the diagrams of the old anatomist. There are innumerable variations, due to congenital or acquired folds of the peritoneum, and many have too quickly decided that anything unusual must be a serious physical defect, and the cause of certain trains of symptoms. The rules for the treatment of malignant disease are well recognized, but it is in questions of abdominal plumbing, if we may use the term, that opinions differ most widely. Fecal stasis is recognized as an evil, and many operations have been designed and performed for its relief that are useless or do positive harm. The surgeon who looks on every such case as one whose faulty plumbing must be restored mechanically to a diagrammatic form is sure to make mistakes, having overlooked the real source of the trouble. Ptosis does not, or should not, always mean operation.

The interrelation of fecal stasis and the neuroses and autointoxications of all kinds are subjects that require further investigation and study, though day by day and year by year our knowledge is steadily advancing. The medical clinician, the neurologist, the psychologist, the bacteriologist must each do his part, and they should be aided, not overshadowed by the roentgenologist, whose mechanical findings may so often be misinterpreted. Viewed from the standpoint of any one of these, the observer sees but one part of the composite picture.

The relation of intestinal abnormalities and distortions to mental disease has always interested me. It is certainly a suggestive fact that a considerable number of cases of megacolon and giant sigmoid are seen in insane asylums. I have, by an operation for acute volvulus in such a case, restored a man to a normal mental condition, after he had been a frequent inmate of the asylum for a considerable number of years. In all these cases of suspected faulty plumbing, it is generally harder to decide which individual needs to be operated on and just which form of operation should be chosen, than to do the mechanical part of the operation itself. With the abdomen open before us it is not always easy to decide which fold or which adhesion is at fault, whether the intestine can be sidetracked or whether it needs excision, and all these factors enter into the subsequent cure or failure. The intestine is not a simple pipe that can be cut and soldered, or placed in what is considered the proper position and kept there, but it is a thin-walled affair in constant motion, always expanding or contracting, and changing its position with the position of the patient and the load it has to bear. We are apt to see only the collapsed intestine on the operating table and cannot picture to ourselves that same intestine distended, partially paralyzed after operation, and carrying its load of gas and fecal matter later. What we know already has been learned at the cost of many failures, and greater future knowledge must come from earnest, careful investigation and honest observation and study of the subsequent history of each individual case. We must try to find out why one case is a success and another, treated in the same manner, is a dismal failure. We must endeavor to recognize those bands or adhesions about the intestine which are of importance in operation and those that are unimportant. The less traumatism to which we subject the peritoneum the better.

We do not know why certain simple operations are followed by extensive and firm adhesions, while others much more extensive, or in the presence of sepsis, are free from these dangerous results. Gentleness in manipulation, and wet gauze instead of dry, leaving as few raw surfaces as possible, probably help. It is assuredly a fact that adhesions may in many cases be divided, and large raw surfaces left, without the formation of new, or the reformation of old adhesions. Until we understand the reason for this and the correct method to be followed to avoid them, we can never be sure of our ultimate results.

Great advances in the treatment of intestinal stasis have been made of late and many patients saved and made useful citizens by suitable operation on the large intestine, but cases should be carefully studied and selected before operating.

The large intestine is more frequently the seat of obstruction than any other part of the tract. An operation, to prove successful, should always be done early, and the cardinal rule is not to attempt too much, and an anastomosis or the temporary artificial anus will save many lives when the primary resection will prove fatal. Excision of a growth may be done later with much greater safety, and the removal of the disease, if it is malignant, can be much more radical. Never leave a patient with an artificial anus without his full knowledge of what it means, and his consent.

Diverticulis is one of the affections of the large intestine that is not infrequently met, and the choice of operation, or even of no operation, is often difficult. When there is a perforation there is of course no question, the abdomen must be opened and the abscess drained the same as an appendix abscess. We sometimes mistake the chronic or subacute cases for malignant disease and do a resection, our mistake in diagnosis being discovered only by the pathologist.

One meets undoubted cases of diverticulitis with recurring symptoms. These cases, as a rule, are relieved though not cured by thorough lavage. What are we to do in such cases? We know that the presence of the pathologic condition is a menace to the health and life of the patient and may be the starting point of malignant disease. On general principles we should remove the offending region, as we would remove a chronic appendix, but the operation is not a safe one and the mortality must be high, especially in those cases in which the lower end of a short sigmoid is involved.

The modern operation for cancer of the rectum gives such good results that radical extirpation should always be attempted in suitable cases.

Up to this point I have considered only the more important operations on the intestinal tract and their advisability, but now comes a more serious question—by whom shall these operations be performed? This applies to all surgery, but particularly to intestinal work, for any man who begins his experiments on man attains final success only at the expense of many lives and much unnecessary suffering. No man should ever attempt a serious operation until he has had a thorough training under a good master.

Throughout the country have sprung up thousands of small hospitals which mark a tremendous advance in the cause of human welfare, and in which is done an enormous amount of surgery, good and bad. In many of these hospitals the staff consists of all the reputable physicians in the town; in other words, any man who holds a degree, whatever his surgical experience, can send his patients there and operate on them. Many of these men have had no suitable training and their work can be imagined, but it is seldom described. The establishment of the American College of Surgeons is a step in the right direction, but only a step. It is perhaps impossible at present, but in time the rule may be made that no man shall practice surgery until he has served a term as an intern at some good hospital and has had a chance to observe and assist competent operators.

Medical education is constantly advancing, and greater efficiency is the aim always before us. At present, large numbers of practitioners, young and old, visit the different famous surgical clinics of the country, and then go home and try to repeat the operations that they have seen performed so easily by the master hand. Such observation and experience, to the man not properly trained, only renders him more dangerous to the community in which he lives. For intestinal work especially, it is unusually dangerous for a man to operate on a human being until he has performed many operations on living animals. Until he has the necessary skill and technic, he is bound, unless possessed of unusual ability, or more often luck, to have many failures, and a failure means a human life.

A witness before a parliamentary committee in England once said: "Gentlemen, with or without the sanction of the law, vivisection must and will continue, surgery cannot stand still, and is it not better that vivisection be done on the lower animals rather than on you, your wives or your children?"

I once assisted a famous surgeon who was performing his first intestinal anastomosis, in the days of Senn's plates. I suggested that his first knot was not drawn tightly enough, but he was sure it was all right. At necropsy he found that he was wrong; had he operated on animals before operating on a man the result would probably have been different. One cannot do these things by seeing them or reading about them. We all make mistakes enough; let us not add to these, unnecessary ones for want of proper preparation.

American surgery today is in the foremost rank, but let us not be content with that; a famous future can be ours, but it must be achieved by constant work and study. The standard must be raised still higher and surgeons must be trained more thoroughly for their work; graduate schools of surgery, large clinics where men can live and work long enough to acquire some of the art and skill of the master, more operations on the lower animals, both in the medical school and hospital laboratories, and greater observation and practice in the after-treatment of surgical cases, all these must be within the reach of the would-be surgeon. Technical skill in the surgeon is important, but of greater importance is surgical judgment. Many a man is, or can become, a skilful operator, but he needs to be something more. In operations on the intestinal tract, often more depends on knowing when to operate and what to do, than in any other part of the body. Of what advantage is it to the patient that a successful excision of the large intestine, for instance, or an anastomosis to side track it be done, if it does not improve his condition, having been performed when it was useless or unnecessary. The man of sound surgical judgment will save more lives and benefit humanity more, even though he be clumsy, than the man who is quick and dexterous but devoid of that essential requirement. The ideal surgeon possesses both qualities, and it should be the aim of every man who claims to be a surgeon, to perfect himself in every side of his art. Much has been written about intestinal surgery, but there are many problems yet unsolved, and it is the trained surgeon who must find the solution.

This subject is a live one which is being carefully studied and worked over. There is still work ahead, for no question that is open to discussion can be considered as settled.

180 Marlboro Street.

CHENOPODIUM IN THE TREATMENT OF UNCINARIASIS

PRELIMINARY REPORT

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In an article on the treatment of uncinariasis with the oil of chenopodium, Levy[1] has reported a number of cases in which he has had excellent results, and has given a detailed account concerning the toxicity of the drug, assuring us of the little danger connected with its administration. His article appeared subsequently to a thorough report of 1,457 cases presented by Schneffner and Vervoort in which results were sought comparatively with other vermifuges, and the following percentages of comparative efficiency were presented: oil of eucalyptus, 38; betanaphthol, 68; thymol, 83; oil of chenopodium, 91.

At the present time, there is perhaps not a field in existence better given for further investigation in lines of hookworm and other parasite therapy than Santo Tomas Hospital. Its location is tropical; its patients (numbering seldom less than 500) are drawn from many nationalities, among which the native poor Panamanians and the West Indian negroes chiefly predominate, and extremely poor sanitary conditions unfavorable to hookworm extermination still exist throughout the interior of the Republic of Panama.

The West Indian negroes mentioned are those poor discharged laborers from the Canal Commission whom Panama still harbors within her boundaries, and many of these, not able to obtain employment, live in the interior of the republic in the most deplorable poverty — shoes, as with most of the Panamanians living in the interior, being a luxury not often possessed by them. Both of these peoples, with few exceptions, when the cause and nature of their maladies and the measures necessary to produce a cure have been fully explained in simple language, will in most instances yield honestly and cooperate with the physician. With the chenopodium treatment it was far easier to accomplish this than with thymol, because of the simpler method of its administration, and the less drastic results following its ingestion. The oil is put up in capsules of 8 minims each, and we have administered two capsules to the dose, including three doses to the treatment, given two hours apart. Each treatment was followed in four hours by 2 ounces of castor oil. In the plan of the treatment laid down and recommended by Dr. Levy in his article, 50 minims of chloroform were added to the castor oil for the purpose of enhancing the efficiency of the vermifuge; but in the form of treatment which we adopted and followed throughout, we purposely omitted this, intending thereby to give the drug under investigation a fairer trial.

In contrast, the accepted routine treatment of uncinariasis with thymol at Ancon and Santo Tomas Hospitals is as follows: At 4 p. m. calomel is given, the supper is restricted to liquids, and at 8 p. m. 2 ounces of magnesium sulphate are administered. The following morning the patient receives 60 grains of thymol in three doses of 20 grains each at the hours of 4, 5 and 6, respectively, and at 9 o'clock 2 ounces of magnesium sulphate, the diet being resumed at noon if the bowels have moved well.

The dosage of both chenopodium and thymol, in the treatments outlined, is that for adults; we have followed Young's rule in the treatment of children. It may be safe to say, however, that 1 drop of the oil of chenopodium may be given for every year of the child's age, and that this dose should be repeated twice, two hours apart, and followed by oil to constitute a treatment as hereinbefore outlined. The oil can well be given to children with sugar.

It must be evident to all who have had experience in the treatment of uncinariasis that such a method of administering a vermifuge, provided it be efficient, is to be preferred. It is attended with much less inconvenience and discomfort to the patient than with thymol, there being no dietetic restrictions and no excessive purging. The matter of dietetic restrictions insisted on by others has been in our experience entirely unnecessary with chenopodium, the oil being given at night merely to facilitate obtaining and examining morning specimens.

The treatment of hookworm disease, and any determination of a removal of infection with either thymol or chenopodium necessarily are expensive from several standpoints: First there is the cost of the drug: Here there is no great variation between the two. The Health Department of the Isthmus pays $2.40 a pound for thymol. Sixty grains constitute one treatment. Levy gives jobbers' prices in the States as from $2.50 to $3 a pound for chenopodium. A treatment consists of 48 minims, but it will be proved later that the average case requires fewer treatments to constitute a cure with chenopodium than with thymol. The other important consideration is the length of time required to effect a cure. In that a great many cases of uncinariasis require several courses of treatment to overcome the infection, it is obvious that the sooner courses of treatment can be repeated, the sooner can the patient be discharged.

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[1] Levy, R. L.: Oil of Chenopodium in the Treatment of Hookworm Infections, The Journal A. M. A., Nov. 28, 1914, p. 1946.

With thymol the effects of the purging and the drug on the patient practically prohibit repetition in less than five or six days. With chenopodium we have often repeated treatments at intervals of three days, and we have never seen the prostration and weakness which is often occasioned by thymol.

The oil of chenopodium is not a new drug. Hare states that the oil is distilled from the fruit of the *Chenopodium ambrosioides,* or American worm-seed, and that its anthelmintic properties have long been known in the treatment of ascariasis. Levy has dealt with great detail in the pharmacology and chemistry of the drug, but as far as we are able to ascertain, no active principle has been isolated therefrom. It is claimed for the drug that it acts as a paralysant on the parasite, causing it to loosen its hold on the intestinal mucosa, enabling the purge to sweep the worms from the intestine.

As concerns the toxicology of the drug, Levy has surveyed the literature on the subject and has collected twelve authentic cases of poisoning, nine of which ended fatally and seven received an overdose. One of his conclusions is that "in therapeutic doses it is nontoxic." In the 108 cases in which we have administered this oil thus far, we have never encountered any manifestations of toxicity. Of the twelve cases mentioned by Levy, eight occurred in children under the age of 13. While most of our experience has been with adults, we have thus far definite record of six cases in children of ages ranging from 3 to 14 years, and none of these have ever shown any ill effects from the drug.

Believing in the nontoxicity of the drug, we have not hesitated administering it to all patients regardless of other conditions, with the exceptions of those suffering from hyperpyrexia and acute inflammations of the gastro-intestinal tract. Accordingly, during the course of treatments, we have had some deaths, all of which went to necropsy and, as will be seen, in none of these, despite careful investigation, were there any evidences of chenopodium poisoning being a factor in the cause of death.

Our methods of observation of treatments administered were as follows: The stool specimen having been microscopically examined and found positive for uncinariae, the hemoglobin was taken, and the first chenopodium treatment given, after which the first whole stool obtained following the administration of castor oil was washed and examined and the hookworms counted in order to determine, in a measure, the success of the therapeutic procedures applied. Then for five successive days a stool specimen from the patient was examined microscopically every morning, and at the end of this time the chenopodium treatment was repeated. If during the examination of these morning specimens one of the first was found to be positive, we frequently repeated the treatment before the series of five was completed. And so we continued, repeating the treatment as long as any one of the specimens showed even as much as a single hookworm egg, and also keeping count of the worms expelled after each treatment. Some there were who received in accordance with this, our routine course of therapy, as many as seven and eight such courses of treatment; and some of these patients, needless to say, yielded very reluctantly to further treatment after the fifth or sixth administration of their medication. In some, though probably not more than two or three, the patients absolutely refused more treatment, and their records unfortunately could not be completed. Our requirements for a cure were, that all morning specimens for at least five or six or more successive days must be negative for uncinaria eggs, and then the treatment having been repeated, the whole stool must be negative for hookworms. After this the hemoglobin was again taken and compared with the first reading. We have had occasion to examine the stools of patients thus treated and considered cured by us, as long as two and three months after the prescribed course of treatment had been completed, and found that the stools were still negative for uncinariae. The hemoglobin estimation also showed a distinct rise in these patients from the time of their cure.

In our series of treatments we also included a number of patients treated with thymol, just as an approximate comparison and with no intention of establishing any definite ratio between the two drugs for, as already stated, this feature of percentage efficiency among vermifuges has already been more or less definitely determined. In a few cases we have also followed thymol treatments by chenopodium, and accordingly have also followed chenopodium by thymol treatments, but this being only a preliminary report, our observations thus far have not been extensive in this respect.

To date we have records of treatment in 168 cases of hookworm disease of both the Old and New World varieties. Thus far we have administered oil of chenopodium to 108 patients, and of these, ninety-two received throughout their treatments chenopodium alone, the remainder having been given alternate treatments of chenopodium and thymol or thymol alone.

With the desire to ascertain approximately the efficiency of chenopodium as a vermifuge in uncinariasis, it was necessary to adopt some method of comparison with thymol, the accepted anthelmintic for this condition. We decided that as good an indicator as any would be a comparison of the average number of hookworms expelled in the first whole stool from equal numbers of unselected and previously untreated cases. The cases in which thymol was given and the first whole stool obtained were sixty, and the average number of hookworms expelled was seventy-six. The first sixty cases treated with chenopodium gave an average of ninety-nine hookworms. Among more recent treatments there have been so much better results that the average of ninety-nine in the first sixty chenopodium cases has increased to 131 in ninety cases. In one instance there were expelled 1,379 uncinariae in a first whole stool.

It was impossible at times to complete courses of treatment instituted for various reasons, such as the patient demanding his discharge, intervening death, or inability to obtain the whole stools, often because of the patient's failure to cooperate. The number of cases at the present time, in which we consider our records complete and the patient as cured, total twenty-four in which thymol only was given, and thirty-five for chenopodium. It will be interesting to note the average number of treatments which each drug required to effect a complete cure, according to our standard as stated above. In the twenty-four instances of a cure with thymol, forty-nine courses of the drug were required to obtain the results. In the first twenty-four cures with chenopodium, only thirty courses were required, and for the total of thirty-five cures, forty-two treatments were needed.

Since beginning this work with uncinariasis, the opinion has grown with us that the oil of chenopodium is a vermifuge which will act more quickly and more efficiently than thymol. The comparison of the number of courses necessary to effect cures with the two drugs, we believe, shows this to be true. Desirous of testing the action of the drug further, we decided to alternate them in the same case. As yet the number of these trials is too few to furnish statistics, or do more than suggest that further investigation will confirm our supposition.

Case 1.—The patient received thymol, after which the first whole stool was negative. Several days later a chenopodium treatment caused the expulsion of seven hookworms in the first whole stool following.

Case 2.—Whole stool after thymol showed twenty-nine hookworms. A week later chenopodium expelled forty-eight hookworms. A second chenopodium treatment gave a negative result.

Case 3.—Thymol whole stool was negative. Chenopodium a few days later expelled eleven hookworms. The next chenopodium treatment was followed by negative whole stool.

Case 4.—Thirteen worms were expelled by chenopodium following a negative result from a thymol treatment.

Case 5.—First thymol result showed seventeen hookworms, after which the third daily stool specimen showed ova. Thymol was repeated with a negative result, after which the fifth morning specimen again showed ova. Thymol was again given with a negative result. Then chenopodium was given; six hookworms were expelled, and five successive morning specimens were negative for ova.

In the many instances in which chenopodium was primarily given, and thymol subsequently administered, the thymol results never exceeded those of the preceding chenopodium treatments.

Most of our patients were admitted to the hospital with conditions other than simply uncinariasis, this infection being discovered through the routine stool examination of all new patients. Some of these patients, dying of the accompanying diseases, gave us the opportunity of observing at necropsy the absolute results of our treatments, and we will cite the following cases in this respect:

Case 6.—The patient had been given three thymol treatments in which the whole stool results were not observed. At this time he was very anemic, and the ova still persisted in the stool. He was then given chenopodium treatment, but the whole first stool was missed. This was followed by five successive negative morning specimens, and the chenopodium treatment was repeated with the result that twenty-five uncinariae were expelled. The hemoglobin was 20 per cent. at the time of beginning the chenopodium treatments. At necropsy the small intestine, especially the duodenum and down near the cecum, were literally filled with hookworms, which were embedded deeply in the mucosa of the valvulae conniventes. All organs were extremely anemic. Nothing else was found to be abnormal save for a chronic nephritis which was not very severe, and a mild bronchopneumonia, probably terminal. The cause of death was attributed to hookworm disease with secondary anemia. The patient died on the day following the last chenopodium treatment.

Case 7.—The patient received two chenopodium treatments with expulsion of but one hookworm. Four morning specimens were negative. The patient died some time after treatment, the cause of death being septic endocarditis, the patient having not received treatment during the time of persistent fever. At necropsy, the intestine was entirely free from hookworms. The septic endocarditis had most probably developed after this treatment had been begun.

Case 8.—The patient was tuberculous. Chenopodium expelled fourteen uncinariae. Five daily stool specimens and the second chenopodium treatment gave a negative result. We had considered him, therefore, cured of uncinariasis. Necropsy, some time later, showed pulmonary tuberculosis as the cause of death. Although the intestine showed two large diverticula and many small ones in the ileum and jejunum (the two large ones being in the jejunum), no uncinariae were found anywhere.

Case 9.—Eighty-seven hookworms were expelled after the first chenopodium treatment, and five successive stools were negative. A second chenopodium treatment expelled two uncinariae. Necropsy revealed, as the cause of death, general septicemia, with ulcers of the leg as a primary focus. Here also the intestinal tract was free from hookworms.

Case 10.—Boy. Hemoglobin was 10 per cent., with no increase during treatment or during stay in hospital. A first thymol treatment expelled twenty-nine uncinariae, and a subsequent chenopodium treatment, forty-eight uncinariae. A second chenopodium treatment was negative. Necropsy showed a complete removal of the parasite and gave the cause of death as congenital syphilis.

Chenopodium has long held a place in the pharmacopeia, being employed chiefly as a vermifuge in ascariasis. In many of our hookworm cases, several other types of intestinal parasites were also present, and our experience has confirmed its efficiency in roundworm infections but absolutely no effect on *Strongyloides intestinalis, Trichocephalus dispar* or trichomonads was noted, these parasites often persisting after many treatments. With the *Balantidium coli* the data are too limited to permit conclusions, as this infection is not very common.

That hookworm infections are sometimes very stubborn and resistant to all treatments is illustrated in the following cases:

Case 11.—The patient received thymol and expelled eleven hookworms, but the following specimens contained ova. Chenopodium was then given, but the whole stool was not received; the following specimens contained ova. The third treatment consisted of chenopodium, and gave a negative result. The fourth treatment was also chenopodium and was negative, but stool specimens were still positive. The fifth treatment of chenopodium was negative. The sixth treatment consisted of thymol, and gave also a negative result. The seventh and eighth treatments were with chenopodium, and similarly gave negative results, after which specimens were still positive, and the patient demanded his discharge.

Case 12.—Thymol case. Seven courses of treatment were required before a cure was effected.

Case 13.—Thymol case. Six treatments established a cure.

Case 14.—Hemoglobin was 43 per cent. Uncinariae and ascarides were present in the first specimen. The first treatment with chenopodium expelled 552 uncinariae and eleven roundworms. Positive specimens followed. The second treatment with chenopodium expelled ten uncinariae, and still positive specimens persisted. Four uncinariae were expelled after the third chenopodium treatment (at this time the hemoglobin had risen to 52 per cent.). Five negative specimens followed. The fourth chenopodium treatment gave a negative result. It will be interesting to note that ten days later, uncinaria ova again appeared in the stool, and a fifth chenopodium treatment was given, causing the expulsion of 120 hookworms and one roundworm. The sixth treatment consisted of thymol, and a negative result followed. The six successive morning specimens were negative. (Thymol was here introduced because our supply of chenopodium became exhausted.) The hemoglobin had risen to 85 per cent. Two stool specimens examined five and six weeks later were still negative.

Case 15.—Hemoglobin was 18 per cent. The first treatment of chenopodium expelled 1,379 hookworms. The second treatment of chenopodium expelled 1,304 hookworms. The result of the third chenopodium treatment, unfortunately, was not received. The fourth treatment, consisting of thymol, expelled thirty-five uncinariae. The fifth treatment of thymol gave a negative result. (Hemoglobin at this time was 27 per cent.) The sixth treatment of thymol expelled two uncinariae. The seventh treatment of thymol expelled two uncinariae. After this there were six negative specimens, followed by a negative chenopodium treatment. (Hemoglobin now had risen to 61 per cent., and the patient's entire appearance was wonderfully improved.) This total of 2,722 hookworms in one patient is the heaviest infection we have ever encountered, with the possible exception of the case cited above which we examined at necropsy.

Such resistant cases, however, are rather the exception than the rule, and in many instances a rapid and permanent cure was obtained. The following cases illustrate some of the gratifying results which attend the successful treatment of hookworm disease with chenopodium:

Cases 16-18.—The patients were a mother, aged 33, with two children, aged 3 and 6, respectively. The hemoglobin was: mother, 32 per cent.; younger child, 50 per cent.; older child, 48 per cent. The stools of all were positive for uncinaria ova, and all received chenopodium treatment, after which the mother expelled 201 hookworms and one roundworm; the younger child expelled sixty hookworms, and the older child expelled twenty-two hookworms. A second treatment with chenopodium gave the following results: The mother expelled twenty-five uncinariae; the younger child expelled ten uncinariae, and the older child expelled nineteen uncinariae. A third chenopodium treatment gave negative results in all three cases. The hemoglobin tests at this time were as follows: the mother, 55 per cent.; the younger child, 80 per cent.; the older child, 68 per cent. Six weeks later, two separate stool specimens were examined from each, and all of these were negative. The hemoglobin tests at this time were as follows: the mother, 74 per cent.; the younger child, 102 per cent.; the older child, 100 per cent.

In all of our hemoglobin tests, the same instrument (a Dare hemoglobinometer) was used.

SUMMARY

1. The method of administration of chenopodium is simple, and is attended with less inconvenience and discomfort to the patient than with thymol. This would give the drug an important place in the field work in uncinariasis.
2. Chenopodium can be given at shorter intervals than can thymol, and a cure can thereby be more quickly established, which gives it a greater economic value.
3. Chenopodium is nontoxic in therapeutic doses.
4. Chenopodium is a more efficient vermifuge than thymol in the treatment of uncinariasis.

Equality Not Biological.—"All men are born free and equal," it is asserted, but such equality is political only. It can not be biological. In every race are certain strains having capacities not attainable by the mass. There should be equality of start, equality before the law, but there will always be differences of attainment. The gifts of potentiality, unit characters of the germ-plasm, are not shared by all people of the same race. The average status of one may be below that of another, and the highest possibilities of one type may be greater than that of another. In general, the highest range of possibilities in every field has been reached by the "blonde races" of Europe. Groups of less individual or of less aggregate achievement may properly be regarded as "lower."—David Starr Jordan in *Popular Science Monthly*.

CREATIN AND CREATININ EXCRETION DURING THE PUERPERIUM AND THEIR RELATION TO THE INVOLUTION OF THE UTERUS *

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The retrogressive changes which follow pregnancy restore the mother's body approximately to the condition which existed before conception took place. The restorative process, as it affects the uterus, includes an autolytic phenomenon known as involution, which rapidly reduces the weight of the organ from about a kilogram to 50 or 60 gm. Histologically, the decrease in mass depends on the atrophy of the muscle cells forming the walls of the uterus, and the metabolic end-products which thus arise are eliminated in the urine.

Since it is generally admitted that following labor catabolic changes predominate in the metabolism of the uterine muscle cells, it seemed reasonable to suppose that this fact explained the presence of creatin and of a relatively large amount of creatinin in the urine of puerperal women. Indeed, the anatomic and physiologic facts regarding the involution of the uterus accorded so satisfactorily with the urine findings that for a long time no one challenged the hypothesis which held that the one was the cause of the other. Lately, however, Mellanby[1] has questioned this doctrine and declares as his opinion that activity of the breasts is fundamentally concerned with the excretion of creatin. It was this uncertainty regarding the part played by the involution process which led us to accept the opportunity to study several patients whose metabolism promised to throw additional light on the problem.

Our conclusions are based on the observations of four types of cases, namely, (1) a normal labor; (2) a conservative cesarean section at the end of normal pregnancy; (3) a conservative cesarean section in a case of pre-eclamptic toxemia, and (4) two cases of cesarean section with removal of the uterus. A material so varied has enabled us to learn in the first place that the creatin and creatinin metabolism is practically identical after normal labor and after cesarean section, provided the uterus is not removed, and the pregnancy has not been complicated by a toxemia. And, in the second place, we have been able to compare the excretion of these substances in cases in which the uterus was undergoing involution with others in which the uterus had been extirpated.

With two exceptions all the patients were the subjects of metabolic observations during pregnancy, but the results to be reported in this communication relate exclusively to the puerperium. The observations were continued without interruption for a period of two weeks or more after the delivery. The diet was creatinin and creatin-free. The urine was obtained by catheterization as long as there was risk of contamination from the vaginal discharge. It was collected over twenty-four-hour periods, was preserved with chloroform and analyzed daily. All determinations were made in duplicate. The total nitrogen was estimated by the Kjeldahl method; the creatinin and creatin by the Folin method.

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* From the Woman's Clinic, University of California Hospital.

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association San Francisco, June, 1915.

[1] Mellanby: The Metabolism of Lactating Women, Proc. Royal Soc., London, Series B, 1913, lxxxvi, 88.

The results of the Kjeldahl determinations indicate a notably smaller output of nitrogen in case hysterectomy was performed. This phenomenon has been previously observed by Slemons,[2] who demonstrated that during acute puerperal involution the average daily nitrogen excretion attributable to uterine autolysis varied between 2 and 3 gm.

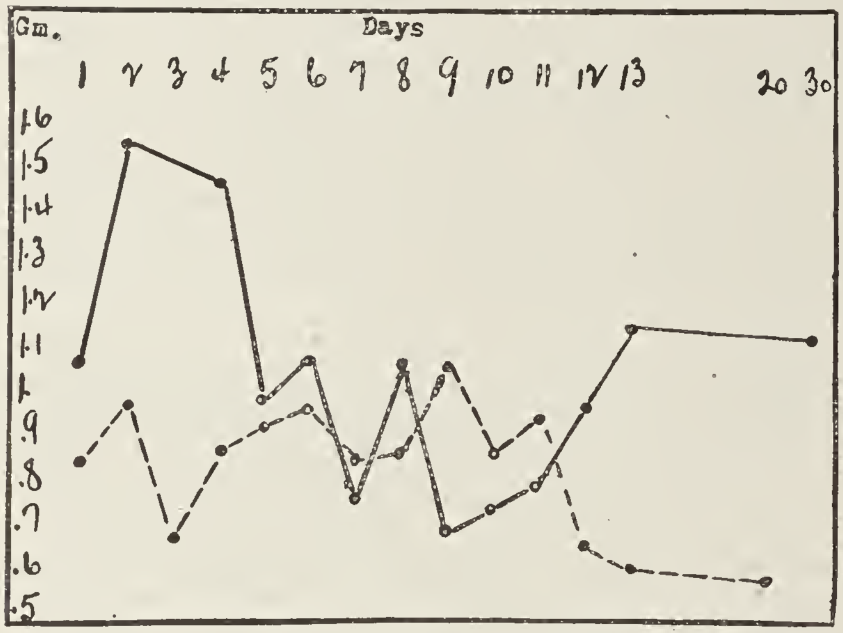

Chart 1.—Contrasting the preformed creatinin of the urine after conservative cesarean section and after the Porro operation. Solid line represents the excretion in the case in which the uterus was not removed; broken line that of the case in which it was removed.

In its behavior the creatinin elimination resembles that of total nitrogen; larger amounts are excreted in case the uterus is undergoing involution. In Chart 1 the creatinin excretion of two patients is illustrated. In both cesarean section had been performed, but in one the uterus was removed and in the other not. During the first thirteen days of the puerperium the mean average daily output of creatinin was found to be 1.09 gm., in two cases in which the uterus was undergoing involution, and .897 in two cases in which the uterus had been removed. Therefore, during this period it appears that approximately 2 gm. less of creatinin is excreted by a puerperal patient, if hysterectomy has been performed. Later in the puerperium the excretion of creatinin has always been lower than during the first two weeks.

An increase in the excretion of creatinin during the puerperium has frequently been demonstrated and has generally been attributed to the involution process, but Heynemann[3] thought additional causes for the phenomenon existed in the muscular effort incident to childbirth and in the restricted diet generally employed thereafter. It would seem, however, that these factors are not essential, for we have observed the phenomenon though the patient was delivered by operation, before the onset of labor, and though she received from the third postoperative day a diet the caloric value of which was quite adequate for the individual.

After bleeding animals, Patterson[4] found the creatinin excretion was increased. If this factor played a rôle in our cases we are unable to estimate it, but in spite of such an influence a lower excretion was invariably found in case the uterus was removed. We are convinced, therefore, that an increased output of creatinin during the period of convalescence following cesarean section without hysterectomy, and also during the normal puerperium, is largely, if not entirely, due to the involution of the uterus.

Soon after Folin[5] devised a satisfactory clinical method for the estimation of creatinin and creatin, the presence of the latter in the urine was sought in a great many different pathologic conditions. Not infrequently during the course of disease creatin was found, but in health it was learned that the urine contained no creatin, or amounts too small for measurement. In the case of women during the period of convalescence from childbirth, however—a borderland between sickness and health — creatin was demonstrated to be a regular constituent of the urine. This observation made in 1908 by Schaffer[6] has been amply verified; but the hypothesis he offered, which attributed the creatinuria to the involution of the uterus as we have said, has been called into question. In these circumstances it is instructive to compare the excretion of creatin in four cases of cesarean section, in two of which the uterus was removed and consequently the involution of this organ could play no part in the metabolism of creatin.

In all the four cases the urine contained a large amount of creatin during the early part of the puerperium. For the first thirteen days of this period the average daily excretion was .207 gm. and .167 gm., respectively, in the two cases in which the uterus was in situ; the corresponding figures for the cases of hysterectomy were .285 and .329 gm. Thus it appears that the removal of the uterus did not modify the creatinuria. As a matter of fact, in the cases in which the involution of the uterus was in progress, smaller amounts of creatin were present than in the cases in which the organ was removed irrespective of the surgical procedure.

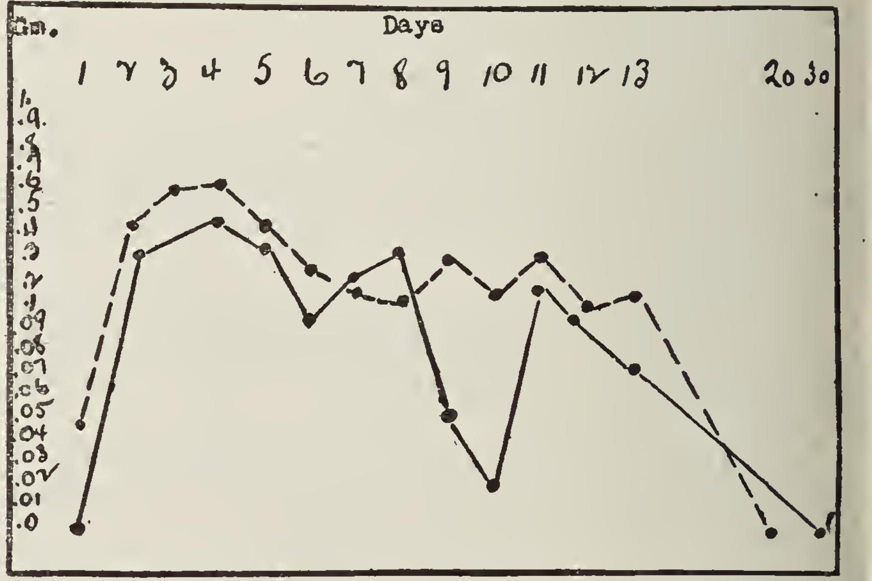

Chart 2.—Contrasting the creatin of the urine after conservative cesarean section and after the Porro operation. Solid line represents the excretion in the case in which the uterus was not removed; broken line that of the case in which it was removed.

The curve representing the daily excretion has generally been of the plateau type. On the day following the operative delivery there begins a notable rise in the output, the maximum is reached about the fourth day, and except for an occasional irregular drop the curve remains high for approximately two weeks. The urine was free of creatin in the cases of hysterectomy on the twelfth and twentieth days, respectively. In one of the cases in which the uterus was not removed, creatin was present on the fifteenth day, when observations were interrupted, but was not found subsequently from the thirtieth to the thirty-fifth days. In the other case of a conservative cesarean convalescent from a toxemia of pregnancy, creatin was still present on the twenty-third day postpartum (.057 gm.). For the first thirteen days of the puerperium the total excretion of creatin in the four cases was as follows: The uterus in situ and involuting, 2.17 and 2.48 gm.; the cases in which the uterus was removed, 3.71 and 4.27 gm. Such results clearly indicate that the creatinuria which always occurs during the period following childbirth is not dependent on the involution of the uterus.

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[2] Slemons: The Involution of the Uterus and Its Effect upon the Nitrogen Output of the Urine, Bull. Johns Hopkins Hosp., 1914, xxv, 195.

[3] Heynemann: Zur Frage des Leberinsuffizienz und des Kreatinstoffwechsels während der Schwangerschaft und bei den Schwangerschaftstoxikosen, Ztschr. f. Geburtsh. u. Gynäk., 1912, lxii, 110.

[4] Patterson: A Study of the Influence of External Hemorrhage on the Partition of Urinary Nitrogen, Biochem. Bull., 1913, ii, 555.

[5] Folin: Beitrag zur Chemie des Kreatinins und Kreatins im Harne, Ztschr. f. physiol. Chem., 1904, xli, 223; The Chemistry and Biochemistry of Kreatin and Kreatinin, Festschrift für O. Hammarsten III, Upsala, 1906.

[6] Schaffer: The Excretion of Creatinin and Creatin in Health and Disease, Am. Jour. Physiol., 1908, xxii, 1.

The facts learned regarding the excretion of creatinin and creatin in these patients have a significant bearing on the question in general of the metabolism of these substances. On the one hand, the quantity of creatinin eliminated depends on the involution of the uterus; on the other hand, there is no relation between this process and the elimination of creatin. And it is also true in these cases that the excretion of the one substance bears no direct or reciprocal relation to the excretion of the other. For these reasons it appears that at least during the puerperium the metabolism of the two substances is independent—a fact which accords with the recently announced views of Folin[7] and of Klercker.[8]

The explanation for the creatinuria of the puerperium is doubtful. Our observations not only make untenable the involution hypothesis of Schaffer and of Murlin,[9] but they also fail to support Mellanby's hypothesis attributing the phenomenon to a failure of excretion of the creatin through the milk. Our cases showed marked creatinuria even though the breasts were functioning normally.

To recapitulate: From observations made on four cases in which cesarean section was performed, in two instances without removal of the uterus, and in two instances with hysterectomy, the following conclusions may be drawn.

1. A lower total nitrogen output is observed in case hysterectomy is performed, and the higher output of nitrogen observed when the uterus is left in situ is explained by the involution process.

2. A lower creatinin output occurs in case of hysterectomy and at least 2 gm. of this substance excreted during the puerperium arise from the involution of the uterus.

3. Creatin in large amounts regularly appears in the urine following childbirth. The creatinuria is independent of the involution of the uterus, and it is also independent of the creatinin metabolism.

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[7] Folin and Denis: An Interpretation of Creatin and Creatinin in Relation to Animal Metabolism, Jour. Biol. Chem., 1914, xvii, 493.

[8] Klercker: Beitrag zur Kenntnis des Kreatins und Kreatinins im Stoffwechsel des Menschen. Biochem. Ztschr., 1907, iii, 45; Ueber Ausscheidung von Kreatin und Kreatinin in fieberhaften Erkrankungen, Ztschr. f. klin. Med., 1909, lxviii, 22.

[9] Murlin: Protein Metabolism of Normal Pregnancy, Surg., Gynec. and Obst., 1913, xvi, 43. Murlin and Bailey: Further Observations on the Protein Metabolism of Normal Pregnancy, Arch. Int. Med., September, 1913, p. 288.

ELEMENTARY BUT VITAL FACTORS IN THE EFFICIENCY OF SMALLER HOSPITALS *

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To add to my personal knowledge of the hospital situation, I sent a rather exhaustive questionnaire to the leading medical men of one of our western states, hereinafter known as "Mid West." The response was most generous. No effort is made to classify the answers, but it is a fair assumption that they represent the general situation, especially in hospitals of from forty to 150 or 200 beds, and they are conclusive evidence that the medical profession is not satisfied with existing conditions, and is fully alive to the pressing need for improvement. Not only is the medical profession fully and painfully cognizant of the many shortcomings in hospital management and service, but the public, already skeptical in regard to the medical profession, is rapidly learning that many hospitals are not as efficient as they might be, and that a palatial operating room does not always mean careful diagnoses, good beds, well-trained nurses, and faithful bedside attention. The public is learning to discriminate between the good and the indifferent. It is only by putting the house in order that the latter all too common type of hospital can escape severe but well-merited criticism. The hospitals that are first to read and heed the signs of the times will spare themselves the rude but belated and unpleasant awakening to the fact that very desirable and financially able patients are seeking better managed and more efficient institutions.

I am, further, convinced that the present efficiency of many of these open hospitals can be doubled, increasing their annual budget, and with much more satisfactory results in every department.

The great majority of the hospitals in "Mid West" are "open." Every physician or surgeon bringing a patient is admitted without question. One of these hospitals has fifty beds and 100 members on the staff. My informant seriously assured me that this was a "closed" hospital, although he was unable to mention the name of a single practitioner of medicine within a reasonable distance who is not freely and probably gladly admitted. He compromised by insisting that the hospital is "not wide open."

THE ATTENDING STAFF

In not more than 5 per cent. of the hospitals in "Mid West" is there anything but a nominal staff; usually there is no staff. When a so-called staff really exists, it "does not meet at all," or it "meets once or twice a year," or "once in a decade," or it "meets when a fight is on," or "everything is hit or miss." Compare this warping, withering, dwarfing, disintegrating situation with the stimulating and invigorating practice in vogue in the oldest and one of the most progressive hospitals in America, located in a great metropolitan city. In this hospital the attending staff meets one afternoon each week, to study and discuss interesting cases; it has one business meeting each month, held just before the monthly meeting of the hospital management; and once each quarter the staff

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* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

and the management have a conjoint business meeting with a dinner.

The attending staff usually sets the pace for the hospital. With an active, progressive, united and cooperating staff, the hospital must be good, because such a staff will make it good. With a staff the reverse of the foregoing, the hospital cannot be good, unless the hospital has an unusually well-organized and efficient nursing staff, with a few unusually strong men on the attending staff.

If there be one special characteristic of the usual attending staff, it is a woful lack of harmonious cooperation, and a great surplus of petty jealousy and bickering. It may be conceded, I think, that the management of a private hospital has the right to select the members of its staff, has the right to say who may enter, and who must remain away. If the hospital management would stop at this point, much would be gained. But the management of some hospitals assumes the right to appoint staff committees or to insist that certain men constitute all or a part of the executive committee of the staff. Unfortunately, in many instances, the management of the hospital is not a good judge of professional efficiency; the wily self-seeking politician, "cowering low with blandishment," receives a much more attentive and willing ear than patient merit that frankly speaks the truth. As a result, incompetent men are too often appointed on such committees. The employees of a great industrial concern have the right to organize as they see proper. How a hospital management can presume to inflict a committee on men whom it invites into the house, to divide with it a great responsibility, or how men can accept such a situation, is beyond comprehension. A staff dominated by an incompetent committee, appointed by the management, is a hopelessly disorganized staff, and not only will the hospital suffer, but also the staff members individually. A staff must be left free to organize as it sees fit, and to select its own officers and representatives. I have seen several attending staffs sadly disorganized because the management insisted on selecting or appointing an unfit committee, although in each instance there was in the staff a group of splendid progressive men, several of whom had seen high-grade intern service, who were in every way deserving of the confidence of their fellow members and of consideration by the management. It is a mistake for the hospital management to appoint even the best men on a committee, as such men will be far more efficient if selected by their fellows.

The right to seek advice and council when and where it will cannot be denied the hospital management. It may invite one man or a group of men to act as its privy council, and in this choice consult only its own pleasure. This is quite a different thing from appointing a staff committee, to dominate the staff, to represent the staff, or to misrepresent the staff, as the committee sees fit. A staff so dominated or controlled can never raise itself to the high level outlined in this paper. The date of its birth and demise are the same, so far as serving a useful purpose is concerned.

What is the chief function of a hospital staff? The answer is very simple. The chief function of a hospital is to educate itself, individually and collectively, to better discharge the duties and obligations incurred by its members in accepting a staff appointment. To serve its purpose, a staff must hold frequent meetings, at which not only hospital problems, but more especially medical problems must be discussed, interesting cases must be presented for consideration, pathologic specimens must be studied, that all may be benefited. As failures are often even more instructive than successes, the former also should be reported for free discussion. It is especially important that the causes of "accidents" be thoroughly investigated and the responsibility fixed. Staff members should make frequent visits to medical centers, and every member making such a visit should bring back with him, for the benefit of his fellows, whatever seems to him worthy of presentation. The operating room should be open to staff members at all times, and all operations should be bulletined. As many members as possible should be invited to study interesting cases in the wards. Necropsies should be bulletined. In this way the experience of each staff member will become very considerable. It might be well for the staff to organize itself into a current medical literature club, to better keep abreast of the times, and also to have its members present synthetic reviews on this or that topic, thus taking an invoice of knowledge in stock. All staff members ought to take an active part in medical society work. With the improvement of the staff individually and collectively as the prime motive in staff organization, increased staff and hospital efficiency, and better service to the patient will be sure to come. All of this is very elementary and self-evident, yet I failed to find one open hospital in "Mid West" in which the staff either realized its opportunities or profited by them, along the lines suggested. Failure to recognize this important function, more than anything else, is responsible for the very general spirit of unrest and dissatisfaction at present existing in the hospital world. Its recognition and exercise must be the first step in the solution of many hospital problems.

With the right kind of attending staff, requests addressed to the hospital management will always be reasonable, in the interests of all concerned, and will receive respectful consideration. To keep the men pushing all at the same time, and in the same direction, will surely bring better things.

THE TRAINING SCHOOL AND THE NURSING STAFF

It need not be said that the members of the attending staff are under serious obligations to the training school, and that it is their duty to cooperate with the head of this department to give the young women in training a proper course of instruction, both theoretical and practical. Such a course must include the necessary laboratory work in selected medicochemical subjects, and in practical becteriology. A nurse cannot grasp the important facts in infection, or understand the all-important rôle of bacteria in surgical work, unless she knows something of bacteriology, and her knowledge must be practical as well as theoretical. Too often the obligation as instructors of nurses rests very lightly on staff members, who do not appreciate the responsibility they assume when they accept the invitation to teach.

The object of the training school is, or should be, primarily, to fit young women for the very responsible duty of properly caring for sick people. Judging from the practice in vogue in some hospitals, the management considers the training school an effective means to reduce the hospital expenses, or even a source of revenue. The management is ever ready to assign a pupil nurse to a special case, charging the patient for this service from $15 to $20 per week. I have known girls still on "probation," and not infrequently nurses in the third or fourth month of training, to be assigned to special cases. To pay a nurse $6 or $8 per month, and have her earn $20 per week, seems a not unprofitable arrangement, but in reality is short-sighted and ruinous. Such service cannot be profitable. The patient pays for and has a right to expect skilled service. It is unfair to the pupil nurses, because special duty often lays on their shoulders responsibilities for which their youth, lack of training, and inexperience entirely unfit them. It is unfair to the doctor because he has a right to assume that his patient, while in the hospital, is under trained and skilful eyes, not always the case in some hospitals. In fact, the question is often forced, "Would the patient not be much safer in his own home, in charge of a selected graduate nurse?" Some training schools expect members of the attending staff constantly to excuse and cover the shortcomings of untrained inexperienced girls; one is expected to become a party to a system which is as dangerous to the patient as it is unfair to the nurse, and which in the end is sure to be disastrous to the reputation of the hospital.

Young nurses ought to be under the direct, Argus-eyed supervision of older nurses, and ought to be in training at least eighteen months before they are assigned to special duty, even in mild cases. They ought to have completed two years of their course in training before they are assigned to special duty in serious cases. The head of the nursing staff ought not to assign pupil nurses to special duty at all, if by so doing the nursing staff is depleted, and the nurses remaining "on general" are overworked and unable to care properly for their patients. This practice is exceedingly bad even from a business standpoint. One patient with a "special" may leave the hospital fairly well satisfied, but a much larger number of patients "on general" leave the hospital feeling that they have not received the attention to which they were entitled. If the head of the nursing staff cannot provide special pupil nurses without overworking the nurses "on general," it is a far better policy to invite graduate nurses into the house for special duty. For obvious reasons a few mercenary hospitals insist that all special nursing in the house shall be done by pupil nurses. Some hospitals even assign a pupil nurse as a companion to a patient able to pay $20 per week. To be an agreeable companion to a "difficult" patient may be an accomplishment of some value, but of such experience a nurse has quite enough, without wasting time that should be devoted to acquiring real useful information. Besides, the nurse is not assigned to this post for her benefit, or for the benefit of the patient, but for $20 per week. Some hospitals assign entirely too many patients to one nurse, as many as six or seven or more patients in private rooms in charge of one nurse being not uncommon. But even with this great pressure on the nurses "on general," there is always one more pupil nurse for special duty, a most short-sighted policy.

Absolutely essential to good work by the nursing staff is management and discipline. I have said that the one special characteristic of the usual attending staff is a woful lack of harmonious cooperation. In a like manner the chief characteristic of many nursing staffs is a woful lack of efficient organization. The nursing staff must have a single, efficient, responsible and fearless head. This head must admit trainers, reject them if unfit; she must have the power to dismiss any nurse in the hospital. Head nurses on the floors of the wards must be just as completely under her authority as the youngest "trainer." In some hospitals, it occasionally happens that head nurses on the floors or in the wards, in length of service or in age, rank the head of the nursing staff, and hence do not take kindly to suggestions or advice. Sometimes these head nurses are not responsible to the head of the nursing staff, but to the same authority to which the head of the nursing staff owes her appointment. I must speak plainly on this all-important point. In community hospitals it very often happens that the head nurses on the floors or in the wards are members of the community and have occupied their positions for years. A younger member of the community, or an efficient lay nurse, is made head of the training school, or head of the nursing staff. This arrangement is entirely inconsistent with high-grade work, as the head of the nursing staff never has that authoritative control so necessary to efficient service. Far better to retire the noble well-intentioned women that have long since earned their crown, and put in their places well-trained, tactful and capable young women, graduate nurses if possible; but far better than the veterans would be the picked members of the third year class of "trainers." To be appointed head nurse on the floor or in a ward would be a much sought-after distinction, and such head nurses would respect and carry out the wishes and ideals of the head of the nursing staff.

If a community has one member competent to act as head of the nursing staff, that member must be put in control, in complete control, of all the departments of the nursing service; she must have the authority to dismiss any nurse regardless of age, position, length of service, or date of affiliation. If a community hospital is unfortunate in not having one such competent member, one must be developed or secured in some way. A thoroughly competent head of the nursing staff will get along in some way, and with great credit to herself and to the hospital, if given a free hand, even without very active cooperation on the part of the attending staff. An inefficient head of the nursing staff makes high-grade service impossible.

With a good attending staff, and with a competent, unfettered head of the nursing staff, there remains but little to add; all else will follow, and the work of the hospital will be high grade.

I wish briefly to refer to the practice in vogue in many of the medium-sized open hospitals: that of having every nurse graduating from the training school serve a short period at the instrument table. Smooth operating room work is not possible with such service. Worse still is the practice which one sometimes sees of having an older nurse, during the operation, act as instructor to the younger nurse at the instrument table. Nothing so loudly and so unfavorably advertises the shortcomings of the operating room service as this thoroughly amateur practice. I should very much prefer the untried nurse, green as she is, than the combination of teacher and pupil at the instrument table, a new nurse being introduced just as soon as the one becomes somewhat proficient. The impossibility of making every graduate an operating room nurse has long been recognized, and the best interests of the patient and of the hospital demand that the attempt to do so be discontinued. Work at the instrument table, as head nurse on the floor, or in a ward, must not be a part of the nurses' curriculum, but a distinction reserved for those especially capable.

AN EFFICIENCY EXPERT

There is no place where an efficiency expert can be more valuable than in the average open hospital. An expert of this kind ought to be employed for short periods, and as often as may be necessary. A report ought freely to criticize the hospital management in all its details, from the dean of the attending staff and the head of the nursing staff, to the orderly in the wards. Every one at all familiar with the ordinary hospital knows how much time is wasted by members of the attending staff and by nurses, and this needless waste of time is not confined to any particular department. It is found all through the house, from the minute the patient enters, until the nurse, with a "bon voyage," passes her into a departing taxi: the great distance nurses travel — travel is the word — to get a drink of water for a patient, or to journey to the chart room to fill in the records, the time that is lost in serving meals, the hours that are lost by the members of the attending staff in waiting for dressings, or because the operating room is not in readiness. An efficiency expert would see many time-saving opportunities that entirely escape notice, not only by those who have been long in the service, but also by the more or less critical causal visitor. In fact, those long in a service are the very last to see the weak points of such a service; they have become a part of the system, and the system a part of them, and too often they are both deaf and blind to its imperfection. The efficiency expert would note also the character of the bedside attention, whether prompt, gentle, tactful, and skilful, or whether dilatory, rough, irritating and crude.

CONCLUSION

A high-grade hospital must have a conscientious, progressive, united and cooperating attending staff, integrated to educate and improve itself, and to discharge its duty alike to patients and to nurses in training.

It must have a nursing staff under the guidance and control of a single, efficient, capable and authoritative head.

It must have a general management which, hard pressed though it may be by financial considerations, remains ever sensitive and responsive to the best interests of its patients.

In such a hospital, responsibility can always be fixed, untrained and poorly supervised girls are not assigned to special cases, the number of patients under the care of one nurse "on general" never exceeds a certain fixed minimum, there is not an unending chain of inexperienced girls at the instrument table, and an efficiency expert is rarely needed. This hospital will fulfil its high mission as an educator of the profession and the community in which it is located.

ABSTRACT OF DISCUSSION

Dr. I. D. Webster, San Diego, Calif.: I am new at the hospital business. It has fallen in my lot to have charge of the San Diego County Hospital. We had a county physician in that county who did not agree with the county medical society or any of its fellows, and the hospital was closed to the medical profession of the community. The county medical society took the matter up and through the board of supervisors I was appointed county physician. I immediately called on the county medical society to furnish the visiting staff. As far as I know the very close relationship that we have established between the county hospital and the county medical society is perhaps somewhat unique. I asked the county medical society to appoint a so-called hospital committee, of which they made me a permanent member, with two other members from the county medical society, and it rests with this hospital committee to choose the visiting staff at the hospital. We had about forty volunteers seeking to get on the staff, and the present situation is that there are a great many who would like to be on the staff to whom we cannot give places. We have four general surgeons, two gynecologists, one orthopedic surgeon; one man who does nothing but pathology and has charge of the laboratory, one on nose and throat and one man who does nothing but the eye. There is a three months' service for each individual through the year and I believe there is some dissatisfaction at that. We are trying to figure out some way to make their services continuous through the year. In regard to the training school, it was a two years' school and the graduates were not eligible for registration. We changed it to a three year course and we were told by the registrar of nurses that our school made the greatest progress of any school in the state. It is about two years since we made this change.

Dr. William H. Walsh, Philadelphia: I am forcibly opposed to nurses giving anesthetics, for I consider the administration of an anesthetic a very important function of the practice of medicine, and under this assumption, from both a professional and a legal standpoint, it would seem perfectly logical to assume that a nurse has no more right to give an anesthetic than she has to open the abdomen. While it is becoming quite common to find that almost any nurse considers herself a competent anesthetist, it is a well-known fact that very few nurses ever become competent in that highly specialized work, and then only after the most painstaking instruction and long and varied experience—experience that is necessarily acquired at the expense of the patients. The examination of a patient before the administration of an anesthetic is a vital part of the duties of the one who gives the anesthetic, and it is quite beyond my comprehension to understand how a nurse can perform this part of her duties with the limited amount of medical knowledge at her command. Finally, the administration of an anesthetic is the function of a physician, and I believe that if the question were ever brought before the higher courts it would be definitely decided that the administration of these drugs was in fact practicing medicine.

With regard to the point emphasized by Dr. Littig concerning the selection of the officers and the committees of the hospital staff, it is a question in my mind whether it is not sometimes better for the board of managers to pick out certain live, wide-awake, progressive members of the staff and make them the officers thereof rather than permit the staff to go on year after year electing the same old reactionary members as their officers, without the courage even to propose others for fear of offending the overlords. This evil tendency forms what has been called by Dr. J. Chalmers DaCosta the "system." It means that certain of the older members of the staff improperly and unjustly acquire sufficient influence and power to further their own selfish interests at the expense of the hospital and public welfare. Under such domination, even a good hospital superintendent is often thwarted in his attempts to do what he knows is for the best interests of the hospital, and in spite of the protests of the regularly appointed authority, these men get more than they deserve. Their opinions on vital questions are often accepted, and they become highly indignant at the attempt of the hospital administrator to suppress the abuses that they foster. With such a staff in full sway the abuses accumulate with great rapidity and neglect is tolerated and excused in those who belong to the "system," but for others the best efforts and most brilliant accomplishments are censured. New appointments to the staff are handled much as is the common garden variety of ward politics, the question of fitness being of little importance, personal reasons being the deciding factor. Again, in the words of Dr. DaCosta, "On one side we see the suffering poor; on the other the foul, loathsome rule of the 'system.' Everything is passed on to the men higher up. If I had my way I'd strike that thrice accursed 'system' dead." I should be pleased to assist Dr. DaCosta when he gets ready to strike. On general principles it would be the best plan to formulate a rule in every hospital that staff officers shall not hold office longer than a period of two or three years, and by this procedure it might be possible to break up the "system."

With regard to the question of continuous service, which has been so ably handled by Dr. Littig, I think it is generally conceded by all close observers of hospital work that both from the standpoint of the medical treatment of the patient and the administration of the hospital, it is a far better plan to have continuous service in preference to any other arrangement. The first consideration in any hospital should be the proper and efficient care of the patients treated therein, and there can be no sound argument against the proposition that the patient is better treated if one physician or surgeon attends him throughout his stay in the hospital. This fact is particularly applicable to the orthopedic service of a hospital, it being particularly desirable that the man who operates in such a case should not only supervise the after-treatment, but should prescribe the proper brace, approve of its adjustment and indicate the changes necessary as the child grows. When the individual patient treated in the hospital becomes the most important consideration in that institution, continuous service will be adopted in all cases.

Dr. L. W. Littig, Davenport, Iowa: I wish to say that is what we hope to accomplish, to have some of these somnolent gentlemen retire. A staff that does not meet for six years is moribund; it is better to have its inactive leaders retire and more progressive men elected to their position. The question of anesthesia does not trouble us much in the Middle West. We have good anesthetists, usually young practitioners that make a specialty of anesthesia, and really do very well. We have but few resident physicians, probably in not more than six hospitals, and in two of these hospitals the anesthetic is administered by students, under the direct supervision of an expert anesthetist. We never have nurses give anesthetics, although the fact has been demonstrated that nurses do make splendid anesthetists. I do not think it is essential that every nurse graduating from a hospital should serve a course at the instrument table. After graduating, nurses have very little work of this kind to do unless they take up hospital work, when an additional course in training should be taken. It is certainly dangerous practice to have every nurse that graduates serve a short term at the instrument table. This is not done in any of the large clinics. The average nurse can pick up all she needs to know by careful observation as assistant to the first operating room nurse.

Tuberculous Metatasis.—It is a sound assumption, that general metastasis in its worst form of tuberculous meningitis is an accurate index of the tendency of any procedure, whether surgical or therapeutic, to mobilize tubercle bacilli infesting tuberculous lesions in various parts of the body. Again and again it happens that in mobilization of tuberculous joints, after necessarily imperfect surgical operations on tuberculous joints or bones or mucous membranes (rectum), or in lymphatic glands, metastasis has been followed by fatal tuberculous meningitis. In these operations, which frequently involve scraping and other crude methods which inevitably open up afferent venous and lymphatic channels by which material elements, such as tubercle bacilli, may be carried into near and distant parts by these channels, tubercle bacilli find their way into the general circulation, and, if in sufficient numbers, may lead to tuberculous meningitis. In some cases, the tuberculous meningitis may be independent of this local injury of tuberculous tissue, but in many cases the tuberculous meningitis is the direct effect of the damage to the tissues around the tuberculous focus.—W. Camac Wilkinson, M.D., *Practitioner*, October, 1915.

THE BLIND DENTAL ABSCESS [*]

HENRY LUDWIG ULRICH, M.D.

MINNEAPOLIS

At the University of Minnesota Hospital, in an effort to correlate oral sepsis with systemic lesions, particularly in patients exhibiting rheumatoid conditions, special inspection of mouths was made for pyorrhea, gingivitis, caries, and by means of the Roentgen ray, for apical abscesses. We were struck by the frequency of apical abscesses in these cases. Routine work was extended to all patients in the hospital in the medical service. Further search was made for apical abscesses by studying the roentgenograms of the mouth in a medical Roentgen-ray laboratory, the purposes of the roentgenograms in many instances being remote from that of ours. The findings are as startling as they are of significance. A little over 68 per cent. of all artificially devitalized teeth were found with apical abscesses, and the total number of abscesses, on 1,350 dead teeth, including those found on pulpless teeth due to caries or accident or to proximal fillings was 83 per cent. (Tables 1 and 2).

TABLE 1.—DENTAL ABSCESSES FOUND IN FIVE HUNDRED CASES

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
500	1,350	976
Number of these teeth abscessed	Nmber of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
669, 67.5%	439, 32.62%	1,108, 83.42%

TABLE 2.—DENTAL ABSCESSES FOUND IN EIGHTY CHARITY AND THIRTY-SEVEN PRIVATE PATIENTS *

CHARITY PATIENTS

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
80	241	111
Number of these teeth abscessed	Number of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
82, 73.87%	130, 53.5%	212, 88%

PRIVATE PATIENTS

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
37	131	102
Number of these teeth abscessed	Number of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
76, 74.7%	29, 22%	105, 80%

[*] In 117 cases divided into poor and rich patients little difference is shown in apical infections.

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[*] From the Department of Medicine of the University of Minnesota.

[*] Read before the American Association of Immunologists, Washington, D. C., May 10, 1915.

One hundred and fifty-nine of these cases with apical abscesses have had bacteriologic review. Henrici[1] reports 107 cases from the University clinic of which 100 gave the *Streptococcus viridans.* Fifty-two are from my private clinic, fifty of which gave *S. viridans* or *S. hemolyticus;* occasionally *S. mucosa* was recovered. Thus, 150 of these 500 cases gave evidence of streptococcus, either in pure culture, or as the dominant organism. Occasionally the *Staphylococcus aureus, or albus,* or the *Micrococcus catarrhalis* was also observed in conjunction with streptococcus. The bacillary growths were considered contaminations. Gilmer and Moody[2] report streptococci, both *S. viridans* and *S. hemolyticus,* and other organisms, such as *S. aureus, Micrococcus catarrhalis,* the *Bacillus fusiformis,* and in two instances diphtheroid bacilli.

Hartzel and Henrici[3] find in 162 cases that 150 yield streptococci. They report inoculation of twenty-four rabbits with *Streptococcus viridans* isolated from apical abscesses. Heart lesions were found in five, kidney lesion in seven, those of the aorta in three, and of the joints in two.

In the light of the doctrine of focal infections the prevalence of these abscesses, with their flora and its pathogenicity, takes on added significance. To me the apical abscess is merely another evidence of a focus of streptococcal focal disease, just as the lesions found in the heart, the mucosa of the stomach, the articulations or the kidneys are evidences of secondary deposits. In other words, it is hematogenous in origin.

Rosenow[4] remarks:

> It would seem, therefore, that focal infections are no longer to be looked upon merely as a place of entrance of bacteria, but as a place where conditions are favorable for them to acquire the properties which give them a wide range of affinities for various structures.

At the time of devitalization of a tooth apical trauma occurs with its subsequent area of lowered resistance, and possibly lowered or changed oxygen pressure, thereby forming an ideal nidus for streptococcal growth. This is possibly the explanation of all apical abscesses with the probable exception of those capping pulpless roots following caries. Under preexisting conditions of caries I can readily see that infection may travel along the canal, producing direct infection of the alveolar bone. It is an interesting commentary that those who have written on this subject, Billings, Rosenow, Gilmer and Moody, and Hartzel and Henrici have still the old habit of thought in looking on the mouth as a primary territory apart from the rest of the body. The suggestion first made by me[5] that these foci are not primarily dental, but secondary deposits, that is, hematogenous in origin, has produced stormy discussions among dentists. One group has accepted the suggestion, while the other claims that these abscesses are due to dental technic, that is, a matter of poor root-canal filling. It seems highly improbable to me that out of 159 possible infections, 150 should turn out streptococcal in origin if there were not some broad biologic law, such as the selective and mutative activity of this group, to account for such results.

Experimental evidence as to the mode of origin of these abscesses has not been secured. Their pathogenicity and their relation to other concurrent foci have had ample clinical verification. There are four striking forms of evidence for this judgment:

First, acute exacerbation of systemic symptoms takes place following their removal; in other words, focal reactions occur, owing to auto-inoculation at the time of their reduction.

Second, acute new systemic symptoms have followed reduction of these areas; in other words, other foci were established.

Third, improvement and sometimes total recession of other focal areas followed the extirpation of these sites.

Fourth, local and focal reactions occurred with vaccines prepared from infected apical areas.

Seventy-six cases were analyzed clinically in which a streptococcus was isolated from apical pockets.

In a recent study, "Streptococcicosis," [6] they were classified for convenience into:

First, a rheumatoid group in which the special feature of the cases consisted of arthritis deformans, rheumatoid arthritis, neuritis and myositis, with or without cardiac involvement (38 cases).

Second, a cardiovascular group exhibiting in the main feature heart lesions or hypertension without any appreciable rheumatoid manifestations (6 cases).

Third, an asthenic group closely allied to Group 1, showing joint, periarticular pains, nerve or muscle pains, but in which the main feature is one of asthenia, mild anemia, albuminuria, and occasionally myocardial weakness. Visceroptosis is a common finding in this group (18 cases).

Fourth, a gastro-intestinal group exhibiting gastroduodenal ulcers, gallbladder or pancreatic symptoms, and acute enteritis (4 cases).

Fifth, a genito-urinary group allied to Group 1 in having at times rheumatoid pains with renal, bladder, prostatic or vesicular involvements (2 cases).

Subgroup 1, streptococcus focal infections superimposed on tuberculosis, syphilis, primary anemia or vice versa (8 cases).

A striking feature of this analysis is the diversity of clinical manifestations for which streptococcal focal disease is responsible. The diversity of symptoms is so marked that I have proposed the term "streptococcicosis" for streptococcal focal disease. Under such an etiologic name various branches of the profession could approach this diverse problem with much more clarity and unity.

Of the more striking foci or symptoms in these groups we have manifestations of rheumatoid conditions, 51 per cent.; heart lesions, 47 per cent.; blood (that is, secondary anemia), 43 per cent.; tonsils, 40 per cent.; pyorrhea, 25 per cent.; kidneys (albuminuria and nephritis), 34 per cent.; caries, 15.8 per cent. (Table 3).

Although the tonsil is represented by 40 per cent., a certain number of these patients presented themselves with tonsils removed; or in the early efforts at correlation, the inspection of the tonsil was not so close as it is at present. The tonsil or pharyngeal ring is the commonest focus and possibly the primary portal of entry. Experience with alveolar infection in which systemic symptoms were present has made us very cautious concerning the apparently innocent looking tonsil. Invariably the same tonsil on closer inspection, and particularly after it had been removed, under protest, by the throat specialist, has proved our suspicions correct.

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[1] Private communication.

[2] Gilmer, T. L., and Moody, A. M.: A Study of the Bacteriology of Alveolar Abscess and Infected Root Canals, The Journal A. M. A., Dec. 5, 1914, p. 2023.

[3] Hartzel, T. B., and Henrici, A. T.: A Study of Streptococci from Pyorrhea Alveolaris and from Apical Abscesses, The Journal A. M. A., March 27, 1915, p. 1055.

[4] Rosenow: Transmutation within the Streptococcus-Pneumococcus Group, Jour. Infect. Dis., January, 1914.

[5] Ulrich: Some Medical Aspects of Certain Mouth Infections, Dental Rev., December, 1914.

[6] Read before the Minnesota Academy of Medicine, Jan. 6, 1914.

To us who are attempting active immunization against disease, the blind dental abscess has a very practical significance; the apical abscess may be the only focus left, evacuation of which will permit the reestablishment of renewed integrity to all parts. It may hold the balance of power in the struggle of the body for complete sterilization. Thus the discovery of such a focus is important in the prognosis of any given case.

TABLE 3.—NUMBER OF TIMES CLINICAL MANIFESTATIONS OR SYMPTOMS WERE NOTED IN SEVENTY-SIX CASES OF STREPTOCOCCICOSIS WITH ALVEOLAR ABSCESSES

Rheumatoid conditions	39	Gastric ulcer	4
Cardiac lesions	36	Cystitis	3
Secondary anemia	33	Pharyngitis	3
Chronic amygdalitis	30	Ascites	2
Pyorrhea	20	Glucosuria	2
Albuminuria	19	Prostatitis	2
Caries	12	Conjunctivitis	2
Visceroptosis	10	Primary anemia	1
Adenopathy	8	Enteritis	1
Neuritis	7	Syphilis	1
Bronchitis	6	Iritis	1
Hypertension	6	Emphysema	1
Nephritis	6	Exophthalmic goiter	1
Tuberculosis	6	Rhinitis	1
Leukocytosis	4		

In every case of streptococcal focal infection, its presence or absence must be established. I can look back on my attempts at vaccine therapy in middle ear, accessory sinuses, and chronic bronchial cases, and now see a possible explanation for some of the puzzling reactions and failures I achieved.

In every case of focal infection due to streptococcus, the presence of this focus may aid us in obtaining material for the preparation of vaccines. Much trouble and disappointment in attempting cultures from glands and tonsils can thus be avoided.

It is difficult, if not too early, to judge of the value of vaccine therapy in streptococcal focal disease. It is our custom to make a vaccine from a root pocket in every possible case, although the major number of these patients are relieved by the reduction of foci alone.

Ten cases with subacute or chronic rheumatoid conditions were treated with autogenic vaccines made from blind abscesses, all streptococcic in type.

Two cases with acute exacerbations of violent character were quickly relieved. In five cases of chronic arthritis, the patients were much improved. In two cases of arthritis, one of sixteen years' duration, the patients are still under treatment and are undergoing steady improvement. One patient with marked arthritis deformans has stopped treatment with no manifest improvement of the joints. Experience has taught us that small doses of vaccine, 5 or 10 millions at about five-day intervals, give the best results.

420 Syndicate Building.

HEMOLYSIS AND AGGLUTINATION IN TRANSPLANTATION *

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In studies of the conditions incident to the cause of autolysis and the dissolution of the transplant, we devoted especial attention to the influence of hemolysis and agglutination on transplants. No question is more timely than that concerning the causes of their absorption.

Most authors lay great stress on the importance of eliminating the two great dangers in blood transfusion — hemolysis and agglutination. We must consider blood transfusion not only as an infusion of a certain quantity of fluid, but also as a transplantation of a definite mass of tissue represented by the cellular elements of the blood.

Accordingly, before transplanting the thyroid, we first made hemolysis and agglutination tests, and operated only when these reactions were absent.

Owing to difficulties in obtaining and in handling the blood (which have since been obviated to some extent by a new method), we are thus far able to report results in only seven instances.

HEMOLYSIS AND AGGLUTINATION

Date	Donor	Host	Hemolysis	Agglut.	Remarks
1/22	179	180	Negative	Negative	In this instance there was autolysis and absorption in three months.
2/3	190	191	Partial	Negative	Thrombosis of the artery set in in six weeks.
2/17	201	202	Negative	Negative	The results were good after eight days.
3/10	224	225	Negative	Negative	The results were good after three weeks.
3/12	228	229	Negative	Negative	Hemorrhage set in in two weeks.
3/20	215	239	Negative	Negative	
4/9	281	282	Negative	Negative	

Before the employment of these tests, we were unable to obtain any results from homotransplantation. But since the importance of these reactions came to be more clearly appreciated, we have in two instances, at least, obtained a satisfactory preservation of the transplant for one and three weeks, respectively. While our experiments have been few in number, we feel justified in concluding from results so far obtained that the hemolysis and agglutination tests to a certain extent are some indication of the tolerance of the tissues of one animal for those of another. Such a hypothesis is given some support by the fact that in blood transfusion these reactions are now largely depended on as clinical indicators. May they not therefore be reasonably expected to be of equal significance in the transfer of the less liquid tissues from one organism to another?

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FACTITIOUS DERMATOSES *

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The object of this paper is to record a group of cases of self-inflicted dermatitis, which have occurred during the last several years in the practices of the late Dr. James Nevins Hyde, the late Dr. Frank Hugh Montgomery, and myself.

Much confusion exists concerning the dermatitis herein described, and the physician who is originally consulted in these cases rarely is able to recognize their character, commonly on account of prejudice, through personal acquaintance with the patient or family. It is on account of this failure to appreciate the possibilities in these cases that it has been thought worth while to record this group of thirty-four cases.[1]

Opinions differ among men who recognize these, and some able observers have recorded cases as being of spontaneous origin, in hysterical persons, which later have proved to be factitious. That there are some cases in which a spontaneous origin can hardly be doubted, there is no question. Yet the large majority, according to most observers, have an associated, though often unrecognized, factitious origin.

In public practice, paupers and others are not infrequently seen who inflict injuries for the purpose of securing financial or other aid. In Europe, the professional malingerer is not uncommon, and the degree of skill exhibited by these people in imitating disease is at certain times high. In this country this class of cases is uncommon.

There is another class in which existing skin diseases are aggravated by irritation, and prolonged by the patient for various reasons. All of these types are excluded from this paper.

The major portion of the patients recorded here were women and poor girls of a highly neurotic temperament, and showing distinct stigmata of hysteria. As will be noted from the case histories, the lesions occurred on accessible parts of the body, such as the breasts, abdomen, and limbs; all were areas accessible to the right hand. The right arm was commonly exempt, except in left-handed individuals. The lesions occurred suddenly in all cases, and usually developed during the night, when the patient was alone; and several of the patients were able to predict the exact spot where a lesion was going to develop, much to the astonishment of their friends.

An interesting feature, in a large number of cases, was the fact that the disease was initiated through accident. This may have been trifling, and the dressing employed in the treatment gave the suggestion to the patient as to how to carry out the deception.

The symptoms in the cases vary from a simple erythema to vesicular, bullous, gangrenous and ulcerating lesions, with their sequels.

A number of cases are on record, and there occurs one in this series, in which tissue destruction has been marked, and amputation of fingers, the whole hand, and even the arm has been performed, with the full consent of the patient.

The methods employed by these patients are varied, and are at times exceedingly difficult to detect. A long list of animal, vegetable and mineral substances is included in this category. Those most commonly used are phenol (carbolic acid), croton oil, cantharides, mustard, various acids and alkalies, including lye, tartar-emetic ointment, cresol and compound solution of cresol. Other methods employed have been burning with matches, with pieces of hot metal, or with bottles containing very hot water, and friction with the fingers, sandpaper, and other rough substances. In one patient whom I saw, intense dermatitis was aroused by rubbing tobacco briskly into the skin of the genital region. The character of the lesions and the intensity of the inflammation depend not only on the agent employed, but also on the strength of the solution, the duration of the application, and the tissue resistance.

ETIOLOGY

The cause of these peculiar actions in the individual must be sought in derangement of the nervous system. All the intricate processes concerned in hysteria could be brought forth to explain the condition here. In some cases there is exhibited a desire on the part of the patient to escape from disagreeable duties or surroundings; in others, to gain attention, sympathy, interest or pity, or to achieve notoriety. In some instances, no possible explanation can be given, and it may be, as suggested by Pernet and Towle, that in a certain proportion of cases there is a dual personality, or a subconscious state, in which the lesions are produced, while in the normal condition the patient has no recollection of the acts performed in the other state.

Towle[2] explains the production of these lesions from the standpoint of hysteria, on the ground that the initial wound which occurs in numbers of cases serves as a suggestion to the patient, who afterward enters into a somnambulistic state, in which he is powerless to control the suggestion of producing wounds by any means at hand. On emergence from this state, the patient has no memory of the somnambulistic period or of the production of the wounds, and honestly believes the wound appeared of itself.

Pernet[3] concludes that in some instances there is an altered personality, whereby the self-infliction of wounds is not remembered by the patient at the time they are examined. In all these cases hysterical stigmata can be found.

Galloway[4] states that the more these cases are investigated, the less probable does their spontaneous origin become.

Jelliffe,[5] in a discussion of hysteria, states that the various cutaneous manifestations occurring in hysteria, such as bullous dermatitis and other lesions, are, in the vast majority of cases, artefacts; yet there remain a few in which this factor cannot be proved.

In the major portion of recorded cases the factitious element is present, though it has not been proved in many of them, for various reasons. Many cases of

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* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space, only a part of the case reports appears in The Journal. They will be recorded in full in the Transactions of the Section and in the author's reprints.

[1] A number of these were collected and the histories written by the late Dr. Montgomery for a paper which he read before a medical society. These are included in this report for the reason that no publication of the report was made.

[2] Towle: Gangraena Cutitis Hysterica: A Report of Four Cases Occurring in Hysterical Individuals, with a Review of Ninety Cases in the Literature, Part of Which Were Artificial, the Remainder Being Reported as of Spontaneous Origin, Jour. Cutan. Dis., 1907, xxv, 477.

[3] Pernet: The Psychological Aspect of Dermatitis Factitia, Jour. Cutan. Dis., 1909, xxvii, 547.

[4] Galloway: Allbutt's System of Medicine, 1911, xi, 54 and 55.

[5] Jelliffe, in Osler and McCrae: Modern Medicine, 1910, vii, 846.

pemphigus gangrenosus of supposedly spontaneous origin have been proved to be factitious by the discovery of the materials used, and later by confession of the patient. That spontaneous cases do occur is strongly supported by Van Harlingen.[6]

Corlett[7] reported a case having lesions of this type. The patient was a hysterical girl, aged 15. This case was recorded as one of spontaneous gangrene.

White[8] recorded a case of recurrent, progressive, bullous dermatitis in a hysterical subject. This case was well studied, and in the opinion of the reporter was one of spontaneous occurrence. In the discussion which followed the reading of the paper, opinion was divided as to its spontaneous or factitious origin.

Illustrating the difficulties encountered in arriving at conclusions on this point, may be mentioned a case recorded by Shepherd.[9] This is the record of a patient, aged 20, who had suffered with a recurrent bullous eruption of the face for four years. After much study, the reporter concluded that the eruption was feigned. The possible connection of this eruption with the menstrual epoch was discussed. The interesting feature was its localization on the face alone.

An interesting case of factitious origin was described by Stelwagon.[10] This is the record of a female patient, aged 19, who had produced lesions on the forearms and legs, over a period of several months, by constant rubbing with the finger. The object of the patient was not to create sympathy, but there was an irresistible impulse to rub the skin, which apparently created an agreeable sensation.

Another instructive case was recorded by Weber.[11] This patient, a woman aged 37, was suffering with hysterical functional nervous affections, and was also a malingerer. The lesions consisted of bullae, with superficial ulceration, and were located on the front of the abdomen. Their duration was seven months. A starched bandage was applied, in order to detect deception. The bandage, however, became loosened, probably by deflating the abdomen, by means of which the patient was able to introduce her hand under the upper anterior portion. In this area bullae developed, and on examination some dark specks were detected in the raised epidermis over the bullae. These specks proved to be powdered cantharides. In spite of the finding, the patient would not acknowledge the deception.

Weber also reported a patient who produced spurious Roentgen-ray ulcers by means of hydrochloric acid. In this patient an appendectomy had been performed, as well as three other abdominal operations. On account of menorrhagia, she was treated with Roentgen rays, and later developed ulcers which spread over the whole abdomen, and which were produced as stated above.

Shepherd[12] recorded four cases which are instructive:

1. Gangrenous patches on the skin of the arms, in a woman aged 30, produced by some heated object. No hysterical stigmata.
2. Woman, aged 44, suffering with a bullous dermatitis, produced by some blistering agent, probably cantharides, phenol, acetic or other acid; the object was to avoid disagreeable work.
3. Woman, aged 28, hysterical stigmata present. Bullous lesions produced by cantharides. Object, to excite sympathy and interest.
4. Woman, aged 24; no hysterical stigmata. Gangrenous patches on foot and leg. Agent used not discovered. Original lesion due to an accident, subsequent ones to design.

Pernet[13] recorded two cases of trichotillomania, associated with other factitious manifestations. These occurred in young women aged respectively 20 and 22.

Illustrating each side of the contention are cases recorded by Wende.[14]

The first case, in a young woman aged 17, had its beginning following the application of phenol to a wart situated on the back of the right hand. Subsequent to this, gangrenous areas began to develop on other parts of the body.

In the second patient, aged 18, the disorder followed an accident sustained while sleigh-riding, the first lesions appearing as a group of vesicles on the nates. In this case, the recurrences were always confined to the original area. The peculiar location of the lesions, in a situation hard to reach by the hand, and the character of the lesions, placed the case, in the mind of the reporter, beyond the possibility of being factitious.

Two affections described under other titles should be mentioned here. Under the title "Zoster gangrenosus atypicus," Kaposi[15] described two cases of cutaneous disease occurring in hysterical young women. He later described others, making a total of eleven.[16] In these cases, recurrent lesions appeared, consisting of grouped vesicles and papules, followed by crusting. In some cases, by coalescence, large areas of gangrene were produced, which, after the sloughs had separated, were followed by cicatrices, which often showed keloidal developments.

Rona[17] (Budapest) stated that in 1889 he reported a case of zoster gangrenosus atypicus, and attempted to solve its etiology. Since that time his views had radically changed. In four of the five cases under his observation there were definite hysterical stigmata; in four, the lesions followed a trauma, two from a needle wound of the finger; one followed operation; one followed abortion. In two of the cases, caustic soda was found secreted. That all the cases were identical with those described by Kaposi he believed there was no doubt, and that the differences in the descriptions of the disorder are due to the different chemical substances used in their production, and the concentration, mode and place of application.

Recently, a group of cases has been described under the title "dermatitis symmetrica dysmenorrhoica," by Matzenauer and Polland.[18] They report six cases, occurring in persons of unstable mentalities. The lesions were usually linear, and developed rapidly. The authors set up a hypothesis explaining the spontaneous occurrence of these lesions on the ground of some change in the internal secretions.

Kreibich[19] discusses the same subject, but proposes the term "gangrenosa neuroticum dysmenorrhoica."

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[6] Van Harlingen: Recent Contributions to Our Knowledge of the Hysterical Neurosis of the Skin, Jour. Cutan. Dis., 1903, xxi, 403. An excellent summary of recorded cases of factitious and spontaneous eruptions occurring in neurotic patients, with extensive bibliography.

[7] Corlett: Jour. Cutan. Dis., 1897, xv, 551.

[8] White: Jour. Cutan. Dis., 1903, xxi, 415.

[9] Shepherd: A Case of Recurrent Bullous Eruption of the Face, Probably Pemphigus Hystericus, Jour. Cutan. Dis., 1906, xxiv, 164.

[10] Stelwagon: Arch. Dermat., 1882, viii, 236.

[11] Weber: Brit. Jour. Dermat., 1912, xxiv, 78.

[12] Shepherd: Jour. Cutan. Dis., 1897, xv, 543.

[13] Pernet: Brit. Jour. Dermat., 1915, xxvii, 85.

[14] Wende: Dermatitis Vesico-Bullosa et Gangrenosa Mutilans, Jour. Cutan. Dis., 1900, xviii, 548. Report of two cases having a hysterio-traumatic origin.

[15] Kaposi: Arch. f. Dermat. u. Syph., 1889, xxi, 561.

[16] Kaposi: In Crocker's Diseases of the Skin, Ed. 3, 1903, p. 534.

[17] Rona: Arch. f. Dermat. u. Syph., 1905, lxxv, 256.

[18] Matzenauer and Polland: Arch. f. Dermat. u. Syph., 1912, cxi, 385 and 454.

[19] Kreibich: Arch. f. Dermat. u. Syph., 1913, cxiv, 165 and 172.

Friedeberg[20] describes a case, under the title "dermatitis symmetrica dysmenorrhoica," of a woman, aged 30, who suddenly developed bullous lesions on the cheek, which in the course of a few days became crusted and healed, without scarring. At the next menstrual period, a similar process occurred on the trunk.

Mathes[21] discusses the etiology of these cases.

Török[22] (Budapest) discusses the cases of dermatitis symmetrica dysmenorrhoica, and concludes that the most probable explanation of these cases is the presence of a factitious element.

DIAGNOSIS

The diagnosis is usually not difficult to one familiar with cutaneous disorders, since the lesions, though of a simple inflammatory nature, are different from those of any recognized disorder. The most important points are the following:

The lesions occur within reach of the patient's hands, and are usually most numerous on regions easily accessible to the right hand. These include the anterior surface of the body, the left arm, forearm and hand, the lower extremities, and the right side of the face and neck. As a rule, the palms and soles, eyelids, mouth, nose, ears, scalp, and genitals are spared.

The lesions are always sharply outlined, and of unusual, often fantastic, shape. They appear suddenly, at irregular intervals, usually one or two at a time, and run a fairly rapid course. When fluid caustic is used, it frequently happens that one or more drops run down the skin from one of the lesions, leaving a characteristic streak, which is usually lighter in color and shows a more moderate degree of inflammation than the patch from which it depends. When the caustic is applied with a needle or pin, as is frequently the case in gangrenous areas, the border shows a finely jagged or serrated edge, made by the numerous punctures in the advancing border. When gangrene is present, it is usually very superficial, and is separated from the normal skin by a narrow, vivid red line. The fingers, nails or some article of clothing are often stained by the agent employed.

Subjective sensations, usually pain and burning, may be greatly exaggerated by the patient, who will cringe or jump at the slightest touch during the examination, and will complain bitterly about the distress caused by the simplest and lightest of dressings. On the other hand, some of the areas are largely anesthetic, and some of these individuals like to exhibit their ability to endure pain. Many of the patients enjoy mystifying their medical attendants by predicting, from twelve to twenty-four hours in advance, the exact areas on which new lesions will occur, claiming that during this period they experience in these areas a sense of heat and burning and other abnormal sensations.

The impulse one has is to confront the patient immediately with the charge, and there are several who advocate such procedure. While occasionally this terminates happily, in the majority of cases it probably would fail, in which case it would work an injustice on the patient, her friends and the attending physician. A plan which I pursue is to instruct the patient in methods of treatment, and during the instruction impress her with the idea that there is no question whatever as to what has produced the lesions, and that if she will faithfully apply the remedies suggested, and as faithfully avoid using anything else, she will make a prompt recovery. Then have the patient watched with care, using at a later date, if necessary, fixed dressings; that is, dressings which cannot possibly be removed without detection; or, if driven to extreme measures, take the patient to a hospital, where she can be kept under strict surveillance, both day and night, when, by complete disappearance of the lesions and the nonappearance of new ones, the diagnosis is proved. This, however, does not reveal the causative agent. In an intelligent patient, the appeal to her pride and self-respect has weight. In certain of the cases no impression is made by such an appeal. It may be that a number of these patients belong to the group described by Pernet and Towle, those who really do not know that they have inflicted the injuries.

Further aids to the diagnosis may be found in the general characteristics of these patients, the unusual history of the disorder, the discovery of anesthetic areas, especially of the fauces and conjunctiva, and other evidences of hysteria.

CASE REPORTS

Case 1.—The patient whose lesions are shown in the illustration was being attended in one of the hospitals of the city for ulcerated, gangrenous lesions occupying the entire length of the left hand, forearm and arm. I saw her in consultation at the hospital. She had been examined by a number of physicians, and apparently was much pleased at the prospect of having another examination. There were several physicians and hospital attendants in the room when the patient was examined. During the undressing of the arm, the following history was elicited: At the beginning, an apparently serious lesion occurred on one finger. A physician was called, who dressed the lesion and stated that he would redress it the following morning. On the second visit, a similar lesion was found immediately above the bandage. This was dressed, and, either daily or on each alternate day for several weeks, new lesions continued to appear immediately above the bandage. They were painless, occurred suddenly, always developed during the night, and the first lesion seen by persons other than the patient was a bulla. The bulla would soon become dark, gangrene would follow, and either deep or superficial ulceration result. At the moment of examination, lesions varying from superficial scars to deep ulcers, through the various stages, were present. They were irregularly shaped, and varied in size from that of a split pea to that of a silver dollar. During the time the dressings were being removed, the lesions were carefully examined, but no questions were asked the patient. She, however, was apparently enjoying the situation and attention. When the dressings were all removed, with no preliminaries, the patient was informed that the lesions were due to the application of phenol made by herself. She was so surprised that before she could master her emotions she admitted the deception, and finally stated that by accident she had learned how to produce the lesions with phenol, and continued the process, as it relieved her from the disagreeable duty of practicing at the piano.

Case 4.—Miss I. V., aged 22, of nervous temperament, had had the cutaneous disorder one and one-half years. The history obtained from the patient and her mother was as follows:

In the beginning, a finger was burned with nitric acid. The lesion remained open for some time. Three months later an ulcer appeared in the same area. Six months after the beginning, curettage was performed and necrotic tissue removed. One month after the curettage, an incision was made into the hand, after which the lesions disappeared, excepting a small spot. Two months subsequently, the record states, the patient was in good condition. One month later lesions began to reappear. New ones occurred still another month later, and two months subsequent to this they began to appear higher up the arm. The lesions all occurred suddenly and began as blisters.

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[20] Friedeberg: Arch. f. Dermat. u. Syph., 1913, cxiv, 173.
[21] Mathes: Arch. f. Dermat. u. Syph., 1913, cxiv, 185.
[22] Török: Arch. f. Dermat. u. Syph., 1913, cxiv, 185.

On examination, the following was noted: The dorsum of the left hand was erythematous, and showed scars from old incisions and lesion relics. One active lesion was present on the side of the face. This was irregular in outline and covered with a brownish eschar. The entire arm and forearm, left side, showed superficial atrophy and scar formation, in irregular areas.

The mother was informed of the diagnosis, and was good enough to cooperate in trying to determine what was being used. Her physicians were also informed, but were skeptical as to the possibility of the disorder being self-inflicted. Eight months afterward, one of the attending physicians reported that, after compound solution of cresol had been found in the patient's stocking, she confessed that the lesions had all been self-inflicted. Following this disclosure, recovery ensued.

Case 5.—Miss F. R., aged 15, had had the cutaneous disorder seven months. The patient was of a highly neurotic temperament and showed marked evidence of hysteria. The disorder began as an abrasion on the left hand, from which lesions spread up the forearm. The early lesions were vesicles filled with semipurulent material. Each new attack was accompanied by marked elevation of temperature, the family stating that it reached as high as 108.5.

Bullae continued to appear from time to time. The day before the patient was examined, a new lesion appeared on the forehead, at which time a temperature of 106.5, as recorded by the mother, was reported. There were never any lesions in the mouth. The patient vomited considerably, but had no nausea. She frequently had spells of fainting; these always occurred when she was with another person.

The patient was right-handed, and was apparently normal mentally; there was no pharyngeal reflex; the corneal reflex was much reduced.

On the forehead a dime-sized, irregular, pigmented, superficial burn was present; healed lesions were present on the left arm; there were irregular hypertrophic scars, with similarly shaped and circular, well-defined, superficial, dried, burned areas on the right arm, in various stages of healing.

Temperature taken at time of examination was normal. Leukocyte count was 8,000. Visual fields were normal and equal.

The diagnosis of factitious dermatitis was made and forwarded to the patient's attending physician. A letter received from the latter some months later reported that under the care of a competent trained nurse the diagnosis was confirmed, that phenol was found to be the agent used, and that the patient had made a complete recovery.

Case 7.—A strong, healthy, Scandinavian girl, age 22, presented a peculiar eruption occupying the anterior surface of the right arm from the wrist to a short distance above the elbow. Three weeks prior to examination, she had pricked her finger with a pin; it became sore and painful, and her physician feared blood poisoning. A few days after the accident, she fainted in church. Fearing serious complications, she was taken to a hospital, where she remained two weeks. A day or two after entering the hospital, a small red area, more or less covered by blisters, appeared, which darkened in color and resulted in a few days in superficial necrosis. Several of these areas appeared on the forearm while the patient was in the hospital.

Examination showed the anterior surface of the right arm (the patient was left-handed) to be occupied by about seven separate rectilinear areas of altered integument. These were placed with their long axes in a transverse direction. Roughly estimated, their size averaged from 2½ to 3 inches by 1 to 1½ inches. Each was separated from those adjacent by a strip of normal skin. The borders were well defined, but in places irregular and frayed out. The lesion nearest the hand, opposite the carpal joint, was practically healed, leaving a scar; the uppermost band was the most recent. The lesions from above downward showed the various stages of evolution and involution of a dermatitis due to the application of a solution of phenol. She had evidently first made an application to the wrist, and, being ignorant of the power of phenol, had used enough to cause a fairly deep burn, which resulted in superficial necrosis and ultimate scarring. While lesion No. 1 was under treatment, she caused No. 2 to appear just above the bandage. No. 3 was produced above the bandage which included No. 2, and so on up the arm. The later lesions were noticeably less severe than the first.

It was learned later, from the girl's history and her conduct, that she was a degenerate. She and her sister had the same lover, and, thinking that her sister was receiving too much attention from him, she had taken this means of attracting his interest and sympathy. The lover departed, and no more lesions appeared.

Case 10.—The patient, Mrs. J. H. W., was 30 years of age, and fond of society. She had been married twelve years, but had never been pregnant. Her husband, who was 25 years older than she, was a minister and circuit-rider, his work taking him away from home a large portion of the time. She was a well-nourished woman of average weight, with some tendency toward hysteria, her physician stated. In December, 1905, she had a hemorrhage from the uterus, which examination showed had come from an ulcer of the uterine wall. Diagnosis of adenocarcinoma was made and the uterus curetted.

The patient stated that the first skin lesion appeared, simultaneously with the hemorrhage from the uterus, as a small pinkish patch on the face. This appeared suddenly. The color gradually deepened for two or three days, then slowly faded out, leaving a stain, which eventually disappeared entirely. Later, numerous patches appeared from time to time on different parts of the body. During a year and a half she had rarely been entirely free from them for more than a week or two at a time. On the body, many of the later lesions had been of rather severe type, the redness being followed by the appearance of numerous small vesicles, or larger bullae. The contents of these bullae, if allowed to flow over the sound skin, produced new lesions.

On examination, the face showed a number of irregularly shaped but sharply outlined areas of erythema, in varying stages of involution. There were no scars on the face. On the body, especially over the breast and on the left arm and forearm, were numerous sharply outlined areas of irregular, and occasionally fantastic, shapes in varying stages of evolution and involution, including acute erythema, vesicles and bullae on hyperemic bases, superficial necrosis, pigmentation and, finally, a few scars.

She had been in the hands of a dozen or more physicians, and stated that she was generally known in her section of the country as "the medical puzzle." She said she always knew from twelve to twenty-four hours in advance, from certain burning sensations, exactly where the lesions would appear; and that the drawing of a blunt instrument over her skin, as had been done by several physicians to test the reaction, was always followed, in from twenty-four to thirty-six hours, by a new lesion. She was frankly told what the trouble was, but denied all knowledge of how the lesions occurred. Six months later, we learned that there had been no recurrence of the lesions.

Case 12.—A woman, aged 19, married two months, applied for treatment of peculiar lesions which had appeared on her breasts, left upper arm, neck and face. They had been coming, one or two at a time, for five weeks. The first one followed an accidental scratch, to which she had applied an antiseptic liquid given her by a druggist.

On examination, the lesions were seen to be chiefly small, irregular, sharply defined patches of erythema. On the breast were several small bullae surrounded by a narrow hyperemic zone. Subsiding lesions were followed by pigmentation, but no scars were visible. From the under margin of a triangular hyperemic area on the breast there extended downward an irregular band from one-eighth to one-quarter inch wide and 1½ inches long. The inflammatory process forming this band was less severe than that on the area above, and was undoubtedly produced by a drop of liquid escaping and running down over the skin.

The woman had always lived in the country, had never been away from home before, and had come immediately after her marriage with her husband to the city, where they had no friends or acquaintances. He was busy with his work all day, and she was, in consequence, very lonely. The nature of the condition was explained to the husband alone, and he very sensibly recognized the situation and generously stated that he did not blame the girl. He sent her home for a few weeks, and a year later reported that everything had come out all right, and he was greatly obliged for the advice given.

Case 20.—A girl, aged 18, apparently in good general health, reticent, at times almost sullen, in association with her companions, was a probationer in a Sisters' hospital. While assisting in dressing a patient with a number of ulcers on the skin, she pricked her finger, and it became infected. The lesion was later incised and curetted, and probably healed. Six months later, the tip of the finger became inflamed, and in two or three days turned black. With hot fomentations, the lesion cleared up. During the next six months, the occurrence was repeated several times, until the first phalanx appeared to be entirely gangrenous and was amputated. Two months later, the second phalanx of the same finger became involved in the same manner and was amputated. Following this, she remained well for three months, when the remaining phalanx of the finger became gangrenous, and was amputated by the same physician. Three weeks later, gangrene began to spread over the back and sides of the hand. On account of the rapidity of the process, the surgeon contemplated removing the hand at the wrist, an operation which the patient begged him to perform to save her life. Before the operation was performed, however, a consultation was held. On examination, the gangrene was found to be superficial, and was bounded by a narrow red line. The advancing border showed a finely jagged or serrated edge, in which the marks of individual punctures could be detected. There was slight anesthesia of the fauces and conjunctiva, and the general condition of the girl suggested hysteria.

The patient denied having made any application herself, but under fixed dressings made a complete recovery, and later confessed to the Mother Superior that she had produced the trouble herself with a needle and pure phenol.

Case 23.—Miss A. Y., a girl aged 17, in good general health, was the eldest of nine children, and, on account of the death of her mother two years previously, had had charge of the entire household.

Six weeks previous to the examination, her finger was scratched on a barbed wire. The skin turned black three days later, and blisters appeared on the hand and arm. These began as pimples, which became dark in three days, and gradually became larger.

On examination, there were seen on the outer surface of the left forearm and on the wrists and hands eight or ten irregularly shaped patches, from 1½ to 2 inches in diameter. There were two acutely inflamed areas, with an irregular, finely jagged or serrated outline, thickly covered with pinhead or slightly larger vesicles. These were of but two or three days' duration. Other similar areas were covered with black, gangrenous crusts, surrounded by a narrow red line. There were two rather thick, irregular, pigmented scars. The tissue destruction was deeper than that seen in most of these cases.

On confrontation, the patient admitted that she had produced the lesions with a pin dipped in lye. A letter received some months later from her family physician stated that the patient returned home and made a complete recovery.

Case 26.—Mrs. J. M. W., a married woman, aged 33, and apparently in good general health, had been seen by many physicians, a number of whom were impressed by the fortitude with which she bore pain. She was equally impressed by the fact that none of her physicians had discovered what the trouble was.

Two and a half years prior to this examination, which was made by Dr. Montgomery, she had all the symptoms of pregnancy up to the seventh month, when suddenly the whole thing disappeared.

The cutaneous disorder was of two years' duration, and had begun in the breast. A month later lesions appeared on the nose. The trunk soon became involved, and finally the limbs. The lesions were accompanied by burning and itching sensations. On the body they began as a blister on the sound skin, or on a slightly reddened area. Frequently, her face had been nearly well. The lesions always appeared suddenly.

On examination, there was found a superficial dermatitis of the nose and cheeks, in irregular, sharply outlined areas, covered with a thin edge of scales or crusts. On the upper surface of the breasts and above them were numerous irregular, sharply defined, erythematous spots, one-quarter to three-quarters inch in diameter. Some of these spots showed slight vesiculation or a superficial necrosis. Areas were seen in all stages of healing and of resulting pigmentation. They were most numerous over the breasts, the abdomen and the left arm. On the breasts were two small areas of erythema, from the lower border of which extended the characteristic streaks caused by the dropping of the fluid over the skin. There were several lesions about the umbilicus, others in the groin and on the inner surface of the thigh.

Her attending physician was informed of the nature of the trouble, and after using fixed dressings for a time he discussed the matter with her. The patient agreed that she would do as he directed, but she promptly put herself in the hands of another physician.

Nearly a year after this examination, I saw the patient in a clinic given before a medical society, when the diagnosis of factitious dermatitis was independently made. The difficulty in making the diagnosis at this time lay in the fact that the patient had become more skilful and was now producing perfectly circular, regular areas, and was not spilling any of the fluid. At least six or eight members of the society discussed the hysterical manifestations seen by them in this case, and all were agreed as to the factitious origin of the lesions.

Case 29.—The record of this patient, Miss M. B., aged 27, includes four or five visits to the Presbyterian Hospital, one or more to the County Hospital, and the attendance of several physicians.

About May, 1910, the patient received an injection of tuberculin in the left arm above the elbow. Three days later, the arm swelled, and the patient was sent to the dispensary for treatment. A salve containing phenol was applied, and the patient returned home. Shortly after this, lesions began to occur, extended down on the arm, later appeared on the left leg, and subsequently, as time went by, on the entire trunk, right arm, and all parts of the body within reach of the hands.

I saw the patient shortly after the onset of the trouble. It was evident that the original phenol salve had given her the idea and the material with which to carry it out. She was hysterical, almost always moderately deaf, sometimes entirely so, and was capable of marked imitation. During the years she had been under observation, the type of the lesions had changed. It is likely, therefore, that the materials used had been modified.

Monday, Nov. 4, 1910, the patient was seen in the clinic at which time the lesions were present on the left arm, the trunk, the foot and the lower limbs, the right arm being free. Up to that time she was supposed to be deaf. In the clinic the case was demonstrated, and attention was called to the absence of lesions on the right arm. November 7, three days later, the patient again attended the clinic, and entered the hospital on the same day. At this time she had a number of lesions on the right arm, which apparently showed evidence of suggestion. The house physician, Dr. Tope, made these notes on that day:

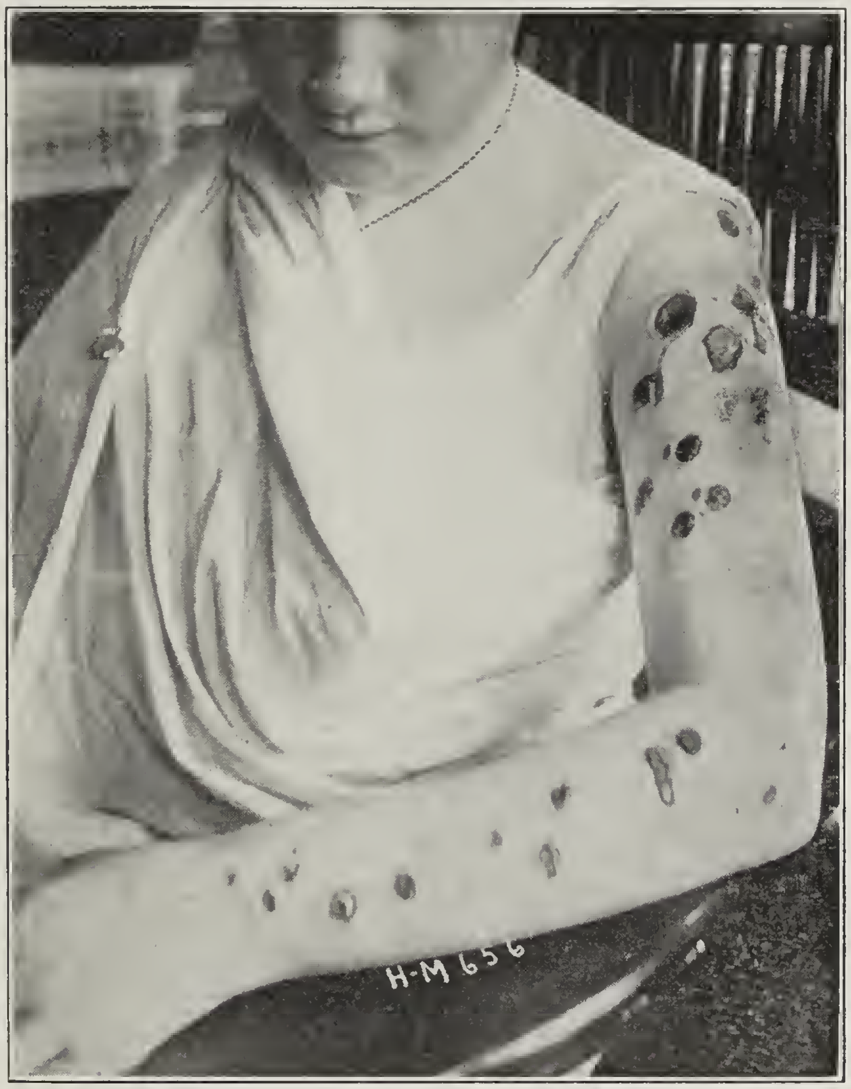
"Lesions situated on both arms, from shoulder to wrist. They consist of open ulcers, gangrenous areas, some covered with dirty-gray sloughs, other ulcers that are healing, and many scars, some of which are keloidal. The patient professes ignorance as to the cause or duration of the lesions;

professes to be deaf, but can hear much better than she admits. Speaking in ordinary tones to her, she not only hears but understands. If asked if she understands, she says 'No.'"

Nov. 1, 1912, when the patient was again in the hospital, Dr. Pineoffs, the house physician, wrote a description of the cutaneous lesions much as given above.

The record further states that the patient mentally was at first in an antagonistic attitude, but during her stay at the hospital she became more cheerful and went about the ward conversing with other patients. Deafness and blindness were complained of, but these later disappeared. The question of a certain amount of true deafness was not definitely settled, but the amount varied from day to day.

During one of her temporary visits at the County Hospital, she saw numbers of syphilitic lesions in inmates of the same ward. After leaving the hospital, many of her lesions assumed the peculiar circinate outlines which she had witnessed at the hospital.



Dermatitis factitia, induced by phenol (Case 1).

She was examined as to her mental state by Dr. Bassoe, who discovered marked evidences of hysteria. There were no other neurologic changes.

The patient had been under the care of Dr. Mackey during the greater part of this time, and it was the observation of all that during her residence in a hospital the lesions always cleared up. Immediately on her release they would recur. As they were always produced at home, and as we had had no assistance while she was there, we had no means of ascertaining the agent employed, except the one originally suggested, phenol.

SUMMARY

Of the thirty-four patients described above, thirty were females. Fifty per cent. were under 22 years of age. Trauma preceded the lesions in twelve cases. Of these, two had been burned with acid, two had had antiseptic applications made by a druggist, and two had been treated with phenolized salve. Of the thirty-four, thirteen confessed and made an immediate recovery; one case was proved under the care of a nurse, and three under fixed dressings; one patient completely recovered after being confronted. Of the total number, twenty-five made complete recovery, three disappeared, one was a degenerate, two gradually recovered after a long time had elapsed, and in two cases the lesions continued. One patient never had lesions while under observation in the hospital, but continued to have them outside.

Of the thirty-four, it was proved that fourteen used phenol, four probably used phenol, one used compound solution of cresol, one phenol and other substances, one croton oil, one lye, one sandpaper, one tobacco, one the electric needle and unknown but liquid applications, six entirely unknown substances, and three unknown liquids. It is interesting to note that several patients recovered after being confronted with the materials they had used, even though denying their use. Change of scene in one case induced recovery, and in another the departure of the person whose presence had irritated the patient. In only four of the group was the diagnosis not positively proved, either by confession or by complete recovery of the case under fixed dressings or constant supervision. In the four, however, the evidence was so strong that there was practically no doubt as to the diagnosis.

CONCLUSIONS

First, it seems probable that the major portion of cases described as pemphigus gangrenosus are in reality examples of factitious dermatitis. That the major number of cases recorded under the title "zoster gangrenosus atypicus" (Kaposi) are of the same type, and also those more recently described under the title of "dermatitis symmetrica dysmenorrhoica," seems probable.

Second, while the disorder is comparatively rare, it probably would appear more common if recognized more generally. As stated in the beginning, the family physician will generally, on account of personal acquaintance with the patient, refuse to admit even to himself the possibility that this particular patient would produce such lesions.

On the recognition of the disorder, the admission of the patient as to its cause, and the cessation of the practice, immediate recovery generally takes place; if not, careful attention to the measures detailed above should be employed, when the desired result is accomplished. Treatment is a simple matter, and requires only the application of the various remedies indicated by the stage of dermatitis present. The only difficulty in any case is to prove the diagnosis.

25 East Washington Street.

ABSTRACT OF DISCUSSION

Dr. Howard Morrow, San Francisco: I have had five or six of these cases in the past ten years. They have all been in women. The majority of the patients have been over 30 years of age. I can recall two who were to me of great interest: One was that of a telephone operator. She disliked her work and stayed away by producing a phenol burn on the arm. Her family had sympathy for her and she was kept at home. She applied the phenol as a compress and produced deep sloughs. Another girl was seen in consultation with Dr. Buckley some time back. She applied phenol to different areas on her leg. She told her folks she was run down and would have to take a trip to get rid of them. After she returned from the trip, these lesions disappeared. After a time they started again. I suggested zinc oxid paste, as the patient cannot remove that, and reapply it. Each day after the application of the paste, new lesions would appear in the neighborhood. After this was done four or five times, Dr. Buckley became annoyed at the patient and he said to her, "You do this yourself and it must be discontinued, or I will report it to your family." She at first denied this but afterward admitted it. No more lesions occurred.

Dr. Lasher Hart, Los Angeles: Dr. George Henry Fox had a case in his clinic. Dr. Fox took the patient into a room and said, "What have you been doing here?" She admitted that the lesions which she had on her forearms had been caused by rubbing salt into them, and that she was seeking sympathy from her employer. Dr. Fox confronted these patients at once with the idea that he knew the diseased areas were self-inflicted, and I have always followed out that idea in my own practice since then.

Dr. George M. MacKee, New York: As bearing on possible etiologic factors, we had in Dr. Fordyce's clinic a few months ago a case of neurosyphilis with lesions of factitious dermatitis on the chest, arms and shoulders. The interesting question was whether or not the neurosyphilis had so altered the nervous system as to produce a malingerer. As is well known, cases of malingering are at times exceedingly difficult to diagnose, and are not infrequently confused with other diseases. I recall a case in which the first ulcer developed on the back of the hand; later numerous ulcers occurred on the forearm. The case was investigated for the possibility of sporotrichosis, syphilis, tuberculosis, etc., but later the patient was proved to be a malingerer.

Dr. A. J. Markley, Denver: During the last six or seven years I have had the misfortune to observe a number of cases of this kind and believe that, as Dr. Ormsby has done, it is necessary carefully to distinguish between the two types of individuals in which this occurs; that is, the malingerer and the neurotic. In the malingerer, if the patients definitely know that you are familiar with the manner in which the lesions are produced, they may be frightened off. On the other hand, hysterical and neurotic individuals are less easily dealt with, and when accused of inducing these lesions themselves, are often led by their neurotic tendencies into practices of more serious kind. Such cases belong definitely in the hands of the neurologist. Of this type, a girl in an orphanage in Denver had become a serious charge to the good Sisters who took care of her. She had disfigured herself with some form of caustic, sparing no part of her body which was accessible to her right hand. The only part which she had been unable to reach was the scapular region of the right shoulder. When confronted with the charge of self-infliction of these lesions, she ceased to produce them, but other stigmata of hysteria occurred, and only when she had been placed under proper neurologic care was any permanent benefit obtained.

Dr. Richard L. Sutton, Kansas City, Mo.: I envy Dr. Ormsby the long list of cases which he has had opportunity to observe. The character of the lesions, the region involved, and the fact that the affected areas were usually readily accessible to the right or left hand are also suggestive. I recall a recent case in Kansas City in which a patient, a woman student, had burned herself with nitric acid. The lesions healed, but new ones speedily appeared. The superintendent of the school was a very religious woman, almost excessively so, and she would not believe it possible that a girl placed under her care would do such a thing. It was only when the matter was thoroughly sifted and the diagnosis verified beyond the shadow of a doubt that the girl was sent home as utterly unfit for the training she had taken up. So one must be as careful as possible in approaching the patient as well as her family, if the treatment is to be ultimately successful.

Dr. Oliver S. Ormsby, Chicago: In one of the illustrated cases which I intended to read, the question of autosuggestion arose. It has been thought that sometimes by autosuggestion lesions may be produced spontaneously; that is, a patient is able to bring out a lesion on the body by fixing the mind on it. These, however, are often factitious, and may be illustrated as follows: In a clinic on a certain Tuesday there was a patient who was supposed to be deaf. The lesions were all placed in regions readily accessible to the right hand, on the left side, and I called this fact to the attention of the assistants. On Friday, when the patient returned, she had lesions on the right side, including the right arm and forearm. At a later date, when in the County Hospital, she observed cases of syphilis in women having that disorder, and some months later she began to have lesions which were circinate in outline, and these lesions were supposed by several to be of syphilitic origin. The question of suggestion is sometimes important.

ROENTGEN STUDIES AFTER GASTRIC AND INTESTINAL OPERATIONS *

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Through my institutional connections I have for a number of years enjoyed special advantages for the roentgenologic study of patients after gastric and intestinal operations. My colleagues have extended many much appreciated courtesies in arranging for the postoperative studies on which this paper is based Results both good and bad have been included, the patients studied representing the work of a number of different surgeons, some of the cases coming from the most famous clinics of this country. Many of the patients had no complaint, the postoperative condition being satisfactory, at least subjectively. Others were

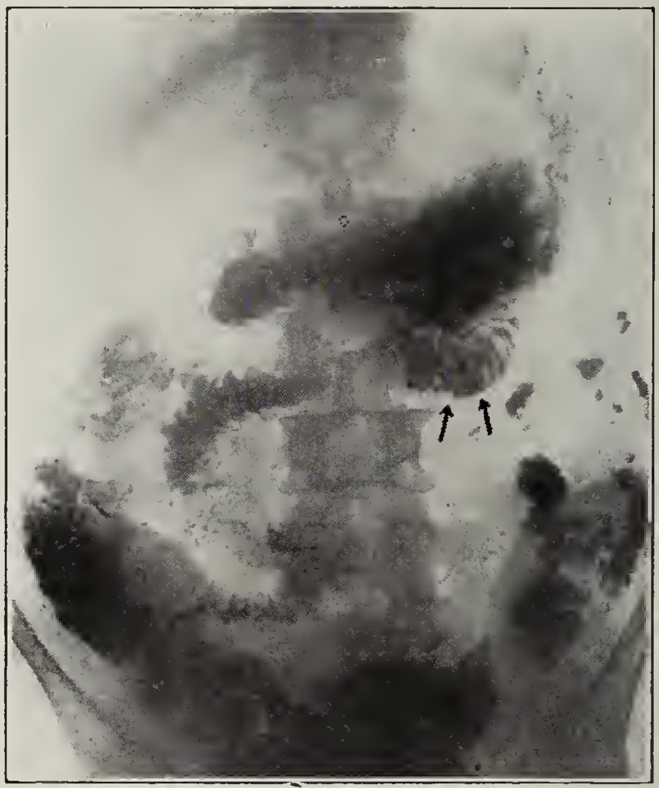

Fig. 1.—Gastro-enterostomized stomach, five hours after eating. Note the delay in the jejunum opposite the stoma. After complete clearance of the stomach, this residue in the jejunum persisted for several hours. This case is typical of the findings in a large percentage of gastrojejunostomies.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

referred for postoperative convalescence, and the opportunity was improved to make the postoperative roentgenologic observations. In the majority of the cases reported in this paper, the examination was advised in the hope that it would assist in ferreting out the cause of untoward symptoms. I would not insinuate that, because the majority of the cases included in the series studied have been unsatisfactory, referring especially to colonic operations, the majority of such cases with operation show similar late results; I merely report my findings on account of their obvious importance. The untoward results have been particularly frequent after operations for the relief of intestinal stasis, real or supposed.

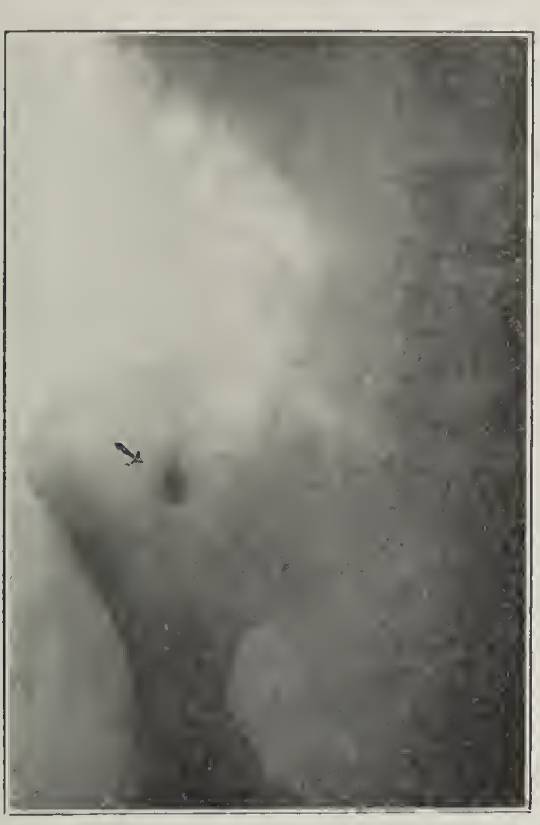

Fig. 2.—The small rounded residue often seen at the site of the appendix stump following appendectomy; also sometimes seen about the base of a diseased appendix before removal. In some of the cases showing such a residue after the barium meal, the operation had been performed years before.

ACUTE SMALL BOWEL OBSTRUCTION

Our experience during the last five years has convinced us of the value of the Roentgen examination in the diagnosis of postoperative acute small bowel obstruction, with special reference to the decision as to the advisability of surgical interference. Having accumulated the evidence in a sufficient number of cases of suspected obstruction following operation, it has seemed warranted to urge strongly the value of the Roentgen study in all such suspected cases with special reference to the existence of an obstruction, the degree of the hindrance, the location and perhaps the nature of the lesion, and whether or not the obstruction is progressive. If nonsurgical treatment seems preferable at first, the progress of the case under treatment may be observed roentgenologically.

Emphasis should be laid on the fact that it is not necessary to administer any barium or other opaque material in pursuing these studies, the observations being made possible by the gas distention of the intestine. There is, therefore, no delay incurred; and no objection can be raised to the Roentgen study of these patients on account of possible danger through delay or through the introduction of new food material into the digestive tube in the presence of possible obstruction. A Roentgen study should be required in every case of suspected postoperative obstruction.

Given a patient on the third day after operation, presenting symptoms suggestive of acute intestinal obstruction, he should be transferred to a carrier, conveyed to the Roentgen-ray department, a 14 by 17 inch plate with intensifying screen placed under him, and a flash exposure made. It must be short enough so that the patient can hold the breath during the exposure. The plate is then removed and the patient returned to his room and bed without further manipulation or inconvenience than is required to lift him onto the stretcher and back to bed again. No preparation of any kind is required; dressings are not removed. The plate is then developed and the findings may be noted as soon as it is taken from the fixing bath. Not more than twenty minutes need be consumed in the entire process.

The developed roentgenograms will reveal at once whether there is any gas distention of the bowel, and if so, whether the distention occurs in the small or in the large intestine. Acute postoperative dilatation of the stomach may be at once ruled out. Small and large bowel may be distinguished by the characteristic outlines of the gas areas. In acute colonic obstruction, the haustral markings as well as the peripheral distribution of the gas along the course of the colon are sufficiently characteristic to identify the large bowel. Equally characteristic is the appearance of the gas-distended coils in acute obstruction of the small bowel; the coils are more or less parallel and the caliber of the small intestine is increased to 1½ or 2, and sometimes 3 inches. It is seen that the distention is not confined to a short segment of the intestine but involves one or more feet of the small bowel, usually many feet. A certain amount of postoperative distention of the small bowel is frequently noted where there are no symptoms suggestive of obstruction, but in the serious cases the degree of distention is at once apparent and suggestive. The serrated contour of the bowel is characteristically different from the contour of the colon due to the markings of the haustra coli;

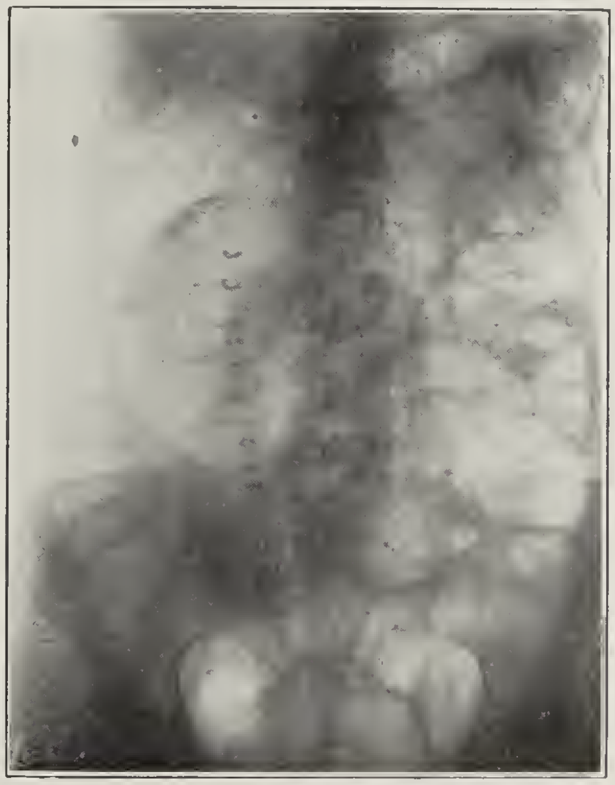

Fig. 3.—Very marked distention of the colon with gas in a case thought to be acute small intestinal obstruction. The gas distention was relieved by washing out the colon, and the administration of pituitary extract. The distribution of the gas and the characteristic markings of the bowel outlines indicate colon rather than small bowel.

so that we are at once able to recognize and differentiate acute postoperative gastric dilatation and obstruction in the large or small intestine.

Observation of the cecal region is especially helpful, for if the cecum contains gas, it is not likely that the obstruction is in the small bowel. If the gas collections, as above described, are seen to occupy the middle of the abdominal shadow while the flanks are gas free, it is probable that the obstruction is in the lower ileum, though not so low as the ileocecal region. When the gas areas occupy the true pelvis and the middle of the abdominal shadow, one may suspect the ileocecal region. Intussusception may be discovered by colonic injection with an opaque material. Early physical findings in these cases are very difficult to demonstrate with surety, whereas the roentgenologic findings may be demonstrated much earlier, and gain in surety as the gas distention progresses.

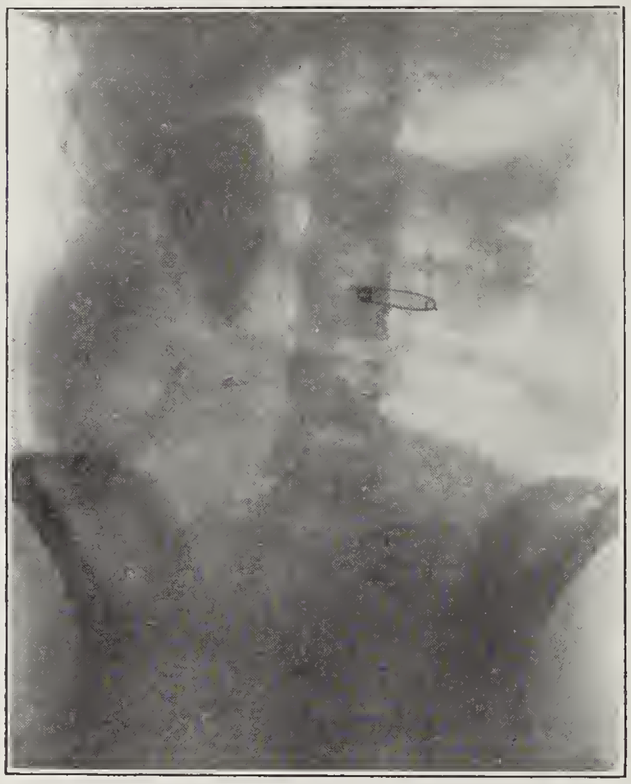

Fig. 4.—Acute obstruction high up in the small intestine, somewhere near the junction of the jejunum and the ileum. Note the absence of gas-distended coils in the lower half of the abdominal shadow.

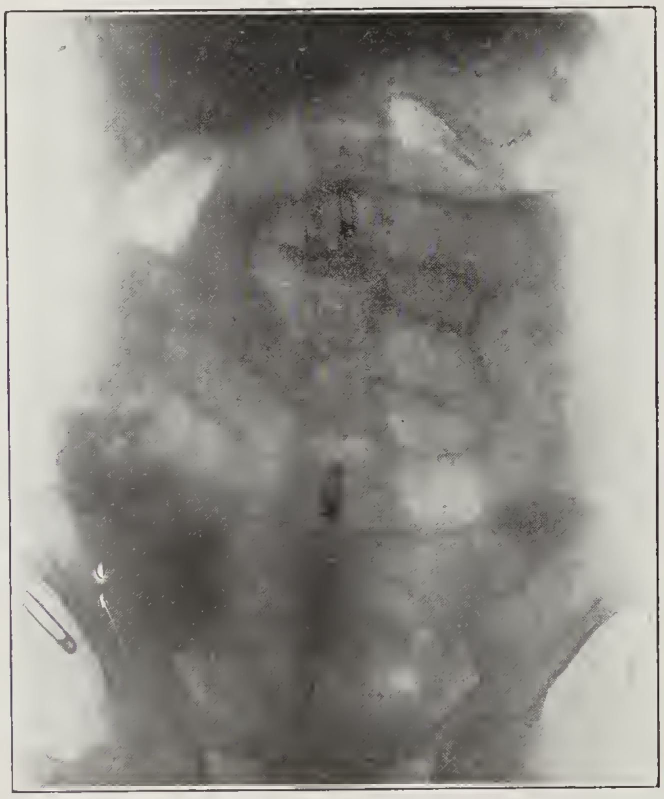

Fig. 5.—Marked gastric dilatation. Acute obstruction low in the small bowel, yet a little distance above the ileocolic junction. One determines this by the distribution of the gas-distended coils. The trace of barium in the cecum remained there from a preoperative barium meal study.

If the observation of the gas-filled bowel (without the ingestion of barium) does not make clear the location of the obstruction, time will be saved by proceeding at once to the administration of the barium enema to rule out colonic obstruction. If the entire colon fills, it is then recognized that the obstruction must exist in the small bowel. If the findings thus far are still indecisive, and the clinical symptoms are not yet clear, with the permission of the surgeon a small amount of barium sulphate, say half an ounce, may be administered by mouth in any medium which the patient will take. These cases are usually also so doubtful from the clinical standpoint that final decision as to operation is postponed in any case, and there is ample time for some of the barium to pass on into the small intestine. After a little experience, however, it is quite unnecessary to administer any barium at all by mouth, the decision being rendered on the appearance of the abdominal shadow with reference to the character and distribution of the gas areas which it may present.

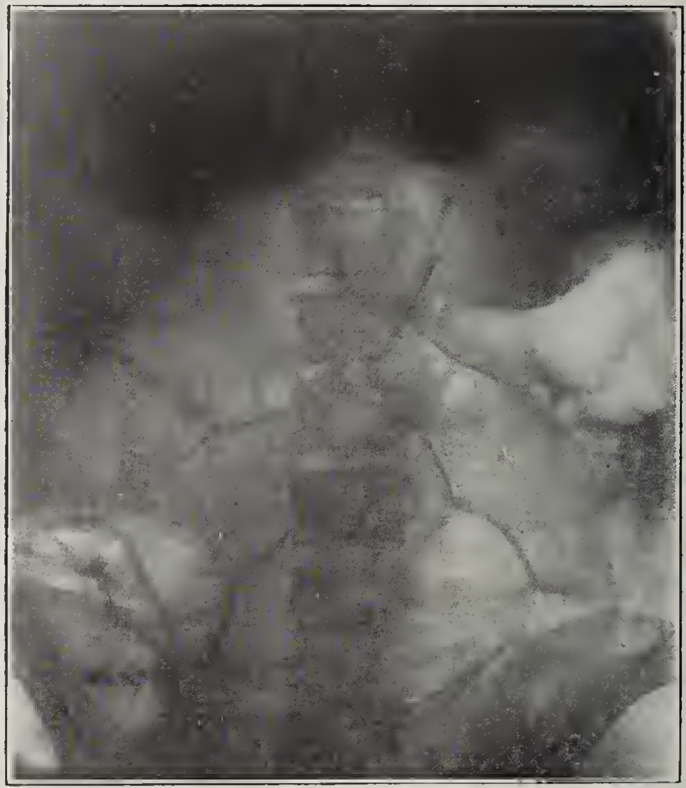

Fig. 6.—Very high grade of acute obstruction near the ileocolic junction. The dilatation of the entire small bowel in this case was extreme.

GASTRO-ENTEROSTOMY

To Cannon belongs the credit for some of the earliest Roentgen studies on gastro-enterostomized patients. Until a few years ago gastro-enterostomy was looked on as a drainage operation, and it was the effort of surgeons to make the anastomosis as near as possible to the lowest point of the stomach. This idea was based on the conception of the stomach as a passive reservoir from which food was discharged more or less under the influence of gravity. Cannon's studies on the movement of food after gastro-enterostomy were very carefully carried out and constitute a classic to which no exceptions can be taken.

There are, however, two new points to which I should like to direct attention. It will be recalled that Cannon and Blake from their experimental work concluded that the stoma should be fairly large and near the pylorus—that conditions which stretch the stomach should be avoided, and that several centimeters of distal intestine should be attached to the stomach to prevent kinking in the jejunum. But when pyloroplasty was possible, these authors thought it was the operation of choice. They found that the rapid exit of food from the stomach was prevented by the formation of rhythmically contracting constriction rings in the duodenum. They believed that this activity replaced in part the function of the pylorus and also served to mix the food with the pancreatic juice and the bile. I have observed this phenomenon in two out of four cases in which a Finney operation had been done. It is interesting that analogous phenomena were noted in a large number of cases in which the ordinary gastrojejunostomy had been performed, namely, a sort of sphincter action established in the jejunum at a point varying from 3 to 6 cm. below the gastrojejunal opening. This was at first interpreted as a spastic contraction of the circular muscle of the jejunum; but in the light of Cannon's observation on rhythmic contractions of the duodenum after pyloroplasty, it seems reasonable to conclude that this contraction ring in the jejunum is purposive, serving somewhat as a sphincter.

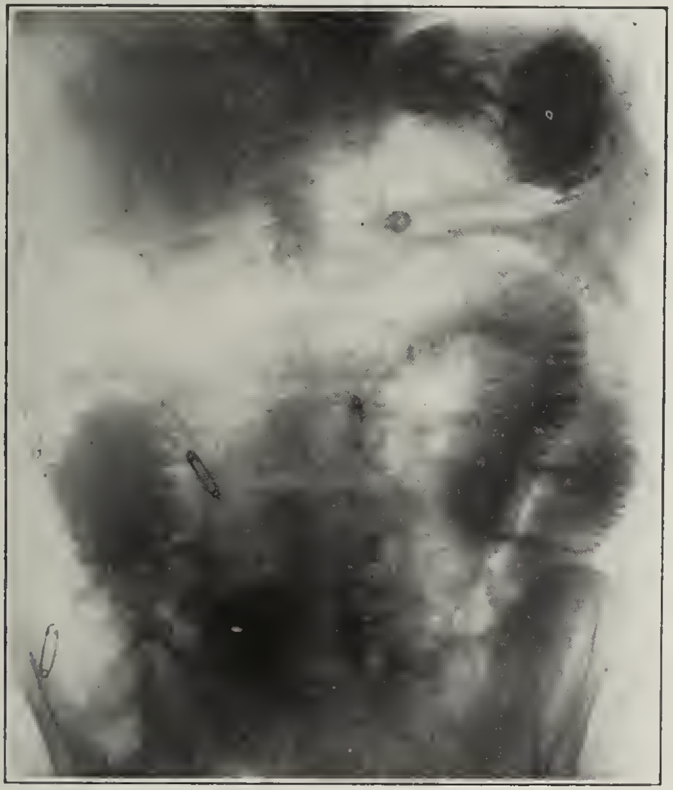

Fig. 7.—Acute obstruction in the small intestine in which the decision to operate was not made until the second examination, six hours after the first. Meanwhile a small amount of barium had been given, and the characteristic appearance of the small bowel visualized.

Kocher years ago made the statement that the gastro-enterostomy opening developed a sphincter action and actually underwent rhythmic contractions. It seems possible that the formation of a contraction ring in the jejunum below the site of operation may well simulate the normal action of the pyloric sphincter. Under the fluorescent screen, one sees a small fingerlike shadow gradually build down behind the gastric silhouette, simulating very much the formation of pseudopodia in the ameba. This fingerlike shadow projects farther and farther until it is suddenly constricted off an inch or two below the stomach, the pinched-off bolus passing onward into the distal small bowel, the proximal portion remaining and gradually assuming larger proportions until the distal portion of it is again pinched off by succeeding contractions. In other words, this action has in a certain degree seemed to take the place of the rhythmic contraction normally occurring at the pylorus.

A second new point relates to a stagnation of food in the jejunum at or near the site of the gastro-enterostomy. Cannon, with F. T. Murphy, made intestinal resections in animals, uniting the severed intestine either by end-to-end or by lateral anastomosis. After lateral anastomosis, there occurred a more or less complete blocking of the canal by undigested detritus at the opening between the opposite

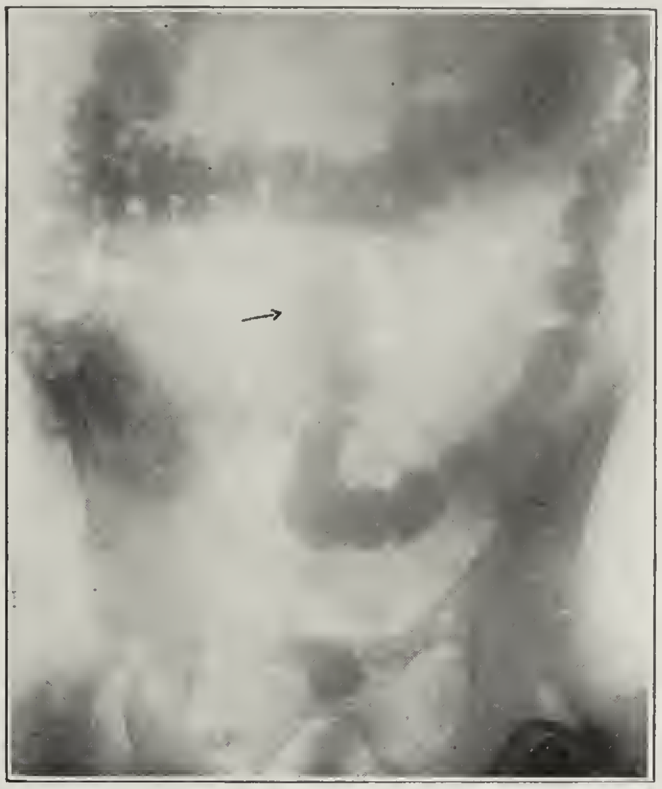

Fig. 8.—Three years after ileosigmoidostomy. The arrow indicates the site of the anastomosis. Appearance of the colon forty-eight hours after barium meal. The colon is filled by material carried backward from the rectum by retrograde peristalsis. This retrogression of food residues often forms large cecal tumors.

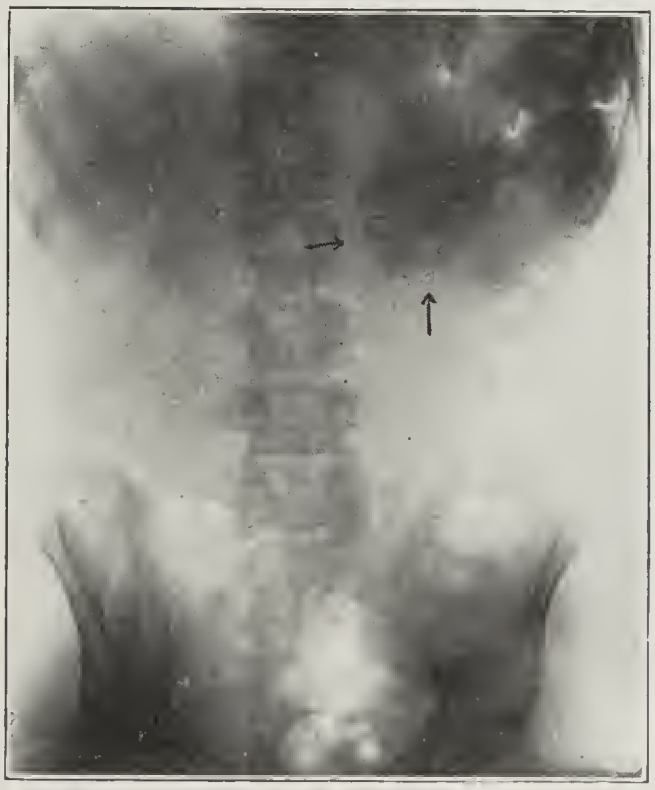

Fig. 9.—Even after removal of the right half of the colon, including the first third or half of the transverse colon, there is a tendency to the formation of a tumor in the proximal end of the remaining large intestine. In this case the barium-mixed residues in the stump are shown on the ninth day following the meal, forming an easily palpable tumor.

loops. Necropsies on animals proved that the stasis was not due to previous accumulation of undigestible waste, but that the two apposed coils did not cooperate to propel the enclosed food, and that after an ordinary meal, food was stagnant in the region of the anastomosis. It has seemed to me that the same phenomenon is also observed after gastro-enterostomy. Especially toward the end of gastric clearance, there occurs a stagnation, apparently in the small bowel, at the site of the anastomosis, this stasis being accounted for by the inhibition of onward peristaltic activities at this point (Fig. 1).

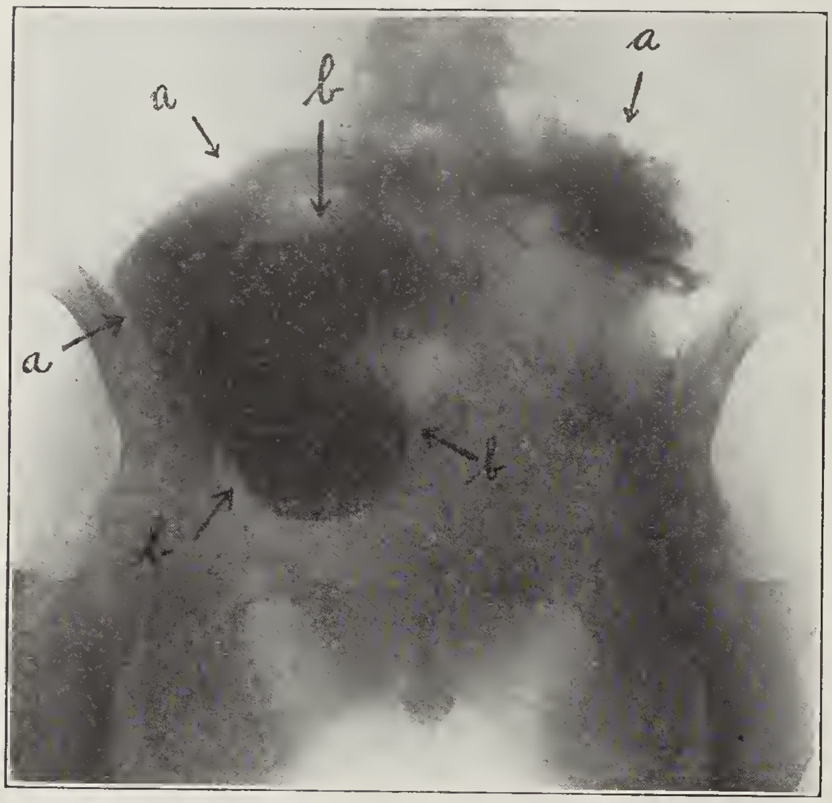

Fig. 10.—This backing up into the short-circuited colon takes place constantly, and begins immediately after food reaches the rectum. This roentgenogram, twenty-six hours after eating, shows at *a* the backed-up material in the transverse colon and cecum, and at *b* a large residue still remaining in the terminal ileum. The bowels had meanwhile moved satisfactorily (?) several times. (See Figure 11.)

APPENDECTOMY

A common cause of cecal stasis is adhesions, usually associated with disease of the appendix. It is also a fact that immediately following recovery from the operation of appendectomy, there is in the majority of cases a considerable degree of cecal stasis. The cecum retains portions of the barium meal for from two to four days, and sometimes more, although the remainder of the colon may clear itself normally. Following the attempt to expel the barium enema it is seen that the cecum has failed to contract, the propulsive ring peristaltic waves which evacuate the large bowel commencing at or above the ileocolic junction instead of at the tip of the cecum. Even at a remote period after the operation, several years later, a certain degree of cecal stasis persists in a considerable number of cases, a rounded residue of barium the size of a 25-cent piece remaining in the cecum after the colon has otherwise been entirely cleared of the barium meal. This is especially likely to occur where the patient complains of a tenderness over the cecum. Sometimes this cecal stasis was present before the operation, as shown by the preoperative Roentgen records; but that it often exists after operation where it did not exist before is convincingly shown by our series. I believe that the rounded barium residue, above referred to, occurs at the site of the stump of the appendix, and that it has some relation to the invaginating suture by which in the technic commonly employed the stump is buried. The coincidence of a point of localized tenderness on pressure with this rounded residue at the site of the appendix stump would suggest the desirability of including the least possible amount of cecal muscularis in the invaginating suture.

ILEOCOLOSTOMY

I have been especially fortunate in having been able to study a large series of cases after ileocolostomy performed for adhesions, ileal stasis, Lane's kink of the ileum, and other nonmalignant lesions. Forty such cases have been examined very carefully, operation in most of them having been performed according to the technic advocated by Lane, one of them by Lane himself. Not all the patients in this series were clinically failures, though the majority of them were examined for the cause of an unsatisfactory result. In most of them, during the early months following operation, the result was apparently worth while, and in a few striking instances the operation had seemed to work like magic; but sooner or later, usually within a year after the surgical procedure, the symptoms have begun to recur and the patient's last state is worse than the first. It should be remembered that this series of cases represents the work of more than a dozen different surgeons, most of them of national reputation—work which I believe to be on the whole representative of the best in technic which this country affords. The unsatisfactory results can, therefore, hardly be attributed to poor technic.

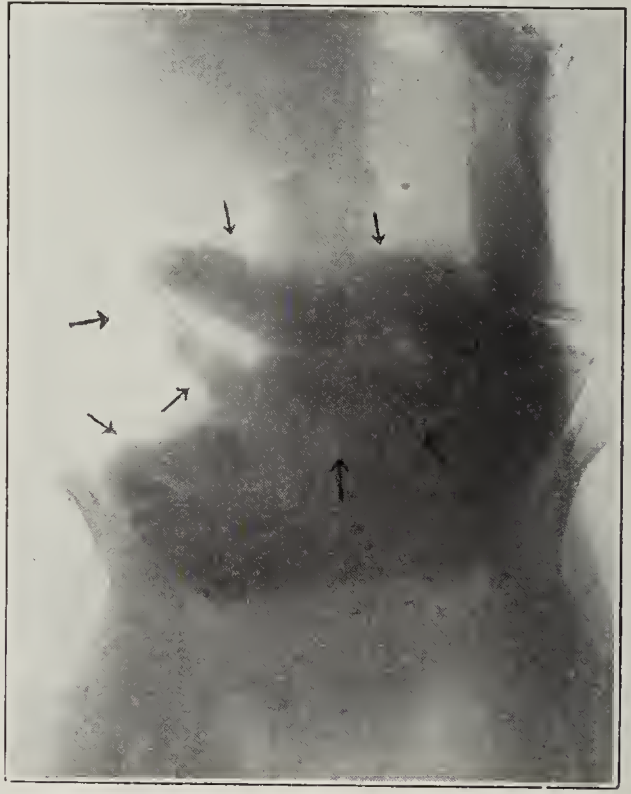

Fig. 11.—(See Figure 10.) The very marked distention of the coils of terminal ileum attending the marked ileal stasis in some of these cases is illustrated by the colon injection. Same case as in Figure 10. The arrows point to distended small bowel, the seat of stasis in Figure 10.

Excepting only those cases in which an artificial ileocolic valve has been formed, all cases have shown incompetency of the ileocolic stoma permitting the enema to flow back into the small bowel as well as retrogradely around the colon to the cecum or as far as the stump of the colon in those cases in which partial colectomy had been performed. The small bowel thus visualized has displayed a variable caliber, not much enlarged in the recent cases, but frequently so large as to be confused with the colon itself in patients examined two or three years after the operation. In some of the roentgenograms it is impossible to tell definitely from the roentgenogram alone which shadows are colonic and which are ileac. Of course, it is recognized that the test by enema reverses the usual order of progress of the food column, but there is also noted in many of these cases a regurgitation of *ingested* food. There is a very definite ileal stasis in most of the older patients (operation performed a year or more before the examination). It is not uncommon to find at the twenty-sixth hour a large mass in the terminal ileum simulating a colonic residue in size and caliber of the coils. The worst cases of ileal stasis, judged by the retention in the ileum of a mass of ingesta, are those cases which, when tested by the enema, show the greatest ileal dilatation and the most extensive ileal filling by the passage of the enema through the anastomotic opening. This incompetency of the stoma to enema and the ileal stasis should both be prevented by the formation of an artificial ileocolic valve by Kellogg's method. In one case reexamined three years after the operation just referred to, the artificial valve still prevented the reflux of the enema, and there was no ileal stasis.

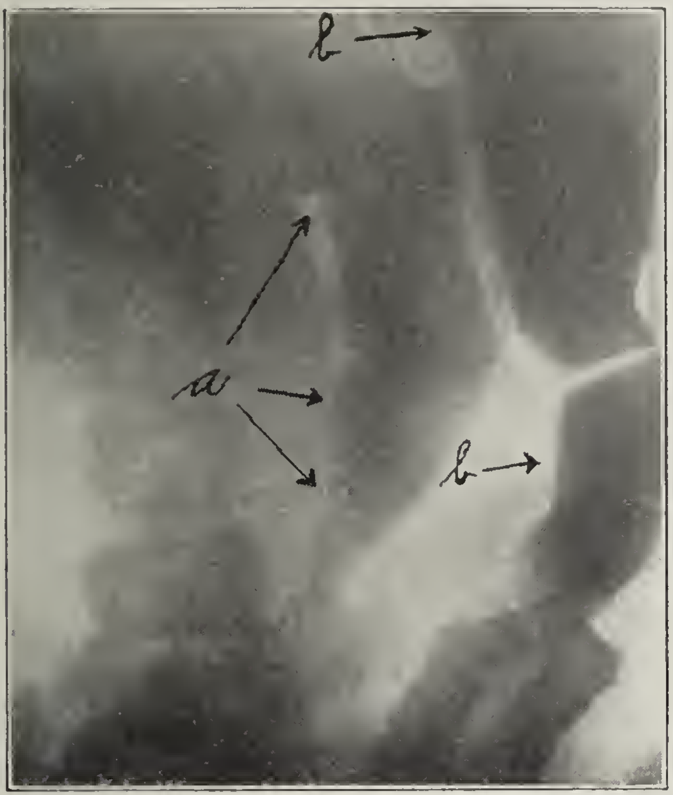

Fig. 12.—Another case two years after ileosigmoidostomy. Colon injection. Note the very marked dilatation of the small bowel shown at *a*, whose caliber equals that of the neighboring colon shown at *b*. There was marked ileal stasis in this case, shown after the barium meal. In cases of ileosigmoidostomy examined shortly after the operation, there is noted a similar insufficiency of the ileocolic orifice, but the coils of terminal ileum do not exhibit the same degree of dilatation until later.

Following the barium meal, there has been noted in every case, without exception, retrograde peristalsis carrying barium oralward as far as possible from the rectum. This regurgitation commences immediately after food reaches the rectum, and the head of the backed-up column has usually reached the splenic flexure by the tenth or twelfth hour. This retrograde movement of ingested material persists in spite of repeated enemas and in spite of repeated bowel movements, so that by the end of the twenty-sixth or even the fiftieth hour, the residues are banked up in the proximal colon, from which it is very difficult to dislodge them. I have seen a large barium-mixed mass in the cecum on the fourteenth day forming a tumor in the right inguinal region, easily palpable and visible on inspection of the abdomen. Hauchamps has recently reported a case of a nervous woman of 26 years, who had suffered all her life from obstinate constipation. To give relief some surgeon made an appendicostomy, to facilitate colonic lavage. Later the patient was reoperated, the appendix being removed and the right kidney being anchored. Still later, the patient failing to improve, ileosigmoidostomy was performed. A month after the last operation the patient was given a barium meal. There occurred evident retrograde peristalsis with the formation of a large barium-mixed fecal mass in the right inguinal region, which was still visible both on inspection of the abdomen and roentgenologically on the thirtieth day, although no opaque salt had been administered meanwhile. This stasis in the excluded colon is usually attended by the formation of distressing amounts of gas, which sometimes distend the colon to enormous proportions, resisting all efforts to dislodge it. Gas distention of the colon after ileosigmoidostomy often distorts the stomach in such a way as to produce a pseudohourglass appearance. Efforts to prevent the retrograde procession by making a kink in the sigmoid just proximal to the anastomosis result only in greater stasis and greater difficulty in dislodging the stagnant material, which is only slightly delayed in its regurgitation.

It thus appears that in a very considerable percentage of cases in which the operation of ileosigmoidostomy is performed for the relief of intestinal stasis, particularly ileal stasis, the end-result is infinitely worse than if the patient had not been operated on, at least so far as the ileal stasis and the patient's comfort are concerned. As before suggested, there is often a period of improvement, sometimes marked; but ultimately the majority of the patients under our observation exhibit a recurrence of the stasis.

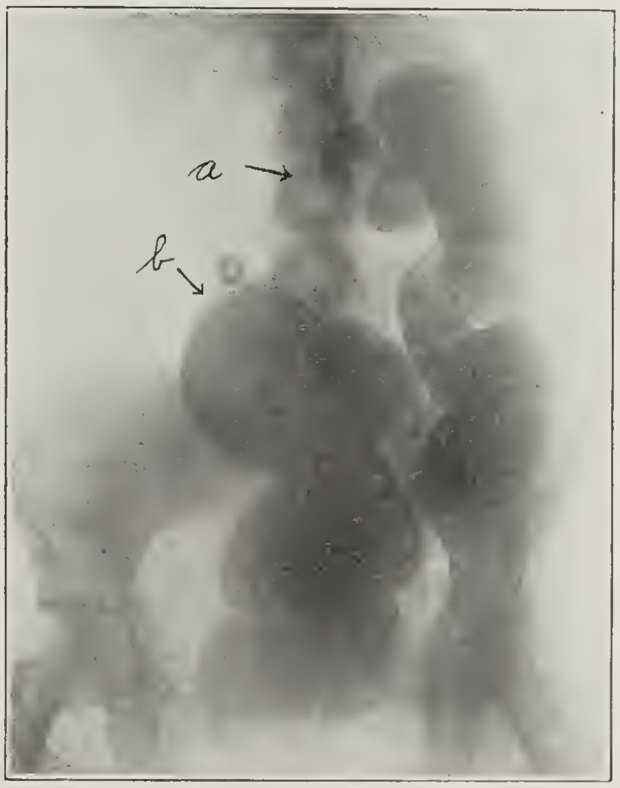

Fig. 13.—In performing the operation of ileosigmoidostomy, it is possible to make an artificial valve at the new opening, by Kellogg's method. In the case here figured, the right half of the colon had been removed, the ileum being inserted into the sigmoid with the formation of an artificial valve. The enema failed to enter the ileum. There was no ileal stasis following the meal. There was marked stasis in the blind portion of the remaining colon; *a*, stump of transverse colon; *b*, site of ileocolic junction.

To avoid a recurrence of the ileal stasis, Kellogg has endeavored to make an artificial ileocolic valve, hoping to prevent the regurgitation of food residues back into the ileum and to lessen the ileal delay. This operation, which results in the formation of a valve-like invagination of the terminal ileum into the colon in a manner resembling the formation of the normal ileocolic valve of the pig, is accomplished by a modification of the ordinary technic for end-to-side ileosigmoidostomy. In twelve cases the valve thus formed has worked satisfactorily in seven, the five failures occurring early in the series. Even in those cases in which the effort to make an artificial valve failed, the patient was no worse off than if the ordinary anastomosis had been performed. When ileocolostomy must be performed, it seems distinctly worth while to attempt the production of an artificial one-way valve, simulating the normal ileocolic junction.

To obviate the retrogression of rectal contents back into the excluded colon in these cases of ileosigmoidostomy, a number of surgeons conceived the idea of resecting the right half of the colon, including the cecum, the ascending colon and a part of the transverse colon. This operation preserved the omentum and saved the patient much of the shock likely to attend removal of the colon down to the sigmoid. In all the cases thus operated in which the patients have come to me for postoperative study, there has been demonstrated the same retrogression of colonic contents with the formation of an obstinate residue in the blind end of the stump of colon, this residue in several cases forming a palpable and visible tumor, persisting many days. In one case this tumor persisted longer than nine days, in spite of repeated daily enemas and the use of laxatives. The severity of the stasis in the stump of the colon has a relation to the length of time which has elapsed since the performance of the operation, becoming progressively worse as the months go by.

The operation of cecosigmoidostomy was also proposed as a procedure which would obviate the distresses attending the retrogression of materials up the colon under the influence of antiperistalsis. This operation appears to me an illogical and unreasonable procedure in these cases. In one instance in which it has been impossible to secure a reexamination by means of the Roentgen ray, the reports from the patient are fairly satisfactory; but in the other cases examined at some interval after the operation (three cases), there has been seen a double procession of food residues, one column traveling up the ascending colon in the normal direction and the other up the descending colon, the two columns tending to meet near the middle of the transverse colon. My friend, Dr. L. T. LeWald, who has studied such a patient two years after operation, has kindly communicated to me his Roentgen findings:

> The intra-abdominal distress and the constipation were relieved for a time, but the symptoms recurred within two years and the constipation became extreme. The bowels never moved without enema, and the gas distention of the abdomen was very distressing. Roentgen studies after a barium meal showed most of the meal going in the direction of the hepatic flexure and transverse colon instead of through the cecosigmoidostomy opening. At the end of twenty-four hours the transverse colon was filled, only a little having passed from the cecum through the artificial opening. By the end of the second day only a trace of the meal had been eliminated, the greater part remaining in the cecum, ascending colon and the transverse colon. Seventy-two hours after the meal and after repeated enemas, it appeared that the elimination of the barium-mixed residue was almost impossible, the appearance suggesting a definite vicious circle. As some of the barium passed down the descending colon and began to enter the sigmoid, it appeared to enter the cecosigmoidostomy opening into the cecum, and thence through the ascending colon back into the transverse colon. Only a small portion remained in the rectum and was voided.

The next class of cases includes those in which it was not deemed advisable to subject the patient to an extensive colectomy, and yet radical treatment was demanded. It was finally decided to make an ileocolostomy with partial colectomy, that is, resection of the right half of the colon followed by insertion of the ileum into the transverse colon as near as possible to the stump. In our Roentgen studies as well as in our clinical observations in these cases, this type of operation has given the most satisfactory results. Thus far, it would appear, both clinically and from the Roentgen findings, that this type of operation is preferable where any operative procedure at all seems indicated for stasis in the right half of the colon. Of course, for a lesion in the pelvic colon such an operation would not be likely to afford any improvement of the condition.

It would thus seem that when for any reason it appears necessary to resect a portion of the colon, making a new ileocolic junction, the ileum should be implanted as near as possible to the proximal end of the remaining portion of the colon, and an effort should be made to produce an artificial ileocolic valve. Exclusion operations are invariably followed by stasis in the excluded intestine, and blind ends, as after ileosigmoidostomy with or without partial colectomy, always sooner or later become the seat of stasis, usually with the formation of distressing amounts of gas which cannot be dislodged without great difficulty. The production of a serviceable artificial ileocolic valve by Kellogg's method is quite feasible, and in the majority of cases it is successful.

THE USE OF PLASTER OF PARIS IN MOUNTING GROSS MUSEUM SPECIMENS

WITH SPECIAL REFERENCE TO PARASITIC WORMS AND SERIAL TISSUE SLABS *

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For several years I have had more or less to do with the mounting and maintenance of gross morbid museum specimens, a large number of which were especially prepared for student-instruction purposes in large medical schools.

Suspended in the usual way by ligatures on glass frames, and after handling several times in the course of a year by instructors and students, these specimens have suffered, entailing much loss in time and some of material in repair. If of soft texture (liver), the threads have torn out, if necrotic the detritus has fallen out, and the glass frames are sometimes broken by shaking when the specimen is handled by students. If the mounting medium has become turbid, a more or less thick layer of nontransparent material

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* From the McManes Laboratory of Pathology, University of Pennsylvania.

intervenes between the eye and the specimen. Or, where the specimen is small (parasitic worms) and fastened to a glass slide by gelatin, the latter has in time lost its adhesion and the specimen dropped to the bottom of the jar.

Of late, therefore, I have aimed in the first place to prepare all specimens so that the important feature to be exhibited will appear on a broad plane surface, and will fit snugly or tightly into the container. This end is most easily accomplished when dealing with slabs of tissue (liver, spleen, tumors) which can be cut to almost any desired shape, and where a variety of variously sized and shaped containers is available. Under these circumstances, no special backing is needed. If, in the second place, the specimen has a flat surface, but is much thinner than the container, it may be held against the face of the container by some special backing, and it is with the preparation of such backings that this communication has especially to deal. Of course there are many specimens which will not permit such treatment because it might hide important features on the opposite side of the specimen, and here the older methods have to be used.

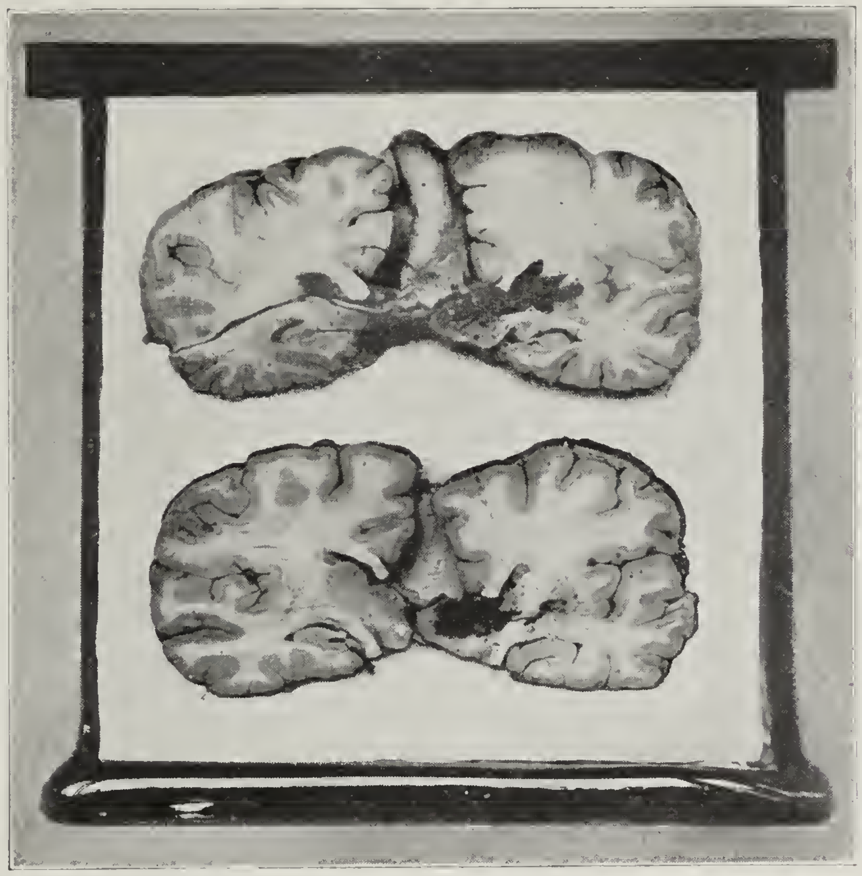

Fig. 1.—Consecutive slabs of brain, largely embedded in plaster of Paris, showing position and extent of cerebral hemorrhage.

The merits of this method are obvious. In bringing the specimen close to the eye, no fluid is interposed to become turbid or distort (especially in cylindric containers) the specimen. It matters not, indeed, so far as the specimen is concerned, if the mounting medium does become turbid. The specimen, furthermore, is held rigidly, permitting marking of the face of the container to indicate special points, and preventing the loss of soft necrotic parts. It is especially valuable in supporting (and partially embedding) slabs of brain.

The choice of an appropriate backing material is most important. Absorbent cotton has been used for a long time and is often most satisfactory. It has the disadvantage of not giving a rigid support unless very tightly packed, and then it is not sightly.

In my hands, plaster of Paris, while not ideal, has proved of great value.

Where the tissue is soft and will not stand pressure (serial slabs of brain are especially amenable to this method) it is arranged face downward on a smooth soaped surface. A wall is built around it enclosing a space about 1 cm. larger than the inside dimensions of the face of the container, which must be rectangular for the proper use of this method, and the inside of the walls now also soaped. Plaster of Paris is poured over the specimen until it is of depth equal to the narrowest anteroposterior dimensions of the container. As soon as the plaster has hardened, which ordinarily occurs in from fifteen to thirty minutes, the walls are torn down and the slab of plaster, with contained specimen, lifted from the glass. While it is still moist the edges are neatly trimmed with a knife until the slab slips snugly into the container. It is allowed to harden further, say for several hours, a moistened cloth, if necessary, being kept over the face of the specimen to prevent undue drying out. The whole is then gently slipped into the container and covered by mounting fluid. It should not be at once sealed, since bubbles will accumulate for several days, and these must be brushed off with a feather before final sealing. In the course of a year the tissue may slightly shrink from its embedding walls, but this is of no moment since it is held in place by the face of the container anteriorly and is always supported below by a plaster base. Indeed, it may be considered an advantage, permitting the inspection, though very limited, of the sides of the tissue slab.

When the tissues are firm, they need not be thus embedded, but are pressed against the face of the container by a plaster backing acting against the back of the specimen. On account of the formation of bubbles on the plaster, it has been found advisable to make up a number of containers holding their backings and keep them in stock in weak formaldehyd (2 per cent.) until needed, the bubbles being meanwhile removed from time to time.

Either rectangular or cylindric containers may be used. Most rectangular ones, however, are unsatisfactory on account of their irregular interiors, commonly flaring out toward the bottom, which quite prevents subsequent removal of the backing. This is sometimes also the case with round containers, especially the ones with necks. Where this is the case, a layer of plaster may be poured in until the "flare" is filled and allowed to harden. The backing may then be made as though there were no flare. The most suitable containers are cylindric ones (though necked ones may also be used), for then the backing may be later removed from the container, neatly trimmed, and the specimen be exactly arranged on it. This is especially desirable with long slender worms like filariae or numerous small worms like hookworms.

The containers receive about one quarter to one third of their capacity of thin plaster-of-Paris cream. It is aimed to insert such an amount that, after the container has been laid horizontally, about one third of the circumference will be covered by plaster. Where there has been a basal flare which has been filled previously by plaster, it is necessary first to soap its surface before pouring in the backing. In the case of necked containers which have ground stoppers, the stoppers (soaped) are now inserted and the containers laid horizontally. In the case of cylindric ones with loose-fitting lids for cementing, cork or rubber stoppers are inserted (also soaped), which will reach well (about 5 mm.) below the point to which the lid will reach. If this distance is not allowed, fluid will later pass by capillarity from the backing to the lid and interfere with sealing. As soon as the plaster has hardened sufficiently (from fifteen to thirty minutes), the stoppers are removed and the containers set upright. If the margins of the backing are uneven, they may be easily corrected now while the container is full of water, and after a few hours the backing may be easily pried or will spontaneously fall away from the face of the container. It is well to mark the original position of the backing by applying a label at its base, for after loosening it will slip freely around the jar, and it is desirable on account of the irregularity of the jar to be able to return the backing to its original position. This is not an important point when dealing with larger worms, but when they are small and delicate they may fail to be nicely gripped between the backing and the face if the two are not thus accurately adapted. It is between the convex surface of the backing and the concave interior of the face that the specimen is to be placed and then held there by pressure, the pressure being given by packing cotton behind the backing.

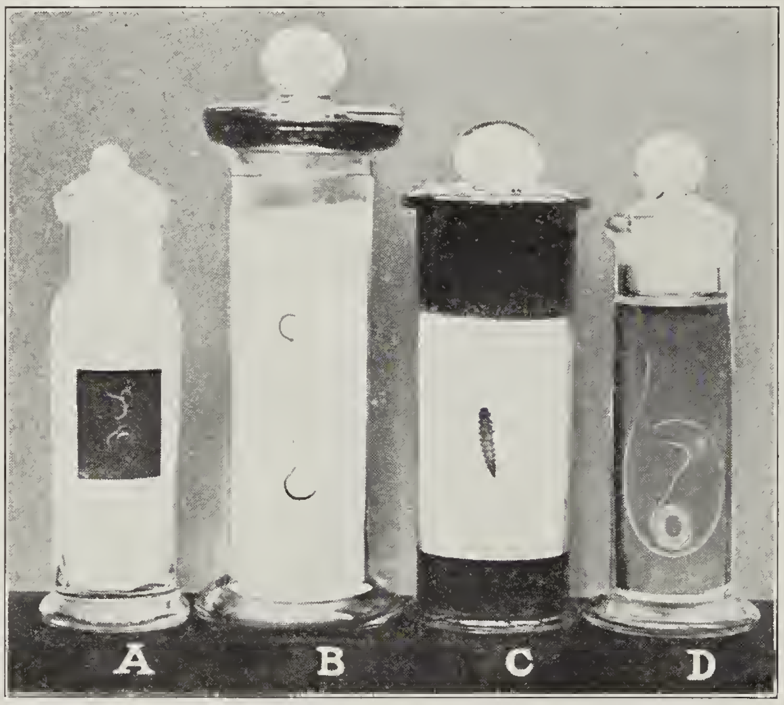

Fig. 2.—Parasitic worms mounted against plaster-of-Paris background: *A,* hookworms shown against a black paper "window," which in turn is supported by a plaster-of-Paris backing. Shows use of necked container. *B,* whipworms mounted against plaster-of-Paris backing. *C,* insect larva mounted in depression. Passe-partout tape wound around container above and below, to give finished appearance. *D,* filariae mounted against black paper background, in turn supported by plaster backing.

Since a dark background is often desirable, a rectangular piece of black photographic paper is fitted over the convexity of the backing sufficiently large to cover it well and hide it, and the whole stood away in weak formaldehyd until needed.

If the specimen is dark, the black paper is withdrawn and discarded, the glistening white backing affording a splendid background. If pale, the paper is brought over the label marking the original site of the backing. In either case the backing is brought over the label, and a pledget of wet absorbent cotton gradually pushed behind it to the bottom of the container, sufficiently large to push the backing snugly but not tightly forward to the face and anchor it. The introduction of excessive quantities of air bubbles with the cotton should be guarded against.

While the cotton anchors the lower end of the backing, the upper end is pulled away from the face of the container, thus producing a (curved) wedge-shaped space between the backing and the face of the container. Into this the worm (or other specimen) is introduced and adjusted in the desired position on the background, the thickness of the wedge being adjusted to the size of the worm by packing cotton behind the backing. After the worm has been oriented, more cotton is inserted to fix the specimen securely, the fluid reduced to the level of the upper end of the backing, and the jar closed.

It will be readily seen that this manipulation is much easier with cylindric containers than with necked ones. When the latter *must* be used or several rather small specimens (hookworms) are to be mounted, it is advisable first to coat lightly the (wet) paper backing with hot gelatin outside the container, and quickly and lightly press the worms into the desired positions. After cooling, the paper is adjusted as before on the backing. When the specimens are sufficiently small this background may be made very small, say 2 by 1 cm., appearing on a white background as a black paper window on which the white worms in turn appear.

The foregoing method is especially applicable in mounting all kinds of worms, except the thicker soft ones, such as the Amphistomidae. The latter should be mounted, as are also larval insects and other thick, soft specimens by the following modification: A cylindric jar must be used, from which the backing can be slipped. This done, a cavity is made in the backing which will take the specimen snugly and will be deep enough to receive the whole specimen. If it is pale, a black paper background may be fastened to the depths of the cavity with hot gelatin. The specimen is placed in the cavity, and the backing slid over the face of the container into position and then held there tightly by cotton as before.

If an especially presentable mount is desired, one or two strips of black passe-partout paper may be wrapped on the outside of the container at the top and bottom to hide the water level and the ends of the backing or background.

This method has possible disadvantages. It is possible to pack the cotton so tightly as to flatten the specimen unduly, and it is possible that the paper may lose its deep black color in time. Black celluloid has been substituted for paper, but a sufficiently thin grade is not on the market to permit the nice adaptation to the irregularities of the glass necessary in mounting very small specimens; but it can be used with larger worms like ascarids. The test of time has not as yet been applied to these two materials for color fastness. Attempts have also been made to color the backing by mixing lampblack or coal dust in the plaster while wet, but quantities sufficient to give a deep black impair the cohesion of the plaster so seriously that it spoils the mounting medium. Portland cement is a most unsatisfactory substitute for plaster. It does not give a good black, sets slowly and cannot be easily fashioned.

Special advantages obtain when the method is applied in mounting worms. They are not damaged by immersion in an adhesive or ligating material, and can be removed easily at any time for microscopic examination.

In conclusion, a word may be said in regard to the use of plaster of Paris. This is purchased, "quick setting" and "slow setting"; the former sets in about five minutes, the latter in twenty. Setting may be hastened by adding salt, retarded by adding a little gelatin. In mixing plaster, it should always be sprinkled on the surface of the water, never adding so much that the surface of the mixture becomes dry. Water should never be poured into dry plaster. The plaster should be allowed to settle from five to ten minutes, during which time a layer of water appears on the surface. This is poured off and the mixture *gently* stirred. These precautions are taken to prevent lumpiness and the formation of bubbles, which result from much stirring. Prepared in this way, the plaster is of the proper consistency for pouring, and is free from bubbles.

JUVENILE DEFORMING OSTEOCHONDRITIS OF THE HIP *

GEORGE J. McCHESNEY, M.D.
SAN FRANCISCO

My reason for presenting a paper on this subject lies, first, in the newness of knowledge concerning it, only two years having elapsed since Perthes' article before the German Congress of Surgeons; and secondly, in the importance of recognizing the disease, and of saving our little patient from a wearisome course of treatment for tuberculosis of the joint, to which, in its early stages, osteochondritis shows a close resemblance, but in its later stages, a vast difference.

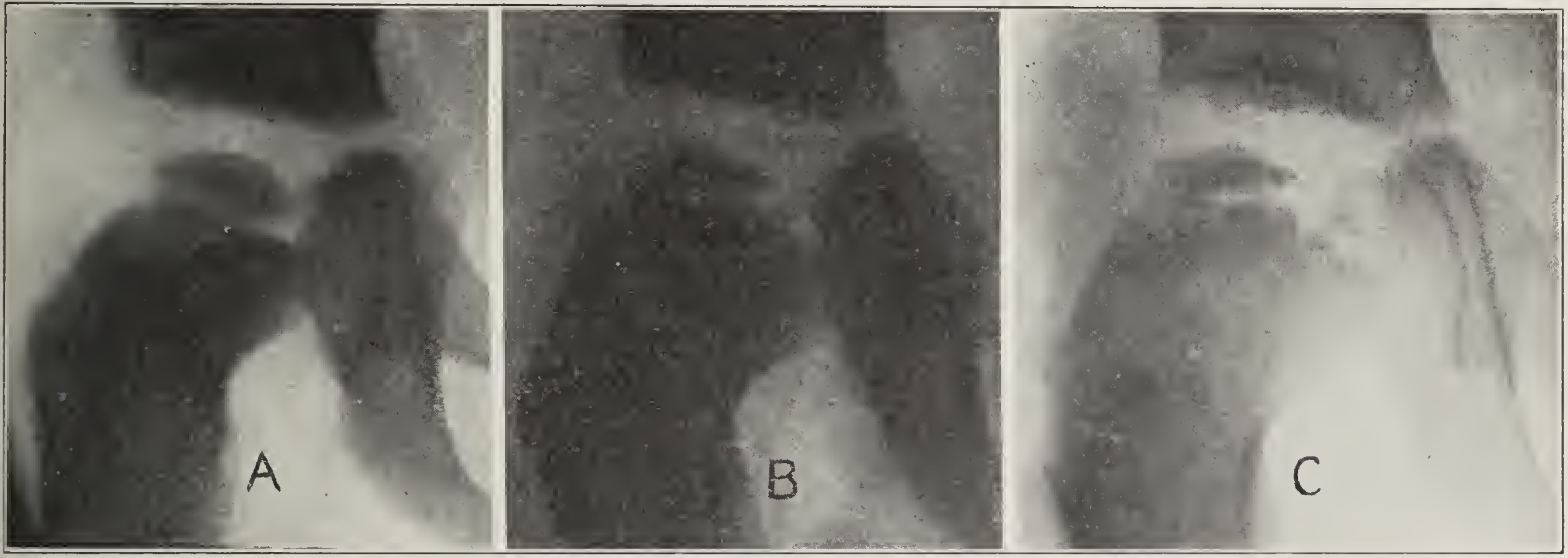

Fig. 1 (Case 1).—*A*, roentgenogram taken at first visit, showing very slight flattening of the epiphysis; *B*, ten months later; *C*, nine months later than *B*, showing fragmentation as well as flattening.

To define briefly, juvenile deforming osteochondritis (the name given by Professor Georg Perthes of Tübingen) is a progressive destruction and crushing, principally of the upper femoral epiphysis, characterized by a slight limp, mild subjective symptoms, a fairly constant limitation of abduction, and a benign course with complete recovery under little or no treatment.

ETIOLOGY

A history of limping by parents is only occasionally elicited, and would hardly seem to have any significance. The disease appears when the child is in good health, and is not especially concerned with any specific trauma, although in two of our three cases, mild injuries were associated with the onset.

Quite constantly boys are affected in the second five years of life. No explanation has been offered for this phenomenon, although one might presume that the strenuous exercise of the male animal at this time of his life might produce a constant strain and tend to a breaking down of the structures in consequence, when no one tissue was at fault.

SYMPTOMS

A slight limp is the obvious symptom. This occurs early and persists till late, becoming more and more intermittent, and is accompanied by slight or no pain. The limp may last from two to four years, says Perthes, and then lessens, in spite of greater destruction of the epiphysis, as seen in successive roentgenograms.

The symptom next in importance is the elimination of abduction, seen constantly, and persisting much as the limp does. It is marked at first, and is due to alterations in shape of the epiphysis and acetabulum, according to Perthes, although he admits that limitation of abduction may be well developed when the flattening of the epiphysis is slight. Under narcosis he could overcome the limitation to a great degree, although not altogether, showing that muscle spasm played an important rôle. This was done in one of our cases with a similar result.

Also rather constantly is reported a limitation of in or out rotation to a slight extent. Other motions are said to be unimpaired, although in two of our cases we found limited hyperextension.

Slight shortening and atrophy are occasional symptoms of lesser note.

Pain is almost a negligible factor, and in these three cases none was elicited by our examinations. There was an occasional complaint of spontaneous pain in the early stages.

PATHOLOGY

According to the studies of Perthes, including an arthrotomy, in which the joint was inspected and specimens removed for microscopy, there is a delay in ossification of the cartilage of the epiphysis, and to a lesser extent also in the juxta-epiphyseal cartilage of the neck and isolated areas in the acetabulum. This forms what he calls "cartilaginous isles," or defects in ossification. He also notes calcareous nodules or dark spots on the ossific nucleus of the epiphysis. As a result we have flattening or crushing of the epiphysis, because cartilage persists in places where bone is needed to bear the increasing weight of the growing child and withstand the traumatisms of a boy's rough play. Its shape also is a factor in this connection, for Quain says, "The epiphyseal cartilage in the young bone is not a flat plate situated at the junction of the head and neck, but an arched lamella, which at the summit of its convexity lies near the center of the articular head."

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Later the flattened epiphysis breaks into two or three pieces, and finally unites to the neck, which has become much shorter and thicker than normal, although still preserving the normal angle.

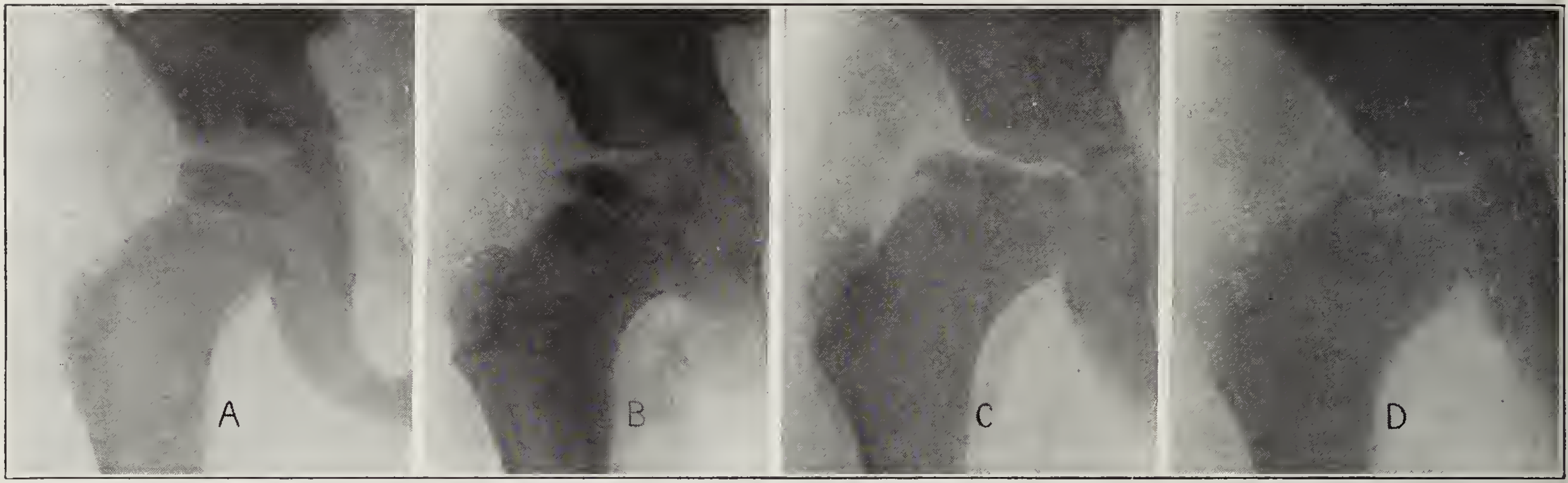

Fig. 2 (Case 2).—*A*, condition at first visit; flattening well marked; *B*, five months later; continuation of process; *C*, six months later; fragmentation appearing; *D*, seven months later; fragmented sections fusing to diaphysis.

ROENTGEN-RAY FINDINGS

These are so distinctive that Delitala,[1] in an exhaustive review, asserts that a Roentgen examination alone is sufficient for the diagnosis.

The flattening or crushing of the epiphysis is the salient feature. This is progressive, being slight at first, and increasing till the epiphysis, instead of being a rounded outline, is reduced to a flattened plate or disk, often divided into two or three parts. Later these appear to fuse, and the whole finally unites to the diaphysis. The cartilaginous isles mentioned above as appearing in the juxta-epiphyseal line and in the acetabulum are sometimes seen in good roentgenograms.

DIFFERENTIAL DIAGNOSIS

Here we must consider tuberculosis, juvenile deforming arthritis, polyarticular acute arthritis or rheumatism, coxa vara and osteomyelitis.

To distinguish it from tuberculosis we can place considerable reliance in the von Pirquet test, in the clinical examination showing the principal limitation of motion in abduction, a little in internal rotation and none in other directions, as opposed to tuberculosis, which usually shows some limitation in all directions. The lack of pain or joint spasm is another point, while the roentgenogram, showing none of the general rarefaction of tuberculosis in the early stages, in the later offers conclusive differences in the shape of the epiphysis.

Juvenile deforming arthritis is accompanied usually by joint crepitation, the pain is quite severe, and there is considerable stiffness and marked limp. The von Pirquet test should help, and the roentgenogram sometimes resembles Perthes' disease closely as to the crushing of the epiphysis, but often shows osteophytes or spurs, which osteochrondritis does not. Furthermore, the joint cartilage is intact, a point emphasized by Perthes.

In coxa vara the roentgenogram and the von Pirquet test are our only means of differentiation; but they should be quite sufficient. Clinical examination and history may fail us altogether.

In acute articular arthritis we have acute onset, much pain and disability, limitation of motion in all directions, fever, etc. The roentgenogram would show no change.

Acute osteomyelitis should present no difficulty. In chronic or healed osteomyelitis, reliance should be placed on the history and Roentgen findings.

TREATMENT

Perthes, with the widest experience of any one, concludes that operation is not indicated, that correction of abduction under anesthesia may be a good procedure, and that plaster spicas do no harm beyond inducing some atrophy, but that extension with massage is probably better.

I cannot agree with Delitala, who thinks that weight bearing has nothing to do with the crushing of the epiphysis, and that intimate alteration in the process of ossification is the only factor. Until we know the pathology absolutely and definitely, the child should be protected from weight bearing in the acute stage, but in the later stages allowed to run about regardless of the apparently alarming changes the Roentgen ray might show, as all cases run a benign course and tend to spontaneous recovery.

Perthes reports five cases seen from five to thirteen years after onset. The history and course were typical, although thought at that time to be tuberculosis. The uniform result was a broad flat head on a short thick neck, resembling coxa vara. There was a constant slight limitation of abduction. Otherwise functions and motion were restored. There was no pain or limp.

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[1] Delitala: Am. Jour. Orthop. Surg., 1915, xii, 555.

During the last two years Dr. Sherman and I have observed three examples of this disease, with histories as follows:

Case 1.—B. F., boy, aged 3½ years, seen first by us in July, 1913, came from a family in which the parents and older children had never limped; his infancy had been normal; he had had pertussis at the age of 1½ years. He complained of pain in the left knee at the time of a fall six weeks before first seen; he limped a little and got better. Again five days before the first visit he twisted the left foot and leg; he heard a snap, and then had pain and difficulty in walking. At the first visit he walked with a decided limp, but on the table had free joint motion, except that the heel would not go so high into the opposite scarpa as normal. Two days later, when reexamined, the limp had disappeared. The von Pirquet was negative. The boy was not seen for ten months, during which time he had intermittent soreness and would limp for a few days. He then showed no limitation of motion or limp, but the roentgenographic changes were marked. Wassermann negative, normal thymus, genitalia, hemoglobin 75 per cent. In April of this year he was seen again. In the eleven months' interval he has had five or six limping spells, each lasting a day or two, accompanied by slight hip pain; the attacks lessened in severity, the last one occurring in September, 1914.

The parents say he has a tendency to stumble because he will not lift the foot so high as the right one, and is a little clumsy in running. Examination shows 40 degrees' abduction, as against 45 in right. Five cm. atrophy midthigh; hyperextension normal; no shortening.

No treatment was given.

Case 2.—L. W., boy, aged 6½, was first seen in December, 1913. The parents had never limped; the child was healthy as a baby; he had had pertussis and roseola, both lightly; he commenced to limp six months before the first visit, and complained of pain in the left knee, not enough to stop play. When seen in the office, he had no limp and no limitation of motion. Tonsils were removed, although no Rosenow bacilli found. A month later he had no limp, but only 14 degrees abduction were permitted, and slight limitation of hyperextension.

Von Pirquet and 2 mg. Koch's Old Tuberculin were both negative. Wassermann was also negative.

The child was put in spica and on crutches to protect the joint. This was continued four months, when the abstract of Söderlund's article[2] induced us to remove the spica and consider the condition as therein described.

The course of the disease since has been quite typical. The parents have endeavored to make him use crutches, but he is as apt as not to discard them when at play, the joint being absolutely without pain.

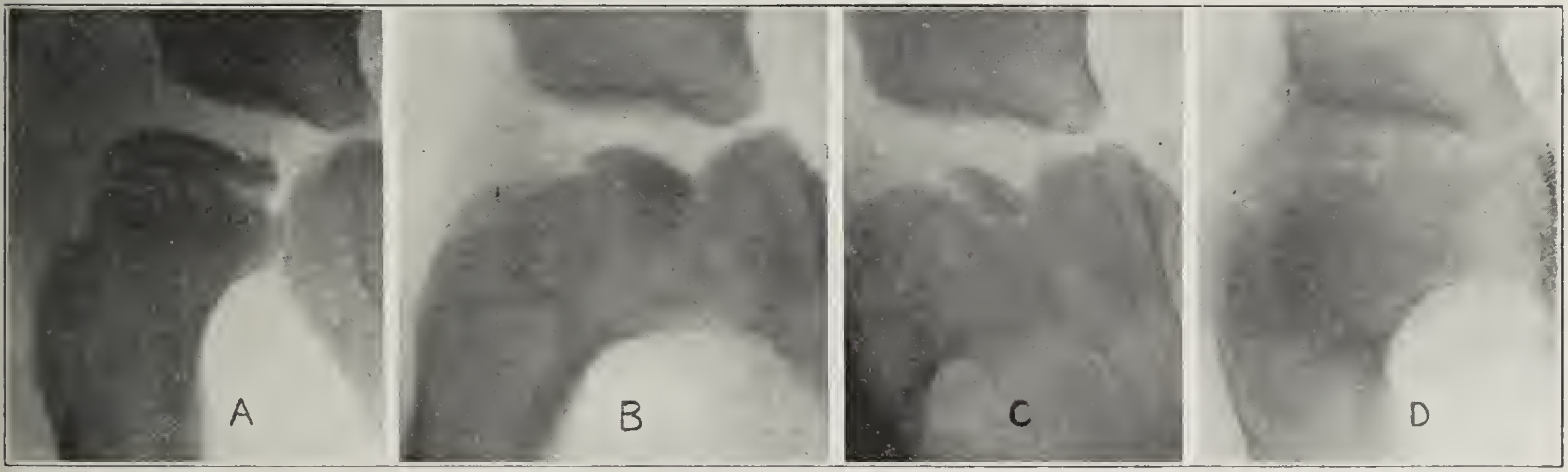

Fig. 3 (Case 3).—*A*, flattening well marked at first visit; *B*, after five months; continuation of process; *C*, five months later; fragmentation appearing; *D*, three months later; continuation of process.

Case 3.—B. C., boy, aged 7, seen first in May, 1914, with no history of limping, had whooping cough and measles lightly in infancy, but no other illnesses. Limping commenced after a fall from a tree, and the boy complained of pain in the groin. He limped a little, steadily, for three months, and then was placed under our care. We found only 15 degrees' abduction permitted, with limited rotation and hyperextension. Roentgenoscopy revealed marked flattening of the epiphysis. The von Pirquet and Wassermann tests were negative. In three weeks, the adduction and other joint restrictions being on the increase, an anesthetic was given, the adduction overcome, and a plaster-of-Paris splint applied.

At the end of seven months, or last March, there being abduction of 35 degrees, with free joint motion, splint treatment was discontinued, in spite of the increased flattening of the epiphysis, as shown in roentgenograms. Since March he has been kept on lift and crutches, although without them he has a slight limp, because of restricted motion; he has a little fulness over the neck of the femur; 25 degrees' abduction are permitted, and two-thirds normal rotation.

He has had no pain since the fall from a tree when the symptoms began.

These three histories and accompanying roentgenograms are quite typical of the syndrome brought into prominence by Perthes two years ago. Keeping it carefully in mind will save a small percentage (Delitala saw six in 1,500 cases of coxitis) from the dreaded diagnosis of tuberculosis. To us also will be given the satisfaction of making a definite advance in the scientific accuracy of our diagnoses.

One should also consider that other joints may be similarly affected. Ridlon,[3] two years ago, before this section reported two cases of osteochondritis dissecans, producing defects in the cartilage of the knee, resulting in small free bodies in the joint. Other rare and little understood joint affections may in time be grouped under a common pathology, having as the salient feature an inflammatory defect, a breaking down or delayed ossification (as in Perthes' disease) of the cartilage.

350 Post Street.

ABSTRACT OF DISCUSSION

Dr. H. M. Sherman, San Francisco: The cases were of interest to us because we had read of the condition before we found it in one of the children. The diagnosis must be made primarily, because an inaccurate diagnosis might cause one to put the child into a splint for a long while when it might not be really necessary. The local diagnosis, apart from the general one, can be made on two bases: first, on the clinical examination, in which one does *not* find the typical symptom of a hip joint tuberculosis, and second, by means of a roentgenogram. These two things, with a negative von Pirquet and a negative Wassermann, should serve to establish the character of the condition. We intended to treat all of these children without any splints at all after we had made our first diagnosis, but one of them evidently was suffering a certain amount of irritation in the neighborhood of the joint, which caused a reaction that impeded motion. We thought that needed protection, so that it was put into a spica which held the hip still for a certain length of time until we could safely take it off. Since then the patient has been without splints. We have not had opportunity to watch the patients far enough into life to know what the ultimate result will be.

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[2] Söderlund, G.: Nontuberculous Hip Joint Disease in the Young, Upsala Läkaref. Förh., 1914, xix, Nos. 2-3; abstr., The Journal A. M. A., May 2, 1914, p. 1444.

[3] Ridlon, John: Osteochondritis Dissecans, The Journal A. M. A., Nov. 15, 1913, p. 1777.

Dr. Haas' paper, it seems to me, comes in here with great usefulness in the experiments which he made on the results of interfering with the circulation in a bone. I refer to the case in which he showed us two pictures in which there had been interference with the growth of a metatarsal bone following an interference with the circulation outside the bone. It would look as if that might be the case in these children with osteochondritis at the hip. If there has been an injury, that might be credited with having interfered with the circulation sufficiently to change development processes. If there has been no history of an injury—and of course one cannot always get a history of all the falls that a child has, because a child cannot tell—if there has been no history, it would not be unreasonable to suppose that every child falls more or less, and that an injury had occurred, in spite of there being no record of it. Experimental work would be difficult, except on animals in which the anatomy was so well worked out that you could tell just where each artery was going; but experimental work should promise an answer to questions of etiology.

A CASE OF STRAMONIUM POISONING

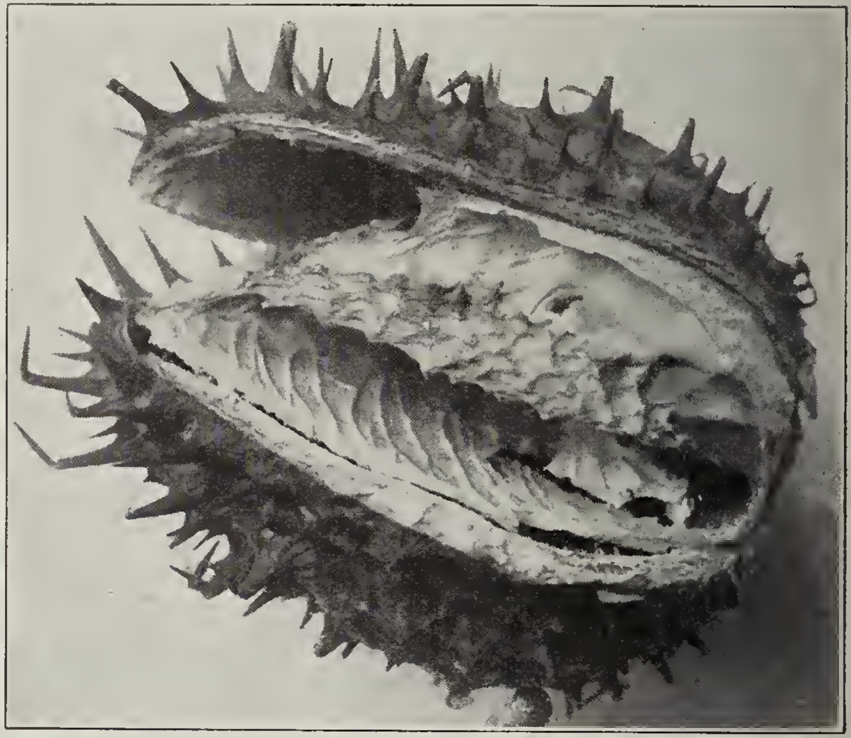
William D. McNally, A.B., Chicago
Chemist, Cook County Coroner's Laboratory

M. R., a strong healthy boy, aged 7 years, died suddenly Nov. 29, 1914. Part of the stomach contents, consisting of 130.5 gm. of poorly masticated food, mostly vegetables, was submitted to me for examination. About twenty small kidney-shaped seeds about 2 mm. long and 2.5 mm. wide, of a brown color, were found unbroken in the food. From the stomach contents which contained broken seeds, 2.2 mg. of an alkaloid were extracted which gave a purple violet with Vitali's test. A drop of a solution containing about 1/200 grain in 1 c.c., was dropped into the right eye of a cat and compared in a half hour with the left eye, when a marked dilatation was noted. An amorphous precipitate was obtained with hydrobromic acid saturated with bromin. The precipitate became crystalline after standing, was insoluble in acetic acid and only sparingly soluble in hydrochloric acid. From the foregoing tests and the physical examination of the seeds, I concluded that the boy had eaten the seeds of the *Datura stramonium*, containing atropin and hyoscyamin.

At the home of the boy I obtained a "thorn apple," a four-valved, four-celled capsule thickly covered with sharp spines containing numerous seeds of the same appearance as those found in the stomach contents. A chemical and physical examination proved the seeds to be those of the *Datura stramonium* or Jamestown weed, sometimes called "jimson weed." The "thorn apples" were obtained in a neighboring yard, where the plant was cultivated for its white flowers. The "jimson weed" is an annual plant, of a very vigorous growth, found in vacant lots and in the country. Since it is so common and easy of access to children, it is singular that more cases of poisoning are not reported.

The seeds were eaten about 5 o'clock in the evening. The boy ate his supper at 6 o'clock, retiring at 8 o'clock feeling as well as usual. About 12:15 he called to his mother, complaining of being alternately cold and feverish. Half an hour later he was delirious, tossed about in his bed, wanted to go barefoot, and pulled at his nightgown. After about one hour of restlessness the boy went to sleep breathing very heavily. The family endeavored to obtain the services of a physician without avail. At 6 o'clock in the morning the mother found the boy resting easy. Fifteen minutes later she went in to awaken another child and found the boy dead, with his face sunk into the pillow, fourteen hours after eating the seeds. The boy did not have convulsions, vomiting or diarrhea.

At the necropsy made twenty-four hours after death, by Dr. H. W. Burmeister, there was no evidence of rash, and no skin petechiae were present. It was particularly noted that the pupils were not dilated to any marked degree. The lungs were slightly distended, and there were a few scattered subpleural petechiae over both lung surfaces. There was a hypostatic congestion in their posterior portions. Scattered over the epicardium of all portions of the heart were numerous (several hundred) small petechiae. These were for the most part discrete, and none measured over 0.1 cm. in their greatest dimension. The liver was negative except for an acute slight passive hyperemia and a parenchymatous degeneration. The jejunum and the ileum contained a thick semifluid yellowish material in considerable amount, and scattered throughout the course of the entire small intestine were about 100 seeds identified as above as coming from the *Datura stramonium*. Otherwise the organs were grossly negative.



Thorn apple of *Datura stramonium*.

The number of necropsies after death from atropic poisoning is small, and the lesions observed, as in this case, are not characteristic.

The literature does not give sufficient data to serve as a basis for even an approximate estimate of the lethal dose of stramonium. An Indian laborer[1] died in seven and one-half hours; the stomach contents contained eighty-nine seeds. A child of 2½ years died after having swallowed about 16 grains of seeds.[2] A girl,[3] aged 8 years, swallowed 237 seeds, and recovered with treatment. In the case reported above, the boy died from eating not more than 180 seeds. According to statistics of Falck, quoted by Kobert,[4] death occurred in 11.6 per cent. of the cases collected of atropin and hyoscyamin poisoning.

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1. Allan: Lancet, London, May, 1847.
2. Duffin: London Med. Gaz., 1834, xv, 194.
3. Friedman: Jahrb. f. Kinderh., 1891, xxviii, 354.
4. Kobert: Lehrbuch der Intoxikationen, 1906, p. 1043.

Special Article

THE AUTOLYSIN TREATMENT FOR CANCER

RICHARD WEIL, M.D.
NEW YORK

I have received so many requests for information concerning the new treatment for cancer described as "autolysin" that I have deemed it advisable to make a public statement on the subject. The fact that I had the opportunity of personally witnessing the application of this compound in a long series of cases has placed me in a position to express an independent opinion as to its merits. At the time when Dr. Beebe was still connected with the General Memorial Hospital,[1] New York City, a preparation was brought to the hospital authorities by Dr. A. Horowitz, with a request that its therapeutic effectiveness in cancer be made the subject of study. This mixture, which has since been described as autolysin, had been used in a number of cancer cases, and was stated to have proved of value. It had already achieved a local reputation and some degree of newspaper notoriety in the treatment of cancer.

In accordance with a well-defined policy of the Memorial Hospital which approves of the further investigation of therapeutic measures of whatever description, provided they offer the hope of assistance in cancer, Dr. Horowitz' mixture was accepted for study. Dr. Beebe volunteered to carry on this study. The rules of the medical board of the hospital prescribe that in such cases the exact composition and formula of the preparation under investigation be disclosed to at least one member of the board, and Dr. Beebe informed the board that this regulation had been duly complied with, and that he was in possession of complete knowledge on that subject. Consequently, Dr. Beebe was given the privilege of applying the treatment in a considerable number of cases, and the fact that I had general supervision of the clinical activities of the institution imposed on me the duty of watching the progress of these cases.

The cases entrusted to Dr. Beebe comprised a wide and diverse group, including cancer and sarcoma of the various tissues and organs of the body. Dr. Beebe has stated, in his first paper, that the cases treated in the Memorial Hospital "represent the most hopelessly incurable and inoperable group of patients." That they were inoperable is indeed true. An ethical regard for the welfare of patients forbids the use of new and experimental remedies in cases which offer a hope of cure by the older and well-tried methods of medicine and surgery. Therefore, only such cases were submitted to his treatment as could not be helped materially by the other means at our disposal, such as surgery, radium or the Roentgen ray. In not a few instances, though not all, the patients were given the benefit of radium or Roentgen-ray treatment, while autolysin in addition was administered. That all of the patients were moribund, or even in very serious physical condition, is, however, not the case. There is a large group of cancer patients, as every physician knows, who are apparently in excellent, or even in perfect health, but in whom the condition of the disease entirely precludes the possibility of effective treatment. Some of the cases put in Dr. Beebe's hands at the Memorial Hospital were in good physical condition, and here the treatment, if of real value, should certainly have demonstrated its virtue.

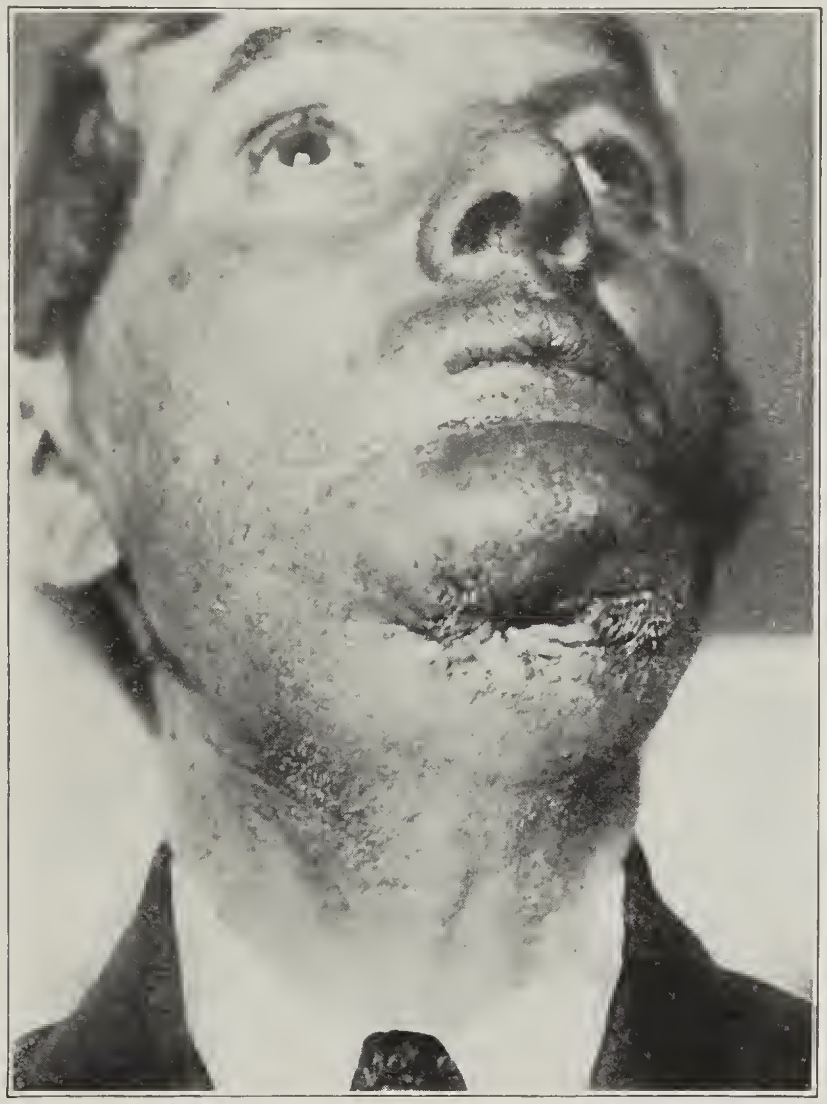
Fig. 1.—Photograph of patient taken in the General Memorial Hospital, July 24.

Since Jan. 1, 1915, twenty-three cases have been treated in the wards of the hospital by Dr. Beebe with autolysin. Of these twenty-three cases, fourteen patients died in the hospital, and eight were discharged unimproved. Only one, to the best of our knowledge, is at the present time in a condition which could be described as an improvement on that presented at the time of admission to the hospital. To this case, which seems to be identical with Case 3 of Beebe's paper[2] of October 2, I shall come in a moment for more detailed discussion. Although the eventual outcome of the cases was not affected by Beebe's treatment, the clinical course was somewhat altered thereby. In those cases in which the mixture was injected directly into the tumors, there resulted necrosis, suppuration, and sloughing of portions of the tumor masses. This effect is quite characteristic of the action of a large number of irritant or destructive substances, whether of mineral or vegetable origin, on tumor tissue. It affects the size of the mass, and may impress the mind of the patient and his friends, but does not in the least degree impede the steady and relentless progress of the malignant growth. Indeed, there is a spontaneous tendency for malignant growths to break down and die at the center, while simultaneously the living cells at the periphery successfully pursue their mission of invasion and destruction of the healthy tissues of the body. Such a result presents not the slightest advance on methods which have been in use for centuries in the treatment of cancer. To attribute it to certain peculiar and specific virtues inherent in autolysin is, to say the least, an illogical assumption. The use of the mixture in the form of a poultice has been claimed by Dr. Beebe to produce local improvement of another type, namely, cleansing of the ulcerated surface of tumors, and a marked amelioration in the character of the discharge. This is the result which I have indeed witnessed, but it is the same result as we regularly obtain in the hospital in the treatment of ulcerated carcinomas by the usual topical applications. Further than this slight incidental change, no beneficial effect was induced.

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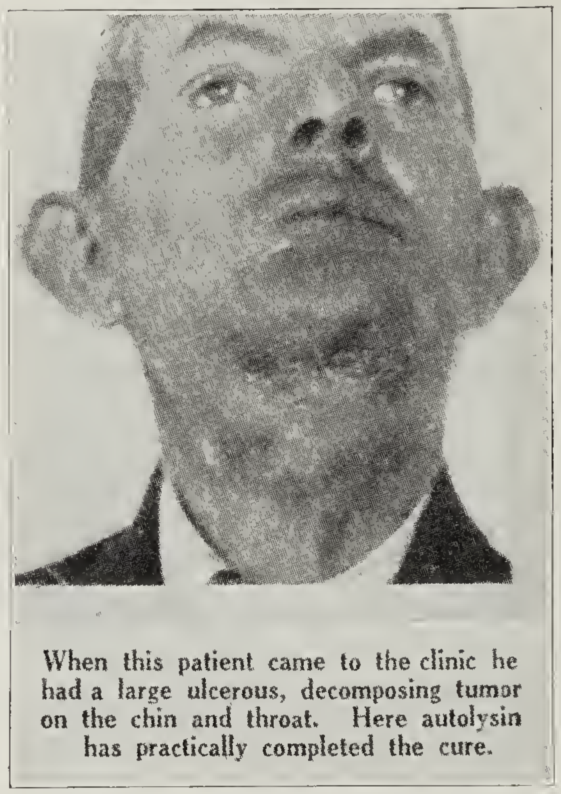
[1] To avoid further misunderstanding, it should be stated that Dr. Beebe's connection with the Cornell University Medical School and with the General Memorial Hospital terminated some time ago.

[2] Beebe, S. P.: New York Med. Jour., Oct. 2, 1915.



When this patient came to the clinic he had a large ulcerous, decomposing tumor on the chin and throat. Here autolysin has practically completed the cure.

Fig. 2.—Reproduction of illustration with legend, as it appeared in Hearst's Magazine in September. According to affidavit (page 1643) this photograph was taken in the office of Dr. Beebe on June 29.

As regards the effect on malignant tumors produced by subcutaneous injection given in a part of the body distant from the disease, in other words, of the constitutional effect, we have indeed seen an improvement in the appearance of ulcerated tumors treated in this manner. On the other hand, it was no greater than the improvement which we regularly obtained in such cases by the unassisted use of the ordinary surgical dressings which were applied in these cases, exactly as in the others. Such being the fact, it seems reasonable to conclude that the improvement was due to the dressings and not to the distant injections. In no case did the constitutional treatment, as it is called, appear to exert any influence of itself.

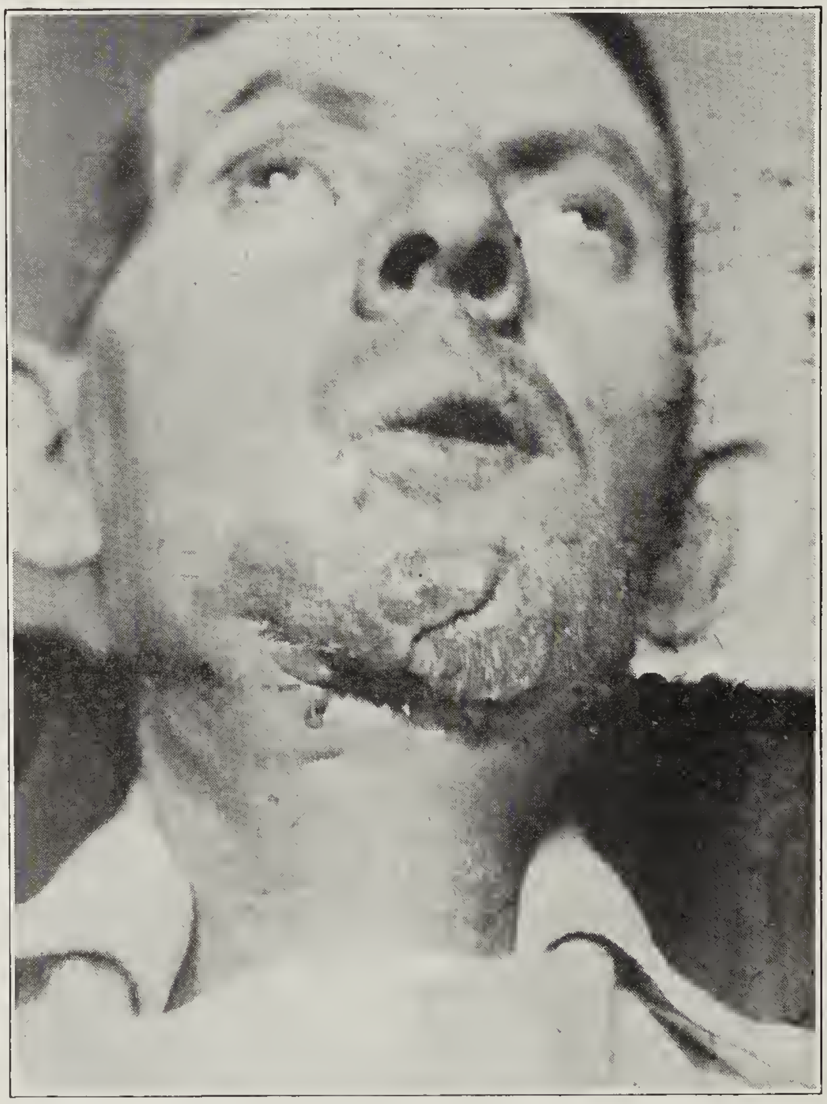


Fig. 3.—Photograph of patient taken in October at the General Memorial Hospital.

Certain general effects are ascribed by Beebe to autolysin, such as relief of pain, diminution of anemia, improvement of appetite, nutrition and sleep. These are claims which have been made for every cure for cancer since the beginning of time. Is it, indeed, very remarkable that a patient who has been consigned to death as the victim of a hopeless malady should regain his spirits and his appetite when he is again confronted with the hope of a cure, and of the eradication of his disease? It is a phenomenon well known to every student of the disease that a large proportion of cases respond in just this manner to any treatment which is offered them. Osler has described a case of cancer of the stomach in which the mere visit to a consultant of sanguine temperament, though poor judgment, who assured the patient there was no possibility of cancer, resulted in a disappearance of all the symptoms and a gain of 18 pounds in weight. It is this psychologic fact which has occasionally deluded the honest student of a cancer cure, and which has also so generously played into the hands of the dishonest.

Contrasted with this occasional effect, however, is another set of results of which no mention is found in Beebe's first article, and a very inadequate description in the second. A fairly large proportion of our patients, certainly over half, were most unfavorably affected by the local injections. The pain of injection was not infrequently so severe that the patients refused to accept, or the intern to administer, the treatment. The consequent swelling was at times so marked as to give great distress, and in two instances the treatment appeared to be responsible for an almost fatal hemorrhage. The general effect on the health and nutrition in many cases appeared to be so deleterious as to dictate the cessation of the treatment. Unquestionably the latter effects far outweighed the former very questionable benefits in frequency and in significance. Moreover, they occurred not only in the earlier and experimental stages of the use of autolysin, but even toward the end of the time during which it was employed in the hospital; in other words, a year of study failed materially to obviate these disastrous effects of the treatment.

I come now to a consideration of certain of those cases, reported by Dr. Beebe[2] in his paper of October 2, "selected to include those in which markedly favorable effects have been obtained." Of all of the cases there reported, only two are recognizable as Memorial cases. To the description of at least one of the cases as detailed in this paper, and probably of the other, I am able to add certain important facts from the records of the Memorial Hospital.

Case 8 describes a very remarkable and peculiar condition, which corresponds in every essential detail, including the age, with one treated by Dr. Beebe at the hospital. The records show that at Dr. Beebe's request this patient received three Roentgen-ray treatments for his disease, at the same time that the doctor was administering the autolysin. This fact is completely ignored in the published statement, and the remarkable improvement of the patient is ascribed entirely to autolysin.

Case 3 corresponds in almost every detail of the description with one observed and treated by Dr. Beebe in the wards of the hospital. The age of our patient, however, was given as 49, that of Case 3 as 52. The autolysin was given by poultice and injection, exactly as in the published case. The improvement detailed in Case 3 corresponds with that observed in the corresponding hospital case. In the hospital case, however, four Roentgen-ray treatments were administered, a fact which is not mentioned in the published report. In view of the discrepancy of three years in age, it is possible that the cases are not the same, although the exceptional nature of the clinical condition, with the close correspondence in so many details, would seem to render such coincidence most unlikely. The hospital case here described is the one previously referred to as the only patient now alive who shows improvement.

When one realizes the brilliant, even if often temporary results accomplished by the use of the Roentgen ray, it is quite evident that some, if not all, of the results ascribed to the autolysin are actually attributable to the rays. We have not rarely seen similar disappearance of such tumors from the use of the Roentgen ray alone.

There is a further addition of importance which I am in a position to make. Case 7, in Dr. Beebe's first paper,[3] described the favorable results of treatment by autolysin in a case of cancer of the mouth. This was the only patient of those described from the Memorial Hospital in that paper, who was then alive and, according to Beebe, benefited by the treatment. In the second paper Dr. Beebe states that the last information received of this case was "about five months ago, when the condition was approximately as that stated in the first paper," which specified freedom from pain, a good general condition, and so marked a local improvement that a casual examination would fail to discover any remains of the tumor. This patient did indeed improve for a few weeks in Dr. Beebe's hands. When he left the hospital, however, his condition was poor, and there was unmistakable evidence of cancer in the floor of his mouth. The hospital records show that this man was discharged "unimproved" on April 5, fully six weeks before the appearance of Dr. Beebe's first paper. Several months ago he wrote to us that his condition was worse than it had ever been, and his pain increasing. Within the last few days I have been informed that his condition is critical.

Within the last few weeks, accident has brought to the hospital another case in which the published records require serious correction. Dr. Henry Smith Williams, who is associated with Drs. Beebe and Beveridge in the enthusiastic advocacy of the autolysin treatment, has recently written a popular review of the treatment for *Hearst's Magazine* of September. This article had wide circulation through the country, and to my personal knowledge has added several recruits to the army of autolysin patients. In that article appears the accompanying illustration (Fig. 2) of an autolysin case, with the statement that "here autolysin has practically completed the cure."

During the very month of that issue, namely, September, the same patient was under treatment at the Memorial Hospital, having sought help in July for a rapid extension of his disease. His photograph (Fig. 3) at the present time forms an interesting pendant to that in *Hearst's*. This patient affirms under oath[4] that the photograph in *Hearst's* was taken on the very day following his first and only treatment with autolysin on June 28. He states that he never again consulted Dr. Beebe or his associates or communicated with them in any way.

These few facts complete the data which I can at present add to the discussion of the efficacy of the autolysin method. In view of the fact, however, that patients are coming to seek it even from distant states and that, to my personal knowledge, many unfortunates, suffering not alone from the disease but from poverty, have had to make the most serious financial sacrifices in order to secure the fancied benefits and meet the expense of the treatment, it may not be amiss to add such further considerations as might be of assistance in estimating its value.

Autolysin has certain of the characteristics which are presented by many of the cancer nostrums of past centuries. Such is the fact that it is composed of a congeries of herbs, the pharmacologic action of which is practically unknown. A more serious accusation, however, can be brought against it. Beebe and his associates are in the position of claiming to have made certain cancer patients "clinically well" with a remedy, the composition of which they have not divulged. The list of herbs which they recite gives no adequate description of the mixture. They disclose neither the parts of the plants which they use, nor the mode of preparation. I violate no confidence when I state that Dr. Beebe gave his word to the medical board of the Memorial Hospital that nothing would be published concerning the effects of autolysin, without previously disclosing publicly its formula and preparation. It might be thought that even though the formula had been withheld, the profession could obtain the mixture for use in the treatment of cancer cases. An interesting document in this connection is furnished by a letter to a physician in Seattle, dated July 29, signed by S. P. Beebe,[5] and recently published by *Northwest Medicine*. In that letter Dr. Beebe declares to his correspondent that the ordinary physician is not competent to use the drug, and lays down the financial terms on which his firm is ready to examine the case — the sum of $250 for "examination, consultation, etc." Of course, writes Beebe, if the doctor will come to New York from Seattle they will be glad to show him how to administer autolysin. After this, the doctor will be able to administer it himself.

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[3] Beebe, S. P.: New York Med. Jour., May 15, 1915.

[4] The following is a copy of the affidavit:

I, Louis Felsenfeld, hereby solemnly swear that on p. 203 of Hearst's Magazine for September, appears a picture, with the description "When this patient came to the clinic he had a large ulcerous decomposing tumor on the chin and throat. Here Autolysin has practically completed the cure," and that this picture is the reproduction of a photograph of me. I further solemnly swear that I have made in all three visits to the office of Drs. Beebe, Beveridge, and Quimby. At the first visit, I made the financial arrangements. I was told that the cost of treatment would be $200.00. I stated that I had only $25.00. They told me to return with the money. About a week later, on June 28, I returned, and paid $25.00, and they told me that I would have to pay them $25.00 in addition for the full cost of treatment. On June 28, I received an injection into the arm, which I was informed was Autolysin. This was the only treatment which I ever received from these physicians. They told me to return on the following day to receive a special treatment. I returned the following day, and received no treatment, but had my photograph taken. After this I never saw or consulted, or communicated in any way with any of these physicians. I solemnly swear that the treatment administered in no way improved my condition. which rapidly became worse.

Louis Felsenfeld.

Sworn to before me this 13th day of October 1915.

Ralph P. Blake,
Notary Public No. 201,
(Seal) New York City.

I wish to add a word in conclusion. The majority of those who will read this article have had practically no means of judging of this treatment through their own observation. Cancer patients are peculiarly gullible, and will snatch at any straw in the hopeless struggle against their disease. Such unfortunates gladly undertake long and painful journeys at the cost of great suffering, and surrender their last remaining dollar, in the hope of gaining relief. Surely they deserve to know all that we can tell them of the treatment which is so enticingly portrayed. My own personal belief, founded on long observation, is that autolysin is useless; that it adds nothing of value to the methods now generally accepted; and that it often aggravates the sufferings and accelerates the death of the patient.

970 Park Avenue.

Therapeutics

PNEUMONIA

(*Concluded from page 1553*)

SERUM AND VACCINE TREATMENT

The value, in all cases, of serum or vaccine treatment of pneumonia is still in doubt. Rosenow[6] found the opsonic content of the serum of the blood in lobar pneumonia to be below normal during the early part of the disease and to become, in favorable cases, above normal as the symptoms began to subside. When there is a severe infection and the patient is overwhelmed by the disease the antibodies in the serum were found to remain below normal. Rosenow developed an autolyzed pneumococcic vaccine which, when injected into a patient with pneumonia, he found, would hasten the production of the antibodies needed to fight the infection, and therefore would hasten recovery. Later Rosenow and Hektoen[7] reported that the mortality from pneumonia in their cases had been reduced by injecting this antigen or vaccine.

Vaccination as a prophylactic and to immunize against pneumonia is purely in the experimental stage.

MEDICINAL TREATMENT

We are past the stage when any dogmatic advice can be given in regard to the use of drugs in pneumonia. The physician who has charge of a pneumonia patient must decide whether a drug is needed to combat a condition or symptom and which drug is the best for the object aimed at. The following are suggestions of drugs that have positive value for certain conditions and brief descriptions of the pharmacoligc action expected of them:

Morphin or Codein.—If the pain is acute in the beginning of pneumonia, one of these sedatives should be given. Acute pain is depressant and should not be allowed. Strapping of the chest is inadvisable in pneumonia. An ice bag over the painful region of the chest does not abort pneumonia and is generally not desirable, and on account of the generally high fever at this time, hot-water bags are not advisable.

A cough that is frequent and unproductive, as it may be in the first stage of pneumonia, will be quieted and the pain alleviated by codein sulphate in doses of 0.01 gm. every two, three or four hours as is necessary. If later there is great insomnia, with a very weak circulation, the safest hypnotic is morphin in a dose not sufficient to slow the respiration greatly or to prevent the needed and necessary expectoration. If there is meningeal irritation or an actual meningitis, morphin is generally contraindicated, as it will cause more delirium, unless the dose is undesirably large.

Acetanilid and Antipyrin.—Acetanilid, 0.10 gm. every three hours for four or five doses, or antipyrin, 0.50 gm. every four hours for two or three doses, may be of advantage in lowering the high temperature in the first stage of this disease. These drugs also will lower the blood-pressure and quiet the heart. Such an action may be needed in the very acute first stage of pneumonia, provided that the heart is normal. At this stage, the lowering of the blood-pressure produced by these drugs is often beneficial. Later in the disease, even if there is high temperature, such coal-tar products are not indicated and should not be given.

Ammonium Chlorid.—If the expectoration is very adhesive and cohesive, scanty in amount and hard to raise, ammonium chlorid acts satisfactorily and is indicated. The dose should be 0.25 gm. every two hours, given in a sour mixture, or in lemonade; and if there is much pain or if there is ineffective, frequent cough it may be combined with codein sulphate. Ammonium carbonate, with its irritant, nauseating action, has no tangible cardiac stimulant action; therefore it should not be used.

Sodium Iodid.—This drug in small doses, as 0.20 gm. three times a day, will promote an increased mucous secretion, render the cough easier, and may hasten a delayed resolution of the lungs. Also, the stimulant effect of the iodin may increase the inhibitory activity of the thyroid gland, and it is now known that the thyroid gland is always injured and soon becomes more or less insufficient in acute infections. A normal thyroid secretion is stimulating and more or less antitoxic.

Digitalis.—Digitalis is another drug that has sometimes been lauded, even in the first stages of pneumonia. If the blood-pressure is low and the heart is primarily weak, and there is a very bloody, prune-juice expectoration showing a poor activity of the right ventricle, digitalis may be of value and sometimes does a great deal of good. On the other hand, with the more sthenic type of pneumonia it seems to increase the lung congestion and may do harm. In the heart failure of pneumonia it does not seem to raise the blood-pressure. After the disease has been in progress a week or more there is more or less of a myocarditis, perhaps a very little, perhaps considerable; at all events, digitalis to increase muscular activity of the heart at this stage is generally inadvisable.

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[5] Beebe, S. P.: Northwest Med., September, 1915.

[6] Rosenow, E. C.: THE JOURNAL A. M. A., Sept. 7, 1912, p. 795.

[7] Rosenow, E. C., and Hektoen, L.: THE JOURNAL A. M. A., Dec. 20, 1913, p. 2203.

Strophanthin. — This drug procured in sterile ampules and injected directly into one of the veins in the elbow, provided digitalis has not been recently administered, is often efficient in tiding a patient over a shocked condition. It should rarely be repeated.

Strychnin.—This is a drug that has been very much overused. To begin strychnin immediately in acute disease is a serious mistake. To give it in large doses very frequently is an error. It excites the nervous system, renders the patient irritable, may cause muscle twitching, and may so irritate the heart as to prevent normal diastolic rest and normal diastolic relaxation. In acute disease, it has been shown not to raise the blood-pressure in serious conditions. In spite of these facts, clinically strychnin often does very good work and even seems to tide our patients over critical periods. In a sluggish, inefficiently contracting heart, when digitalis is contraindicated, strychnin is many times of benefit in making the heart more normal. If a patient is stupid, apathetic and indifferent to his condition, strychnin lights up the nervous system desirably. The rule for strychnin should be, when indicated as shown by this discussion, to give to an adult not more than $\frac{1}{30}$ of a grain, hypodermically, if deemed advisable, once in six hours, and such a dosage should not be long continued. As soon as there is improvement, it should be given by the mouth instead of hypodermically.

Camphor.—Laboratory findings and some hospital reports have not shown that camphor is of value in heart failure. On the other hand, clinical experience at the bedside not infrequently shows that hypodermic or intramuscular injections of a sterile preparation of camphor and oil improves the pulse as to its regularity and volume, causes the surface of the body to be warmer, and many times relieves a cardiac dyspnea by thus equalizing the circulation. At the same time it is a mild nervous and cerebral stimulant, which is often desirable, and it never irritates or causes any heart pangs as some of the so-called cardiac drugs can occasionally do. When there is cardiac dyspnea, when the pulse is small and especially when it is slow and weak and the surface of the body is cold, and when there is cold perspiration, that is, a partial collapse condition, camphor given hypodermically every three or four hours until there is improvement will many times be found of benefit.

Pituitary Fluid.—This represents one of the activities of the posterior lobe of the pituitary body. It has more or less superseded epinephrin in acute conditions, as pituitary raises the blood-pressure a little longer, is a little less sudden in its action, seems to stimulate the heart considerably, and stimulates and increases the activity of the kidneys. The contents of an aseptic ampule should be given hypodermically and perhaps repeated two or three times at three or four hour intervals.

Caffein.—The administration of this drug as coffee or tea has already been discussed under diet. Perhaps no drug, except epinephrin, the action of which is very fleeting, so frequently raises the blood-pressure in serious conditions as does caffein. In emergencies it may be administered hypodermically, or it may be given by the mouth several times in twenty-four hours. It should not be forgotten that it is a cerebral stimulant and not a sleep producer. Its action on the heart is almost always for good, except in some few patients who show an idiosyncrasy to it, the heart becoming irritable from any form of caffein.

Ergot.—This drug, when given in aseptic preparation intramuscularly, certainly raises the blood-pressure, quiets the central nervous system and gives a better vasomotor tone, and may relieve hypostatic congestion of the uninvolved lung, which is one of the dangers of a failing heart in pneumonia. If the blood-pressure is high, this drug should not be given.

Nitroglycerin.—When pneumonia occurs in a full-blooded, sturdy man, especially if he is of the age when his blood-pressure is a little high, small doses, as $\frac{1}{200}$ to $\frac{1}{100}$ grain, every four to six hours, tends to dilate the peripheral vessels and relieve the internal congestion. It also slows and quiets the circulation. By bringing more blood to the surface of the body, it also tends to promote loss of heat and a reduction of temperature. It will never weaken a heart as long as the blood-pressure is high; it should not be used if the blood-pressure is low.

Alcohol.—This drug has lately come into great disfavor. It was, of course, inexcusable to give it in large amounts in pneumonia. On the other hand, as a drug, it still has certain physiologic activities which may in certain cases be of value. In the first place, alcohol will inhibit more or less the acidemia which might otherwise result from a patient's inability to take enough nourishment or enough starch. It then becomes a food, given in such doses as not to cause flushing, throbbing of the head, or cerebral irritation. Also, every clinician has seen a rapid heart become slower, more regular, and the pulse become of more equalized volume under the proper use of alcohol in certain selected cases of pneumonia. In such patients small doses of alcohol may be of value. It will be seen from the discussion of nitroglycerin, however, that many times this drug will act as well, as far as the circulation is concerned, but of course nitroglycerin is not a food. The alcohol selected should generally be a good whisky or a gin. This is not to urge the administration of any form of alcohol, but is to show that alcohol is a drug with physiologic activities and may be used in certain conditions with as much discrimination as is used in giving any other drug.

Hypnotics.—It is hardly necessary to name the different hypnotics. As above stated, in very weak conditions the only safe hypnotic is morphin. In delirium and in insomnia it may be well to use some other hypnotic than morphin. Almost any one of them causes some subsequent cardiac depression. The best hypnotic is perhaps chloral, but there is a great prejudice against its use as it is supposed to be a very great cardiac depressant. There is some doubt about this. Probably an effective dose of chloral is no more depressant to the heart than is an effective dose of any other hypnotic. A few doses of sodium bromid may be advisable. If a synthetic drug is to be selected, sodium diethyl-barbiturate (veronal-sodium, medinal) is perhaps less depressant, in effective dose, than any other.

As stated at the outset, a restful, quiet room, a sensible, efficient nurse, a sufficient amount of fresh air, and a suitable diet and proper care of the bowels will prevent high temperature, heart failure, low blood-pressure, insomnia, tympanites and toxemia in very many cases, and prevention is far better than the treatment of these serious conditions.

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SATURDAY, NOVEMBER 6, 1915

STATISTICS OF INFANTS AT BIRTH

The variations in the weight of the human infant at birth have been the subject of considerable speculation and statistical study. It has been asserted that the weight at birth is greater the nearer the mother's age is to thirty-five years, the greater the weight of the mother, the greater the number of previous pregnancies, and the earlier the appearance of the first menstruation. Race and climate have also been assumed to be of influence.[1] Minot[2] believed that all of these influences work principally through prolonging or abbreviating the period of gestation, and that the variations at birth depend partly on the duration of gestation and partly on individual differences of the rate of growth in the uterus.

A recent careful statistical analysis of more than 500 confinements, yielding approximately equal numbers of male and female infants, showed that the length of the period of gestation is very much less variable in normal females than the weight of the infant which is delivered.[3] According to Robertson's calculations, the mean length of periods of gestation yielding males is 282.5 days, with a probable error of ± 0.55 days and a variability of 4.47 per cent. The mean length of periods of gestation yielding females is 284.5 days with a probable error of ± 0.57 days and a variability of 4.85 per cent. The deviation of normal periods of gestation from the mean are fortuitous in origin. The chances are a million to one against a male child being delivered at the termination of an otherwise normal pregnancy before 224 days or of a female child before 222 days after the onset of the last menstruation. Hence all seven-month children (210 days) may be regarded as the fruit of pathologic pregnancies. It is inferred that the length of the period of gestation in normal females is primarily determined, not by the fetal development, but by a maternal cycle of events which is to a considerable extent independent of the stage of development attained by the fetus.

Data now available for a number of different countries of the world bring out the striking similarities in the average weights at birth of infants from the same groups of people, and an unexpected difference between the averages for diverse peoples. For infants born in Great Britain the average weight measurements at birth have long been quoted as 113.6 ounces for males and 110.4 ounces for females. Newer figures by Karl Pearson[4] give the mean weight at birth of 1,000 male infants born in London (at the Lambeth Lying-in Hospital) as 116.8 ounces, while that of 1,000 female infants is 113.2 ounces. For Birmingham corresponding figures of 114.9 and 113.5 ounces respectively have been reported.[5]

T. B. Robertson calls attention to the excellent agreement with one another of the various estimates of the weight at birth of British infants born in the British Isles. Records which he has just published[5] in relation to the Queen's Home, a maternity hospital in Adelaide, South Australia, in which the admitted patients belong to the same laboring and unskilled artisan classes as do those furnishing the data for the British Isles, give unexpectedly different figures. Robertson found that the average weight at birth of 247 male infants born in South Australia, the fruit of normal confinements, is 127.3 ounces, while that of 264 female infants is 121.2 ounces. He thus emphasizes the striking fact that South Australian infants weigh from 8 to 10 ounces more at birth than infants born in Great Britain. They are also from 5 to 6 ounces heavier at birth than infants of English descent born in the Eastern United States.

Robertson points out that the results observed cannot be due to any racial selection among the immigrants from the British Isles who have given rise to the population of Australia: In the first place, there is no evidence that such selection has occurred to any greater extent than it has, for example, in London, of which city the very great increase in population during the past century has been contributed by all parts of the British Isles, and, in the second place, there is no evidence of the existence of a race in the British Isles which is in any noteworthy degree superior in physical dimensions to the average inhabitant of England. It has been said that the evolution of the Australian people may be regarded as that of the British people under changed climatic, social, and economic conditions. To these factors, therefore, Robertson is impelled to ascribe the superior weight of the Australian infant at birth. He specifically points out that the climate is much less rigorous than that of England, food is cheaper in proportion to income, or, when of a like price, better in quality, and the social and economic conditions are so far an improvement on those prevailing in England that whereas women of the laboring and unskilled artisan classes in England have frequently to supplement the family income by their own exertions, those of the corresponding classes in Australia as a rule confine their physical activities to the management of their households and families, a condition of affairs which, quite apart from the possible direct effects of physical labor on the mother, must have important indirect effects in ameliorating the nutritional and hygienic conditions within the household. Attention is called to the fact that these conditions may be conceived to have an appreciable prenatal effect on the growth of the child, since Pinard has shown that the rest and improved nutrition of hospital life cause a notable increase in the average weight of infants delivered by working mothers who spend a part or a whole of the period of pregnancy in a lying-in hospital, and Prochownik has shown that the size of a child at birth may be reduced by restricting the diet of the mother.

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[1] Cf. Lee, F. S.: Reproduction, American Textbook of Physiology, 1896, p. 925.

[2] Minot, C. S.: Human Embryology, 1892.

[3] Robertson, T. B.: On the Fortuitous Origin of Departures from the Normal Period of Gestation in Man, Am. Jour. Obst., 1915, lxxi, No. 6.

[4] Pearson, K.: Data for the Problem of Evolution in Man, Proc. Royal Soc. London, 1900, lxvi, 23.

[5] See Robertson, T. B.: A Comparison of the Weights at Birth of British Infants Born in the British Isles, the United States, and Australia, Univ. California Pub. Physiol., 1915, iv, 207.

As regards weight at birth, the Anglo-American infant is intermediate between the Australian infant and the infant born in the British Isles. In a way this corresponds with the character of the social and economic conditions prevailing in the three countries concerned. The interesting suggestion is made that the mean weight of infants of the same race at birth is a very sensitive criterion of the social and economic environment in which they are born. If this proves to be true, a new relation between the economic and hygienic problems of a nation will be brought into prominence.

THE "AUTOLYSIN" TREATMENT FOR CANCER

Modern science calls for proof — proof as indubitable and unqualified as the case will permit. Scientific men accept new theories and new alleged facts only when they are supported by reliable evidence. Especially is this true in the realm of scientific medicine. Unlike the exact sciences, there are in medicine so many elements which may vitiate definite conclusions that the careful physician is slow to accept claims made for new therapeutic agents. And rightly so; for human health and life are too valuable to be made the sport of untried theories and unsupported claims. In a world largely dominated by commercial instincts, this unwillingness on the part of the physician to accept, at its face value, every claim made for a new therapeutic product has long been a source of irritation to the exploiter. It is not surprising, then, that the refinements of twentieth century advertising have been brought to bear in overcoming the physician's caution — a caution exercised wholly in the interests of his patients; hence the spectacle, during recent years, of the exploitation of additions to materia medica — some of which may have had an appearance of at least quasiscientific value — brought to the notice of the public, rather than to the medical profession, by every art known to the modern advertiser. At the same time a semblance of scientific standing has been given the products by publishing in such medical journals as would accept them articles describing these products. The theory, apparently, on which such methods are based is that by creating a sufficient demand on the part of the public for these products, the physician will be dragooned into using preparations which his sober judgment tells him have not passed through the refining fires of scientific investigation. It is only necessary to call to mind the Friedmann "consumption cure" campaign, and the resurrection of the discredited scopolamin-morphin anesthesia under the popular name of "Twilight Sleep," to realize the potentialities for harm that this method of exploitation carries.

The most recent example of this pernicious method of bringing into the public eye new therapeutic agents is exemplified in what has been called the "autolysin" treatment for cancer. Early in the publicity movement for this treatment The Journal[1] urged caution, calling attention to the secrecy and the unscientific character of the formula. "Autolysin" was brought into the limelight of publicity chiefly through the medium of sensational newspaper and magazine articles. This was accomplished before the preparation had been so tried out as to establish, without question, its value or lack of value. Its exploitation makes the thoughtful wonder whether it belongs in the realm of scientific discovery or in that of crude commercialism. As is always to be found in such cases, the failures are minimized and the successes are heralded. Its use for all practical purposes has been wholly in the hands of its friends and promoters. Naturally, reports emanating from such sources must be looked on as *ex parte* statements, rather than as scientific records. The time has evidently come, as it will come in all such cases, when we may expect to hear the other side. A little while ago[2] The Journal published a disclaimer from a Detroit physician whose name had been connected with one of the magazine articles boosting the treatment. Elsewhere in this issue is further evidence on the other side.[3] Also, The Journal submits some correspondence[4] relative to the exploitation of this new product, dealing with the commercial aspect of the case.

Some of the best brains in the world are working on the problem of the prevention and cure of cancer; so far the solution is not in sight. When it comes it will come as a gift of medical science to humanity. It will not come in the form of secret and mysterious combinations controlled by a few individuals to be doled out to those who are able, or willing, to pay the toll demanded. It will be determined after a series of experiments carefully conducted under scientific control in various institutions and under the observation of disinterested, scientific workers. Only under such conditions will it be possible to declare, with any degree of scientific accuracy, that a successful treatment has been established.

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[1] The Horowitz-Beebe Treatment for Cancer, editorial, The Journal A. M. A., July 24, 1915, p. 336.

[2] Sept. 18, 1915.

[3] Weil, Richard: The Autolysin Treatment for Cancer, The Journal A. M. A., this issue, p. 1641.

[4] Propaganda Department, p. 1662.

Whether the "autolysin" mixture may possess some elements of value in combating the scourge of cancer must be left to the future to decide. Even should it be found of use this would not alter the fact that the methods of exploitation have been unworthy of scientific men, and in their effects on the public, the very refinement of cruelty.

CRAIGIASIS

The classification of amebas was not an especially difficult task until after the pathogenic forms became known and artificial culture mediums were developed, when the difficulty of distinguishing between the pathogenic and the innocuous forms arose. At present, it is recognized that the nature of the pseudopodia and the ectoplasmic and endoplasmic differentiation are unsafe diagnostic characters by which to identify amebas; for these have been shown to vary widely in the same species under different conditions of environment. Gradually improvements in cultural methods, recognized nuclear differences and other dissimilarities in ameboid types of rhizopods have made generic separations among them imperative. Accordingly, the old genus *Ameba* has been distributed by a protozoologist into a series of allied genera: Ameba, Vahlkampfia, Nägleria, Craigia, Trismastigameba and Parameba.[1]

This growing complexity has been accompanied by changing views regarding the pathogenesis of some of the species. At one time some authors regarded all amebas as being without significance in relation to disease, because of the frequently reported presence of these forms in the stools of apparently healthy individuals. Thus, in 1905 Craig examined 200 persons not suffering with dysentery, and found amebas in sixty-five. Doubtless, periods occur in the course of amebic dysentery in which symptoms are entirely lacking. The recognized existence of unharmed or immune carriers of other types of organisms makes it seem less strange today than it might have seemed a few years ago to learn that there are some individuals apparently perfectly healthy who harbor amebas in large numbers for long periods without any unfavorable symptoms. Of course, lesions may exist without becoming evident during life. Strong[2] has expressed the questions at issue as follows: Are the instances cited cases of natural resistance or immunity against the parasite; or are they instances in which the parasites are unable to exert any harmful action until the proper symbiotic bacteria appear in the intestine, and are only awaiting this moment to become pathogenic; or are they cases in which the organisms are still incapable of producing any injury until through some mechanical disturbance a small erosion in the mucosa occurs; or are they instances of infection with an ameba harmless to man?

Between the extremes of opinion, that all amebas are harmful, and that none really have etiologic significance per se, it seems safe to say at present that the *Endameba histolytica* and its near relatives are pathogenic, whereas the *Endameba coli* may be a harmless inhabitant of the human intestine, where it lives on the available bacteria. In 1906, Captain Craig of the United States Army observed a small ameba in the human intestine in six cases of chronic diarrhea. He named it *Parameba hominis,* but it was later given the new generic designation *Craigia* in honor of its discoverer. Although its habitat in the human intestine was undisputed, the question as to its possible relation to chronic diarrhea has called for confirmation. Evidence of this sort has recently been furnished by Dr. Barlow,[3] of the Medical Department of the Cuyamel Fruit Company of Honduras.

In the course of Barlow's investigations concerning the prevalence of intestinal parasites on the coast of Honduras, a flagellated organism, differing from *Endameba histolytica,* was observed in numerous cases. All of these had presented symptoms of mild dysentery or chronic diarrhea. The additional fact that no cases of flagellates were found without the symptoms, along with other features which need not be detailed, have led to the identification of the parasite as *Craigia hominis* (Craig's *Parameba hominis*), and the indictment of it as the etiologic factor in the intestinal disease.

Craigiasis has accordingly been defined as a diseased condition of the body produced by infection with protozoa belonging to the genus *Craigia.* It is probable that the latter has a wide distribution. Craig's cases were all in residents of the Philippine Islands, or recent arrivals from there. Barlow's cases were found in Honduras. They have been grouped from among those furnished with drinking water from certain supplies. The grouping has been so marked that Barlow is strongly inclined to attribute the chief source of infection to polluted water, though the possibility of introduction of the parasites by direct or indirect contact is not excluded. It is reported that patients with craigiasis may remain as carriers for a long time.

In its morbid anatomy, this disease doubtless involves comparatively superficial ulcerations of any or all parts of the intestine, with a tendency to the formation of abscesses in the liver, and possibly in other organs. Secondary changes in other parts of the body, due either to intoxication from the derangement of function of the damaged organs, or to the entrance of bacteria in the lesions produced by the parasites, may occur. Among the many therapeutic measures tested, the only effective treatment was found to be either with emetin (alkaloid), hypodermically, or ipecac, internally.

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[1] Calkins, G. W.: Genera and Species of Amoeba, Tr. XV Internat. Cong. Hyg. and Demography, Washington, 1912, ii, 287.

[2] Strong, R. P.: Amoebic Dysentery: Osler's Modern Medicine, 1907, i, 499.

[3] Barlow, N: Craigiasis, Am. Jour. Trop. Dis. and Prev. Med., 1915, ii, 680.

THE IMPORTANCE OF AGGLUTINATION IN IMMUNITY

The well-known phenomenon of agglutination of bacteria by homologous immune serum has received little consideration as a factor in the defense of the organism against infection. Gruber and his associates, in their classical work on the nature of agglutinins, expressed the opinion that these substances were of primary importance in the protective mechanism of the body. They believed that the englobement of the bacteria by the leukocytes in vivo in the presence of immune serum was aided by the agglomeration of the bacteria and their accumulation in the different organs of the body. Subsequent investigators, although appreciating the great value of the reaction of agglutination in the diagnosis of certain infectious diseases and in the differentiation of varieties of bacteria, were unable to find experimental evidence in vitro in support of Gruber's hypothesis. Now, indeed, it is almost the general view of immunologists that the part played by the agglutinins in immunity is merely incidental and subordinate, the important factors being other antibodies such as the opsonins, bacteriolysins and antitoxins.

Some important observations pertaining to this phase of immunity have recently been made by Bull[1] which indicate a wide disparity between the results of agglutination experiments in vivo and in vitro. In an investigation of the manner of the rapid disappearance of pneumococci and other organisms from the blood stream of infected rabbits, following the injection of immune serum, it was found that the serum caused an almost instantaneous agglutination of the organisms. Smears taken from the heart's blood of the rabbit a few seconds after the injection of the serum often, revealed a marked clumping of the invading bacteria. Furthermore, these clumps rapidly accumulated in the internal organs, especially the liver and spleen, where they were taken up by the assembled polymorphonuclear leukocytes and ultimately destroyed. These reactions were specific, as in the test-tube experiments, but agglutination seemed to take place in dilutions of serum which were entirely ineffective in experiments made in vitro. In all of Bull's researches, including instances of both natural and passive immunity, the agglutination of bacteria in the blood of the infected animal was followed by phagocytosis and destruction of the organisms in the viscera of the body, and a subsequent disappearance of the bacteria from the blood stream. It was observed, however, that when agglutination was not complete, a few organisms remained in the blood, later to multiply and cause a fatal bacteremia. In view of these facts, it seems probable that the agglutinins, like the opsonins, antitoxins and bacteriolysins, are important protective elements.

These observations are of great value in emphasizing the intricate nature of the protective mechanism in the animal body. The evidence at hand does not minimize the importance of other well-known phenomena occurring in the reaction to bacterial invasion, but emphasizes the cooperation of antibody actions and leukocytic activity as the forces on which depends the outcome of the struggle between many forms of infection and resistance.

ABOLISHING SECRECY AND MYSTERY IN "PATENT MEDICINES"

Nearly a year ago—Dec. 31, 1914—the New York Board of Health made a notable revision of the sanitary code. The revised code requires that on and after Dec. 31, 1915, no proprietary or "patent medicines" shall be sold in the city of New York until certain requirements have been met. The essential requirement is that the names of all ingredients for which therapeutic effects are claimed, and of all other ingredients, except such as are physiologically inactive, shall be furnished the department of health. A statement of the quantities of these ingredients is not required. This information will be given in confidence and will not be open to inspection by the public or any other than the official custodian of such records or those duly authorized to prosecute the laws, municipal, state and federal. An alternative is offered. Instead of depositing this information with the department of health, the exploiters of "patent medicines" may print on the label conspicuously, clearly and legibly the name—not quantity—of each ingredient in the product. If this is done, the preparation is removed from the class designated by the section of the code as constituting a "proprietary and patent medicine."

As was to be expected, this move on the part of the health authorities of the city of New York for the better protection of the public health met instant and active opposition on the part of "patent medicine" makers. Some of this opposition was described in the Propaganda Department of The Journal, Jan. 16, 1915. Many meetings have been held and much perfervid oratory dispensed by the "patent medicine" makers and their henchmen in the apparent attempt to bluff the health department. A good deal of the talk is, doubtless, of the same nature and for the same purpose as that indulged in by the small boy who passes the lonely churchyard after dark. Whether it has had the result of keeping up the flagging courage of those who might perforce be tempted otherwise to obey this new law in the interest of the public health remains to be seen.

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[1] Bull, C. G.: The Agglutination of Bacteria in Vivo, Jour. Exper. Med., 1915, xxii, 484.

As the time for the enforcement of the ordinance comes nearer, that which originally seemed to be solid opposition begins to change. The *Weekly Bulletin* of the Department of Health of the City of New York for Oct. 23, 1915, reproduces a letter, signed by some leading wholesale druggists and dealers in proprietary medicines, in which the health department's registration ordinance is endorsed. These concerns go even farther. Not only do they signify their intention of selling only patent and proprietary articles that have registered under the new law, but they also "go on record as favoring a federal law regulating the sale of patent and proprietary articles, for the same reasons which brought about the passing of the above mentioned local ordinance." The names of the druggists and dealers who thus exhibit a wholesome respect for the public health and a due regard for the laws of their city are: Bakst Brothers, Britt, Loeffler & Weil, Bruen, Ritchey & Co., Eimer & Amend, Henry Klein & Co., Lehn & Fink, C. S. Littell & Co., Matz & Cohen, McKesson & Robbins, Schieffelin & Co., and Towns & James. These wholesale druggists and dealers have also sent a communication to the manufacturers of the patent and proprietary medicines informing them that they intend complying with the ordinance and would, therefore, request the manufacturers to make their articles legally salable, and in their letter they add, "As federal legislation of a similar nature seems to be impending, compliance with these new requirements seems to be more urgent in order to make your products salable in all parts of the country."

The New York ordinance is unquestionably a step in the right direction, a forward move in the interest of public health and safety. It would be more desirable if the ordinance required, without alternative, a definite quantitative declaration on the trade package of the active ingredients of each product. If the people desire to treat their own ailments — as they have a perfect right to do — they should know what they are getting in the preparations sold for the relief of such ailments. Nevertheless the New York law will, even in its present form, give a much larger degree of protection than has heretofore been possible. Dr. Goldwater, commissioner of health, is to be congratulated on the not inconsiderable service he has performed in bringing about the enactment of this ordinance. It is a service that is not confined to New York City alone, for every forward movement, no matter how local, is far reaching in its moral effect.

THE BOWEL MOVEMENT

"It may sound like a Hibernianism, but food does go down the [alimentary] tract more easily because it is put in at the upper end." This quotation, from a recent article[1] on the motor functions of the intestine, furnishes the text for what ought to be an important consideration in relation to the movement of the bowels. Nothing in the daily life of man is of greater import for his comfort and health than the proper evacuation of the alimentary canal. For some reason, the origin of which is not easily discovered, civilized man in the higher walks of life has attempted to establish an artificial habit with respect to this function. One copious movement of the bowel early every day — soon after rising — is regarded by thousands as conforming to a normal, healthful, physiologic routine. Precisely as the failure to perform this act once a day is popularly looked on as a menace to comfort and even good health, so its more frequent occurrence is not uncommonly the occasion for worry lest diarrhea or other forms of impaired alimentary behavior may be at hand.

What is the physiologic moment for the evacuation of the bowel? Is there any urgent theoretical reason why it should occur at any particular time, or rather, why habit should select for it the time immediately after rising? To the individual employed in business or other vocational pursuits, convenience may dictate the advantage of discharging a disagreeable duty at the most convenient moment, so as to be relieved from personal inconvenience during the remainder of the day. One may as reasonably, however, establish the habit of one meal a day or two meals at fixed hours, and disregard "the call of the stomach."

Even the most cursory observation of the higher animals shows that the emptying of the bowel does not conform to the fixed routine of infrequent defecation to which man has intentionally become resigned. The newer physiology of the alimentary tract clearly teaches that there are natural periods when peristaltic waves are initiated which would naturally induce an emptying of the lower bowel in due time. Every part of the intestine is in a state of activity which can be played on and modified by impulses reaching it from all portions, above and below. Hertz[2] has demonstrated in the case of man that, with the passage of food out of the stomach, the ileocecal valve relaxes, and material travels through the colon at the same time. These features have been emphasized by Alvarez,[1] who notes that the promptness with which a mouthful of food introduced in the stomach causes material to pass through the ileocecal valve or to rush through the colon shows that the human intestine exhibits the characteristic long-distance reflexes.

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[1] Alvarez, W. C.: The Motor Function of the Intestine from a New Point of View, The Journal A. M. A., July 31, 1915, p. 388.

[2] Hertz, A. F.: Jour. Physiol., 1913, vii, 55.

Every one can recall the desire for evacuation which is frequently felt after a liberal meal. In children the movement of the bowel soon after feeding is familiar. Both adults and children have schooled themselves to repress the natural postprandial impulses to defecate; these impulses are not compatible with our social engagements. Custom in this respect is regulated by convenience rather than by physiologic considerations.

The question may well be raised whether this disregard of natural stimuli is not a potent factor in the widespread manifestation of constipation. Undoubtedly, habitual response to the normal incentives to defecation soon after the introduction of food into the stomach would be a wholesome reform. The facts of physiologic science speak for it. The roentgenologist knows that a contrast meal will go down the bowel faster if followed, a few hours later, by food. The effect of more than one stool per day, moreover, would bring timely relief from those all too familiar symptoms of malaise which have made us a nation of "pill-loving" sufferers. Of course, the "patent medicine" interests would suffer, but the bowel of man, which, according to Keith, contains enough muscular tissue in its colonic wall to form a mass as large as the biceps of a blacksmith's arm, ought to be expected to do its duty unaided.

Current Comment

BACTERIA IN THE AIR

To the air has long been attributed a subtle potency to incite disease when suitable conditions prevail. One need not go back far in history to reach the days when "night-air" and "sewer-air" were feared as the bearers of indefinable dangers to health. The discovery of the rôle of micro-organisms in the transmission of disease has largely changed this attitude. It is true that air from certain localities, such as soils or sewers, may contain an admixture of gaseous impurities—carbon monoxid and dioxid, marsh gas and hydrogen sulphid—which are not wholesome to the organism. But these admixtures are, in all except the most unusual circumstances, so small in amount as to have little if any harmful significance for health. The organic or solid impurities of the air give more cause for alarm, for they include the living bacteria. In sewer-air the proportion of micro-organisms is usually less than that of streets and houses, and they are usually harmless species. The movement of air in sewers is rather slow, so that abundant opportunity is afforded for the suspended particles, including the living agents, to become deposited on the moist surfaces. The gaseous components of the air are of secondary moment. There is a growing conviction, however, that in the majority of cases of so-called "air-borne" disease it is not the particulate constituents of the atmosphere that are directly responsible for the transmission of disease. Suspended particles, including bacteria, may, of course, be sprayed about by the acts of coughing and sneezing and thus aid in the dissemination of diseases, particularly those of the respiratory tract. But as a rule it appears that the diseases conveyed through the air are carried through the agency of insects acting as vectors or as hosts for the infective parasites. In many hospitals, therefore, the "air-borne" diseases are now treated side by side in the same ward without fear of greater transmission than if they were isolated in separate wards. Attention is centered on the possibility of the carrier agency, animate or inanimate, rather than on the atmosphere as such. As a recent speaker expressed a phase of it, the problem is one of wire screens more than of ventilation. It is, however, of interest to learn something regarding the prevalence of bacteria in the air of different regions. A recent systematic study by the New York State Commission on Ventilation[1] showed clearly that the air of occupied spaces such as factories, schools and offices contains more bacteria than that of open spaces in the city or country. It is significant that the increase in streptococci manifests itself promptly in the occupied spaces. Whereas in country or city air there are rarely more than ten of this group of micro-organisms per hundred cubic feet of air, the number may rise to more than forty in factories. There is a rapidly growing tendency, supported by much convincing evidence, to teach that ventilation has nothing whatever to do with either the transmission of the so-called "air-borne" diseases or the lessening of their transmission. Furthermore, the opinion is freely expressed that transmission by way of the air is of infinitely less importance than transmission by inanimate and animate carriers that have been in intimate contact with patients.[2] Nevertheless, the indisputable facts just cited regarding the comparative distribution of certain objectionable bacteria in occupied spaces still deserve respectful consideration in relation to the problems of public health.

MEDICAL MEN AS COLLEGE PRESIDENTS—WILBUR PRESIDENT OF LELAND STANFORD

In three instances during the last few years, medical men of national reputation have been selected as presidents of prominent universities. In 1913 Dr. Frank Fairchild Wesbrook was elected president of the newly established University of British Columbia at Vancouver. Dr. Wesbrook had for several years been dean of the University of Minnesota, College of Medicine and Surgery, where he had shown a remarkable administrative ability. He had been professor of pathology and bacteriology in that institution for eighteen years, and was also a prominent figure in various public health movements, having been elected president of the American Public Health Association in 1905. At the beginning of the present year Dr. Livingston Ferrand was elected president of the University of Colorado. Dr. Ferrand for several years had been the executive secretary of the National Association for the Study and Prevention of Tuberculosis, and the marked success of this body was largely due to his ability as an organizer and administrator. Word has now been received that Dr. Ray Lyman Wilbur of San Francisco has been elected president of Leland Stanford Junior University, a chair occupied until 1913 by David Starr Jordan and since that time by John Casper Branner. The latter accepted the chair with the understanding that a successor should be elected in 1915, when he would have reached the retiring age of 65. Dr. Wilbur has demonstrated a remarkable ability as an organizer and as an administrator, having occupied the deanship of Leland Stanford Junior University, School of Medicine, since 1910, and the chair of medicine since 1899. He has taken an active part in the discussion of educational problems during the last several years. The selection for the presidency of prominent universities of men who are familiar with the problems of medical education and public health gives promise of a deeper interest in those problems by the educators of the country and will lead to a wider dissemination among the people generally of information in regard to hygiene and the prevention of disease. The experience these men have had in medical affairs, furthermore, gives them a broad view which will aid them in their administrative duties, particularly in the last two universities, which have medical departments.

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[1] Browne, W. W.: Bacteria in City, Country and Indoor Air, Science, Sept. 10, 1915, p. 351.

[2] Cf. Abbott, A. C.: Ventilation in Its Relation to Air-Borne Disease, Science, Sept. 10, 1915, p. 358.

PUBLIC HEALTH PROPAGANDA IN CHINA

The spread of the educational propaganda in public health work is strikingly illustrated in articles in the July number of the *China Medical Journal,* the greater part of which is given up to a discussion of this subject. Dr. Arthur Stanley, health officer of China, discusses "How to Initiate Public Health Work in Chinese Cities"; Dr. Wu Lien Teh, medical officer to the Foreign Office of Harbin, "Awaking the Sanitary Conscience of China"; Dr. E. S. Tyau, "A Plea for a Campaign of Public Health Education in China," and Dr. W. W. Peter of the Council on Public Health, "Public Health Education in China." Evidently the problems, difficulties and remedies adopted differ surprisingly little from those in our own country. Dr. Teh, for instance, after enumerating the many insanitary customs of the Chinese, says that they have for centuries practiced a system of simple hygiene peculiarly adapted to their needs. They wear suitable clothes for summer and winter, drink tea, avoid alcohol, eat cooked food and are moderate in many things. The result is that many diseases frequently occurring in Europe and America are distinctively uncommon in China. Instruction through the public schools and the churches is recommended; and also the organization of the women of the community for public health work. Educational exhibits of photographs, charts and instructions in Chinese are also used. The Chinese prototype of the "Save the Babies" pamphlet, printed in large quantities and distributed by the American Medical Association, is an exhibit chart in Chinese characters entitled "Shelter the Babies." Wire screening, fly traps, "patent medicine" advertisements, lantern slides, illustrations and other educational methods are being used. Bulletins are being sent to the teachers and pupils in mission schools, and every effort is being made to develop public health sentiment among the people. Certainly the gospel of good health is being widely preached when China begins to educate her millions.

A NATIONAL ENTRANCE EXAMINATION BOARD

During the week beginning June 19, 1915, under the auspices of the College Entrance Examination Board, 4,941 high school students were examined for entrance to eighty-two colleges and universities, of which thirty-two had medical departments. The examination covered seventeen subjects, for each of which three examiners had been selected, two being teachers in colleges and one a teacher in a secondary school. Altogether, therefore, there were fifty-two examiners, experts in their various subjects, who prepared the questions. The examinations were held simultaneously in thirty-eight states of this country, altogether in 154 different localities. The examination in each city was given at some educational institution, under supervisors and proctors selected by the secretary of the board. After the examination papers were completed, they were placed in charge of readers who did the grading. This year 166 readers were appointed, and of these, seventy-nine were representatives of colleges and eighty-five were representatives of secondary schools. In fees from candidates examined, $26,090 was received. For the preparation of the questions and other services the fifty-two examiners were paid $1,719 for salaries and expenses; for grading the papers, the 166 readers were paid $15,254 for salaries and expenses; for supervision of the examinations and for proctors, $3,650 was expended for salaries and expenses.[1] Here we have an examining board which for fifteen years has been conducted on a nearly self-supporting basis; which gives a thorough, reliable examination recognized — so far as we have been able to learn — by all colleges and universities. The board will arrange to conduct its examinations in any locality where five or more applicants can meet, thereby making them convenient for the student, who is free to seek admission to any college of his choice. Since the opportunity to take a well-conducted and reliable examination has thus been made so convenient, one wonders why all examinations in high school branches could not be conducted by this board. It would do away at once with confusion of standards and ratings resulting from the multiplicity of agencies now conducting "examinations" and issuing "certificates," the value and reliability of which are so uncertain. Here is an examination of known quality to replace uncertainties. Here, indeed, seems to be the solution of what is still one of the gravest problems of medical education — the securing of a thorough and reliable "equivalent" credential by those who have not been fortunate enough to complete courses in standard high schools or colleges whereby they could be excused from examination. Meanwhile, the organization and methods of the College Entrance Examination Board also furnish many practical suggestions which would be of value if the organization of other examining boards, national in scope, should be deemed advisable.

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[1] Those interested in preliminary examination should read the Fifteenth Annual Report, which may be obtained from the secretary of the board, Dr. Thomas S. Fiske, Substation 84, New York City.

RABIES

The modest report[1] of the results of antirabic inoculation at the Pasteur Institute in Paris for 1914 is another reminder that this classic therapeutic procedure of the great French scientist has brought down the mortality of a dreaded danger almost to the vanishing point. It is safe to say that the probable mortality of the usual run of cases untreated by the Pasteur method would be far more than 16 per cent. In 1912, 1913 and 1914, there were treated successively, in the original institute, 395, 330 and 373 persons, without a single death. Could anything speak more eloquently of this invaluable contribution to mankind which has made it possible to save, literally, thousands of persons in the few years that have intervened since those eventful days in the summer of 1885 when the first patient received antirabic treatment in Paris? The fact that among human beings rabies is no longer common in civilized countries, because early preventive antirabic treatment is successfully applied in almost all infected subjects, ought not to be allowed to obscure the danger of infection which is still possible. A remark attributed to Pasteur and reported by Sir Victor Horsley before the Royal Commission on Vivisection in 1907 deserves to be quoted because of the still timely advice contained in it. "The freedom of England from rabies," said Horsley, "I take to be one of the great achievements of modern science: and we owe it entirely to M. Pasteur. . . . I had the honor of acting as secretary of a committee that was appointed by the government to inquire into M. Pasteur's treatment; and, when the committee was in Paris, M. Pasteur said to us, 'Why do you come here to study my method? . . . You do not require it in England at all. I have proved that this is an infectious disease: all you have to do is to establish a brief quarantine covering the incubation period, muzzle all your dogs at the present moment, and in a few years you will be free.'" The passing of the muzzling act and rigid legislation regarding the importation of dogs have caused a practical eradication of rabies in England. This was largely due to Pasteur's influence. Shall other civilized countries continue to neglect the obvious duty of stamping out rabies, and to require the maintenance of special institutes to provide for emergencies largely within the control of suitable preventive measures?

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[1] Viala, J.: Les vaccinations antirabiques à l'Institut Pasteur en 1914, Ann. de l'Inst. Pasteur, 1915, xxix, 306.

Maternal Impressions.—Maternal impressions and prenatal culture are not facts, but superstitions. To realize their falsity, no deep researches are necessary; nothing more is needed than a knowledge of some elementary facts and scientific thought about those facts.—*Jour. Heredity.*

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

DELAWARE

Physician Receives Verdict.—Dr. Evan W. Roberts, Milford, received a verdict of $2,000 against the Queen Anne Railroad, October 23, on account of injuries received when the automobile in which he was riding was struck by a train.

New State Society Officers.—The one hundred and twenty-sixth annual meeting of the Delaware State Medical Society was held in Wilmington, October 12, and the following officers were elected: president, Dr. George I. McKelway, Dover; vice president, Dr. James T. Massey, Viola (reelected); secretary, Dr. George W. K. Forrest, Wilmington (reelected); and treasurer, Dr. Samuel C. Rumford, Wilmington (reelected). The society approved the establishment of a national board of medical examiners. The subject of the presidential address delivered by Dr. Henry W. Briggs, Wilmington, was "The Physician, Past, Present and Future."

DISTRICT OF COLUMBIA

Washington Health Rules.—A booklet entitled Washington Health Rules has been published by the Association for the Prevention of Tuberculosis of the District of Columbia. The book contains twelve chapters, each of which is based on one of the health rules first promulgated by the association in 1912. The booklet is to be placed in the hands of each teacher in the public schools.

The Evolution of Man.—Dr. Ales Hrdlicka, curator of anthropology in the National Museum, delivered an address before the Anthropological Society of Washington and the Medical Society of the District of Columbia, October 13, in the medical school building of George Washington University on "The Evolution of Man in the Light of Recent Discoveries and Its Relation to Medicine."

Personal.—Dr. Howard Fisher, Washington, has returned after several months of hospital work in Europe.——Dr. and Mrs. James McKee celebrated their golden wedding anniversary, October 12. Dr. McKee is a Civil War veteran and has been connected with the medical division of the Pension Bureau since 1902.——Dr. Lewis J. Battle, chairman of the medical committee which served during the Grand Army of the Republic encampment, was the guest of honor at a banquet given by the medical men on his committee, October 7. Nearly 100 local practitioners were present and Dr. A. Barnes Hooe presided as toastmaster.——Dr. Frank Fremont-Smith, while examining a revolver at his summer home at Bar Harbor, Me., was accidentally shot, but is making satisfactory progress toward recovery.——Dr. George von Pullinger Davis, Washington, has gone to Salt Lake City as professor of physiology in the University of Utah.——Under the auspices of the National Society of Keep Wells, Dr. William T. Davis, Washington, gave a talk in the parish hall of St. John's Church, October 29, on "The Eye—Its Uses and Abuses."

FLORIDA

Object to Occupation Tax.—Physicians of Tarpon Springs have asked the city council to exempt them from the medical license fee of $10 per annum, stating that they do sufficient charitable work to warrant this exemption.

Health Trains Soon in Operation.—The three Pullman cars which are being fitted up for the traveling exhibit of the State Board of Health are ready for the installation of the apparatus and should be ready to start on the first trip early this month. Every town in the state will be visited and demonstrations and lectures will be given.

Hospital Notes.—On September 27, application was made to the judge of the Circuit Court of Escambia County, for a charter incorporating the Pensacola Hospital.——The Pensacola Hospital was opened to receive patients, September 1, and is now in full operation.——The School for Nurses of the Pensacola Hospital was opened September 15. Twenty nurses have been enrolled for service, five of whom are pupil and nine probation nurses.——The Clearwater Hospital, built by the city of Clearwater at an expense of $25,000, and having an endowment of $100,000 given by Mr. M. F. Plant, will be opened this month.——Physicians and surgeons of Marianna and Jackson County are making plans to build a hospital in Marianna during the coming winter.——The City Owned Hospital Association was organized at Jacksonville, September 6, Dr. Mark B. Herlong being elected president, and Dr. Marvin H. Smith, secretary.——Plans for the Miami hospital have been approved by the directors and there is $50,000 available for construction, $30,000 of which is in the possession of the city, while bonds have been issued for the remaining $20,000.

ILLINOIS

Citizen Gives Medical Books.—A citizen of La Salle has made a gift to the Public Library of $10,000, the interest of which is to be used for buying medical books.

Superintendents Association Meets.—At the annual meeting of the Association of Superintendents of State Charitable Institutions held in Springfield, October 12, Dr. Henry J. Gahagan of the Elgin State Hospital was elected president, and Dr. William F. Schulz, superintendent of the Chicago Industrial Home for the Blind, secretary.

Foot and Mouth Disease.—The state supreme court has now issued an opinion, October 27, that the state board of live stock commissioners have the right to kill all cattle afflicted with foot and mouth disease. The state veterinarian, however, says that if the herd of Mrs. Scott Durand is found free of the disease, they will be spared.——Foot and mouth disease was discovered in five new localities in McDonough County, October 27, and on the following day, 108 head of cattle and 500 hogs belonging to Samuel Dougherty, and valued at $28,000, were slaughtered.

Scarlet Fever.—At Decatur an extensive epidemic of scarlet fever has existed for some time. On account, it is said, of the failure to cooperate on the part of the medical profession, the local health authorities have been unable successfully to cope with the epidemic. At the meeting of the city council, October 13, it was voted to employ an expert physician to assist in eradicating the disease. For this position, Dr. H. L. Wright, formerly of the health department of Chicago, was suggested and authority was given to employ Dr. Wright.——Dr. Charles E. Crawford of the State Board of Health has ordered school, churches and motion-picture shows in Pecatonia closed on account of the increasing number of cases of scarlet fever in the city.

Personal.—Dr. John R. von Achen, Peoria, has been appointed deputy coroner of Peoria County.——Dr. Joseph P. Comegys, Rock Island, fractured his arm while cranking his automobile, October 27.——Dr. Ben B. Griffith, secretary of the State Board of Health of Springfield, has resigned.——Dr. John D. Mandeville, Champaign, is reported to be seriously ill in the Julia F. Burnham Hospital in that city.——Dr. Wiliam S. Holliday, Monmouth, was operated on for appendicitis at the Monmouth Hospital, October 23, and is reported to be doing well.——Drs. William H. Maley and William O'R. Bradley have been appointed local surgeons of the Illinois Traction System in Galesburg.——Dr. Oliver O. Dyson, state veterinarian, who has been ill with typhoid fever at his home in Springfield, is convalescent and has returned to his duties, including the supervision of the state fight on foot and mouth disease.

Chicago

Personal.—Drs. Joseph M. Blake and George R. McAuliff were painfully injured in a collision between the automobile in which they were riding and an auto truck, October 25.

Psychopathic Clinic.—The first municipal psychopathic clinic was opened this week at the Iroquois Memorial Hospital under the direction of Dr. Harold N. Moyer, head of the psychopathic division of the new school of sanitary inspection of the department of health.

Physicians' Club Meets.—At the first meeting of the season of the Physicians' Club of Chicago at the Hotel Sherman, October 19, Municipal Judge Jacob H. Hopkins, John L. Whitman, superintendent of the Bridewell; Emory Sanford Hall, the architect, and Miss Harriet Vittum of Northwestern University Settlement, were the speakers.

Industrial Safety.—Physicians interested in the forming of the health and safety of industrial establishments in the state met at the City Club, October 15, for the organization of the National Association of Industrial Physicians and Surgeons. The committee having this matter in charge is composed of Drs. J. Chase Stubbs, Harry E. Mock, Andrew M. Harvey, Wilber E. Post, F. M. McCurdy, William C. Lucas and C. G. Farnum.

INDIANA

Chiropractor Fined.—It is reported that William H. Monks, a chiropractor, was fined $25 by a jury in the Indiana Circuit Court, recently, for practicing medicine without a license. It is stated the case will be appealed to the supreme court.

Personal.—Dr. Herbert M. Senseny has been appointed local surgeon for the Nickel Plate System at Fort Wayne.——Dr. John Richards, for fifty-three years a practitioner of Laud, celebrated his eightieth birthday anniversary, October 21.——Dr. John Herman Wylie and wife, formerly of Bluffton, sailed from San Francisco for China, November 6. Dr. Wylie's new post of duty will be in a hospital established in North China by the Rockefeller Institute.——Dr. John P. Franz, Indianapolis, was painfully injured in a collision between his automobile and a street car, recently.——Dr. Henry P. Metcalf, New Salem, was thrown from his automobile and seriously injured, recently.——Dr. Guy A. Schultz, Lebanon, has declined appointment as assistant surgeon to the National Soldiers' Home, Johnson City, Tenn.

MARYLAND

Faculty Changes.—At the meeting of the faculty of the School of Medicine of the University of Maryland, Drs. Ridgley B. Warfield, Gordon Wilson, William S. Gardner, Harry Friedenwald and Arthur M. Shipley were elected members of the executive committee; Dr. Randolph Winslow was elected president of the faculty; Dr. John W. Chambers, vice president; Dr. James M. H. Rowland, secretary, and Dr. Samuel K. Merrick, treasurer.

Personal.—Dr. Lewis C. Spencer and Dr. Martillus H. Todd of the American staff of surgeons at Pau Hospital base in France have returned to Baltimore. Both physicians were on the staff of the Johns Hopkins Hospital until their departure for Pau.——Dr. Marshall B. West, health officer of the first district of Baltimore County, is confined to his home in Catonsville with a badly infected hand. He is reported as being slightly improved.——Dr. William F. Lockwood has been selected as dean of the School of Medicine of the University of Maryland, succeeding Dr. R. Dorsey Coale, deceased.

To Fight White Plague.—Following discussions of the question of tuberculosis in Baltimore and the means needed to hold it in check, steps were taken recently at a meeting in the Medical and Chirurgical Faculty Building to organize physicians, nurses and social workers engaged in fighting tuberculosis not only in the city, but in the state. The meeting and the action that grew out of it were the results of an effort of those engaged in preventive and curative work among tuberculosis patients to bring about a standardization of methods and to facilitate exchange of data and thus minimize duplication. Dr. Henry Barton Jacobs, president of the Maryland Association for the Prevention and Relief of Tuberculosis, acted as chairman of the meeting and at its conclusion appointed a committee to elect officers and organize the new body, the committee being formed of the heads of the various medical and social organizations for the relief of this disease.

MICHIGAN

Municipal Hospital Opened.—The new Municipal Receiving Hospital at Antoine and McComb streets, Detroit, which has been erected at a cost of $250,000, was formally opened October 12. The building will accommodate 135 patients and will be under the charge of Dr. Leo J. Dretzka. The main objects for this hospital are the provision of a clearing house for emergency cases and of a psychopathic ward for the mentally disturbed.

Personal.—Dr. George A. Trueman was elected mayor of Munising, October 17.——The resignation of Dr. Marinus L. Holm, Lansing, as bacteriologist for the branch laboratory of the State Board of Health at Houghton, has been accepted.——Dr. Samuel E. Barnhart, Battle Creek, who was seriously injured, September 26, at Pomona, Calif., in a collision between his automobile and a railway train, the injuries including the fracturing of both arms and seven ribs, is reported to be convalescent and has returned to Battle Creek.——Dr. Albert F. Stone, Bay City, caught his left hand in the gearing of the self-starter of his automobile, September 30, sustaining injuries, which necessitated the amputation of the terminal phalanges of the first and third fingers.

MISSOURI

Recognition Withdrawn.—It is reported that the Missouri State Board of Health, by unanimous vote at a meeting held October 18, declared the University of West Tennessee Medical Department of Memphis an unaccredited medical college in the state of Missouri.

New Public Clinics.—Public clinics for diseases of the eye, ear, nose and throat and for genito-urinary diseases, have been recommended by Dr. Paul Paquin, director of public health of Kansas City. Both of these clinics will be held at the Waterworks Building.——The dental clinic is to be transferred to the Karnes School.

Personal.—Dr. John A. Pringle, assistant superintendent of the Springfield City Hospital, has been appointed temporary superintendent, succeeding Dr. Frank E. Chapman, resigned.——Dr. Lincoln C. Chenoweth, Webb City, has been elected a member of the Board of Control of the Jasper County Tuberculosis Sanatorium.——Dr. George I. Mays, Joplin, who has been seriously ill in St. Vincent's Hospital, New York City, is reported to be improving.——Dr. Vincil B. Janes, Cameron, was seriously injured in a railway accident near Sheldon, recently.

St. Louis

Clinic Club Organized.—The St. Louis Clinic Club was organized, October 12, with about twenty charter members. Dr. George Richter was elected president, and Dr. Frederick A. Baldwin, secretary treasurer.

Personal.—Dr. Ellen M. Osborn was thrown from her buggy, October 20, by a collision with a coal wagon, and suffered a fracture of the nose and severe contusions of the face.——Dr. Leo Loeb has been appointed professor of comparative pathology in the medical school of Washington University.——B. Landis Elliott, instructor in physiology in Washington University, is reported to be ill with trichinosis in Barnes Medical Hospital.

NEW YORK

Vassar College in Welfare Work.—The students of Vassar College have raised a fund of $1,200 to support a district nurse for the town of Poughkeepsie.

Personal.—Dr. Henry L. Elsner is ill at his home in Syracuse.——Dr. Andrew R. Ellis, Roxbury, has been obliged to give up his medical practice on account of ill health and has moved to Livingstonville.

Lectures on Oral Hygiene Discontinued.—The State Department of Health announces that as the legislature made no appropriations for the services of the two lecturers on oral hygiene hitherto attached to the staff of the department it is necessary to discontinue this valuable work.

Boarding Houses for Tuberculosis Patients.—The state aid charities association and the committee on the prevention of Tuberculosis of the charity organization society of New York City have prepared a list of country boarding houses for tuberculosis patients to which any one interested can have access.

Popular Health Lectures.—The first of a series of public health lectures which the Albany Medical College has offered to the public was given October 13 in the auditorium of the State Education Building, Albany, by Dr. Herman M. Biggs, health commissioner of New York, on "The Public Health Law of New York State."

Municipal Piggery for Saranac Lake.—The Saranac Lake Board of Health proposes to establish a municipal piggery in which to dispose of properly sterilized garbage from the village. It is believed that the piggery will produce a revenue that will pay for the cost of garbage collection. This experiment is attracting wide attention throughout the state.

New York City

Harvey Society Lecture.—The second lecture of the Harvey Society series given at the New York Academy of Medicine, November 6, at 8:30 p. m., is by Prof. A. J. Carlson of the University of Chicago on "Recent Contributions to the Physiology of the Stomach."

Dr. Goldwater Quits Health Department.—Dr. Sigismund S. Goldwater, who has been commissioner of health for the past two years, relinquished the duties of his office, November 1. Dr. Goldwater handed his resignation to the mayor, July 1, stating that he had accomplished about all that he could under present conditions and was desirous to return to his work as head of Mount Sinai Hospital. Dr. Haven Emerson, deputy health commissioner, will succeed Dr. Goldwater.

Loving Cup Given.—Dr. George Chaffee, Bay Ridge, founder of the New York and New England Association of Railway Surgeons, was presented with a handsome silver loving cup by the association at its twenty-fifth annual session, October 21. The cup bears the following inscription: "Presented to Dr. George Chaffee, Founder, Ex-President and Corresponding Secretary of the New York and New England Association of Railway Surgeons, by the Ex-Presidents in Grateful Recognition of Twenty-Five Years of Devotion and Loyalty to the Association, 1890-1915."

Personal.—Dr. Abraham Sophian has returned from Europe.——Dr. William J. Maloney, who was seriously wounded while serving with the British troops at the Dardanelles, sailed for home, October 23.——Dr. Frank D. Jennings, Bushwick, was assaulted near his home, October 20, and rendered unconscious. The reason for the attack is unknown.——Dr. Harold Kniest Faber, formerly of the Rockefeller Institute, has been appoined assistant professor of pediatrics at the Leland Stanford University, San Francisco.

Health Department Strengthens Patent Medicine Ordinance.—At its last meeting the board of health strengthened the Goldwater Formula Disclosure ordinance which is to become effective Jan. 1, 1916. The vital paragraph of the section read: "The names of the ingredients of every such medicine shall be registered in the department of health in such a manner as the regulations of the board of health may prescribe." It was felt that this was not sufficiently clear and in addition certain patent medicine interests having declared their intention of disregarding the ordinance, the above paragraph has been amended to read: "The names of all ingredients to which the therapeutic effects claimed are attributed and the names of all other ingredients except such as are physiologically inactive shall be registered in the department of health in such a manner as the regulations of the board of health may prescribe."

NORTH CAROLINA

Leeward Islands Want Medical Men.—The government of the British West Indies has been advertising in North Carolina papers during the past few weeks, for capable young medical men to serve six months or longer in medical service in the Leeward Islands. These positions offer admirable opportunities for the study of tropical diseases.

Enforcement of Vital Statistic Laws.—The State Board of Health has placed a special agent in the field who will devote his attention to securing the enforcement of vital statistic laws. His work will be chiefly to impress on physicians, undertakers and others, the necessity of filing their reports of deaths and births promptly. In other words, this will be a campaign of education.

Hospital Notes.—The physicians and business men of Greensboro met October 5 to formulate plans for the establishment of a new general hospital in the city.——The Twin City Hospital Association, Winston-Salem, is endeavoring to raise an endowment fund of $100,000 for a city hospital, and the association will contribute $10,000 of this amount, provided the city secures the balance of $90,000.

Personal.—Mrs. R. S. Boyers has been elected municipal health officer of High Point and Mrs. J. E. Sells, health officer of Winstom-Salem.——Dr. Albert Anderson, superintendent of the Raleigh State Hospital, has returned after an extended tour of inspection of psychopathic institutions in the East.—Dr. Edward C. Register, Charlotte, has been elected president of the American Medical Editors' Association.

PENNSYLVANIA

State Board Examination.—The State Bureau of Medical Education and Licensure announced, October 27, that medical examination for state licenses would be held at Philadelphia, January 18 to 20.

Laboratory for Allegheny General Hospital. — It is announced that the children of the late William H. Singer, Pittsburgh, will erect, equip and endow in his memory at a cost of $400,000, a research laboratory in connection with the Allegheny General Hospital.

Tuberculosis Home Opens.—The new buildings of the department for the treatment of tuberculosis of Allegheny County at Woodville, Pittsburgh, were dedicated September 2. The camp is situated on a hill about a mile from the main buildings of the county home.

Philadelphia

Medical Institutions.—The department for diseases of the chest of the Jefferson Hospital, 236 and 238 Pine Street, has opened a pay ward to a limited number of male patients suffering from pulmonary tuberculosis.

Personals.—Dr. Luther C. Peter has been elected associate professor of diseases of the eye in the Philadelphia Polyclinic and College for Graduates in Medicine.——Dr. Charles A. E. Codman, president-elect of the Medical Society of the State of Pennsylvania, was tendered a dinner and reception by the West Philadelphia Medical Association at Hotel Rittenhouse, October 26. Dr. John Welsh Croskey, president of the society, was toastmaster and spoke of the movement under way to make Philadelphia a world medical center and urged those present at the dinner to work toward this end.

WEST VIRGINIA

Trachoma Hospital Opened.—Surg. John McMullen, U. S. P. H. S., opened a trachoma hospital at Welch, October 4, with accommodation for twenty patients, and it was almost filled from the start.

Smallpox.—In a bulletin of the West Virginia Public Health Council, Dr. S. L. Jepson, State Health Commissioner, says, that in the past three years West Virginia has had 7,000 cases of smallpox and so far as has been ascertained, only 2 per cent. of these persons had ever been vaccinated. It is said that the most intense prejudice against vaccination exists in all parts of the state, based on false reports and erroneous beliefs as to the injurious results alleged to follow vaccination. Among the foolish and misleading reports was one that a number of patients had been taken to Wheeling to have their arms amputated as a result of vaccination. This report, Dr. Jepson says, was entirely baseless, and in more than forty years of experience in the practice of medicine, he had never seen as a result of vaccination anything worse than a sore arm. He calls attention to the vast financial loss to the state on account of this ignorance and prejudice which has resulted in the expense of quarantine and caring for the 7,000 cases during three years. Local health officials have been instructed by the State Health Council no longer to establish quarantine, but merely to placard the houses containing smallpox patients. It is said that if unvaccinated persons persist in refusing such a simple but positive preventive, there is no reason why the people in general should be taxed rigidly to quarantine and guard houses for their sole benefit.

WISCONSIN

Kenosha Sanatorium Nearly Ready.—The Kenosha County Sanatorium, which is being erected on an 87-acre site at a cost of $32,000, will be ready to receive patients December 1. The institution will accommodate twenty-four patients.

Sterilizing Law to Be in Effect.—The Wisconsin sterilization law, passed by the legislature of 1913, will, it is said, be put into actual operation by the State Board of Control in November when twenty-four inmates of the Home for the Feeble-Minded, Chippewa Falls, will be operated on. The work, which is being carried on in an effort to cope with the problem of stopping the propagation of children by feeble-minded and degenerate parents, will be continued as fast as circumstances will permit.

War on Quacks.—A war on "quack" doctors and "fake" medical institutes in Milwaukee has been begun. Arrangements have been made by the health department for free consultation and advice in connection with venereal diseases for all those who apply at the bacteriologic laboratory of the health department in the city hall. Dr. E. V. Brumbaugh of the health department will be in attendance. Following the plan adopted by New York City, no remedies will be prescribed, but those asking advice will, after the diagnosis is made, be urged to consult reputable physicians for treatment.

CANADA

Saskatchewan Hospital News.—A medical staff will be organized in connection with the Regina Grey Nuns' Hospital. A new nurses' home has recently been completed and will shortly be occupied. The necessary funds for the Saskatchewan Hospital Unit are now nearly in sight and only final instructions are awaited from the Imperial Government before proceeding with the work of organization.——The Isolation Building in connection with the Regina General Hospital is to be used for a nurses' home until a new building is completed.

Defectives in Toronto.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, has dealt with 1,000 mental defectives, a great percentage of whom are juvenile criminals, at his clinic for feeble-minded children. It has been impossible to confine the clinic to children and he now treats adults. All efforts to obtain assistance from the provincial government and the Toronto civic authorities having proved fruitless, no very great results can be expected. Dr. Clarke states he has barely touched on the great number of criminally disposed feeble-minded adults and children. Of those treated during the past year only a few have reached institutions owing to the congested condition of all the provincial institutions for the insane and feeble-minded. He states that juvenile crime in Toronto has increased 100 per cent.

Personal.—Dr. Thomas C. Brandon, Watford, Ont., has been appointed surgeon in the British service and will leave in a few days for the front.——Dr. James Gow, Windsor, was painfully injured in a collision between automobiles, October 1.——Dr. Joseph A. Andrews, Indian Harbor, Labrador, reached New York, October 1, and reports that an epidemic of beriberi has existed among the natives of Indian Harbor.——Sir Wilfred Grenfell of Labrador was one of the speakers at the Interdenominational Medical Missionary Conference at Battle Creek, November 2 to 5.——Lieut.-Col. Henry R. Casgrain, Windsor, Ont., in charge of No. 3 Stationary Hospital at Alexandria, Egypt, reported seriously ill, is now on his way back to England. Just before sailing news of his condition was reassuring.——Drs. Vanwycke and Crompton of Toronto were added to the staff of the University of Toronto Base Hospital as captains before the unit sailed for the Mediterranean on October 16. Lieut.-Col. P. Walter H. McKeown of Toronto did not accompany the hospital but remained in England as president of a medical board to advise the pension board. Dr. Thomas G. Brodie returned to Toronto; Dr. Alfred H. W. Caulfield remains in London, and Dr. J. George A. Campbell who is ill will remain in England for a month or two.——Dr. Harry Morell, editor of the *Western Medical News,* Regina, Sask., is at present attached to the Canadian Red Cross, Duchess of Connaught Hospital, Taplow, Bucks, England. He is in charge of the pathologic department. The hospital has accommodation for 1,000 patients.

GENERAL

McCoy to Succeed Anderson.—Surgeon-General Rupert Blue, U. S. P. H. S., has announced the appointment of Surgeon George W. McCoy as director of the Hygienic Laboratory, Washington, succeeding Surgeon John F. Anderson who recently resigned to accept private employment. Dr. McCoy is at present in charge of leprosy work at Molokai, Hawaii.

Leprosy in the United States.—In an address made by Dr. William A. Pusey, Chicago, before the Chicago Medical Society, October 27, he stated that there are about 500 cases of leprosy in the United States, of which 275 were in Louisiana, 100 in New York City, 50 on the Mexican frontier and 5 in Chicago. He advocates the establishment of a general leprosarium.

Railway Surgeons Hold Meeting.—At the annual meeting of the Railway Surgeons' Association of Pennsylvania Lines East, in New York City, October 18 to 20, the following officers were elected: president, Dr. James B. Siggins, Oil City, Pa., vice president, Dr. Charles J. Roberts, Berwyn, Pa.; secretary, Dr. Amos W. Colcord, Clairton, Pa., and treasurer, Dr. Joseph C. Egbert, Wayne, Pa.

Accident Board Officers Elected.—At the meeting of the National Association of Industrial Accident Boards and Commissions, held in Seattle, October 2, Floyd L. Daggett, Olympia, was elected president; Wallace D. Yaple, Columbus, Ohio, vice president, and L. A. Tarrell, Madison, Wis., secretary treasurer. It was decided to hold the next annual meeting in Columbus, Ohio, April 25 to 28, 1916.

Pellagra Conference.—At the third triennial conference of the National Association for the Study of Pellagra held in Columbia, S. C., October 21 and 22, the following officers were elected: president, Capt. Joseph F. Siler, M.C., U. S. Army; vice presidents, P. A. Surg. R. M. Grimm, U. S. P. H. S., and Henry W. Rice, Columbia, S. C.; secretary, Dr. James W. Babcock, Columbia, S. C., and treasurer, Dr. James A. Hayne, Columbia, S. C.

Dakota and Montana Physicians Unite.—Physicians of western North Dakota and eastern Montana met in Williston, N. D., October 19, and organized the Kotana Medical Association, including Divide, Williams, McKenzie and the western half of Mountrail counties, as well as the Montana counties adjoining North Dakota. Dr. Melverton E. Trainor was elected president; Dr. Edward J. Hagen, vice president, and Dr. Frank W. McManus, secretary-treasurer, all of Williston. The next session of the association will be held in Williston.

Social Hygiene Problems Discussed.—At the annual meeting of the American Social Hygiene Association held in Boston, October 8, Pres. Abram W. Harris, Northwestern University, was elected president in the place of Dr. Charles W. Eliot, Cambridge, Mass.——The Central States Conference on Problems of Social Hygiene, under the auspices of the association, was held in Chicago, October 25 and 26, at which the subjects discussed were "The Social Hygiene Movement," "The Education and Moral Aspects of the Social Hygiene Movement," "Public Health," and "The Aspects of the Problem of Prostitution."

Prevention of Infant Mortality.—The preliminary program for the sixth annual meeting of the American Association for the Study and Prevention of Infant Mortality, to be held in Philadelphia, November 10 to 12, is most attractive. The general subjects discussed have been already noted in The Journal. The Bellevue-Stratford Hotel will be the general headquaters and here all the sessions, with the exception of the joint session with the Philadelphia County Medical Society on Economic Aspects of Infant Welfare, will be held. This latter session will convene at the College of Physicians, November 10 at 8:15 p. m.

Bequests and Donations.—The following bequests and donations have been announced:

Alice Home Hospital, Lake Forest (Ill.), and Lake Bluff (Ill.) Orphanage, each $5,500, the proceeds of the Lake Forest Country Fair.

Chicago Home for the Friendless, residuary beneficiary, and Eastern Maine General Hospital, Bangor, Maine, $5,000, by the will of Luther H. Pierce, Chicago.

Aid Association of the Philadelphia County Medical Society, $5,000, by the will of Dr. Eugene I. Santree.

Cancer Commission of Harvard University, the income from $25,000, by the will of William Endicott.

Cancer Commission in the City of Boston, $23,250, by the will of Julia M. Moselet.

Associated Jewish Charities and Jewish Consumptives Relief Society, Chicago, each $10,000, by the will of Bernard Baumgarden.

University of California, Berkeley, a donation of $10,000, as an endowment for a bed in the University Hospital of the University California Medical School, San Francisco, in memory of his wife, the late Belle Garber Pellache, and her brother, the late Joseph B. Garber, by Whitney Pellache, New Haven, Conn.

Tuberculosis Week.—As has been previously announced by the National Association for the Study and Prevention of Tuberculosis, Tuberculosis Day will this year be expanded into Tuberculosis Week, taking place December 6 to 12. For this week the National Association suggests three special days—National Medical Examination Day, December 8; Children's Health Crusade Day, December 10, and Tuberculosis Sunday, December 12. Circulars describing the general scope, plan and aim of the movement have been prepared and are sold by the National Association at 15 cents per 100. Sermon outlines have also been prepared and are sold at 25 cents per 100. It is suggested that these circulars be placed in the hands of teachers, ministers and others. A special circular on Medical Examination Day will be issued later and also some special literature on Children's Crusade Day. It is said that the object of the National Medical Examination Day is to secure the interest of physicians, employers of large groups of labor and lastly workingmen of all kinds. It is not hoped to have everyone examined on this day, but the object is to arouse interest so that people will be set to thinking about periodical medical examinations. It is suggested that the interest of physicians should be aroused by having the matter presented in the local medical society, where, if the general plan is approved, a wholesale rate of examination during a stipulated period might be fixed at $2.50 to $3, this examination to include a complete physical examination and such bacteriologic and chemical analysis as may be necessary. In Michigan, recently, it is said, at the request of the governor, nearly 500 physicians participated in Tuberculosis Day, making a large number of free examinations of tuberculous patients.

FOREIGN

Typhus in Australia.—According to a dispatch from Melbourne an epidemic of typhus fever has broken out in Victoria, Australia, where 447 cases have been reported with 144 deaths.

Nobel Prize to Vienna Physician.—It has been decided to award the Nobel prize for 1914 to Dr. Robert Bárány of the University of Vienna, on account of his work on the physiology and pathology of the ear.

Wood Alcohol Kills.—In a telegram from Berlin of October 18, it is stated that of 100 workmen, who while shipping wood alcohol from Nijni-Novgorod, Russia, opened a barrel and drank from it, twenty are dead and the remainder seriously ill.

Yellow Fever.—On October 5 it was reported that a young engineer had died from yellow fever in the Ancon (C. Z.) Hospital. The disease was contracted in Colombia.——Under date of October 27, it was reported that yellow fever is epidemic in Buena Ventura, Colombia.

WAR NOTES

Harvard Hospital to Be Continued.—Dr. E. H. Nichols, who organized the Harvard British Hospital at the front, announces that it will be maintained for another year and asks for applications from surgeons, physicians, dentists and nurses who are willing to serve with another Harvard Surgical unit in a British hospital. Transportation charges will be paid both ways and the pay will be the regular army rates with additional allowances. Preference will be given to Harvard medical men and young graduates at hospitals. The term of service will be at least six months. Application should be made to H. H. White, University Press, Cambridge, Mass.

Typhoid Mortality Reduced by Inoculation.—Dr. Leo Bernard reports that out of 800 cases of typhoid fever in French soldiers which he studied, the mortality of those who had been given the antityphoid inoculation was only 5½ per cent., while among the unvaccinated it was 17 per cent. He believes that if the triple inoculation had been made as in this country, the death rate would have been much lower.

American Physicians Decorated.—It is reported from Nish that Crown Prince Alexander of Serbia has decorated forty-three American physicians and sanitary engineers representing the Rockefeller Foundation and the American Red Cross, in recognition of their services in checking the typhus epidemic in Serbia.

Personal.—Dr. B. W. Caldwell and other physicians of the American Red Cross contingent from Serbia passed through Rome, October 29, on their way to Germany by way of Switzerland, to assist in the care of Russian prisoners on German soil.——Drs. Edward Stewart, Ralph W. Mendelson and Stanley Osborn, members of the staff of Lady Paget's Hospital at Uskub, Serbia, are believed to have been captured by the Bulgarians.——Drs. Taylor Jones, Thomas W. Jackson and George W. Mellon, who have been on duty in Serbia, and Dr. M. H. Todd, who has been on duty in a war hospital in France, reached Boston from Europe, October 21.——Drs. W. M. Lacy, W. A. Lane, W. J. Dodd, R. R. Sattler, Channing Simmons and Paul Withington, who went abroad with the Harvard unit, reached New York, October 19.

BERLIN LETTER

Berlin, Oct. 5, 1915.

Personal

Prof. Adolf von Baeyer, the father of German chemistry, will celebrate his eightieth birthday, October 31. With the beginning of the present semester he retired from his professional duties. He was appointed von Liebig's successor at the University of Munich in 1875, and for forty years he has been actively engaged in carrying on the work begun by von Liebig. Baeyer had much to do with the advancement of chemical knowledge in Germany; in fact, to him is due the credit of having placed it on the high plane it now occupies. Many of our best chemists have been trained under Baeyer. Among these one might mention Emil Fischer and Richard Willstätter; the latter probably will be Baeyer's successor. Baeyer discovered artificial indigo, a discovery on which rests the enormous development of the German dye industry. No other scientific discovery has ever led to such enormous financial and commercial advancement as the investigations made by Baeyer in 1865, which led to the discovery of indigo.

Reorganization of the Berlin Health Department

For many years the Berlin Medical Society has asked that the administration of the local health department be in keeping with the increase in population and the demands of present-day hygiene. The authorities have now met this demand by making provision for the creation of a city health bureau whose personnel is sufficient assurance for the proper administration of health laws. Nurslings, schoolchildren and recent graduates will receive such attention as should be given them by an adequate health department. Suitable provisions have also been made for the control of tuberculosis, alcoholism, venereal diseases and for the regulation of all hygienic matters pertaining to light, air, water, sewerage, food, housing, etc., the prevention of epidemics, disinfection, and the control of the sanitation of all municipal institutions. The municipal inspection bureau, administered until recently by the late Professor Proskauer, was placed under the jurisdiction of the health department. This department is not under the charge of a director, but of a committee or bureau, the president being the city physician, who is also the chairman of the health board. The health bureau is divided into a medicinal and a social hygiene division. The director of the latter is Professor Grotjahn, a man who has distinguished himself in this field. His writings on social pathology are well known. The director of the medicinal division has not been appointed. The health board has complete control of all health matters, and its decisions are final. All matters pertaining to health, hygiene and sanitation must be referred to this board or bureau. The city physician may attend the meetings of other bureaus in which health questions are under consideration, and participate in the work. He is also privileged to inspect all institutions concerned with hygienic work. He must be kept advised of any health activities participated in by other bureaus, and receive timely notice of all meetings at which such questions will come up for discussion, so that he may make arrangements to be present in person or by proxy.

Infant Mortality Among the German Nobility During the Nineteenth Century

Professor Schlossmann, director of the Children's Clinic in Düsseldorf, has made a study of infant mortality in the reigning families of Germany. His figures show that there has been a consistent and steady lowering of the infant mortality in each decennial period from 1800 to 1900. From 1800 to 1810 the death rate was 13.3 per cent.; in 1850 it was only 6.6 per cent., and in 1870 it was only 3 per cent. Among the older children, those under 14 years, the death rate during the first decade was 24.1 per cent., and in the last decade it was 8.6 per cent. In some families the mortality was extraordinarily high. The highest mortality was found in the house of Nassau. It was 35.1 per cent. In the house of Anhalt it was 30.7 per cent. among all the children, and 23 per cent. among the nurslings. Liechtenstein had only 2 per cent. mortality among its nurslings, and Bavaria 9 per cent. total children's mortality. The conclusion to be reached as the result of these observations is that the mortality among the children of the nobility today is much lower than it was a hundred years ago, and Professor Schlossmann is convinced that the progress made in hygiene is bound to lower these mortality figures considerably, not only among the nobility but among the populace in general. The regulation of infant feeding and the improvements made in housing are the two prime factors concerned in this reduction of the mortality. Schlossmann's findings are in accord with those published some time ago by Max Kemmerich, who showed that the duration of life is greater and the mortality lower among the royal families than it was a hundred years ago. This is also true of the people in general. Kemmerich concludes, therefore, that the oft-made statement that cultural and economic success lead to racial degeneration is wrong, and that the opposite is true.

PARIS LETTER

Paris, Oct. 7, 1915.

The War

TREATMENT OF ARTICULAR WOUNDS

This was the subject of an interesting discussion at the last session of the Réunion médicale de la IV-e armée. Dr. H. Fresson discussed particularly penetrating wounds of the knee. Care must be taken to avoid death, amputation and ankylosis. Early operation should be the rule in all penetrating wounds of the knee joint, without exception when there is a projectile or foreign body in the wound. Injections of iodoformized ether may be utilized in the exceptional cases of small penetrating wounds without any foreign body or in cases in which penetration is doubtful. This method, without other procedure, has given Fresson three recoveries. Simple arthrotomy is a classical bilateral arthrotomy with deep, long incisions to reach all the pockets; posterior drainage is thus avoided. Gauze drains dipped in iodoformized ether are placed transversely and renewed each day. A plaster and metal splint is placed in position immediately after the operation. During the following period, it is necessary to guard closely against the possibility of purulent fistulas, which must be eradicated, especially on the side of the popliteal fossa. Horseshoe arthrotomy with section of the patellar tendon is indicated (1) in cases of fracture of the patella necessitating an operation on that bone; (2) when bilateral arthrotomy will not give an opportunity to reach the foreign body; (3) when the classic arthrotomy will not be sufficient to arrest the evolution of the arthritis.

Attempts at flexing the knee should be begun as soon as possible. After the operation, the treatment demands great care. The results will be good in proportion as the operation has been performed early.

Dr. Anselme Schwartz, agrégé professor at the Faculté de médecine de Paris, and surgeon of the hospitals, divides articular wounds into three classes from the therapeutic point of view: (1) articular fractures; (2) articular wounds without osseous lesion; (3) articular wounds with slight osseous lesions.

In articular fractures, the treatment is, in the main, the same as in nonarticular fractures: opening up of the soft parts, removal of fragments and foreign bodies, careful cleansing and drainage of the focus. There is, however, one particular which distinguishes articular from nonarticular fractures; this is the necessity, in general, of completing the operation by a complete and regular resection.

Articular wounds without osseous lesions seldom occur except at the knee. Such a lesion is always caused by a very small projectile. There is a small orifice in the soft parts and an articular effusion. In two cases Schwartz has followed the following line of conduct: All is prepared for complete operation; then the course of the projectile is explored. If it leads into the synovial, arthrotomy is immediately performed. If it is doubtful, the course of the projectile is explored under anesthesia, and if it leads into the joint, operation is performed.

Articular wounds with slight osseous lesions are the most delicate cases. Here it is necessary to be guided by certain principles of general surgery: 1. It is permissible to sacrifice bone more freely in the arm, in which mobility is sought, than in the leg, in which the aim is solidity. Resections therefore may be made more liberally in the arm than in the leg. 2. There are certain differences among the various articulations; resections of the elbow and the shoulder and ablation of the astragalus give excellent results. 3. Certain articulations are more easily drained than others. In the knee, lateral patellar incisions, and if necessary, the transverse incision, give good drainage, while it is impossible to drain the elbow well without resection. As for immediate amputation, no matter what the gravity of the case, it ought to be a very rare exception.

Dr. Maurice Chevassu, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, is convinced that for articular wounds the question of time is perhaps most essential of all. Early operations give in general good or excellent results; late operations on the other hand give mediocre or bad results.

INTENSIVE TREATMENT OF SYPHILIS IN THE HOSPITALS

It may be readily understood that much interest is felt at present in reducing to a minimum the duration of the stay in hospital of syphilitic soldiers affected with contagious manifestations, in order that they may be sent back to the ranks as soon as possible. In a previous letter (The Journal, Aug. 28, 1915, p. 813), I mentioned a report from Drs. Dalimier and Debat on the treatment of syphilitic manifestations in soldiers by short and intensive courses of arsenic and mercury. Dr. André Bernheim has recently reported to the Société de médecine de Paris the technic which he employs in the service organized by Professor Gaucher and directed by Dr. Butte at the Chaptal Hospital. An injection of 0.03 gm. of mercury benzoate (1:100 solution) or red mercuric iodid is given daily. In order to reinforce the action of the mercury and at the same time to hasten its elimination, the patient each day takes a glass of water containing sulphids and every three days takes a sulphur bath. He is given a supplementary ration of a liter (about a quart) of milk. In the course of each meal, he takes a pill containing 1 mg. of arsenic trioxid and 1 mg. of strychnin sulphate. The patient uses a tooth brush and a tooth powder of mentholated chalk. Every day a nurse paints the gums with a 1:50 solution of chromic acid. During this intensive course, the patient is kept under very close observation, the urine being examined every six days. At the same time the local lesions are actively treated, the chancres being thermocauterized at a short distance and then dusted with calomel, the mucous plaques painted successively with 1:10 silver nitrate and 1:15 chromic acid and papulosquamous syphilids covered with Vigo's plaster [a 20 per cent. mercury plaster]. This intensive treatment may be carried out in any kind of a hospital organization. It permits the cicatrization of chancres in a period varying from five to sixteen days, and mucous plaques and secondary syphilids in fifteen days on an average.

LONDON LETTER

London, Oct. 15, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The consulting physicians and surgeons to the British expeditionary force in France have issued a statement that they have observed with some regret that many physicians have resigned their temporary commissions in the medical corps. No doubt a considerable proportion of these are recalled to Great Britain by personal and public claims on their services which they could not neglect. After a few months of comparative quiet, some of them have perhaps found the work monotonous. Those physicians who contemplate applying for commissions in the army are asked to consider the matter in another light. In order to insure a successful issue to the war our army and navy must show the greatest patience and tenacity of purpose. The same is true of the work of the medical profession. A similar tenacity of purpose and an equal patience are required in addition to the skill and energy which every battle calls forth. The excitement of great and moving events is necessarily transient, and men must be prepared to do their duty steadfastly during long periods of dulness. Yet it is during these dull periods that the services of the army surgeon are really of the greatest value, though they may be dull and uneventful to himself, and it is during these intervals that he gets into that close touch with officers and men which gains their confidence and gives him an influence without which mere professional knowledge is not of much avail. It is no doubt monotonous to be constantly watchful of the cleanliness of billets, to supervise food, to prevent parasitic infections, to treat sore feet, diarrhea or muscular rheumatism, and to do the thousand and one things which help to keep the soldier an efficient fighting man. But the medical officers who does these things is doing at least as much for his country as the man who performs operations or treats typhoid. The staffs of the field ambulances have also to deal with many minor ailments of little interest, but every division is dependent on them for the rapid return to the regiments of those whose illnesses are too slight to justify a return to England.

THE SIGNIFICANCE OF ABNORMAL SIGNS IN THE RECRUIT'S HEART

At the request of the War Office, Sir James Mackenzie has drawn up a memorandum to serve as a guide to medical examiners of recruits. He points out that the healthy heart in the young can exhibit murmurs, and variations in rate and rhythm, which are perfectly physiologic in origin and indicative neither of disease nor of impairment. Before examining the heart he recommends that the functional efficiency be found out by ascertaining how it responds to effort. This is shown by the amount of exertion the candidate has been accustomed to take in the past in his work or play, and if he can undergo severe bodily exertion without distress. The physiologic murmurs are always systolic in time, and the situation of the greatest intensity may be at the apex, midsternum, or base of the heart. If the candidate's response to effort be normal, and the heart normal in size, the murmur is negligible; for if the cause which produced the murmur hampers or embarrasses the heart in its work, the size of the embarrassed chamber will increase and its functional efficiency be impaired.

Only two forms of irregularity need be considered. Irregularities indicating serious mischief, such as the irregularity of auricular fibrillation or of heart block, will be associated with such diminution of the functional efficiency that the candidate would not seek to recruit. The most common irregularity is that which occurs in the healthy heart of the young. It is characterized by a lengthening and shortening of the pauses between the beats; it will often be found to vary with respiration, the beat increasing in rate during inspiration and decreasing during expiration. When it does not have the characteristic respiratory character it can be made to take on the character if the candidate is made to breathe slowly and deeply for a few minutes. It is frequent in perfectly healthy hearts, and is, therefore, of no importance. In rare cases the pulse may be found intermitting more or less frequently. If the heart be auscultated, two short sharp sounds rapidly following one on the other may be heard during the pause. If this is the only sign present, that is, if the functional efficiency of the heart be good and the size normal, then these extrasystoles are of no significance and the candidate should not be rejected. Many candidates whose hearts are perfectly healthy suffer from palpitation or excited action during examination. The beat becomes forcible and rapid, and a systolic murmur may be present. If such a candidate be told to lie down and breathe slowly and deeply for a few minutes, the heart's action becomes less violent and the rate slows during expiration. With a history of good functional efficiency, the candidate may be considered suitable for enlistment.

CASUALTIES FROM THE ZEPPELIN RAID

A fleet of airships has visited London and the eastern counties and dropped bombs with the following results: Twenty-seven men, 9 women and 5 children were killed, and 64 men, 30 women and 7 children were injured. Of these casualties, 32 killed and 95 injured occurred within the London area.

THE HEALTH OF THE ARMY

Prof. H. R. Kenwood, a well-known authority on hygiene, who has been appointed as an expert to the army in France, has made an interesting report on his branch of the medical work. Early in the war it was considered that the special circumstances demanded some strengthening of the sanitary personnel, and so additional sanitary sections were formed, each consisting of a commissioned officer, four noncommissioned officers and twenty-five men, one section being attached to each division. These sections were recruited from a good class of men, well trained, and including men who had had experience of sanitary work before enlistment; the staff sergeants, sergeants and corporals were generally inspectors in civil life, and the rank and file were mostly from the building and engineering trades; each section had its own motor lorry to carry its equipment. The duties of these special sections ranged from skilled sanitary work, such as disinfection, the purification of water, etc., to the construction of crude incinerators, simple arrangements for the bathing of the troops fresh from the trenches, and scavenging. Their skill has enabled many difficulties to be overcome. Many improvisations have had to be fashioned to suit novel conditions and difficulties, such as the destruction of vermin, the eradication of the fly population in a country which is highly manured under an intensive system of cultivation, the disposal of the carcasses of horses, etc. Steam is used to disinfect clothing and textile articles, and cresol solution is applied to infected surfaces. With regard to the drinking water, the circumstances of the campaign caused special precautions to be taken from the first. The army water carts were originally furnished with batteries of filters, capable of arresting the germs of water-borne disease, and mobile laboratories were equipped with the means of making a chemical and bacteriologic examination of any water supply which it was proposed to issue to the troops. But these precautions were soon supplemented by more effective measures, and since the early days of the war all the water issued has been previously treated as if it certainly contained the germs of typhoid, and in a manner that would effectually dispose of such organisms were they present. In short, the drinking water is chlorinated under skilled direction, and the result is an always safe water supply. The preventive measures against typhoid are as complete as science and ingenuity can devise, and the results have been exceptionally good. Although the figures of the units vary, the large majority of the forces have been inoculated against this disease, and this proved of the greatest value. The noninoculated British soldier is found to be between fourteen and fifteen times more liable to catch typhoid than the inoculated soldier. Precautions against "carriers" are also taken. Mobile laboratories with skilled bacteriologists go from place to place for the systematic examination of the feces of large numbers of men.

Marriages

Clarence Leon Fessenden, M.D., Fulton, N. Y., to Miss Louise W. Ryder of Roanoke, Va., at Towanda, Pa., October 20.

Archibald Wright Graham, M.D., to Miss Alecia Madden, both of Chisholm, Minn., at Rochester, Minn., September 29.

Fred William Robinson, M.D., Sturgis, Mich., to Miss Mildred Leonora Clarke of Milford, Conn., October 16.

William Duncan McKim, M.D., Washington, D. C., to Miss Leonora Jackson, in New York City, October 12.

James Stuart Pritchard, M.D., Ottawa, Ont., to Miss Myra Bradwell Helmer of Chicago, October 21.

Francis Leo Daly Scanlan, M.D., to Miss Margaret B. Williams, both of Syracuse, N. Y., October 20.

Walter Gerald Nuessle, M.D., Lansford, N. D., to Miss Helen Nippolt of Tacoma, Wash., September 8.

Furman Leaming Pyke, M.D., Lafayette, Ind., to Miss Inez Johnston of LaGrange, Ind., October 20.

William E. Kiser, M.D., Bellaire, Ohio, to Miss Gertrude Helen Coleman, at Dover, Ohio, October 19.

Allison Temple Wanamaker, M.D., to Miss Mary Helen Allmond Patten, both of Seattle, October 20.

Carl Shepard Oakman, M.D., Detroit, to Miss Harriet Brooks at San Antonio, Texas, October 20.

Edward J. H. Salmon, M.D., to Miss Theresa Kennedy, both of Jersey City, N. J., about August 7.

Arthur Knowlton Drake, M.D., Monmouth, Ill., to Miss Lois Potter of Galesburg, Ill., October 19.

Clarence H. Boswell, M.D., Rockford, Ill., to Miss Ruth F. Ward of Flushing, N. Y., October 20.

Charles L. Schang, M.D., Greenville, Pa., to Miss Susie Maxey of Vicksburg, Miss., October 18.

John S. B. Woolford, M.D., Chattanooga, Tenn., to Miss Eliza Winslow of Baltimore, October 23.

Harold M. Allen, M.D., Norway, Me., to Miss Emily Briggs of Lawrence, Mass., October 20.

James LeRoy Anderson, M.D., Winfield, Ill., to Miss Clare Leland Kinney, at Chicago, October 14.

George David Cutler, M.D., Boston, to Miss Jessie Barr Wright of St. Louis, October 19.

Conrad B. Vonnahme, M.D., to Miss Mary Rung, both of East St. Louis, Ill., October 31.

Patrick H. O'Malley, M.D., to Miss Elda Sharples, both of Chinook, Mont., October 8.

Roger Paul Dawson, M.D., to Miss Marguerite A. Long, both of Boston, October 20.

Deaths

John Henry Huddleston, M.D. Harvard Medical School, 1891; aged 51; a Fellow of the American Medical Association; a trustee of the New York Academy of Medicine; a member of the American Climatological Society, American Public Health Association, Association of Military Surgeons of the United States, and National Association for the Study and Prevention of Tuberculosis; a director of the Metropolitan Life Insurance Company; visiting physician to Gouverneur and Willard Parker hospitals, and the Riverside Sanatorium; consulting physician to the United Hospital, Port Chester, N. Y.; captain and assistant surgeon, Seventh Infantry, N. Y. N. G., from 1895 to 1907; Carpenter lecturer in 1902; secretary of the American Committee of the Fourteenth International Medical Congress; a trustee of the New York State Hospital for Incipient Tuberculosis; died at his home in New York City, October 30, from pneumonia.

Rear Admiral Joseph Benson Parker, M.D. Medical Director, U. S. Navy (retired). Bellevue Hospital Medical College, 1866; aged 74; who entered the volunteer service of the United States Navy, March, 1863; as an acting assistant surgeon; served in the Mississippi Squadron until his honorable discharge in 1865; and was appoined assistant surgeon, U. S. Navy in November, 1866; whose last services were the command of the Portsmouth (N. H.) Hospital and Navy Yard, the presidency of the Naval Medical Examining Board, Washington, and the command of the Naval Hospital, Washington, and who was retired June 20, 1903, with the next higher grade to that held on active list, on attaining the age of 63 years, after fifteen years and one month sea service and twenty years and six months shore or other duty; died at his home in Philadelphia, October 21.

Edmund C. Rivers, M.D. University of Maryland, Baltimore, 1879; aged 57; of Denver; a well-known specialist on diseases of the eye and ear; president of the board of trustees and professor of ophthalmology in the Denver and Gross College of Medicine, Denver; vice president of the board of directors and consulting oculist to the Denver Maternity and Woman's Hospital Association; while hunting in Barr Lake, near Denver, October 24, was drowned while attempting to save the life of a negro caretaker who was falling from his motor boat.

James A. McGuigan, M.D. Jefferson Medical College, 1862; aged 81; surgeon of volunteers during the Civil War; died at his home in Philadelphia, October 21, from heart disease. On March 8, 1912, Dr. McGuigan and Dr. William Williams Keen were the guests of honor at a dinner given by the medical profession of Philadelphia on the occasion of the fiftieth anniversary of their graduation in medicine.

Clayton L. Ransom, M.D. Willamette University, Salem, Ore., 1903; of Mill City, Ore.; a Fellow of the American Medical Association; who disappeared while hunting in the Jackson Hole country, Wyo., September 17, was found dead near his camping place, October 21, his death having been due to a gunshot wound supposed to have been accidentally self-inflicted while climbing over a log.

Eugene Shamon McCain, M.D. University of Texas, Galveston, 1903; aged 37; a Fellow of the American Medical Association and quarantine officer at Brownsville; formerly health officer at Tampico, Mexico; was shot and killed by Mexican bandits who held up and robbed a passenger train of the St. Louis, Brownsville and Mexico Railroad, about October 18.

Harvey R. McClellan, M.D. Starling Medical College, Columbus, Ohio, 1854; aged 88; a charter member of the Greene County Medical Association; for sixty years a practitioner of Xenia, Ohio; contract surgeon in the Army during the Civil War; founder of the McClellan Hospital, Xenia; died at his home in that city, October 17, from pneumonia.

Richard H. McBaine, M.D. College of Physicians and Surgeons in the City of New York, 1907; aged 32; a Fellow of the American Medical Association; a specialist on physical diagnosis; physician to outpatients in and a member of the faculty of Washington University, St. Louis; died in Barnes Hospital in that city, October 17, from septicemia.

Frederick Gillett Byles, M.D. Jefferson Medical College, 1882; aged 62; professor of hygiene and sanitation in the University of Colorado, School of Medicine, Denver; obstetrician to the Colorado Cottage Home and a member of the staff of the Denver City and County Hospital; died at his home in Denver, October 21, from arteriosclerosis.

William H. Pruner, M.D. College of Physicians and Surgeons, Baltimore, 1884; aged 60; a Fellow of the American Medical Association and for the last twenty-five years a practitioner of Washington County, Neb.; died at his home in Kennard, Neb., October 19, from prostatic abscess complicated with multiple abscesses of the kidney.

Joseph R. Huntt, M.D. College of Physicians and Surgeons, Baltimore, 1888; aged 50; mayor of Laurel, Md., for one term; formerly health officer; local surgeon of the Baltimore and Ohio Railroad and director of the Citizens' National Bank; died at his home in Laurel, October 18, from cerebral hemorrhage.

William George Kimball, M.D. Dartmouth Medical School, Hanover, N. H., 1876; aged 68; a member of the Massachusetts Medical Society; medical examiner for Hampshire County and representative in the Massachusetts Legislature in 1895 and 1896; died at his home in Huntington, October 20.

Mark H. O'Daniel, M.D. Atlanta (Ga.) Medical College, 1881; aged 53; formerly local surgeon at Jeffersonville, Ga., for the Southern Railway; for several years a member of the staff of the State Sanitarium, Milledgeville; died in Williams' Private Sanitarium, Macon, Ga., October 14.

Henry P. Mowry, M.D. Hahnemann Medical College, Chicago, 1877; aged 61; ex-president of the village of Bronson; formerly a member of the State Board of Charities and Correction; died at his home October 6, from angina pectoris.

Peter S. Leisenring, M.D. Pennsylvania Medical College, Philadelphia, 1852; aged 86; formerly professor of obstetrics in Omaha Medical College; secretary of the board of health and city physician of Omaha; formerly president of the San Diego (Calif.) Medical Society; died at his home in San Diego, October 15.

Mark Richards Crain, M.D. University of Vermont, Burlington, 1879; aged 59; a Fellow of the American Medical Association and a well-known surgeon of Rutland, Vt.; died in his office in Rutland, October 14, from the effects of morphin, self-administered, it is believed, with suicidal intent, while despondent.

Raymond Russ, M.D. University of California, San Francisco, 1900; aged 42; a Fellow of the American Medical Association; instructor in surgery in the University of California; formerly of San Francisco and San Mateo, Calif.; died at his home in Hillsborough, Calif., October 24, from tuberculosis.

Guerney Abner Gregory, M.D. Maryland Medical College, Baltimore, 1909; aged 35; of Stroudsburg, Pa.; formerly a member of the Medical Society of the State of Pennsylvania; died October 14, from acute gastritis, in the North Water Gap Sanitarium, Stroudsburg, where he was attending a patient.

William Patrick George, M.D. Washington University, St. Louis, 1875; aged 68; a member of the Arkansas Medical Society; a Confederate veteran; since 1869 a practitioner and druggist and president of the First National Bank of Berryville, Ark.; died at his home about October 13.

Alexander Perry, M.D. Vanderbilt University, Nashville, Tenn., 1905; aged 34; a Fellow of the American Medical Association; who began practice in Nashville and later was obliged to go to Denver and finally to Los Angeles in search of health; died in the latter city, October 20.

Joseph Jerome Noll, M.D. College of Physicians and Surgeons in the City of New York, 1885; aged 51; a member of the Medical Society of the State of New York; assistant physician to the New York Dispensary; died in his home in New York, October 17, from heart disease.

Samuel C. Rusmisell, M D. Medical College of Ohio, Cincinnati, 1876; formerly a Fellow of the American Medical Association; of Buckhannon, W. Va.; president of the People's Bank of West Virginia, Buckhannon; died at his home about October 18.

Anthony J. Maslowsky, M.D. Kentucky School of Medicine, Louisville, 1907; of Mariah Hill, Ind.; formerly coroner of Spencer County, Ind.; died October 22, from injuries received in the overturning of his automobile near Rockport, Ind., the week before.

James Rankin Vincent, M.D. Medical College of Ohio, Cincinnati, 1884; aged 60; a Fellow of the American Medical Association; for many years a practitioner of Wilkinsburg and East Liberty, Pittsburgh; died at his home in East Liberty, October 23.

Frank Duane LeValley, M.D. University of Michigan, Ann Arbor, 1883; aged 58; a member of the Michigan State Medical Society and a practitioner of Vassar, Mich., since 1890; died at his home October 14, from heart disease.

John T. Hampton, M.D. Jefferson Medical College, 1879; aged about 70; a retired practitioner of Philadelphia; was found dead in his berth in a sleeping car on an Atlantic Coast Line train near Florence, S. C., October 9.

George M. Hite, M.D. Eclectic Medical Institute, Cincinnati, 1886; aged 56; of Nashville, Tenn.; also a clergyman of the Primitive Baptist Church; died in an infirmary in that city, October 21, after a surgical operation.

George W. Long, M.D. University of Pennsylvania, Philadelphia, 1874; aged 67; of Graham, N. C.; a member of the Medical Society of the State of North Carolina; died in a hospital in Statesville, N. C., October 16.

Thomas Henry Whalen, M.D. Illinois Medical College, Chicago, 1898; aged 57; who had charge of the smallpox epidemic in Tippecanoe County, Ind., in 1902; died at his home in Lafayette, Ind., October 19.

Patrick Wallace Cremin, M.D. College of Physicians and Surgeons in the City of New York, 1866; aged 74; a member of the Medical Society of the State of New York; died at his home in New York City, October 17.

Eugene Larrie Tupper, M.D. University of Minnesota, Minneapolis, 1897; aged 42; died at his home in Lima, Ohio, October 21, from organic heart disease.

Frank Butler Adams (license, Connecticut, 1893), aged 57; an eclectic practitioner of Hartford, Conn., for thirty-two years; died in St. Francis' Hospital in that city, September 23, from carcinoma of the throat.

John Clark Gauntlett, M.D. University of Michigan, Ann Arbor, 1887; aged 51; a resident of Elk Rapids, Mich., for more than twenty years; died at his home in that place, October 19, from heart disease.

George Corson Burnley, M.D. Hahnemann Medical College, Philadelphia, 1890; aged 49; a specialist on diseases of the eye; died at his home in Lock Haven, Pa., October 15, from angina pectoris.

Albert Schaffer Erney, M.D. Jefferson Medical College, 1877; aged 61; a practitioner and druggist of Philadelphia; died at the home of his son in that city, October 12, from cerebral thrombosis.

Michael J. Kenney, M.D. Marquette University, Milwaukee, Wis., 1911; aged 39; formerly a member of the State Medical Society of Wisconsin; died at his home in Manawa, Wis., October 22.

George A. Heintzelman (license, Philadelphia County, Pa., 1886), aged 81; for thirty years a practitioner and druggist of northwest Philadelphia; died at the home of his son in that city, October 19.

Adolphe Joseph Delcourt, M.D. University of Liege, Belgium, 1875; aged 68; formerly a Fellow of the American Medical Association; died at his home in Houma, La., October 16.

Charles Lee Caven, M.D. University of Southern California, Los Angeles, 1896; aged 43; a Fellow of the American Medical Association; died at his home in San Diego, Calif., October 18.

Matthew H. Sheldon, M.D. Eclectic Medical Institute, Cincinnati, 1876; aged 62; of Mt. Erie, Ill.; died in the Olney (Ill.) Sanitarium, September 17, from nephritis.

James K. Reader (license, Oregon, 1890), aged 69; a homeopathic practitioner of Ashland, Ore.; a veteran of the Civil War; died in Santa Rosa, Calif., October 11.

Amzi Jones, M.D. Vanderbilt University, Nashville, Tenn., 1900; aged 42; for fifteen years a practitioner of New York City; died at Saranac Lake, N. Y., October 22.

Clarence Ormsbee, M.D. New York University, New York City, 1865; aged 76; of Newburgh, N. Y.; died in Sadlier's Hospital, Poughkeepsie, N. Y., October 13.

Brooks A. Colomb, M.D. Tulane University, New Orleans, 1885; aged 53; president of St. James Parish, La.; died at his home in Colomb, La., September 20.

Joel F. Scott, M.D. Jefferson Medical College, 1883; aged 62; a Fellow of the American Medical Association; died at his home in Wilson, Pa., October 19.

Emil Haass (years of practice, Illinois, 1878), aged 88; for sixty years a practitioner of Will County, Ill.; died at his home in Frankfort, Ill., October 13.

James Henry Woodul, M.D. Kansas City (Mo.) Medical College, 1881; aged 80; died at his home in Whiting, Kan., September 12, from senile debility.

William J. Hicks, M.D. Medical College of Georgia, Augusta, 1889; aged 63; died at his home in Moultrie, Ga., August 5, from amebic dysentery.

Noah Woodrow Patton, M.D. Jefferson Medical College, 1884; aged 59; died at his home in Charleroi, Pa., October 14, from cerebral hemorrhage.

Samuel Chase Thayer, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1881; aged 54; died at his home in Boston, October 11.

Sidney H. Minor, M.D. University of Tennessee, Nashville, 1893; aged 46; died at his summer home near Hendersonville, Tenn., October 15.

John A. Long, M.D. Baltimore Medical College, 1893; aged 45; died at his home in Bowmansville, Pa., October 8, from heart disease.

Hardin Welch Bright, M.D. Bellevue Hospital Medical College, 1886; aged 53; died at his home in Richmond, Ky., about October 21.

Cyrus L. Harnden, M.D. University of Wooster, Cleveland, 1875; aged 65; died at his home in Clyde, Ohio, October 19.

Powhatan Bledsoe, M.D. University of Maryland, Baltimore, 1860; aged 87; died at his home in Wildwood, Va., June 24.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports:

Swan's Rheumatic Bacterin (Mixed) No. 47

According to the statement of the manufacturers (Swan-Myers Company, Indianapolis, Ind.), Swan's Rheumatic Bacterin (Mixed) No. 47 contains in each c.c., pneumococci 25,000,000, Friedländer's bacilli 25,000,000 and streptococci polyvalent 450,000,000.

The Council's Committee on Serums and Vaccines held that there is no satisfactory evidence that either the pneumococcus or Friedländer's bacillus is concerned in the etiology of acute and chronic rheumatism or rheumatoid arthritis, and no conclusive evidence that the streptococcus is an etiologic factor. In view of this the committee held this mixed vaccine unscientific in composition, and hence barred from admission to New and Nonofficial Remedies by Rule 10.

The Council adopted the report of the committee and, the report having been sent to the manufacturer and the manufacturer's reply considered, authorized its publication.

Elixir Iodo-Bromide of Calcium Comp. "Without Mercury" and "With Mercury"

The Tilden Company, New Lebanon, N. Y., and St. Louis, Mo., sells "Elixir Iodo-Bromide of Calcium Comp. without Mercury" and "Elixir Iodo-Bromide of Calcium Comp. with Mercury." The latter is said to contain, in addition to the ingredients of the former, 1/100 grain mercuric chlorid in each fluidram. According to the label the formula of the elixir "without mercury" is :

> "*Formula*—Salts of Iodine, Bromine, Potassium, Sodium, Calcium, Magnesium with Stillingia, Sarsaparilla, Rumex, Dulcamara, Lappa, Taraxacum, Menispermum."

A recent circular declares that the elixir contains:

> ". . . a number of the most powerful alteratives of the pharmacopeia such as chemically pure iodin, magnesium, potassium with sarsaparilla, stillingia, prickly ash, burdock, taraxacum, etc. . . . Each fluidounce contains seventy-two grains of the combined salts."

The same circular also alleges that each dram of the preparation contains:

> ". . . the equivalent of one and one-half grains of the combined iodids, potassium and calcium . . ."

It will be observed that, (1) the two statements quoted from the circular make no reference to bromids; (2) the statement that each dram contains "the equivalent" of 1½ grains of the combined iodids, potassium and calcium, accounts for but 12 of the 72 grains of "the combined salts" per fluidounce declared in the preceding quotation; (3) the circular mentions the presence of a drug—prickly ash—not declared on the label and, finally (4) none of the "formulas" gives the quantities of all of the several constituents.

It is evident from these "formulas" that the Tilden Company continues its policy of concealment and mystification as exemplified in the cases of Hydrocyanate of Iron, Tilden (discussed in The Journal, June 19, 1909, p. 2008), Febrisol (The Journal, June 29, 1912, p. 2043) and Respirazone (The Journal, June 14, 1913, p. 1899).

In the circular just quoted ("The Conquest of Syphilis"), all hope for the syphilitic is declared to rest in mercury and iodin, and it is implied that only through Elixir Iodo-Bromide of Calcium Comp. is it possible to obtain the greatest good from these drugs.

> "Were the cleansing influences of these two drugs [mercury and iodin] unavailable to the luetic patient, he, truly, would be as pitiable an object as the leper . . .
>
> "Modern Pharmacy has devised no better means of utilizing these anti-syphilitics than Elixir Iodo-Bromide of Calcium Comp. (Tilden) with or without mercury. . . . the Elixir, in proper dosage, acts in specific fashion and is adapted for use in all stages of the disease.
>
> "In the early months . . . Elixir Iodo-Bromide of Calcium Comp. (Tilden) with mercury is a trustworthy weapon and the physician need have no fear but that it will subjugate the disease . . .
>
> "When . . . the virulent stage is passed . . . Elixir Iodo-Bromide of Calcium Comp. (Tilden) without mercury may be given the patient with every assurance that medicine's most aggressive measures are being resorted to . . . From time to time, up to the very end of the time honored three years' period of treatment, it is well to put the patient back on the bichloride, using for this purpose the form of the Elixir administered in the first stages of the disease . . .
>
> "This regime . . . will indubitably antidote the virus of syphilis and eradicate from the organism its every vestige."

While it seems incredible that any physician would jeopardize the health—even the life—of a patient by accepting this boastful magniloquence as sound therapeutic advice, still the fact that certain medical journals lend their advertising pages to advertisements for Tilden's Elixir with the caption "The Conquest of Syphilis" makes it incumbent on the Council to record its condemnation of the employment of this unscientific, semisecret mixture.

It is recommended that Elixir Iodo-Bromide of Calcium Comp. "without mercury" and "with mercury" be held in conflict with Rule 1 (secrecy of composition), Rule 6 (unwarranted therapeutic claims) and Rule 10 (unscientific composition).

THE HOROWITZ-BEEBE AUTOLYSIN TREATMENT

Some Bids and Estimates for the Treatment of Cancer

Immediately after the publication, in a popular magazine, of the first articles on the autolysin treatment of cancer, inquiries were received from various parts of the country in regard to this treatment and its value. Cancer sufferers were invited in the magazine article to write to the Autolysin Laboratory for advice regarding the treatment. Naturally many responded. There were strong evidences from the beginning of a commercial spirit in the exploitation of the treatment. We quote below some of the evidence. The first is a series of telegrams that passed between a Seattle physician and Dr. Beebe:

Dr. S. P. Beebe,
New York, N. Y.
Seattle, Wash., July 7, 1915.

Kindly wire me collect at once particulars of autolysin treatment for cancer. Would it be possible for you to send me some autolysin with directions for using same for the treatment of an inoperable cancer of the uterus which involves the rectum and bladder.

DR ——————
SEATTLE WASH
NEW YORK N Y JULY 8 1915

WIRE RECEIVED AUTOLYSIN NOT GIVEN OUT FOR GENERAL USE BY PROFESSION REASON UNACQUAINTED WITH THERAPEUTIC EFFECT AND PHYSIOLOGICAL ACTION EITHER NECESSARY TO BRING PATIENT HERE FOR TREATMENT OR HAVE MEMBER OF STAFF IN CONSULTATION CONSULTATION FEE HERE TWO HUNDRED FIFTY DOLLARS CONSULTATION FEE IN SEATTLE TWO THOUSAND DOLLARS A MEMBER OF OUR STAFF WILL BE IN CONSULTATION WITH DR W COLFAX MATTHEWS AT BUTTE MONT JULY FOURTEENTH YOU CAN ARRANGE THROUGH HIM FOR A CONSULTATION AT THAT TIME FOR FIVE HUNDRED DOLLARS

S P BEEBE MD

Dr. S. P. Beebe:
Seattle, Wash., July 8, 1915.

Will Doctor who is coming to Butte to give autolysin come on to Seattle and give treatment necessary for trial for five hundred dollars. Wire me collect.

DR ——————
SEATTLE WASH
NEW YORK N Y JULY 9 1915

WIRE REC'D OUR STAFF MEMBER DOCTOR WILLIAM E FITCH WILL BE IN BUTTE ON THE DAY AND DATE AND AT ADDRESS GIVEN IN DAY LETTER OF EIGHTH AND WILL COME ON TO SEATTLE FOR FIVE HUNDRED DOLLARS AND TRAVELING EXPENSES FROM BUTTE TRUST YOU CAN HAVE MORE THAN ONE CASE FOR TREATMENT

S P BEEBE MD

A physician in Detroit wrote to Dr. W. H. Axford of Bayonne, N. J., whose name was mentioned in one of the popular articles as having used the treatment, asking for information regarding it. The following was the reply:

New York City, June 30, 1915.

My dear Doctor:—Your letter addressed to Dr. Axford, c/o The Polyclinic Hospital has been referred here for attention, and we note therefrom that you have a patient suffering from cancer of the liver and you desire information pertaining to this treatment concerning which we beg to submit the following:

For more than two years "Autolysin" has been subjected to the severest possible test in that only inoperable and hopelessly incurable cases were accepted for treatment, many of whom came with the verdict of the family physician hanging over them of having only two or three months lease of life. These patients have taken the treatment and the results on the whole have been satisfactory, in many instances, the improvement was so gratifying to the patients that they left the institution claiming they were fully recovered. We, however, are not so optimistic, but we feel that we can conservatively say that in many instances there were evidences of complete clinical recoveries.

At the present time "Autolysin" is not available for general use by the profession for the reason that they are unacquainted with its therapeutic effect and physiological action which is necessary for its intelligent administration. Before we consider it a safe remedy, a physician must first be personally instructed in the technic of its administration as well as have pointed out to him just what reactions are liable to follow—which govern future dosage—and have explained to him just the way to handle and take care of these reactions when they occur.

If your patient is able to be brought to New York for treatment, the fee for examination, consultation, etc., will be $250, and the after-treatments at the rate of from $25 to $35 per week. If this patient is unable to stand the trip then it will be necessary for a member of our staff to see her in consultation with you. The fee for this trip and consultation will be $1000 and traveling expenses.

Trusting this information will serve your purpose, and that we may have an opportunity of giving your patient the benefits of this treatment, we beg to remain W. E. Fitch.

Shortly after the publication of our editorial on this treatment, the following letter, dated July 27, 1915, was received from a subscriber in St. Louis:

To the Editor:—Following the "Beebe-Horowitz" editorial in this week's number of your Journal, I am venturing to send you the enclosed copy of a communication to one of my patients.

Briefly the history of my patient is as follows: One year after an operation for gall stones, at which gall stones were found and the gall bladder left without drainage, a second operation was done for a mass that was in the scar line. This was diagnosed, clinically, as carcinoma of the gallbladder and liver. A large mass grew on the abdominal wall and the patient suffered many hemorrhages that had almost caused his death a number of times before controlled.

He was brought to my office on a stretcher and the massive dose X-ray, Coolidge tube, was administered through several ports of entry. The first treatment controlled the bleeding and the mass wholly disappeared from the wall. There was also a great diminution of the liver dulness. He gained much in weight and has returned to his work.

Following his reading of the article in *Hearst's Magazine,* he wrote to Dr. Horowitz and got the enclosed reply—not, however, until after he had departed for New York, so great was his hurry to avail himself of the treatment.

He did not get farther than the "Financial Secretary" and came home for further X-ray treatment.

The following is the letter referred to. The second and third paragraphs, which are omitted, are the same as those in the letter already quoted. The fees, however, differ.

Dear Sirs—Your letter of the 19th instant, addressed to Dr. Horowitz has been received and carefully noted. We observe therefrom that you are suffering from a carcinoma of the gall bladder, and we believe from the report which you have very kindly given us that you should lose no time in availing yourself of the advantages offered from the administration of "Autolysin" in malignant disease such as you have.

. . . .

We note from your letter that you can come on to New York now in the next few days, and we should be very glad to welcome you and offer you the advantages of this new method of treatment. The examination with reports of the various laboratories and consultation will be $500. The treatment at $50 per week thereafter.

Trusting this information will serve your purpose and that we may have an opportunity of giving you the advantage of this treatment, we beg to remain,

Yours very truly, (Signed) Alexander Horowitz, M.D.
Per: W. E. F. [W. E. Fitch (?)—Ed.]

The following letter appeared in *Northwest Medicine* for September, and was said to have been written to a physician in Seattle. We again omit the second and third paragraphs, as they are the same as those already quoted. It seems that these two paragraphs are utilized in many of the letters, no matter who signs them:

New York City, July 29, 1915.

Dear Doctor:—Your letter of the 24th inst. duly received. We note from it that you have a patient under observation who is suffering from an inoperable malignant disease of the uterus. We believe we can conservatively say to you that "autolysin" at the present time offers the only hope for patients of this deplorable condition.

. . . .

If your patient is able to stand the trip to New York, we should be very glad to receive her for treatment and to have you accompany her, in order that we might have the patient under our personal observation and at the same time show you every courtesy in the case by personally instructing you into the technic of the administration of "autolysin." The fee for examination, consultation, etc., here would be $250. If the patient cannot stand the trip to New York and is able to pay for a consultation in Seattle, we could arrange to send a member of our staff there to see her in consultation with you, which consultation would be $250 and traveling expenses and the allowance of $200 per day for the time consumed in a trip from here to Seattle and return.

Trusting this information will serve your purpose, we beg to remain,

Yours very truly,
S. P. Beebe, M.D.

The following correspondence indicates that a change in method of exploitation—this time through the physician—was adopted. The first letter was addressed to The Journal, and is from a physician. The Samuel M. Noyes who is mentioned is, according to a letter-head, an attorney-at-law of Wheeling, W. Va. Noyes is now, according to an autolysin circular, the "distributor."

Ellsworth, Iowa, Sept. 20, 1915.

To the Editor:—In the recent numbers of *Hearst's* there have appeared articles on Autolysin, used in the treatment of carcinoma. Afflicted persons are directed to write to S. M. Noyes, New York, who would put the sufferer in touch with the remedy. I wrote as a layman requesting information and received the enclosed booklet and letter.

September 17, 1915.

Dear Sir:—Replying to your letter with reference to the Autolysin treatment of cancer.

I enclose a leaflet intended for the medical profession only, that tells something of the methods and results of the new treatment. I suggest that you hand this to a local physician in whom you have confidence, and ask him to read it. If after doing so he feels that this remedy might be of value in the case to which you have reference, let him communicate with me directly and arrangements can be made to secure a supply of Autolysin. The remedy is distributed solely through legally qualified medical practitioners.

Awaiting your further communications, I am,

Yours very sincerely,
S. M. Noyes.

To a physician in Virginia Mr. Noyes wrote:

September 8, 1915.

My dear Doctor:—Replying to yours of August 29, beg to advise that in all cases it is better that the physician administering Autolysin should, if possible, attend Dr. Beebe's clinic at 25 East 70th St., New York City, but where this is impossible I will send same direct with full instructions as to its use.

The regular price being Twenty-four Dollars ($24.00) per dozen 2 c.c. Ampules and special rates made to patients who are unable to pay this price.

In the future please address me at 17 East 38th St., New York City.

Yours very truly,
S. M. Noyes.

On the other hand, patients seem to have been directly favored. Another physician writes to The Journal:

Sept. 22, 1915.

"One of my patients handed me a draft of $24.00 for 12 ampoules of the Horowitz-Beebe cancer cure. He had written to them personally and received a reply stating their price.

The foregoing are samples of the correspondence that has been forwarded to The Journal. It presumably represents the methods of promoting this unproved, secret and possibly dangerous, treatment.

VARLEX COMPOUND

An Alleged Cure for the Liquor and Tobacco Habits

"Varlex Compound," put on the market by the Varlex Manufacturing Company, Kansas City., Mo., is one of those heartless frauds sold under the claim that it can be given secretly to "cure" the liquor and tobacco habits. The term "heartless" is used advisedly. There is no preparation that can be given secretly to cure alcoholism; wives and children of inebriates reading lying advertisements of the Varlex type purchase the worthless nostrums, often with money that can be ill afforded, in the hope of releasing father or husband from the thraldom of alcoholism. The sordid wretches engaged in the business of selling these alleged cures know full well that there is not one chance in a thousand that the return of the money spent will be demanded; for, in the nature of the case, the victims are unwilling to risk the publicity that such a demand would bring.

Varlex Compound is advertised by the "prescription fakes" method. Under the heading "Home Recipe for the Liquor Habit" the claim is made that a "well-known physician located in the Middle West, who has treated thousands of cases of the liquor habit" gives the following "simple inexpensive prescription that can be given secretly in coffee, milk, water or in the food." The alleged prescription is:

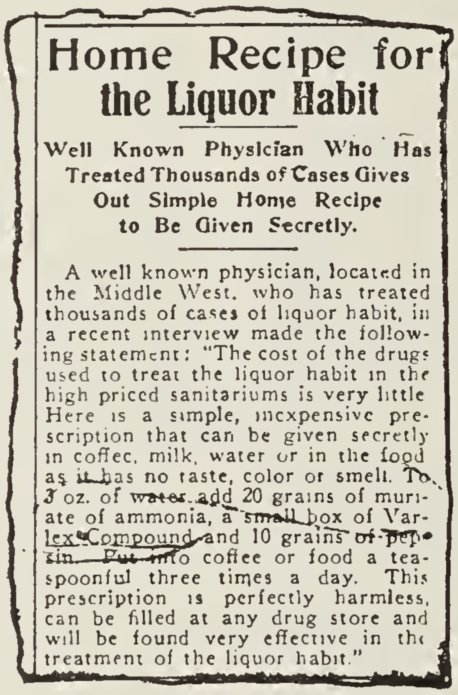
Water	3 oz.
Muriate of Ammonia	20 grains
Varlex Compound	1 pkg.
Pepsin	10 grains

A package of "Varlex Compound" was submitted to our Chemical Laboratory. Here is what the chemist reported:

CHEMIST'S REPORT

One package of "Varlex Compound for Making A Treatment For The Liquor And Tobacco Habit," prepared by Varlex Mfg. Co., Kansas City, Mo., was submitted to the Chemical Laboratory for examination. The package contained about 48 grains of a brownish-white powder, having a slightly sweet taste. Qualitative tests demonstrated the presence of milk sugar (lactose). Alkaloids and metallic substances were not found. Quantitative determinations indicated that the powder consisted of approximately 97 per cent. lactose and 3 per cent. moisture. In other words, it appears to be essentially milk-sugar.

The swindler who sells fake mining stock to widows and the hold-up man who makes women and girls his victims, rank higher, morally and ethically, than those who would sell worthless nostrums to unfortunate women who grasp, despairingly, at the promise that with the aid of these mixtures they can free their loved ones from the slavery of drink. Kansas City, Mo., is the home of more than one vicious and cruel medical fraud but none is more conscienceless than that exploited by the Varlex Manufacturing Company.



Home Recipe for the Liquor Habit

Well Known Physician Who Has Treated Thousands of Cases Gives Out Simple Home Recipe to Be Given Secretly.

A well known physician, located in the Middle West, who has treated thousands of cases of liquor habit, in a recent interview made the following statement: "The cost of the drugs used to treat the liquor habit in the high priced sanitariums is very little Here is a simple, inexpensive prescription that can be given secretly in coffee, milk, water or in the food as ~~it~~ has no taste, color or smell. To 3 oz. of ~~water~~ add 20 grains of muriate of ammonia, a ~~small~~ box of Varlex Compound and 10 grains ~~of pepsin. Put in~~to coffee or food a teaspoonful three times a day. This prescription is perfectly harmless, can be filled at any drug store and will be found very effective in the treatment of the liquor habit."

A typical advertisement of the Varlex fraud.

Correspondence

Experiences with the Sodium Citrate Method of Indirect Transfusion of Blood (Lewisohn)

To the Editor:—In a recent article on this subject by Dr. Irving Simons (The Journal, Oct. 16, 1915, p. 1339) occur some curious errors, which ought to be corrected lest they lead the profession not to estimate properly a method of transfusion which may turn out to be of great value. To those who have experience with transfusions it is evident that the accidents which occurred in two of Simons' series of three cases were not due to the use of citrate, as that author thinks, but to hemolysis or agglutination (or most probably both)—that is, to incompatibility between the blood of donor and that of patient. I know for a certainty, as a result of an experience now extending over more than 350 transfusions, that hemoglobinuria such as occurred in Simons' first case never occurs unless one of the bloods mixed is actively hemolytic toward the other. This is true irrespective of whether the transfusion is by anastomosis, syringe or citrate method. (Since publication of the recent article by Dr. Libman and myself [*Am. Jour. Med. Sc.*, 1915, cl, 36], I have performed the preliminary blood tests for twenty-five citrate transfusions in which no such accidents occurred.)

Simons states, indeed, that such a test was done before his first transfusion; but since he does not describe the technic of either test or transfusion (indeed, they were both performed by another man before Simons saw the case), and since a correct technic and interpretation of these tests require considerable laboratory experience, not too much reliance should be placed on this.

In fact, it is hard to see why Simons cites this case at all as against the citrate method since he says in his conclusion: "There is no reason to believe that hemoglobinuria may not occur with either type of transfusion [that is, direct or citrate] with equal frequency. . . . Infarction occasionally occurs (lung, kidney) and . . . hemoglobinuria is quite common and can occur even when the tests in vitro are negative." To this last statement I can only reply that hemoglobinuria and infarction are exceedingly rare and never occur when the tests in vitro (properly performed) are negative and the technic of the transfusion is correct.

In the description of Simons' other cases there is no mention of any tests at all. It is important to notice that in the second of Simons' unhappy accidents the transfusion was the second one which the patient had undergone and was done eleven days after the first, and from the same donor—the patient's son. Now it has been shown experimentally (Ottenberg, Kaliski and Friedman) that it is possible to develop isohemolysins by direct transfusion from an animal of the same species. And the time requisite for the development of these antibodies is probably the same as for the development of other antibodies, namely, from four to ten days. Corresponding with this is the striking fact that if one goes through the literature of fatal accidents after transfusion, one finds a disproportionately large number of these patients to have had second transfusions five days or more after the first and with no preliminary blood tests. I have seen one such case myself (described in the recent article with Dr. Libman). Simons' article adds another to the literature. In fact, it may be set down as an axiom that to subject a patient to a second transfusion without painstaking preliminary blood tests is to court danger. It need hardly be explained again, after all that has been written on the subject, that the mere fact that the donor is a near blood relative does not obviate the necessity for the preliminary blood test.

Instructive, therefore, as Simons' cases turn out to be, they add nothing to the question of the value of the citrate method in transfusion.

Reuben Ottenberg, M.D., New York.

To the Editor:—The results obtained by Dr. Simons with the citrate method of blood transfusion differ not only from my own but from the general experience of others. The citrate method, one of the latest of the innumerable transfusion methods, would not have acquired such great popularity in so short a time if the method had not given good results. My material comprises nearly fifty cases, and I have never had any untoward results with this method. Lately I have used the citrate method quite extensively in children (the youngest child being 20 days old), and though I have in some cases injected large quantities (for instance 350 c.c. to a child 3 years of age), I have never observed any toxic symptoms.

The records of Simons, as published in The Journal (Oct. 16, 1915, p. 1339), seem incomplete. It is obvious that his tests for hemolysis and agglutination are partly responsible for his results. We all know that the success of a blood transfusion depends largely on a careful execution of these tests. He does not tell us how he used the method, whether he used the proper proportion of citrate and blood, whether he had a free flow of blood from the donor's vein into the glass jar, etc.

I fail to understand why Simons was not satisfied with the result of the citrate method in his second case. He gave 500 c.c. of citrated blood, and the hemoglobin rose from 38 to 58 per cent., and had reached 75 per cent. on the following day. A reaction occurred, there being a temperature of 102, but a rise of temperature is apt to occur in a certain percentage of cases no matter what method is used (vessel anastomosis, syringe method, etc.).

The records of the first case are so incomplete that it is hardly possible to form any definite conclusion as to its clinical aspect. The patient was suffering from intestinal hemorrhages. An exploratory laparotomy was performed, but the cause of the hemorrhages was not ascertained. The patient had received a citrate transfusion and a Crile transfusion before the operation. He died a few hours after the operation; no postmortem examination was made.

Simons advocates the Crile method for blood transfusion. However, it is not clear how he would apply the vessel anastomosis in a case of acute hemorrhage. He states that he spent four hours on a Crile transfusion, and the patient would have been dead long before he succeeded in uniting the vessels. It is just in the cases of profuse hemorrhages, where the patient is pulseless from acute loss of blood and where minutes count, that the citrate method is the method of choice, as it can be performed in ten minutes.

We are indebted to Crile for having revived blood transfusion. His method, however, is practically never used now, because it has been proved that the same results can be obtained in a much more simple way by the syringe or citrate method. Any method which does not accurately indicate the amount of blood transfused cannot be considered a safe method.

I think we can definitely say that the vessel anastomosis will become more and more of historical interest.

In an editorial article on blood transfusion which appeared in the same issue (October 16, p. 1368), you state that "it would seem probable that eventually through the discovery of harmless anticoagulating methods, transfusion will become a simple procedure." The citrate method represents this desideratum. Richard Lewisohn, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TOXIC EFFECTS OF BARIUM

To the Editor:—1. I have been approached by a friend for information about the toxic effects of barium compounds on the human system. 2. He is to have charge of a large barium plant and wishes to be posted on any possible trouble that the workmen may experience in handling this material. I have been unable to find any reliable data on this subject. H. R. Mutchler, M.D., Greystone Park, N. J.

Answer.—1. Barium acts as a powerful direct stimulant to all forms of muscle. It produces a slowing of the heart, a strong vasoconstrictor action with a consequent rise of blood pressure, and, when taken in large doses, paralysis of the cardiac muscle. It stimulates and later paralyzes the central nervous system. It is a peristaltic stimulant and a local irritant. The symptoms following the ingestion of large doses include vomiting, diarrhea, abdominal pain and dilatation of the pupils. Death is preceded by tonic and clonic convulsions. Fatal doses may be as low as 3 to 15 grains.

2. According to Oliver, the compounds of barium have never been studied in their relation to health. It is probably sufficient to say that special precautions should be taken to prevent the workmen being exposed to fumes arising from vats and tanks, to insist on the greatest cleanliness, to allow sufficient respirators during certain operations, and to take every precaution for insuring the removal of dust and thorough and efficient ventilation. Most of the instances of barium poisoning which are recorded have arisen through error, a large dose of barium having been taken when some other preparation similar in appearance was desired. Rambousek calls attention to cases of poisoning from sulphuretted hydrogen gas in plants devoted to the manufacture of sulphuric acid, in which process barium plays a large part. There are no instances, however, of barium poisoning in this industry.

THE COMPOSITION OF ALKALOL

To the Editor:—Please publish the formula of the nose and throat wash "Alkalol." W. B. C., M.D., Philadelphia.

To the Editor:—I should like to know the approximate composition of a remedy known as Alkalol, which is sold by an Eastern concern without the formula being given on the wrapper or the advertisement that goes with the stuff. It is advertised as useful in inflammations of the mucosa of the nose and throat. A. J. Provost, M.D., Oshkosh, Wis.

Answer.—The Chemical Laboratory of the Association, having been requested to analyze a bottle of Alkalol purchased on the open market, reports as follows:

"Alkalol was found to be a clear, light brown liquid having an aromatic odor, a saline taste and an alkaline reaction toward litmus. It yielded about 2 per cent. of solids, mainly alkali, chlorid, chlorate and bicarbonate; of this 2 per cent., about one half was bicarbonate. During evaporation of the liquid, odors resembling eucalyptus, spearmint, cinnamon and vanilla were noted, the last, in view of the manufacturers' statement as to balsamic constituents, probably indicating the presence of some substance like Siam benzoin. Small quantities of salicylic and benzoic acids were found present. Alkalol thus appears to be essentially an aromatized, weakly alkaline, saline solution, containing a small amount of chlorate, probably potassium chlorate."

From this report physicians may judge for themselves how well justified are the claims that:

> "Alkalol is more, infinitely more than a simple alkaline solution."
>
> "Alkalol is an ideal agent for gargling, spraying or irrigating the postnasal, postpharyngeal spaces and tonsils."
>
> "For enteric diseases particularly of children, Alkalol is invaluable."
>
> "Appreciation of its peculiar physiological action will explain why and how it is of surpassing effectiveness in all conditions where there is ulceration or perforations of the drum membrane."

TINNITUS AURIUM, CHRONIC RHINITIS AND ALTITUDE

To the Editor:—1. Please inform me if there is any distinction between head noises and tinnitus aurium.

2. What effect would a high altitude have on tinnitus aurium, or head noises, or on chronic rhinitis? H. J. F., M.D., Wisconsin.

Answer.—1. Tinnitus aurium and head noises are different terms to define the same condition. Occasionally a patient will state that he does not hear the tinnitus in the ear but in the head.

2. A high altitude usually has no permanent effect on tinnitus aurium. Sometimes the conditions increase and sometimes diminish on moving to high altitudes. Chronic rhinitis of an intumescent character is likely to be benefited by a high altitude, unless dust in the atmosphere causes irritation. In such cases the affection would be aggravated. Chronic rhinitis with scabbing of the nares is usually aggravated by a high altitude.

DEATH PROBABLY FROM PULMONARY EMBOLISM

To the Editor:—At her second confinement, March 1, Mrs. B., aged 30, always healthy, was delivered of twins — girls. It was a forceps delivery, but there was no apparent trouble. She made a splendid recovery, and had no elevation of temperature after the fourth day. On the night of April 15, about 11:30, after retiring and having probably been asleep for some time, she called her husband and exclaimed that she was dying. He found her gasping for breath, blue in the face, trying to vomit a quantity of blood, froth and mucus which was pouring from her mouth. She died almost immediately. I have asked a number of physicians concerning this case, but none of them seem to know anything about it. H. D. S., Oklahoma.

Answer.—It is somewhat difficult, even when a case is actually before one, without a postmortem examination, to suggest the cause of death in such instances. Sudden death with similar symptoms may be due to a number of different causes. In the instance here described it seems most likely that death was due to pulmonary embolism.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Foram Bldg., Sacramento.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Massachusetts: Boston, November 9-11. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Medical Council of Canada

The third annual announcement of the Medical Council of Canada has been received. This council is at present made up of thirty-two members, three being appointed by the government, two by each province of Canada, one from each medical school of Canada, and three representing the homeopathic school of medicine. From this membership six standing committees have been appointed, these being, besides the executive committee, committees on education, finance, discipline, rules and regulations, and educational standards.

The members of the board do not act as examiners. Prior to each examination, certain examiners are appointed from the faculties of the various medical schools. For example, for the examination held at Montreal and Halifax, Oct. 12, 1915, thirty examiners were appointed, four each in surgery, medicine (including therapeutics), anatomy, physiology, obstetrics and gynecology, hygiene and state medicine, pathology and bacteriology, and two homeopaths. Thus the board has been empowered to secure as examiners those who are best qualified because of their teaching positions to conduct examinations in the various subjects.

At the examination held in October, 1914, eighty-six candidates presented themselves for examination and of these candidates, forty-nine (57 per cent.) passed, twenty-two (25.6 per cent.) were rejected, and fifteen (17.4 per cent.) required to take subsequent examinations in one or two subjects.

The total expenses of the board for the year ending March 31, 1915, were $13,576.45; whereas the income, which included $15,000 from a government grant, amounted to $36,871.62.

The fee for the examination, including subsequent registration, is $100. In case of failure requiring reexamination, the candidate is required to pay one half of the original fee, that is, $50.

Candidates for the examination of the council are required to present either (*a*) a license of a provincial medical council or board of examiners, or (*b*) a certificate from the registrar of a provincial medical council, or board, that the requirements of that council or board in regard to preliminary education, matriculation, medical curriculum and graduation have been complied with.

Candidates who hold diplomas outside of Canada are required to present certificates from the registrar of a provincial medical council, the same as is required of graduates of the Canadian universities.

Applications for examinations, together with the necessary certificates and fee, must be deposited with the registrar at least four weeks before the date set for the commencement of the examinations.

The qualification granted by the Medical Council of Canada is known as the "License of the Medical Council of Canada" (L. M. C. C.).

The subjects of the examination are physiology, anatomy, hygiene and public health, pathology and bacteriology, midwifery and gynecology, surgery and medicine (including therapeutics), six questions being assigned in each subject. The examination consists of a written examination in each subject in the English or French language, and also (*a*) a clinical and oral examination in medicine and surgery, and (*b*) an oral examination in physiology, anatomy, hygiene and public health, pathology and bacteriology, and midwifery and gynecology. Sixty per cent. is required to pass. A candidate who fails in not more than two subjects may present himself at a subsequent examination for the subjects in which he failed. Failure in more than two subjects necessitates reexamination in all subjects. Grades are not subject to revision. The next examination will be held simultaneously at Toronto and Winnipeg, June 13, 1916.

New York January Report

Mr. H. H. Horner, chief of the examination division of the New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 26-28, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 156, of whom 118 passed, including 2 osteopaths, and 38 failed, including 1 osteopath. Fifteen candidates were licensed through reciprocity. Thirteen candidates were granted reregistration licenses. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
Yale University	(1910)	1
Rush Medical College	(1914)	1
Johns Hopkins University	(1904) (1911, 2) (1914)	4
University of Maryland	(1912) (1914)	2
Harvard University	(1911) (1913)	2
Tufts College Medical School	(1910) (1912)	2
University of Michigan Medical School	(1914)	1
University of Michigan, Homeo. Med. School	(1912) (1914)	2
Albany Medical College	(1910) (1911) (1913, 6) (1914, 5)	13
Columbia University, College of Physicians and Surgeons	(1912) (1913, 6) (1914, 3)	10
Cornell University	(1913, 2) (1914)	3
Fordham University	(1913, 2) (1914, 3)	5
Long Island College Hosp.	(1911) (1912) (1913, 5) (1914, 8)	15
New York Homeo. Med. Coll. and Flower Hosp.	(1914)	5
New York Med. Coll. and Hosp. for Women	(1914)	2
Syracuse University	(1913, 3) (1914, 3)	6
University and Bellevue Hospital Medical College	(1913, 2) (1914, 11) (1915)	14
University of Buffalo	(1913, 2) (1914)	3
Cleveland Homeopathic Medical College	(1903)	1
Cleveland Pulte Medical College	(1913)	1
Jefferson Medical College	(1912) (1914, 2)	3
Medico-Chirurgical College of Philadelphia	(1914)	1
University of Pennsylvania	(1910, 2) (1911, 1) (1912, 2)	5
Woman's Medical College of Pennsylvania	(1914)	1
Vanderbilt University	(1903) (1906) (1912)	3
University of Virginia	(1910) (1911)	2
McGill University	(1902) (1914)	2
University of Toronto	(1895) (1909) (1911)	3
University of Jurjey	(1907)	1
University of Edinburgh	(1902) (1910)	2

FAILED

Chicago College of Medicine and Surgery	(1912)	1
College of Physicians and Surgeons, Baltimore	(1913)	1
University of Maryland	(1911) (1914)	2
Harvard University	(1893) (1905) (1914)	3
Albany Medical College	(1914)	3
Columbia University, College of Phys. and Surgs.	(1913)	2
Fordham University	(1913)	3
Long Island College Hospital	(1910) (1911) (1912) (1914)	4
New York Homeo. Med. Coll. and Flower Hosp.	(1913, 2) (1914, 2)	4
Syracuse University	(1913)	1

University and Bellevue Hospital Medical College	(1914)	1
Eclectic Medical College, Cincinnati	(1914)	1
Ohio-Miami Medical College	(1911)	1
Jefferson Medical College	(1912)	1
Medico-Chirurgical College of Philadelphia	(1914)	1
University of Pennsylvania	(1907) (1912)	2
University of Vermont	(1903)	1
Queens University	(1911) (1913)	2
University of Naples	(1905) (1907)	2
University of Palermo	(1905)	1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Denver and Gross College of Medicine	(1908)	Utah
Rush Medical College	(1900)	Ohio
Indiana University	(1910) (1911)	Indiana
Johns Hopkins University	(1911)	Ohio
Baltimore Medical College	(1907)	New Jersey
Harvard University	(1912)	New Jersey
Univ. of Michigan Med. School..(1880) New Jersey;	(1911)	Michigan
University of Michigan, Homeo. Med. School	(1914)	Michigan
New York Homeo. Med. Coll. and Flower Hosp.	(1913)	New Jersey
University and Bellevue Hospital Medical College	(1913)	New Jersey
Jefferson Medical College	(1906)	New Jersey
University of Pennsylvania	(1911)	New Jersey
University College of Medicine, Richmond	(1911)	Virginia

Book Notices

Practical Materia Medica and Prescription Writing with Illustrations. By Oscar W. Bethea, M.D., Ph.G., F.C.S., Assistant Professor of Materia Medica, Tulane University. Cloth. Price, $4 net. Pp. 549. Philadelphia: F. A. Davis Company, 1915.

The subjects are handled chiefly from the standpoint of the practicing physician. The uses of remedies are mentioned briefly, most of the discussions being devoted to the forms in which medicines may be administered, that is, their pharmacy. According to the preface, the object of the book is to give instruction to the student concerning what preparations of a remedy, for example, iron, "will best meet the demands of particular conditions, the precautions to be observed in employing them, how to correctly prescribe them, alone or in combination, and, if in combination, with what forms or preparations of the other agents; how to order for the safest, most convenient and agreeable administration; how to use the correct names, conveniently estimate the proper quantities, the best hours for administration, and the many other matters an ignorance of which may render the physician unable to properly put to practical use his knowledge of the other departments of medical science." Medical students, physicians and pharmacists should find the book useful.

Pathological Lying, Accusation and Swindling. A Study in Forensic Psychology. By William Healy, A.B., M.D., Director, Psychopathic Institute, Juvenile Court, Chicago, and Mary Tenney Healy, B. L. Criminal Science Monograph No. 1. Cloth. Price, $2.50 net. Pp. 286. Boston: Little, Brown & Co., 1915.

The authors define pathologic lying as falsification entirely disproportionate to any discernable end in view. A liar of this type is not falsifying because he is insane, feebleminded or epileptic. His lying, too, represents a trait rather than an episode. It is an easy and a short step from this form of lying to swindling, and closely akin to these traits is that of accusation of self or of others without reasonable motive. Dr. Healy has had exceptional opportunity to become acquainted with this form of abnormal mentality. He is able to give detailed histories of nineteen cases. These cases have been carefully studied, and their peculiar features clearly set forth. Particular attention is given to the consideration of the influence of heredity, environment in early life, sex, physical condition of the patient, habits, psychic contagion, etc. A few borderline cases in which the lying is due to insanity, or is at least one manifestation of it, are considered. The prognosis in the patients under Dr. Healy's observation has been better than is generally believed to be possible. A brief outline of the treatment is given, with emphasis laid on the importance of removing harmful causes and of diverting the activities into channels in which lying will be readily detected and there will be opportunity to let off mental steam in some way easily consistent with truth-telling.

Books and articles on this subject in English are rare. This is shown by the review of the literature in the second chapter. A work on this topic in the English language, therefore, was really desirable. The book is well written and scholarly. It is broad minded, showing a knowledge not only of psychology and insanity but of general medicine as well. It shows, further, that the exceptional opportunities afforded for research in the psychopathic institute connected with the juvenile court of Chicago have been well utilized. Dr. Healy's reputation as the author of the excellent work, "The Individual Delinquent," will be further enhanced by this volume, though in it he shares the honors with his wife. The book is fittingly dedicated to Judge Merritt W. Pinckney of the juvenile court, Chicago, whose character, ability and self-sacrificing public spirit render him deserving of this tribute.

The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital. By Lewis Webb Hill, M.D., and Rena S. Eckman, Dietitian. Introduction by Richard C. Cabot, M.D. Cloth. Price, $1. Pp. 72. Boston: W. M. Leonard, 1915.

Allen's method of treatment of diabetes attained popularity with a rapidity which seems to indicate its worth as an accepted method of procedure in such cases. This little monograph contains the details of the treatment. The actual technic is not difficult to master. A series of graduated diets are offered which have proved successful in the use of the treatment at the Massachusetts General Hospital. The booklet will be found of value to the physician who wishes to undertake the treatment of a case of diabetes by this method. It is to be regretted, however, that the price of the book is out of all proportion to its evident cost of production.

The Principles and Practice of Obstetrics. By Joseph B. DeLee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School. Second Edition. Cloth. Price, $8 net. Pp. 1087, with 938 illustrations. Philadelphia: W. B. Saunders Company, 1915.

In this edition of this excellent work, the author has thoroughly revised the text and elaborated some of the sections. Many new illustrations and plates have been added. An apology is made for those illustrations in which rubber gloves are not shown on operator's hands, because of the difficulty of neat reproduction of such pictures. The book is marked by an excellent conservatism; for instance, in his discussion of "twilight sleep" and of the value of the Abderhalden test, the author realizes that neither the radical enthusiast nor the bitter opponents of these procedures have reached the correct points of view.

Scientific and Applied Pharmacognosy. Intended for the Use of Students in Pharmacy, as a Handbook for Pharmacists and as a Reference Book for Food and Drug Analysts and Pharmacologists. By Henry Kraemer, Ph.B., Ph.M., Ph.D., Professor of Botany and Pharmacognosy, Philadelphia College of Pharmacy. Cloth. Price, $5. Pp. 867, with illustrations. Philadelphia: Published by the Author, 1915.

This contains a discussion of vegetable drugs arranged according to botanic families. It also includes a consideration of a few of the more important drugs obtained from the animal kingdom, and a key for the identification of powdered drugs and foods. A large number of interesting and instructive illustrations add to the value of the work, which is well adapted for the purpose for which it is intended. The author's "Applied and Economic Botany" is intended to be used as preparatory and supplementary to the present volume.

A Text-Book of Pathology. By Alfred Stengel, M.D., Sc.D., Professor of Medicine, University of Pennsylvania, and Herbert Fox, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. Sixth Edition. Cloth. Price, $6 net. Pp. 1045, with 468 illustrations. Philadelphia: W. B. Saunders Company, 1915.

This edition represents an extensive revision of this well-known textbook on pathology and the complete rewriting of many sections. A new section on transmissible diseases has been added, as well as on the pathology of the eye, ear and skin. The chapter on technic, of previous editions, has been omitted. The chapter on diseases of the nervous system has been much shortened. Numerous new illustrations have been added.

Medicolegal

Statute Violated by Granting Degree of Doctor of Chiropractic

(Commonwealth vs. New England College of Chiropractic, Inc. (Mass.), 108 N. E. R. 895)

The Supreme Judicial Court of Massachusetts overrules the exceptions of the defendant corporation, which was convicted of granting the degree of Doctor of Chiropractic without authority and contrary to the statute. The statute referred to provides, among other things, that, whoever, without the authority of a special act of the legislature granting the power to give degrees, offers or grants degrees as a school, college or as a private individual, shall be punished. The court says that it is not to be assumed that the statute was intended to relate only to such degrees as were in use at the time it was enacted. It is comprehensive in its terms and may include whatever properly may be described as a degree at any time. "Doctor" is used commonly to indicate skill in the general subject of medicine. Doubtless one purpose of the legislature in enacting the statute was to protect the public from the imposition and suffering which might follow the indiscriminate use of a title conveying the implication of skill to treat disease by those who have pursued no adequate course of study to qualify them. "Chiropractic" is a new word. But it is held in Commonwealth vs. Zimmerman, 108 N. E. R. 893, that one practicing it may be found to be practicing medicine. "Degree," as used in this statute, is any academic rank recognized by colleges and universities having a reputable character as institutions of learning, or any form of expression composed in whole or in part of words recognized as indicative of academic rank, alone or in combination with other words, so that there is conveyed to the ordinary mind the idea of some collegiate, university or scholastic distinction. While this definition may not include all instances, it is sufficiently accurate for the present case. When a title like "Doctor," commonly associated with unusual skill acquired by academic or professional study in schools or colleges, is conferred either separately or associated with other words, the statute is violated. The conferring of a title made up of the word "Doctor" and a word relating to the healing art may be found to be the granting of a degree within the meaning of the statute. The word "Doctor" in connection with an unusual and high-sounding word would be quite as likely to impose on the ignorant and credulous as the false use of the conventional Doctor of Medicine.

Chiropractic and the Practice of Medicine

(Commonwealth vs. Zimmerman (Mass.), 108 N. E. R. 893)

The Supreme Judicial Court of Massachusetts overrules exceptions to a conviction of the defendant of practicing medicine without having been lawfully authorized. The evidence tended to show that he had kept an office, indicated by a sign on which his name was followed by the word "chiropractor," and that he practiced for pay. The court says that the treatment pursued by the defendant was to have those who resorted to him to go into an inner room and remove their outer garments until they were stripped to the waist. The patient then took a sitting position. The defendant examined down the spine, beginning at the top, by feeling with his fingers to see whether each vertebra was in its proper position. The method to discover whether a vertebra was out of position was by making a gliding move of the three middle fingers of the right hand, which constituted the process of "palpation" whereby one vertebra was compared with another. As a result of this "analysis" the defendant was able to tell whether vertebrae were out of alignment or out of their normal positions. In making "adjustments," the patient was placed on a low table with face downward and the vertebra which was out of condition was given a quick thrust or push by the hands of the defendant. Although the defendant did not prescribe medicine, and testified that he paid no attention to the patient's description of symptoms or disease, yet it was obvious that his purpose was to treat the human body in order to make natural that which he found abnormal in the narrow field of his examination. The removal of pressure on nerves is a means of relieving the ills flowing from that source.

The plaintiff's manipulation was of a most important part of the body and related to a nerve center. It might have been found that it could have no other aim than a prevention of disease or relief from existing disarrangement of body functions. That which the defendant did and its manifest purpose might have been found to be practicing medicine within the meaning of the statute. Medicine relates to the prevention, cure and alleviation of disease, the repair of injury, or treatment of abnormal or unusual states of the body and their restoration to a healthful condition. It includes a broad field. It is not confined to the administering of medicinal substances or the use of surgical or other instruments. It comprehends a knowledge not only of the functions of the various organs of the human body, but also the diseases to which these organs are subject, and the laws of health and the modes of living which tend to avert or overcome disease as well as the specific methods of treatment that are most effective in promoting cures. In order to practice medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it, he still may be found to practice medicine. It is a matter of common knowledge that there has been great specialization in that profession in recent years.

It was of no consequence that the defendant abstained from the use of the words "diagnosis," "treatment," or "disease" in description of what he did, and employed the terms "analysis," "palpation," and "adjustment." The acts which he did and their manifest design were to be examined rather than the words used, in order to ascertain the true nature of the defendant's conduct. The circumstance that the statute exempts certain classes, such as osteopaths and pharmacists, and those practicing Christian Science, mind cure, massage and others, does not render the statute unreasonable as to the defendant nor deny to him the equal protection of the laws. One of the exemptions is of the "cosmopathic method of healing." "Cosmopathic" is defined in the Standard Dictionary as "open to the access of supernormal knowledge or emotion supposedly from a preternatural world." Without undertaking to decide what a "cosmopathic method of healing" may be, plainly it does not include the defendant's operations.

Fraud Order Upheld After the Employment of a Physician

(Hall vs. Wilcox (U. S.), 225 Fed. R. 333)

The United States Circuit Court for the Southern District of New York in denying a motion, in this old but recently reported case, for a preliminary injunction to restrain the postmaster at New York City from withholding mail from the complainant, who was selling "electric belts" which were advertised as curing or aiding many ailments and increasing and preserving the sexual powers of men, holds that the presumption was that the postmaster general was right in his conclusion on which he issued the fraud order under which the mail was withheld. Certainly the complainant, the court says, did not meet the burden of proof imposed on him by the presumption. He admitted one recent instance of business to be indefensible, and scarcely denied that such instances may have been the rule. If they were even rare, he admitted that some fraudulent quackery existed until recently. To assert that the course of business indicated by the past had been mended by the sudden employment of a licensed physician, concerning whose professional qualifications (including pecuniary independence of the complainant and the electric belt business) nothing was shown, was asking too much of credulity. The complainant's argument was based on the proposition that his misdoing must be proved to be in the present tense, to justify a fraud order. The court knows of no more persuasive evidence of present conduct than past performance.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Dec. 17-18.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

(*Continued from page 1581*)

Roentgen Deep Therapy

Dr. Arthur F. Holding, New York: The physical methods used with the Roentgen ray, such as radium coagulation and the ultraviolet light, gave 100 per cent. of cures in the treatment of nonmalignant cases, that is, where the disease was superficial. Seventy per cent. of deep therapy cases were improved in conjunction with surgery, and 7 per cent. of the inoperable cases were improved in about 20 per cent. of the hopeless, inoperable cases.

Radium Plus Roentgen Ray in the Treatment of Superficial Lesions

Dr. Russell H. Boggs, Pittsburgh: Radium applied locally supplemented by the Roentgen rays to the adjacent tissues is the ideal form of radiation, because all the malignant cells can be rayed stronger with less injury to the healthy tissues. Surgery and radium are local methods of treatment. Metastases in distant parts of the body are beyond the reach of these methods. Radium destroys the malignant cells without injuring the normal ones, but the radium rays do not reach beyond a certain depth; hence it is evident that radium should be used only in cavities, cross-firing as much as possible before inserting the tube into the growth, and raying the adjacent lymph supply as thoroughly as possible.

DISCUSSION OF THE PAPERS OF DRS. HOLDING AND BOGGS

Dr. Henry K. Pancoast, Philadelphia: I have been interested in radium for over a year and a half, and have treated more patients with radium than with other methods. Nevertheless, I have as much confidence in Roentgen therapy as I ever had. Radium and Roentgen rays can be combined to good advantage. There are certain conditions in which radium is superior to the Roentgen ray, such as nevi. It is useless to attempt to treat with radium unless a sufficient quantity is used. This is especially true of deep lesions, and even in the case of superficial lesions it is dangerous to treat large areas with small quantities of radium. It has been said that radium reactions are not as severe as Roentgen-ray reactions. That is not true; but radium reactions disappear more rapidly and more uniformly than Roentgen-ray reactions. It has been said that radium radiation is not manifested in a desirable way beyond an average of 2.5 cm. from the source of radiation. I believe that there is such a condition as stimulation of the growths. We may give too little radium or too little Roentgen radiation, and stimulate a malignant growth to greater activity, thus also increasing the danger of the occurrence of metastases. In inoperable carcinoma of the uterus, when radium has been used, patients with few exceptions have been markedly improved. The local lesion in the cervix has in many instances disappeared. The patient has moments of comparative comfort, without discharge or bleeding, although after a year I have received reports of recurrences and metastases. Why? For the simple reason that the man who used the radium did not have in mind the fact that effects were not being obtained beyond 2 or 3 cm. distant from the Roentgen tube. That can be overcome by a combination of the Roentgen and radium therapy.

Dr. H. W. Dachtler, Toledo, Ohio: I do not know of any case of epithelioma that has been cured by radium. I know of two patients who were treated with radium because the Roentgen ray was not satisfactory. One of these patients is dead and the other would like to be. As to the difference in reaction between radium and Roentgen rays, that is easily explained. Radium is applied to the surface, and the intensity of the Roentgen ray is 1,000 times greater; hence radium reactions clear up more rapidly.

Dr. George E. Pfahler, Philadelphia: The keynote of success in this line of work is a combination of radium and the Roentgen ray, the former to be applied in cavities and the latter on the surface.

Oxygen in Cystoscopy and Pyelography

Dr. Amedee Granger, New Orleans: For six years I have used oxygen. It is easily obtained, does not harm the tissues, and is a mild antiseptic and analgesic; it is well borne by the bladder, and permits of much greater distention in the case of painful and irritable bladder than is possible with either air or boric acid solution. It is easily retained and easily expressed. Calculi show with remarkable clearness. If the prostate is enlarged, the shadow is easily made out. The entire outline of the bladder is distinctly visualized, and if the walls are unyielding because of adhesions or infiltrations, these are easily seen. Growths, diverticuli and other deformities are easily recognized.

Pyelography

Dr. W. F. Manges, Philadelphia: Pyeloscopy is preliminary to pyelography. A big catheter and an opaque fluid should be used. No attempt is made to settle the actual condition of the injected pelvis, but only to determine the proper time to make the pyelogram. The procedure causes the patient no additional discomfort, and is a safeguard against overdistention. The operator need not have any fear of personal danger, because fluoroscopy today can be made perfectly safe.

DISCUSSION ON THE PAPERS OF DRS. GRANGER AND MANGES

Dr. John H. Selby, Washington, D. C.: Oxygen is a very valuable aid in the study of the bladder. Using it in the kidney requires much distention of the pelvis and calices, as well as of the ureter, in order to get the proper differentiation. That is dangerous. Therefore, I prefer the fluid which is allowed to flow in by the gravity method. Fluids, especially thorium nitrate, are not as irritating as oxygen, and do not overdistend. If there is danger of overdistention, the patient should be put immediately into a hot sitz bath, the back scalded, if necessary, and then he should be given 1/75 grain of atropin. I have had to do that several times. This work is very dangerous unless it is done carefully. It is a feasible and workable method in experienced hands. I am glad that Dr. Manges has taken up fluoroscopy in kidney cases. Our English confrères are well satisfied with this method, and some of them believe they can locate a stone in 80 per cent. of the cases without making any roentgenograms at all. The question of ascending infection, however, must be considered in these cases. In a few cases in which a 10 to 12 per cent. thorium nitrate solution was used after the bladder was filled and the patient was then placed in the Trendelenburg position, we could see the solution travel up the ureters.

Dr. A. W. Crane, Kalamazoo, Mich.: I have distended the bladder with filtered air for the last ten or twelve years, and have never had any bad results or accidents. It is not necessary to use oxygen. The air is filtered by pushing cotton into a medicine dropper and pumping air through that into the catheter until the patient feels some distention in the bladder. It is not necessary to overdistend the bladder, because if it can be outlined, one can decide whether the stone, if present, is inside or outside of that viscus.

Dr. William H. Stewart, New York: I made some investigations of enlarged prostates by injecting air into the bladder. I was much impressed with the detail of the coccyx which this method gave. One cannot get it in any other way. Overdistention and direct trauma of the calices can be avoided by using Dr. Manges' method. These two points have caused most of our trouble, but this method is not dangerous, if used by the expert.

Treatment of Exophthalmic Goiter by Roentgen Therapy

Drs. J. D. Zulick and George E. Pfahler, Philadelphia: The trial of the treatment of goiter by Roentgen therapy with an interval of waiting of one month is justifiable in all cases, and if operation is decided on, nothing is lost, and many operations can be avoided. The treatment should be directed toward both the thyroid and the thymus. An increase in weight and a decrease in pulse rate are the first signs of improvement, and are practically always found. Treatment must not be prolonged over too long a period, or hypothyroidism may be produced. The goiter and the exophthalmos are the last to show improvement, and in many cases have shown no change at all.

Method of Preventing Unpleasant Symptoms Following Deep Roentgen Therapy

Dr. Sidney Lange, Cincinnati: Unpleasant constitutional symptoms following deep Roentgen therapy may be the result of an acidosis. As the administration of sodium bicarbonate by mouth prevents the occurrence of these symptoms, I now prescribe as a routine 30 grains of sodium bicarbonate every three hours for the first forty-eight hours after each treatment. When the condition of the patient warrants, the sodium is also given for twenty-four hours before treatment, to increase the alkalinity of the blood, and the patient is encouraged to drink freely of alkaline water. We also apply Dodd's alkaline lotion twice daily to the skin areas under treatment as a prophylactic measure against the development of a reaction. We have thus been able to increase the skin tolerance and deliver a greater dose to the underlying tissues than would otherwise be possible.

Cause and Prevention of Constitutional Symptoms Associated with Deep Roentgen Therapy

Dr. George E. Pfahler, Philadelphia: The gases produced by the action of the high tension current on the air are an important factor in the production of these symptoms. We may possibly add the ionization effects of the rays. The highly sensitive and neurotic type of patient is more liable to develop these symptoms than the more sluggish and phlegmatic patient. The rational line of treatment is to eliminate the gases and to provide fresh air. The former may be accomplished by preventing leakage of the current by careful insulation, and the latter by giving the treatment in a large, well-ventilated room, and by the instillation of a fan which will carry the gases away from the patient. To supply fresh air and oxygen directly to the patient, I use a breathing mask placed over the nose and mouth. It is made of celluloid with a rubber cap similar to the mask that is used in connection with a nitrous oxid-ether apparatus. We also divide each series of treatment, giving part of the treatment on two or three successive days.

Roentgen Therapy of Menorrhagia, Dysmenorrhea and Uterine Myomas

Dr. Sidney Lange, Cincinnati: In fifty consecutive cases a satisfactory result was obtained by Roentgen treatment, and artificial menopause, apparently permanent, was established in every case in which it was desired, regardless of the age of the patient. Malignancy has not developed in any case, either during or following treatment, nor has there been a recurrence of menstruation, although in several cases there has been an occasional faint show during the few months just following the treatment. After the lapse of a few months, however, abatement of the ovarian function has been complete and permanent. It is a most satisfactory form of treatment, as it does not harm, causes no discomfort or pain, and is good in its results.

DISCUSSION ON THE PAPERS OF DRS. LANGE, ZULICK AND PFAHLER

Dr. Frederick H. Baetjer, Baltimore: I have been very much interested in deep therapy of the thymus. In all our cases we have made examinations of the chest to see whether there was any compression of the trachea or a substernal thyroid. After operation on the thyroid a certain percentage of the patients did not get well. The question is, Does the thymus play any rôle in these cases? We cannot demonstrate the thymus roentgenographically in every case, because its edges may be as thin as tissue paper, and hence throw little or no shadow. We have often seen the edges of the gland extending out beyond the sternum. We have started to treat all thyroid cases first by raying the thymus, protecting the thyroid as much as we could. In many ways the results have been satisfactory, and in some cases they have been disappointing. We always give this treatment first, however, and if there is no improvement an operation is performed. The difficulty in treating the thyroid with the Roentgen ray is that we cannot tell how much of the gland is being destroyed, and we must remember that a certain amount of gland tissue must be preserved for function. The surgeon is better able to approximate that when the gland is exposed to view.

Dr. Rollo H. Stevens, Detroit: To prevent constitutional symptoms, I use an electric fan, blowing directly on the patient, and I give the treatment in two sittings. I treat the patient from the side, and that position, together with covering the patient's mouth with a towel, seems to help them very much.

Dr. George E. Pfahler, Philadelphia: A prominent physiologist told me that the enlargement of the thyroid stimulates the enlargement of the thymus, and vice versa, and he suggested that the exophthalmic patient may have an enlargement of the thymus as the result of shock, nervous strain, or some condition which favors enlargement of the gland, but that the enlargement of the thymus might be responsible wholly for the thyroid enlargement.

Dr. Sidney Lange, Cincinnati: I treated a woman who had a sarcoma of the upper jaw, exophthalmos and blindness in each eye, with, in addition, occlusion of the nares. Deep therapy gave splendid results, the exophthalmos disappeared, the nares opened up, and the foul odor of the discharge stopped. A patient with lymphosarcoma of the neck made a symptomatic recovery. The patient, a railroad engineer, is still at his work. There has been complete disappearance of the tumor. Another patient with mediastinal sarcoma presented marked circulatory pressure symptoms. He also has made a symptomatic recovery, being entirely free from all pressure symptoms. *(To be continued)*

DELAWARE STATE MEDICAL SOCIETY

Annual Meeting, held in Wilmington, Oct. 11-12, 1915

The President, Dr. Henry W. Briggs, Wilmington, in the Chair

Anthrax

Dr. John Palmer, Jr., Wilmington: I have in the last eight years attended over forty-two cases of anthrax affecting the cutaneous and cellular tissues. The part is thoroughly but gently washed with 1:2,000 mercuric chlorid solution, dried well, then swabbed with 10 per cent. tincture of iodin and some alkali applied. This is repeated daily for several days until the slough has come away. It takes about two or three weeks for an ulcer to heal, which it does with very little scar as compared with the tissues involved. No systemic treatment is necessary other than cleaning out the bowels, though some require strychnin and alcoholic stimulants. If the trachea becomes much involved, nothing will prevent death by suffocation. It has been my experience that if the vesicles are kept unruptured it is better for the patient. The fatal cases I have seen were those in which the vesicles had been ruptured.

DISCUSSION

Dr. Joseph P. Wales, Wilmington: It is important to let the vesicle alone. When the blood vessels and lymphatics are opened, a worse infection in the tissues around the vesicle will ensue.

Dr. Joseph W. Bastian, Wilmington: I had a slight experience with anthrax and realize that the diagnosis will mislead the majority of us if we are not on our guard. The pimple is innocent looking, and as it develops, the surrounding tissue is slightly lighter in color than the healthy tissue.

In Wilmington, where we have a great number of Morocco factories, there is much more anthrax than is found in many other parts of the country, and it is a condition which is fatal so often that it is exceedingly important in two particulars: if it is not meddled with too much, the patient is liable to recover, and, if it is meddled with, the infection is going to spread, and may possibly reach other persons.

Uterine Fibroids

Dr. Henry J. Stubbs, Wilmington: These growths are the most common of all uterine tumors, and usually develop during menstrual life. They are prone to secondary degenerations and to septic infection. The latter condition may be brought about by the improper use of the uterine sound, by an injury or by extension from neighboring structures. These tumors not infrequently undergo malignant change, and for this reason alone should be removed early. The usual symptoms are hemorrhage, pressure and traction, constipation, rectal and vesical tenesmus, and frequent urination or retention of urine. In thirty-three patients operated on I have had five deaths. One successful case had had an exploratory operation in a large hospital and had been pronounced inoperable.

DISCUSSION

Dr. S. C. Rumford, Wilmington: In making examinations for other conditions we frequently find fibroids. The ones, aside from those that are large and produce pressure, that generally call the patient's attention to the condition and cause her to consult us are the submucous variety with hemorrhage. We should bear in mind the possibility of malignancy. All fibroids should be removed. Fibroids producing pressure of any sort should be removed because they are likely to be infected by a bruise or blow on the abdomen, or by a fall, which may interfere with the blood supply sufficiently to cause an infection. A very unfortunate condition following operation is embolism. This happened to me in two cases; the patient got up perfectly well and died suddenly.

Dr. George I. McKelway, Dover: Fibroids of any size should be removed. They are liable to degenerative changes. The mere fact that these changes may not be fatal does not influence the fact that they do impair the general health and sometimes the mental health.

Unusual Case of Renal Calculi

Dr. James A. Draper, Wilmington: The patient, a man of 38, stated that ever since he could remember he had been subject to attacks of severe pain in the left loin extending to the bladder, during which the left side of the abdomen would swell and only a small amount of urine would be passed. The attacks would last from a few hours to a day and terminate by the passing of a large quantity of very thick offensive urine. At 11 years of age litholapaxy was done for stone in the bladder. This gave only temporary relief. When seen a year ago he was weak, pale and emaciated with a senile appearance. A roentgenogram revealed stone of the kidney. Operation was done and several calculi found aggregating in weight 1 pound 2½ drams. The patient died of kidney failure three weeks later.

DISCUSSION

Dr. William Wertenbaker, Wilmington: The differential diagnosis between renal calculi, cholelithiasis and appendicitis is frequently not made. At times it is impossible. I recall a case in which I made a diagnosis of either gallstones or kidney stone. During an attack the doctor called in diagnosed the condition as suppurative appendicitis, and a surgeon verified the diagnosis. The patient fell into my hands some years afterward. She continued to have pain on the right side, radiating up to the right shoulder blade, with nausea and vomiting. In the meantime she developed strangulated hernia at the seat of the old incision. She was again rushed off to a surgeon, who afterward told me that he had palpated the gallbladder and could not find stones. After her return from the hospital she developed cystitis, and by that time I could feel a distinct mass in her right loin. On operation there was found a large pus cavity in the central part of which there was a renal stone. It is my opinion that that stone had existed from the very beginning.

Dr. H. A. Cleaver, Wilmington: This collection of stones was one of the greatest known. At the time when I first saw the plate I could hardly believe my eyes. It seemed to me incredible. In kidney calculus, clinical diagnosis is not sufficient. The history and urinalysis are important; but in any case with suspicious symptoms around the kidney, diagnosis is likely to be in doubt until the roentgenologist has made a careful examination.

Some Points in the Treatment of Fractures

Dr. Harold L. Springer, Wilmington: A roentgenogram should be made by an experienced man in all cases, whether one is sure of the diagnosis or not. This will serve as a protection for the physician, as well as give the patient the benefit of any doubt that might exist as to the correct diagnosis. It will also be of value in case of any legal complications. An anesthetic should be used without hesitation in securing perfect reduction. Fractures do not require emergency treatment. The soft parts should be given the first attention and allowed to become normal even if it takes several weeks. This will avoid those disastrous complications which require open operation to correct. Open operations should be used only in those cases in which conservative treatment has been tried and failed, with the exception of fractures of the patella, olecranon and capitellum, which should always be treated by the open method. Too absolute fixation of fractures of the shaft of the long bones should be avoided, and rigid immobility in fractures about joints should be secured. All movement in the latter should be postponed until the end of the fourth or fifth week. Disastrous results can be avoided only by the careful treatment of all fractures, particularly in the use of common sense in their dressing; and too much emphasis cannot be laid on the necessity for frequent and repeated inspections of the part to ascertain if it has been perfectly reduced and is remaining in good position, as well as to see that there is no undue pressure on the soft parts causing interference with the circulation.

DISCUSSION

Dr. H. A. Cleaver, Wilmington: It is astonishing what mistakes can be made with a condition apparently so simple as a fracture. An injury to the hip joint or shoulder joint should absolutely not be diagnosed without a roentgenogram.

Dr. William L. Rodman, Philadelphia: No one at this time is justified in treating a fracture, particularly about the joints, the elbow joint more than any other, without an accurate diagnosis having been made by means of the Roentgen ray. Lawsuits are very apt to follow fractures that are treated, and for moral reasons we want every support possible. In addition to the valuable aid given by the Roentgen ray, one is putting oneself in a position in which one cannot be criticized if one has called to one's aid so valuable an agent as the Roentgen ray. An anesthetic should be used in practically all cases, particularly in the case of a fracture in a child. It is almost impossible to make an accurate diagnosis without an anesthetic, and it is almost impossible to secure an accurate coaptation of the fragments. Here is where not only the practitioner but also the surgeon fails to do his full duty by the patient. In our efforts to secure absolute immobility of the fragments we sometimes are responsible for ununited fracture. Particularly is that the case in the humerus and femur and in bones in which we know that nonunion or delayed union so frequently occurs. In other words, a certain amount of motion at the seat of fracture is not undesirable in some instances.

Military Preparedness in Relation to the Medical Man

Major La Garde, Washington, D. C.: There is a responsibility that the civilian practitioner does not always take to himself when it comes to the condition of war. In the Spanish-American War we were a drop in the bucket as it were in numbers compared to the practitioners of medicine who came into the military establishment. There were six civilian practitioners for every one of the army's four. In the Civil War it was far greater. When it comes to a question of medicomilitary preparedness, your responsibility is just that much greater than ours, and you must take it home and consider it for all sorts of patriotic reasons. In the countries of France and England and Germany and Russia today every doctor is in one way or another connected with the military establishment. We in the regular army attempt to hold the framework of what you have got to work with in time of war. We keep it going as well as we can. When war comes we have got to have assistance, and we must have assistance that has been prepared and that has been trained, because, if we get people who do not know anything about the subject of camp sanitation, hygiene, administration and all the work that is necessary on the line of communication with an army, the help that we get is worse than useless. So we want an auxiliary staff we can put our hands on and whom we have work for. We have a national guard organization, but they are not sufficient. The general staff desires that there shall be at least six doctors for every thousand strength. We have reason to believe that we shall get that without any trouble from Congress. Congress for various reasons that I will not go into now is very liberal toward the medical department. The achievements of the medical department are world wide. Now what we want from the medical profession outside is assistance so that what we call the Medical Reserve Corps of the Army will be composed of more than average men from civilian life. Now if you will give us licentiates from the National Board of Examiners, which has been proposed, I am sure that I can vouch that after we have trained these men in the summer camps and after we have trained them through the correspondence school, there shall be no breakdown in the medical department of the army.

COLORADO STATE MEDICAL SOCIETY

Forty-Fifth Annual Meeting, held at Denver, Oct. 5-7, 1915

(Concluded from page 1582)

Peripheral Facial Paralysis: Treatment of the Refrigeration Type

Dr. George A. Moleen, Denver: When cases are seen early, within from sixty to seventy-two hours, a cantharidal vesication over the mastoid seems to cause a prompt improvement in proportion to the earliness of application, and a calomel purge, preferably in divided doses. The use of salicylates is advisable and seems to do good, rather in view of the stimulating hepatic influence than of their antirheumatic effects. The eye should be guarded through the use of a shield, and bathed and bandaged to keep the lid closed, especially at night. After from two to four days, strychnin increased with moderate rapidity to $\frac{1}{24}$ or $\frac{1}{20}$ grain should be given, and at the same time gentle massage with the aim to exercise passively the muscles; it is well to advise that voluntary attempts should be made to move the face muscles at the same time. The electric stimulation should be instituted at frequent intervals and for brief periods when the massage is begun. If no faradic contractions can be obtained, the galvanic current should be used. Just sufficient current to accomplish distinct motion is advisable, and if the anode causes a contraction with a less current strength than the cathode, this should be employed. The faradic current should replace the galvanic as soon as contractions may be obtained, unless a current strength is required, which is painful. Electricity has not the slightest curative value, and is used simply to obtain the mechanical stimulation caused by the movement of the paralyzed muscles in order to maintain their nutrition and to avoid atrophy as far as possible. In the more advanced cases, painting the mastoid with caustic solution of iodin, or the internal administration of potassium iodid, or both may be tried. Massage and electrically induced exercise of the muscles, together with strychnin, may be used advantageously. Persistent and patient use of these measures will often be rewarded by marked improvement, for even when the muscles have long since lost their electric contractibility, one must not despair, for electric response has reappeared after having been lost for a year. Recoveries of considerable movement have been observed in cases of even longer standing.

DISCUSSION

Dr. Howell T. Pershing, Denver: My experience has been very much the same as Dr. Moleen's, and I take the same view of the etiology which he has emphasized, namely, persons who suffer from Bell's palsy generally do so because the facial or fallopian canal through which the nerve travels is long, crooked and narrow, and if it is constricted the least bit more than it is in normal individuals, then the nerve has no room for swelling. Then, if the patient is exposed to cold on one side, such as might ordinarily cause rheumatic symptoms of stiff neck and a little pain about the ear, this nerve may swell. As there is no room for it to swell, pressure is immediately exercised, and the nerve fibers will not withstand the pressure and paralysis ensues. Hereditary cases can be explained from the fact that there is the anomaly of undue narrowness of this canal in the family. For instance, I have had four cases of Bell's palsy in one family. The father had two attacks of facial paralysis on the same side; his son had an attack of facial paralysis, and his daughter had a similar attack. I had the opportunity of treating them in all four attacks. As to treatment, if I get the case early, I put a blister behind the mastoid and give the salicylates on the theory that if it is not rheumatism it is something like rheumatism, and the salicylates are good in almost anything that resembles rheumatism. I myself believe these cases are rheumatic and probably infectious, and exposure to cold lowers the resistance and allows the infection to get a start. At any rate, I approve of the treatment which was recommended by Dr. Moleen.

Dr. G. A. Stoddard, Pueblo: It would seem almost presumptuous on my part to take issue with Dr. Pershing in cases of this kind; but I do not think the cause of the trouble is swelling of the nerve itself, but the lining of the cavity through which the nerve passes. It surprises me to hear Dr. Pershing speak of rheumatism as being anything but an infection.

Dr. James A. Patterson, Colorado Springs: I should like to put on record a series of cases in one family. The mother had one or two attacks of Bell's palsy. Her daughter had one attack, and the son had three attacks. The last attack was very persistent, but there was complete recovery. These patients are prone to have more than one attack. I have seen more than one attack in the same patient.

Heat in the Control of Inoperable Cancer

Dr. C. E. Tennant, Denver: Modern investigation seems to prove conclusively that heat is one of the most effective therapeutic means we have in the control of cancer, provided it is properly applied. The subsequent use of the Roentgen ray with crossfire applications of the rays from a hard tube is no doubt good after-treatment. The source of the heat may be varied from that of hot water to the actual cautery, but it must be constant, long continued, and free from insulation in order to spread evenly a temperature of from 120 to 150 F. throughout the mass. In applying the treatment to carcinoma of the pelvis or other easily accessible structures, the Percy cautery irons are probably most satisfactory. The Percy method is proving very satisfactory in inoperable cancers of the lip, face, neck and breast, and I believe it worthy of use as a preliminary treatment in borderline cases of this class, as well as pelvic lesions. This should be followed later by radical excision, thereby doing away with the possible metastatic recurrence.

DISCUSSION

Dr. W. A. Kickland, Fort Collins: There is a difference in the vitality of the cells of a new growth from the cells of normal tissue. This makes it possible to use any one of a number of agents to destroy the cancer cells. Arsenic, zinc chlorid, the Roentgen ray, radium, heat, etc., are not selective in their action in the strict sense of the term, but destroy every living cell which comes under their influence, the weaker ones first, and finally the normal cells. Just how many degrees of heat there are between that which will cause the death of the abnormal cell and that of a normal one is perhaps still a question. Dr. Percy says that a cancer cell dies at 113 F., while a normal cell lives at 131 F. We know that in the application of heat to the lower forms of life, protoplasmic activity is increased up to 116 F., that at 120 all activity stops, and that the protoplasm will not recover if heated to 125. As a preliminary treatment in some inoperable cases, the application of heat may make some cases operable; but as a means of obtaining a permanent cure, it has not more selection in its action than has a scalpel in the hands of a competent surgeon.

Dr. William M. Spitzer, Denver: I believe that in the course of time heat will prove very effective in the treatment of not only inoperable but of operable cancer. Cancer of the bladder grows without deep infiltration for a long time. Until this time arrives, when it infiltrates the muscular and the peritoneal coats, we can treat it very successfully with heat. In 25 per cent. of the cases of cancer of the bladder we have heretofore failed to reach any result except death. In the last five or six years we have been able to apply heat to these cancers intravesically with excellent results.

Dr. Casper F. Hegner, Denver: The resistance of the normal cell depends not entirely on its inherent vitality, but in a large measure on the arterial circulation. Malignant cells may be extremely vascular, but the vascularity depends almost entirely on the venous content. A low grade heat, if applied at a temperature not exceeding 140, will affect actively the circulating blood. If it goes beyond that it causes more or less destruction of the vessel wall and coagulation. If the temperature is kept below that, it will kill nearly all cells having the power of arterial circulation, and a large venous content, and the normal cells having healthy circulation will not be affected. That is a more rational explanation of the efficacy of low grade temperatures in the treatment of malignant growths.

Further Experience in the Use of the Wire Tourniquet in Thyroidectomy

Dr. Leonard Freeman, Denver: Several years ago I reported a new, simple and safe method for the performance of partial thyroidectomy by means of the wire tourniquet. Since then I have had occasion to employ the procedure fifty-four times in forty-one cases, and have modified and perfected the technic considerably, so that I now feel justified in declaring that the method is a useful addition to the operative procedures in connection with goiter. The advantages of the wire tourniquet are several: It is easily and rapidly applied, requiring no particular skill in its adjustment and saving considerable time. It effectually controls all hemorrhage, thus obviating the necessity for crowding the field with hemostatic forceps. It does away with danger to either the recurrent laryngeal nerves or the parathyroid bodies, because it is employed at a safe distance from them, and even if they should by any chance be caught, the pressure is not great enough to injure them permanently. It compresses the goiter without crushing it, which is of importance in exophthalmic goiter at least. Lastly, the loops pass through the tissues and prevent the wires from slipping during the course of the resection irrespective of the size of the remaining stump. Neither clamp forceps nor a ligature of any kind answers the same purpose, nor can they be used, except in special cases. Forceps crush the tissues objectionably if they are applied tightly enough to prevent slipping when the lobe is cut away. Sutures are usually placed with much difficulty, and if tight enough to be efficient are apt to cut through, especially if the tissues are soft and vascular. Both forceps and ligatures may crush the nerves or the parathyroids.

DISCUSSION

Dr. Charles B. Lyman, Denver: I have seen Dr. Freeman use this method in many cases, and it is extremely satisfactory. There are types of large goiters that are not easily delivered in which it might be objectionable, and when the technic is applied close to the base may produce a sufficient amount of tugging on the trachea to interfere with proper respiration. I prefer to control hemorrhage with hemostats, using small ones, which are not in the way.

Dr. Charles A. Powers, Denver: One might perhaps question whether in this day the ligation of important tissues *en masse* is a procedure based on entirely sound surgical principles. I have been thinking that as time goes by Dr. Freeman will resort to the painstaking ligation of the individual vessels.

Dr. William B. Craig, Denver: I dislike to disagree with Dr. Powers. This is a recognized operation, and outside of enucleation of the tumor we have the operation of resection, one that can be done the speediest, and with the least loss of blood. It is the operation of choice. I have done more resections than enucleations or extirpations.

Dr. A. S. Taussig, Denver: The average man in doing much goiter work can use this method quite safely. It seems to me, many practitioners could use it who would not undertake it in another way.

Dr. Frost C. Buchtel, Denver: In the ordinary case of goiter, hemorrhage is not serious. In a large intratracheal goiter, particularly if one has associated with the goiter a small subretrotracheal lobe, hemorrhage is very serious. In a small goiter that is easily dislocated, I think the wire tourniquet would be eminently satisfactory. In these cases almost every form of hemostasis is satisfactory.

Etiology, Pathology and Therapy of Hodgkin's Disease and Allied Affections

Dr. J. L. Yates, Milwaukee, Wis.: In Hodgkin's disease there are four quite distinct types of lesion or stages in the development, from the earliest to the latest, or possibly from the most acute to the most chronic. The first has been reproduced experimentally. The other three are well established. Atypical lesions are remarkably numerous, and since apparently they may develop as the result of favorable therapy, it is fair to assume that they may be the result in part of variations in virulence and resistance. Since Bunting obtained the *B. hodgkini* in February, 1912, he has been able to cultivate it from all fresh affected tissue wherein the histologic diagnosis was positive or when the blood picture of the patient was characteristic unless that tissue had been contaminated or had been recently actively treated by the Roentgen ray. He has recovered it in pure culture five times from one individual at various intervals extending over three and a half years, three times from another, and twice from two others. Recently one of our earliest patients from whom a mass of cervical glands had been removed eight years previously suffered a relapse, and the organism was obtained from a recent axillary enlargement. The inoculation of dogs with small doses over many months has produced the chronic changes in the germinal centers in lymph glands and in the spleen identical with those occurring in Hodgkin's disease and Banti's disease, respectively. Moreover, these experimental animals and one normal man who was given a polyvalent vaccine prepared from similar organisms all developed the characteristic blood changes, the man reverting to normal after the vaccination was discontinued.

A study of our experiences and a review of the literature have indicated that certain more or less generally accepted therapeutic measures are harmful or futile. Arsenic is of benefit solely as a tonic. The administration of salvarsan is of no lasting if any benefit. Roentgen therapy must be given as an adjunct, since no cure due to this agency alone is on record. Aside from burns, the progress of the disease may be affected unfavorably by ill-advised roentgenologic treatments. Partial excisions are as indefensible as in cancer therapy, and this applies equally to the removal of test glands. A probable diagnosis can be obtained from the clinical history, the blood picture, the reaction to tuberculin and physical examination. If radical treatment be indicated, a primary excision with frozen section diagnosis may immediately precede it. Otherwise there is nothing to be gained for the patient but a probably certain diagnosis at the risk of a grave dissemination of the process. The only justification for routine test gland excision, the preparation of an autogenous vaccine, has been eliminated from our work.

MINNESOTA STATE MEDICAL ASSOCIATION

Forty-Seventh Annual Meeting, held at Rochester, September 30 and October 1, 1915

The President, Dr. J. T. Rogers, St. Paul, in the Chair

Radium in Dermatology

Dr. S. E. Sweitzer, Minneapolis: Radium has a definite value in the treatment of certain skin conditions. It is easily controlled and of accurate dosage. Its application is unattended by pain and is very pleasing to the patients, especially the young and the very old. The cosmetic results are excellent.

DISCUSSION

Dr. G. P. Crume, Minneapolis: The rays from the salts of radium or radioactive substances are very like those from the Roentgen-ray tube. Whether or not the emanations are identical in substance is not known, but their effect on normal and diseased tissues appears to be the same. The reactions are certainly very similar. Each one possesses some advantages, due chiefly to the form in which used. For example, radium lends itself especially to use in the cavities of the body, as the mouth, rectum and vagina, or may be placed in a capillary tube and inserted into a tumor with the hypodermic needle. The chief objection is that there is only a very limited quantity available, and the applicators are small, making it very tedious to radiate a large area.

Dr. G. B. New, Rochester: In treating large cavernous angiomas frequently seen in children, a large tube inserted directly into the tumor through a small incision, and left in for a longer time than the ordinary exposure, will give much better results. In large cavernous angiomas, the result is better if we make a small slit in the tumor and insert a large radium tube in the mass instead of using superficial packs outside.

Dr. R. E. Farr, Minneapolis: Some years ago under the use of the Roentgen ray in this class of cases I succeeded in obtaining a clinical cure in a number of instances, but later become dissatisfied with that treatment on account of failures. In those cases in which surgery does not hold out very hopeful success, radium can be tried.

Dr. J. W. Little, Minneapolis: When a tracheotomy tube is worn for a long time, we find that the granulations are not only around the tube but also in the trachea itself; and when the tube is removed, these granulations will fill up the trachea and cause difficult breathing. The tube has to be reinserted. Radium can be used here to get rid of these granulations and also the superficial ones, by being applied externally.

Dr. E. H. Beckman, Rochester: There is no question that epithelioma in the early stages is an absolutely local disease, and as such can be cured in a great many cases with radium and with the Roentgen ray. Very often in growths about the eye or on the cheek, a great deal better cosmetic results can be obtained with radium than with excision. But it must be remembered that we know very little about the penetrating power of the Roentgen ray and radium, and that when a malignant growth is situated in such a position that the adjacent lymph glands are subject to early involvement, while the primary growth may have entirely healed and may stay healed permanently, metastases may occur in the adjacent lymphatics, and for that reason I believe that a great many cases that are being treated at the present time with radium are hardly cases to be treated in that way.

Dr. H. G. Irvine, Minneapolis: Working with radium in dermatology, it should be taken for granted that the cases treated are selected cases, and the experienced dermatologist will not attempt to treat such cases with radium except when patients refuse to undergo operation. After excision, either the Roentgen ray or radium should be used. It is not possible in some locations to be sure that the entire tumor is removed. It is possible after excision that the Roentgen ray or the rays of radium will have a selective action on cancer tissue; exposure of the part to the rays will make one more reasonably sure that any remnants of cancer cells are destroyed. I think it is recognized in such a case as cancer of the lower lip that the best treatment would be first excision, followed by the use of radium or the Roentgen ray.

Syphilis

Dr. N. L. Linneman and Dr. E. L. Tuohy, Duluth: Our study was an attempt at a classification of 387 cases of syphilis. In the primary group there are 18 cases. Four were on the lip (3 on the lower and 1 on the upper); 1 on the right leg, above the knee; 2 at the meatus; 10 at the glans penis, and 1 on the tonsil. In the secondary cases, primary lesion in 5 was extragenital (2 being on the finger, 2 on the lip, and 1 under the scrotum). A mixed infection complicated 3 of the primaries, causing ulceration. There were 61 cases of secondary syphilis; 25 were macular, 13 were maculopapular, 19 papulopustular, and 1 ulcerative or malignant. These came under observation from one to twelve weeks after the onset. Ages varied from 2 to 61. A boy of 2 acquired the disease by being kissed by an aunt who had mucous patches in the mouth. Fifty of these cases occurred under the age of 30. The character and extent of the eruption had little to do with the constitutional disturbance. In the group of cases known to have syphilis, or in which there was parental or conjugal syphilis, there were forty-nine cases. Forty-one consulted us to find out whether they were still in need of treatment, and eight came because husband or wife had been infected, and it was desirous to know whether they had also contracted the disease. All gave positive Wassermanns and were treated. As far as could be ascertained, the disease had been contracted from six months to fifteen years previously. Fourteen of this group came because they were contemplating marriage and wished to know their condition. In most of these cases, the patient felt quite well, but in several, despite the absence of active complaint, evidences of syphilis, such as ulceration of the nose or tender points on the tibia, could be elicited.

In the cutaneous group, there were 40 cases. Mucous patches in the mouth and throat occurred in 3 cases. A great variety of ulcers were encountered: 5 on the leg; 1 on the right arm; 1 on the back of the neck; 5 on the tonsils; 1 on the tongue; 1 on the gum (about the back teeth), and in 1, a very large ulcer on the abdomen, below the umbilicus. One had ulcers about the rectum; 2 had large serpiginous ulcers back of the shoulders and neck; 4 had eczemalike, scaly patches in the palms of the hands; 1 had a rash like psoriasis quite generally over the body; 2 had gumma of the nose; 1, gumma of the upper lip; 1, gumma of the roof of the mouth, and 1, gumma of the left cheek. One had a large broken-down ulcerating gumma of the scalp; 1 had condylomata lata around the vagina and rectum; 6 had a scaly condition, notably on the cheek, tending to cover considerable areas of the body, and 1 patient had pemphiguslike blebs. In this cutaneous group were 7 congenital cases, the ages being from 1 month to 6 years. Ten of this group of acquired syphilis gave no history of the disease, and had no treatment. The others had had short courses of treatment.

In the nervous group there were 31 cases, 4 cases of cerebrospinal syphilis and 27 cases of tabes. Three of the 4 cases of cerebrospinal syphilis were advanced cases, and all 3 had more or less hemiplegia. The other case was an early case. The early case responded to treatment very readily. In one of the advanced cases, which was of five years' standing, the patient gradually grew worse, and finally died. Of the other 2 patients, 1 of them showed some improvement, especially so far as pain was concerned, and also gained considerable in weight, the general condition being improved very much. The other patient was under observation for four months, and thought he was hopeless because he did not improve more rapidly; consequently he quit treatment. Of the 27 cases of tabes, 11 cases were in the stage of ataxia, and had considerable impairment of motion. These cases had nervous symptoms from four to twenty years. Seven of these patients admitted having had syphilis, and had more or less treatment. The other 4 patients gave no history of syphilis. Five of these patients gave positive Wassermanns, and 3 of the negative Wassermanns gave positive cerebrospinal fluid. Eight of these patients showed more or less improvement, especially so far as pain was concerned. One patient showed very marked improvement, especially so far as motion was concerned. Three patients did not improve any at all as far as I could see. In the other 16 cases, there was little or no impairment of motion, and most of the patients consulted us on account of the pain, usually in the region of the legs. Three of the last group had optic atrophy of the primary type, and the eye symptoms were the primary manifestations of the disease.

DISCUSSION

Dr. G. B. Eusterman, Rochester: We are inclined to believe that syphilis predominates in the populous centers. This is true in the main, and it is especially borne out by the fact that in one general hospital in New York over 60 per cent. of the patients registering there showed a positive Wassermann reaction. In our rural centers, also, we are surprised at the frequency of syphilis as the cause of the syndrome. While the Wassermann reaction has been one of the most valuable contributions to medicine, it has its limitations. Repeated positive Wassermann reactions, particularly when they become strong, are definite corroborative evidence of syphilis. This, in addition to other evidences of syphilis, makes it conclusive.

Dr. C. R. Ball, St. Paul: In reading up the treatment of syphilis, one of the things which struck me forcibly was this: After reading a long discussion of whether the patients thoroughly treated were any more liable to late nervous syphilis than those who had never received any treatment at all, I found that statistics are quoted on both sides and the conclusion of the men who took part in the discussion, men who had reviewed the literature, and were competent in every way, was that it was about even.

Dr. G. J. Thomas, Rochester: If we are able to cure syphilis, say in ten or fifteen years, we are going to have compiled a large number of treated cases and the results of treatment and the kind of treatment used; and when men treating syphilis will do as Drs. Linneman and Tuohy have done, compile statistics or keep good records, at the same time, we shall have arrived at a certain system of treating this disease. We all know, there are many different ways, different combinations of salvarsan, neosalvarsan, mercury and the iodids, and practitioners seem to obtain the same results; but we must and will go a long way toward getting satisfactory results if we will compile our statistics and keep good records. This paper also emphasizes the point that syphilis is not a venereal or skin disease, but a general disease, and the quicker we realize that, the quicker shall we be able to cure it.

Medical Treatment of Diabetics Preparatory to Surgical Treatment

Dr. David M. Berkman, Rochester: Twenty-six patients suffering from glucosuria have been operated on in the Mayo Clinic during the past year. Two of these patients died following operation (mortality 7.7 per cent.): one died in typical coma, the other apparently from the result of the surgical condition. The observation of the diacetic acid and total ammonia output in twenty-four hours is of more importance than the sugar itself. The ultimate aim of treatment is not merely to render the urine sugar free but to decrease the tendency to acidosis and increase carbohydrate tolerance. Large doses of alkalies are urged, preferably sodium bicarbonate, for several days previous to and also after operation, since in this way the neutralization and elimination of the acids formed in the blood are greatly facilitated. Local anesthesia should be used whenever possible. Ether is the safest of the general anesthetics. In the series of cases reported, novocain was used in five instances, combined novocain and ether in one, and ether the remaining twenty. The operative conditions were varied.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

September, III, No. 3, pp. 119-182

1 Epidemiology of Plague in New Orleans. R. H. Creel, San Juan, P. R.
2 *Epizootic Lymphangitis and Sporotrichosis. K. F. Meyer, Berkeley, Calif.
3 *Epidemiologic Study of Poliomyelitis. W. A. Sawyer, San Francisco.

2. **Lymphangitis and Sporotrichosis.**—Epizootic lymphangitis of equines, Meyer says, is caused in South Africa, Algeria and Jamaica by a parasite which morphologically (gram-positive, irregular inside structure, budding forms) has all the characteristics of a yeast and which biologically behaves, in the complement fixation test, like blastomyces. The similarity with leishmania bodies, which is suggested by some staining reactions (with Giemsa, etc.) and the position of the parasites in the phagocytes, is explained, and it is demonstrated that the serologic tests and the more careful morphologic studies with hematoxylin stains do not justify the creation of a new species of lymphosporidium (Gasparini, 1908). The parasite is not a protozoon, but a blastomyces, namely, the *Cryptococcus farciminosus*. In the United States the disease which was diagnosed as epizootic lymphangitis in 1907, has been recognized as being sporotrichosis. Epizootic lymphangitis apparently does not exist here. Morphologically, by cultures and serum tests, the two diseases can easily be separated. In horses the parasite of sporotrichosis is rare in the pus and can rarely be demonstrated microscopically. The serums from sporotrichotic infections give complement fixation with the *Cryptococcus farciminosus*, indicating a relation of the *Sporothrix schencki-beurmanni* to the cryptococcus. This observation is further proof of the vegetable nature of the parasite of epizootic lymphangitis. Human infections from equine sources of epizootic lymphangitis and sporotrichosis are rare. Meyer calls attention to the fact that it is in the interest of comparative tropical medicine that suspected cases of infections of epizootic lymphangitis should, in future, be carefully investigated bacteriologically and serologically.

3. **Study of Poliomyelitis.**—In the summer and fall of 1913 several groups of cases of epidemic poliomyelitis appeared in Northern California. Most of the cases were in small towns in which conditions were more favorable for tracing the probable path of infection than they would have been in larger and less isolated communities. The field investigations were carried on by Sawyer in August and November, 1913. The usual observations regarding symptoms of the cases, sanitation of premises, domestic animals, insects, climate, etc., were made, but only the data which bear on possible methods of transfer of the infection are presented by him. Many of the cases showed interesting group relations, suggesting the possibility of transfer by contact. Observations were made regarding the stable fly (*Stomoxys calcitrans*), but no important new evidence was obtained. In none of the cases was there a history of a stable-fly bite.

In many of the cases reported, the infection can be explained on the theory that epidemic poliomyelitis is transmitted through contact from acute cases or carriers. The active virus of poliomyelitis was demonstrated by animal inoculation to be present in rectal washings obtained from a patient fourteen days after the beginning of the paralysis. The virus of poliomyelitis may survive in demonstrable quantities for at least thirty-six hours in specimens of rectal washings if they are kept packed in ice. Therefore, samples taken during a field investigation may be sent to a central laboratory for examination. Since the active virus may leave the body from the rectum, as well as from the nose and mouth, precautions should be taken in the care of the poliomyelitis patient to prevent infection, not only from the nasal and buccal discharges, but also from feces and soiled bedding.

Archives of Internal Medicine, Chicago

October, XVI, No. 4, pp. 509-692

4 *Syphilis and Raynaud's Disease. H. Lisser, San Francisco.
5 *Study of Atrioventricular Rhythm Following Auricular Flutter. P. D. White, Boston.
6 *Creatinin of Blood in Nephritis. Its Diagnostic Value. V. C. Myers and W. G. Lough, New York.
7 *Method for Determination of Plasma and Blood Volume. N. M. Keith, L. G. Rowntree and J. T. Geraghty, Baltimore.
8 Studies of Nitrogen Partition in Blood and Spinal Fluid. A. C. Woods, Boston.
9 *Study of Diagnostic and Prognostic Significance of Venous Pressure Observations in Cardiac Disease. A. H. Clark, Baltimore.
10 Relations of Hypersusceptibility and Insusceptibility Induced in Guinea-Pigs by Instillation of Horse Serum into Nose. H. Sewall and C. Powell, Denver.
11 Changes in P Wave of Human Electrocardiogram. C. H. Goddard, Baltimore.
12 *Severe Anemia with Remarkable Shaped Red Blood Cells and Chronic Leg Ulcer. J. E. Cook and J. Meyer, St. Louis.
13 *Hemolytic Activity of Spleen in Pernicious Anemia. O. H. Robertson, Boston.
14 *Bacteriologic and Clinical Study of Nontuberculous Infections of Respiratory Tract, with Special Reference to Sputum Cultures as Means of Diagnosis. J. A. Luetscher, Baltimore.
15 *Relation of Suprarenals to Pancreas. F. C. Mann and D. Drips, Rochester, Minn.

4. **Syphilis and Raynaud's Disease.**—The case reported by Lisser presented symmetrical gangrene of the feet, and four unquestioned attacks of local asphyxia of the fingers, without exposure to unusual cold. The transient nature of the glucosuria ruled out diabetes as the etiologic factor. A gonorrheal vaginitis with probable arthritis occurred, and a gonorrheal septicemia with emboli might be held responsible for the gangrene of the lower extremities; but the question of such sepsis was never proved and does not seem probable clinically. The patient had congenital syphilis, and an obliterative endarteritis could cause the condition. But the vasomotor attacks of the fingers, combined with the symmetrical gangrene of the feet was so typical of Raynaud's disease that the latter diagnosis must be considered very seriously. In fact, Lisser says, it seems justifiable to conclude that the patient simultaneously suffered from three diseases—gonorrheal vaginitis with arthritis, congenital syphilis and Raynaud's disease.

5. **Atrioventricular Rhythm Following Auricular Flutter.**—A cardiac rhythm is described by White which arises in the atrioventricular junctional tissues of a patient who showed flutter and fibrillation of the auricles prior to the onset of the present rhythm. This atrioventricular rhythm responds in rate readily to exercise, forced respiration, vagal pressure and atropin, but not to digitalis. The sequence of contraction *vs-as* is lengthened by vagal pressure and by digitalis, the latter apparently acting more on the auriculonodal junction than on the pacemaker in the *a-v* tissues. Atropin may shorten the *vs-as* interval prolonged by digitalis, but with the uninfluenced *a-v* rhythm the effect of atropin on the *vs-as* interval is overborne by the increase in the rate of the heart beat resulting from the action of the drug on the *a-v* pacemaker; under such circumstances the *R-P* interval is increased slightly. Premature beats interrupt the rhythm rarely; on such occasions the returning cycles are not compensatory. Coupled beats of an unusual character appear when the *vs-as* interval is markedly prolonged by digitalis or by vagal pressure. The constancy of the atrioventricular rhythm and the failure of sino-auricular rhythm to be restored by atropin or by vagal pressure point to a loss of function of the sino-auricular node, its task as pacemaker being assumed by the atrioventricular junctional tissues.

6. **Creatinin of Blood in Nephritis.**—The estimation of the blood creatinin has been of considerable prognostic value in the work of Myers and Lough, cases showing over 5 mg. per 100 c.c. of blood having invariably terminated fatally. Of eleven cases showing over 5 mg. of creatinin per 100 c.c. of blood, all terminated fatally in from a few days to two months. In this group of cases the phthalein output was practically zero. It seems reasonable to conclude that when a noticeable retention of creatinin has occurred, the functional condition of the kidney has been gravely impaired. In the authors' experience creatinin values from 2.5 to 3.0 mg. per 100 c.c. of blood should be viewed with suspicion and figures of from 3.0 to 5.0 mg. regarded as decidedly unfavorable, while figures over 5 mg. probably indicate an early fatal termination.

7. **Method for Determination of Plasma and Blood Volume.**—The principle underlying the method used by Keith, Rowntree and Geraghty is the introduction directly into the circulation of a nontoxic, slowly absorbable dye, which remains in the plasma long enough for thorough mixing, and the determination of its concentration in the plasma colorimetrically by comparison with a suitable standard mixture of dye and serum. The blood normally constitutes 8.8 per cent., or 1/11.4 of the body weight. Normal individuals have approximately 85 c.c. of blood per kilogram, the extremes being 78 and 97 per kilogram. In pregnancy, before term, the blood and plasma volumes are increased. A condition of serous plethora exists. Within a week or two after delivery, the blood values return to normal. In obesity, the plasma and blood volumes are relatively small. Many cases of anemia exhibit a relatively large plasma volume. Polycythemia in the sense of a high blood count may be dependent on a low plasma volume. It may be associated with a large plasma volume, in which case true plethora is indicated. Hyperglycemia exists without increase in blood volume. In anasarca accompanying myocardial insufficiency the blood volume may be absolutely increased. A small volume is shown in many cases of marked hypertension. Therefore so far as these studies go it would appear that hypertension is not dependent on a large blood volume.

9. **Venous Pressure in Cardiac Disease.**—The venous pressure was followed by Clark at frequent intervals in fourteen cases of cardiac insufficiency at various stages of decompensation and compensation. Two hundred and seventy-six observations were made. Hooker's modified method was used. A diurnal variation in venous pressure of from 8 to 12 cm. of water was noted in four normal and four cardiac cases, all the patients being confined to bed. This variation was based on two-hourly observations over a period of twenty-four hours. It was found that the highest venous pressures occurred during the sleeping hours in the cardiac cases, while in the normal cases, as previously observed by Hooker, the lowest pressures of diurnal variation occurred at night. In the patients who died, either a rapid rise in venous pressure or a continuously high pressure above the 20 cm. level was observed before death. A venous pressure continuously above 20 cm., which was not lowered by the digitalis series, was an indication of grave cardiac involvement.

A venous pressure continuously below 20 cm. gave no definite indication as to the effect of digitalis or strophanthin therapy. A fall in systolic arterial pressure and a rise in venous pressure occurred in four cases before death. Otherwise no constant relation could be noted either between the systolic, the diastolic, the pulse pressure, or the amplitude-frequency product on the one hand, and the venous pressure on the other. Venous pressure and urine output generally showed an inverse variation. The variation was usually coincident, but, if coincidence did not occur, the changes in venous pressure tended to precede the changes in kidney function. The venous pressure was lowered in seven out of eight pleural tappings. Venesection lowered the venous pressure in three cases observed, but the subsequent rise in pressure was rapid.

12. **Anemia with Remarkable Red Blood Cells.**—Many of the red cells in the case cited by Cook and Meyer, about one in three, on rough count, were elongated, oat-shaped or crescent-shaped, with the same color and structure as the normal red blood cells. Some of the crescent-shaped cells in the fresh drop would curl and bend as if they were unusually pliable. There was considerable variation in the size of the red cells and also many structures which seemed to be fragments of cells, as if some of the cells had been crushed. The rather uniform character of these fragments, however, suggests that they were not artefacts. Nucleated reds were always present

and at times were quite numerous. With Romanowsky stains here was only slight polychromatophilia. The red cells varied in number between 1,800,000 and 3,100,000, usually about 2,500,000; there was at all times a leukocytosis of mild degree; the color index averaged slightly below 1, and there was a constant eosinophilia at the expense of the polymorphonuclear cells.

13. **Hemolytic Activity of Spleen in Pernicious Anemia.**—In a study of the hemolytic activity of the fresh spleen obtained by Robertson at operation, from six patients with pernicious anemia, it was found that extracts of the spleen pulp made with both normal salt solution and alcohol, possessed no hemolytic properties. An ethereal extract, on the other hand, showed a marked hemolytic action. However, the hemolytic substance contained in this extract belonged to the group of unsaturated fatty acids and has been obtained in equally strong concentration from the normal liver and intestine. The only change in the splenic vein blood obtained at operation, which could not be accounted for by manipulation, was a decreased resistance of the red cells. These cells were definitely less resistant than those of the peripheral circulation in the same individual and in normal controls. These findings seem to exclude any gross or easily demonstrable manifestation of hemolytic activity on the part of the spleen. However, the decreased resistance of the red cells in the splenic vein, would suggest that the spleen in pernicious anemia elaborated some toxic substance or enzyme which so injures the blood cells during their passage through that organ that they are more susceptible than normally to destruction elsewhere. It seems probable that in some other part of the body there is elaborated an abnormal hemolysin or an abnormally acting normal hemolysin.

14. **Nontuberculous Infections and Value of Sputum Cultures.**—According to Leutscher the pneumococcus is the cause of 62.44 per cent. of all the nontuberculous infections below the larynx, and the influenza bacillus in 28.5 per cent. These two organisms cause 90.94 per cent. of the infections of the bronchi and lungs; 74.96 per cent. of the infections of the larynx, and 31.29 per cent. of the infections of the nose, throat and sinuses. The streptococcus, contrary to common belief and textbook reports, is only rarely the cause of infections in the lungs, and when found, is usually associated with complications such as lung abscess, bronchiectasis, carcinoma, etc. In infections of the head, however, it assumes the predominant rôle, especially in the tonsils. The *Staphylococcus aureus* was never found to be the cause of the acute infections of the lungs or larynx and only once was it found in acute coryza and acute sinusitis. The *Micrococcus catarrhalis* may cause rhinitis, laryngitis, acute bronchitis and acute bronchopneumonia. It was found in pure culture in three out of thirty-seven cases of acute rhinitis, five out of thirty-eight cases of acute laryngitis, and in one each of acute bronchitis and primary bronchopneumonia. The colon and typhoid bacillus rarely if ever produce acute lesions in the lung. The typhoid bacillus, however, may produce lung abscess following an infarct.

15. **Relation of Suprarenals to Pancreas.**—Mann and Drips were unable to demonstrate any specific relationship between the suprarenals and the pancreas.

Boston Medical and Surgical Journal

October 21, CLXXIII, No. 17, pp. 603-646

16 Relation of Medical Profession to Preventive Medicine. H. Emerson, New York.
17 Syphilis We See But Do Not Recognize and Importance of Familial Studies. H. F. Stoll, Hartford, Conn.
18 Some of Anatomic Pathologic Problems in Tuberculosis. F. M. Pottenger, Monrovia, Cal.
19 Acute Otitis Media in Infancy and Early Childhood; Avoidable Mistakes in Diagnosis, Prevention, Treatment. W. R. P. Emerson, Boston.
20 Can Speech Present a Sign of Congenital Syphilis? W. B. Swift, Boston.
21 Unusual Case of Obstructing Prostate Diagnosticated with Difficulty from Tabes. J. D. Barney and J. B. Ayer, Boston.
22 Report of Interesting Stomach Case. F. E. Lewis, Newton, and R. D. Leonard, Boston.

Illinois Medical Journal, Chicago

October, XXVIII, No. 4, pp. 241-320

23 Mental Disease. C. W. Sawyer, Marion, Ohio.
24 Observations in Psychiatry. B. F. Williams, Lincoln, Neb.
25 Care of Insane Under Illinois State Board of Administration. H. J. Gahagan, Elgin.
26 Abnormal Conditions of Thyroid Gland and Its Relationship to Neurasthenia and Mental Defects. C. L. Reeder, Tulsa, Okla.
27 Psychoses in Twins. P. B. Newcomb, Osawatomie, Kan.
28 Mental Hygiene in Childhood. E. B. McCready, Pittsburgh.
29 Relation of Pfropfhebephrenia and Dementia Praecox to Crime. W. J. Hickson, Chicago.
30 Genesis of Certain Phenomena as Interpreted in Psychanalytical Study of Case of Paranoid Dementia Praecox and Case of Hysteria. M. A. Bahr, Indianapolis.
31 Why Delay in Recognizing Locomotor Ataxia? C. F. Neu, Indianapolis.
32 Remedies in Crime Situation. W. Healy, Chicago.
33 Value of Environment. H. P. Sights, Hopkinsville, Ky.
34 Prevalence of Syphilis in Penal Institution. O. M. Kramer, Columbus.
35 Inherited Syphilis in Feeblemindedness. W. H. McKay, Columbus.
36 Mental Examination of Delinquent Boys and Girls. T. H. Haines, Columbus.
37 Diagnosis and Present Status of Treatment of Syphilis. L. D. Smith, Chicago.
38 Pre-Institutional Care of Insane. C. C. Ellis, Dunning.
39 Causative Factors in Psychoneuroses. M. Solomon, Chicago.

Journal of Experimental Medicine, Lancaster, Pa.

October, XXII, No. 4, pp. 389-516

40 Chemoserotherapy of Experimental Pneumococcal Infection. H. F. Moore, New York.
41 *Mechanism of Anaphylactic Shock. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
42 *Biology of Peripheral Nerves in Transplantation. R. Ingebrigtsen, Christiania.
43 *Diagnostic Value of Placental Blood Film in Estivo-Autumnal Malaria. H. C. Clark, Ancon, Canal Zone.
44 *Immunologic Study of Bacillus Influenza. M. Wollstein, New York.
45 *Mechanism of Curative Action of Antipneumococcus Serum. C. G. Bull, New York.
46 *Method of Serum Treatment of Pneumococcic Septicemia in Rabbits. C. G. Bull, New York.
47 *Fate of Typhoid Bacilli When Injected Intravenously into Normal Rabbits. C. G. Bull, New York.
48 Agglutination of Bacteria in Vivo. C. G. Bull, New York.
49 *Fatty Degeneration of Cerebral Cortex in Psychoses, with Special Reference to Dementia Praecox. H. A. Cotton, Trenton, N. J.

41. **Mechanism of Anaphylactic Shock.**—The mechanism of acute intoxication is stated by the authors to be as follows: An immediate mobilization of a nonspecific protease in large amounts; the formation of a state of antiferment deficiency through colloidal changes; a simultaneous cleavage of serum proteins (proteoses) through the peptone stage to amino-acids; an intoxication by these peptones with a resulting cellular injury, made evident by an increase in serum lipase, the fall in temperature and other manifestations of acute shock. The elements of specificity lie in the mobilization of the nonspecific cellular ferment and the colloidal changes in the serum, not in the production of specific ferments.

42. **Peripheral Nerves in Transplantation.**—Ingebrigtsen found that in autoplastic transplanted nerves a degenerative process occurs which resembles the ordinary Wallerian degeneration, but appears a little more slowly than the latter. The cells of Schwann are in a condition of survival and are capable of multiplication after the transplantation. In homoplastic transplanted nerves a degenerative process resembling a Wallerian degeneration, somewhat delayed, occurs. The cells of Schwann multiply, and for sometime at least are in a condition of survival. After twelve to fourteen days an abundant and increasing immigration of lymphocytes is observed, and from the eighteenth day the cells of Schwann develop a necrobiotic appearance. In heteroplastic transplanted nerves numerous myelin ovoids are formed during the first four to five days, but there is no proliferation of the cells of Schwann and no Wallerian degeneration is seen. The graft becomes necrotic within about two weeks.

The formation of ovoids that occurs during the first four to five days after the performance of the heteroplastic transplantation does not reveal the condition of the life of the graft. This formation of myelin ovoids is found in the nerve fibers when they have been kept in an incubator for twenty-four hours in Ringer solution or in homologous or heterologous serum, but it is not found in the fibers after their incubation in isotonic salt solution, the presence of calcium being necessary for the occurrence of ovoid formation. Heteroplastic transplanted nerves become necrotic. They are unsuitable for bridges in cases of nerve defects, and Ingebrigtsen's results explain the failure of the attempts at heteroplastic transplantation of nerves in human beings. To bridge a nerve defect by implantation one must use autoplastic or homoplastic grafts. The occurrence of a Wallerian degeneration in these grafts during the first two or three weeks after the transplantation should make bridging a promising operation; for in this period the grafts resemble the peripheral part of a divided nerve and must be assumed to be capable of regeneration, and thus are different from dead material.

43. **Value of Placental Blood Film in Malaria.**—Clark claims that the pregnant state encourages attacks of malaria by lowering bodily resistance and by furnishing an additional harbor for the development of parasites. A tenable theory in regard to most attacks of this nature, occurring in cases under professional care, would appear to be the development of latent malaria (malarial carriers) into acute attacks toward the close of the pregnant state. The women who expose themselves offer favorable conditions to the introduction of a primary infection. Malaria frequently interrupts the late stages of pregnancy and sometimes causes the death of the mother and the fetus, more often the latter. The commonest mishap is miscarriage late in pregnancy. Occasional stillbirths occur and sometimes there is a fatal issue to both the mother and child. Clark found that the placental blood film examination is worthy of routine application wherever estivo-autumnal malaria is endemic. This type of malaria when associated with labor and the early days of the puerperium can be more easily and certainly diagnosed by the use of this film and a polychrome stain than by employing the usual films made from the mother's peripheral blood at the time of labor. The placental film in such an infection offers an abundance of adult parasites and far more evidence of the presence of pigment, while the peripheral blood film frequently offers but a scant number of the small ring or discoid forms of a parasite. The examination of the present series revealed positive placental films in nineteen cases, while but eight of these same cases were positive in the peripheral blood film examination. On the other hand, no peripheral blood films were found positive in which the associated placental films did not reveal a far more abundant evidence of the infection.

44. **Immunologic Study of Bacillus Influenza.**—Briefly, the results of Wollstein's investigation are as follows: Influenza bacilli therefore vary in pathogenic effect both for man and animals, but they are not distinguishable by means of serologic reactions into different types. Apparently all influenza bacilli belong to one class or race, irrespective of origin or virulence.

45. **Curative Action of Antipneumococcus Serum.**—According to Bull an active antipneumococcus serum causes agglutination of pneumococci in vitro and in vivo. The antiserum acts in far greater dilution in causing agglutination as determined by the microscopic than by the macroscopic test. The antiserum when injected into the circulation of rabbits suffering from pneumococcus bacteremia causes a rapid disappearance of the diplococci from the blood. This disappearance is brought about by instantaneous clumping of the diplococci in vivo and the removal of the clumps by the liver, spleen, lungs and possibly other organs. The diplococci which fail of agglutination tend not to be phagocyted and persist longer in viable form than the ingested clumps. The protection afforded by the immune serum is specific for the type organism and is determined by the presence of agglutinins which prepare the pneumococci for removal from the blood and phagocytosis on a large scale. Normal rabbit blood is devoid of agglutinating and of protective effect against virulent pneumococci. Agglutination is not merely an incidental phenomenon, but constitutes an essential process in association with phagocytosis in the protection of the rabbit against pneumococcus infection.

46. **Treatment of Pneumococcic Septicemia in Rabbits.**—The treatment of pneumococcic septicemia in rabbits by small repeated doses of immune serum was successfully carried out by Bull. The number of pneumococci capable of being brought to destruction through phagocytosis in the organs in this way was great. Not all the rabbits treated with small repeated doses of the serum survive. Those that succumb do so, not to a general infection, but to a pneumococcus meningitis. The explanation of this phenomenon is simple. When the number of pneumococci originally inoculated is great a small number penetrate into the subdural space. Those in this space do not come under the influence of the serum, hence they are not agglutinated and prepared for phagocytosis, whence they multiply and set up a fatal meningitis. The activity of the immune serum administered in this way against virulent pneumococci is so great that a revision of ones notions as to the limit of powers of the antiinfectious serums seems necessary. It is patent that the problem is not simply a relation between quantity of immune bodies and number of bacteria. It is more complex than that conception indicates. The factor of the leukocytes and the degree of their possible activities under the conditions of the experiment come into play. Hereafter, in defining the mode and power of action of antiinfectious serums the condition of cooperation of the body forces will have to be more strictly considered.

47. **Fate of Typhoid Bacilli Injected Into Normal Rabbits.**—Bull found that typhoid bacilli are agglutinated promptly in the circulating blood of normal rabbits and quickly removed from the blood stream. The clumped bacilli accumulate in the organs and are taken up by assembled polymorphonuclear leukocytes in the liver, spleen and possibly other organs. The phagocyted clumps of bacilli are digested and destroyed by the phagocytes. Hence, destruction of typhoid bacilli *intra vitam* is brought about by an entirely different process than is the destruction by serum and whole blood in vitro. While the latter is caused by bacteriolysis, the former results from agglutination and intraphagocytic digestion.

49. **Fatty Degeneration of Cerebral Cortex.**—From the data provided by his investigations Cotton concludes that in all pathologic processes of the cortex which end in dementia and death, the fatty degeneration of the elements of the cortex plays a not unimportant part. The characteristic change for most of the psychoses is found in a great increase in amount of fatty deposits when compared to normal individuals of the same age. In some processes such as senile dementia and dementia praecox the fatty substance appears to fill completely the cell body, and these cells have apparently lost all their functioning power. It is not common to find the fatty deposits in the processes of the ganglion cells except in dementia praecox, and to a limited extent in senile dementia. In other cases the pathologic variety of the fatty deposits in the ganglion cells is seen to be diffused over the whole ganglion cell. Cotton was able especially to observe this in infectious psychoses, in general paralysis, and in epilepsy. The so-called central neuritis assumes a peculiar attitude in that it plainly leads swiftly to an acute fatty degeneration of the ganglion cells, in which there exists an inclination of the fatty granules to flow together into large masses. Frequently the fatty degeneration of the ganglion cells appears to be connected with the sclerosis of the cells, especially when it is a matter of slowly progressing alterations of degeneration. In the young chronic cases of dementia praecox, far-reaching fatty degeneration of the ganglion cells, especially in the second and third cortical strata, likewise occurs. These findings should constitute an important contribution to the pathologic anatomy of dementia praecox.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

October, VII, No. 3, pp. 225-383

50 *Seat of Emetic Action of Various Drugs. C. Eggleston and R. A. Hatcher, New York.
51 *Influence of Salicylates on Elimination of Uric Acid and Other Waste Products from Blood. W. Denis, Boston.
52 *Studies on Circulation in Man: Change Produced in Blood Flow (in Hands) Under Influence of Digitalis in Cases of Auricular Fibrillation. G. N. Stewart and R. W. Scott, Cleveland.
53 Id. Criteria by Which Deficiencies in Blood Flow (in Hands or Feet) Due to Mechanical Causes May Be Discriminated from Changes Due to Functional (Vasomotor) Causes. G. N. Stewart, Cleveland.
54 *Effects of Veratrum Viride and Cevadin (Veratrin). J. D. Pilcher and T. Sollmann, Omaha.
55 *Physiologic Test for Cholin and Some of Its Applications. R. Hunt, Boston.
56 Action of Opium Alkaloids, Individually and in Combination with Each Other, on Respiration. D. I. Macht, Baltimore.
57 Vasomotor Reaction in Nicotin; Locus of Stimulation. R. G. Hoskins and S. W. Ranson, Chicago.

50. **Seat of Emetic Action of Various Drugs.**—The results of approximately 500 experiments, made to determine the probable seat of the emetic action of some of the more important drugs, and of others of less importance are reported by Eggleston and Hatcher. They found that practically all alkaloids and alkaloidal drugs in common use, including morphin and preparations containing it, which produce nausea and vomiting, either as their chief or as their side actions, do so by direct action on the vomiting center. Sodium salicylate, picrotoxin and the digitalis bodies also produce nausea and emesis through direct central action. There may be, in the case of certain drugs with irritant properties, synergistic reflex and central actions, whereby a smaller dose by mouth may be more effective than would be the case for either action alone. An illustration of this seems to be afforded by emetin. The evidence in favor of the central action does not in every instance exclude the possibility of the drugs also having an irritant action on the alimentary mucosa when given orally. It is probable that the ipecac alkaloids, veratrin and sodium salicylate may have this reflex action in man, at least in susceptible individuals. Some of the advantages claimed for certain proprietary preparations of opium, such as narcophin and pantopium are refuted by the results of the authors' experiments, and they believe that this is also probably true, to a certain extent, of some of the proprietary preparations of salicylic acid.

51. **Influence of Salicylates.**—The increased output of uric acid following salicylate medication, in Denis' opinion, is due to a lowered threshold value of the kidney, not only for uric acid, but in all probability for other waste products as well. Such being the case, he says, it may well be that the beneficial effects resulting from the use of salicylates in acute rheumatic fever, may in part, at least, be due to a power possessed by this class of drugs of increasing kidney permeability, thereby facilitating the rapid and more or less complete excretion of the toxins which produce symptoms of these diseases.

52. **Influence of Digitalis in Cases of Auricular Fibrillation.**—In three cases with auricular fibrillation, the blood flow in the hands was promptly and decidedly increased after the administration of digitalis. In a fourth case, which had not been considered to respond well to digitalis, the hand flow was somewhat increased when the drug was stopped after a rather long course of it. Digitalis having been again begun, the hand flow at the end of a week was again found to be diminished.

54. **Effects of Veratrum Viride.**—According to Pilcher and Sollmann veratrum viride and the related alkaloid cevadin are without direct action on the vasomotor center. As a result of anemia from the fall in blood pressure, or from asphyxia from respiratory depression, the center may be stimulated in about half the experiments; such action may be prevented by artificial respiration. Convulsant doses of cevadin also increase the central vasomotor tone.

55. **Physiologic Test for Cholin.**—The method proposed by Hunt consists in converting the cholin into the acetyl derivative (by heating the cholin with acetyl-chlorid in a sealed tube in the water bath) and testing the physiologic action of the reaction product. Details as to the method as applied to various fluids and organs are given.

Kentucky Medical Journal, Bowling Green

October, XIII, No. 11, pp. 471-506

58 Today and Yesterday in Medicine. O. P. Nuckols, Pineville.
59 Ossification of Bones of Hand. J. W. Pryor, Lexington.
60 Common Sense in Dermatology. M. L. Ravitch, Louisville.
61 Difficult Presentations. J. T. Reddick, Paducah.
62 Indications for and Limitations of Turbinectomy. C. W. Reynolds, Covington.
63 Scopolamin as General Anesthetic in Surgery. J. O. Jenkins, Newport.
64 Twilight Sleep. A. E. Threlkeld, Wheatley.
65 Law of Heredity. M. Bell, Jr., Eminence.
66 Placenta Praevia Centralis; Cesarean Section for Relief. W. O. Humphrey, Louisville.

Lancet-Clinic, Cincinnati

October 2, CXIV, No. 14, pp. 289-310

67 Diagnosis and Treatment of Fistula in Ano. R. H. Barnes, St. Louis.
68 Operations on Gallbladder in Relation to Life Expectancy. W. S. Harpole, Chicago.
69 Use of Pituitary Extract in Inevitable and Incomplete Abortions. B. J. O'Connor, Louisville, Ky.
70 Obscure Fevers of Infancy and Childhood. B. K. Rachford, Cincinnati.

October 9, No. 15, pp. 311-338

71 Differential Diagnosis and Preoperative Treatment of Prostatic Hypertrophy. W. S. Ehrich, Evansville, Ind.
72 Pellagra and Uncinaria Disease in Relation to Life Insurance. M. J. White, Washington, D. C.
73 Principles and Methods which Result in Intellectual Precocity. T. A. Williams, Washington, D. C.

Medical Record, New York

October 23, LXXXVIII, No. 17, pp. 681-726

74 Pancreas Stone Colic. M. Einhorn, New York.
75 Impotence in Male. M. Hühner, New York.
76 *Immunized Milk in Prophylaxis and Treatment of Typhoid. J. Rosenberg, New York.
77 Section of Posterior Roots of Sixth to Tenth Thoracic Nerves for Relief of Severe Gastric Crises in Locomotor Ataxia. F. W. Bancroft, New York.
78 Intelligent Treatment of Diseases of Skin. W. S. Walsh, Providence, R. I.
79 Differential Diagnosis between Cerebral Hemorrhage and Softening Due to Thrombosis. G. Burke and J. Nuzum, Chicago.

76. **Immunized Milk in Treatment of Typhoid.**—Rosenberg states that immunized milk is absolutely safe and harmless, while antityphoid vaccination often causes more or less severe systemic symptoms. Immunized milk is an excellent medium to provide general immunization for typhoid at trifling expense and without risk. It causes neither local nor systemic ill-effects. It is fatal to but one organism, namely, the typhoid bacillus. Drinking one quart of immunized milk per day for a period of about two weeks provides adequate protection for two months. Immunity, however, can be prolonged indefinitely by drinking one or two quarts of immunized milk every ten days to two weeks. Besides an efficient prophylactic, immunized milk will probably prove itself to be a valuable aid in the treatment of typhoid, especially in the early stage of the disease. Rosenberg urges that immunized milk should be used at the onset, even before a diagnosis is possible, and should be given in every suspicious case; it may succeed in aborting the disease, preventing the infection by augmenting the body's natural defenses. It will provide the needed antibodies to destroy the invading host, neutralize the bacterial toxins at a period when the body is not as yet prepared to cope with the infections organism.

Michigan State Medical Society Journal, Grand Rapids

October, XIV, No. 10, pp. 501-554

80 Past, Present and Future of Michigan State Medical Society. R. Peterson, Ann Arbor.
81 Medical Schools of Last Half Century. T. A. McGraw, Detroit.
82 Retrospect of Early History of Michigan State Medical Society. G. E. Ranney, Lansing.
83 Two Tumors of Head. C. G. Darling, Ann Arbor.
84 Case of Spindle-Cell Sarcoma of Accessory Sinuses. R. B. Canfield, Ann Arbor.
85 Age, Relationship Between Types of Malignant Diseases. C. V. Weller, Ann Arbor.

Modern Hospital, St. Louis

October, V, No. 4, pp. 221-310

86 Requirements of Modern Contagious Disease Hospitals. F. W. Southworth and L. W. Johnson, Washington, D. C.
87 First County Hospital Under New Texas Law. L. Shenners.
88 Hospital Noises and How to Minimize Them. B. Hollings, Boston.
89 Training School Organization and Work in Mental Hospitals. C. McCabe, Baltimore.
90 Hospital Library; Books for Patients. E. K. Jones, Waverly, Mass.
91 E. W. Sparrow Hospital, of Lansing, Michigan. M. Landis, Lansing, Mich.
92 Baker Sanatorium at Charleston, South Carolina. J. D. Newcomer, Charleston, S. C.
93 Training of Superintendents of Small Hospitals. E. J. Johns.
94 Building of Hospital; Construction. O. H. Bartine, New York.
95 Mechanical Equipment of Hospitals. D. D. Kimball, New York.

New Jersey Medical Society Journal, Orange

October, XII, No. 10, pp. 481-532

96 Every Obstetric Case a Surgical Case. J. W. Fithian, Camden
97 Medical Witness. W. J. Arlitz, Hoboken.
98 Treatment of Old Brain Injuries. M. W. Reddan, Trenton.
99 Laryngoscopy, Bronchoscopy and Esophagoscopy. H. Vaughan, Morristown.

New Orleans Medical and Surgical Journal

October, LXVIII, No. 4, pp. 215-286

100 Cardiospasm Causing Enormous Dilatation of Esophagus. (To be continued.) R. Matas, New Orleans.
101 Infectious Diarrhea. C. J. Bloom, New Orleans.
102 Incomplete Amputation of Penis with Successful Repair. P. J. Gelpi, New Orleans.
103 Clinical Interpretation of Serum Tests for Typhoid and for Syphilis. S. C. Jamison, New Orleans.
104 Intestinal Parasites in Honduras. N. Barlow, Cuyamel, Honduras.

Northwest Medicine, Seattle

October, VII, No. 10, pp. 305-338

105 Prevention of Cancer. A. E. Rockey, Portland, Ore.
106 Bacterial Etiology of Rheumatism. C. S. Wilson, Tacoma.
107 Rheumatism as Factor in Surgical Diagnosis. H. E. Allen, Seattle.
108 Relation of Tonsils to Rheumatism. W. Johnston, Spokane.
109 Gastro-Intestinal Conditions and Rheumatism. A. P. Lensman, Seattle.
110 Complications and Sequelae of Rheumatism. W. S. Griswold, Seattle.
111 Treatment of Rheumatism. A. M. Smith, Bellingham.
112 Lymphangioplasty in Treatment of Some Leg Ulcers. J. T. Mason, Seattle.
113 Expert Evidence in Courts from Standpoint of Physician. P. Rockey, Portland, Ore.
114 Tonsillectomy and Illustrations of Operation with Special Knife. S. M. Samuels, Seattle.
115 New Refraction Cabinet. A. B. Mattice, Seattle.

New York Medical Journal

October 23, CII, No. 17, pp. 833-880

116 Tuberculosis of Patella. A. J. Davidson, Philadelphia.
117 Some Unusual Gastro-Intestinal Cases. A. Bassler, New York.
118 Extragenital Chancres. H. K. Gaskill, Philadelphia.
119 Opposite Sex Twins in One Body? W. L. Howard, Westboro, Mass.
120 Endamebic Dysentery. N. Barlow, Cuyamel, Honduras.
121 Epididymis-Vas Anastomosis for Sterility. W. F. Bernart, Chicago.
122 Phenoltetrachlorphthalein Test of Liver Function. M. Kahn and J. R. Johnston, Pittsburgh.
123 Injuries to Bone at Tendon and Ligament Insertions without Local Tenderness. A. H. P. Leuf, Philadelphia.
124 New Profession; Social Welfare Worker. M. B. Gordon, New York.
125 Rectal and Anal Fistula. J. Frankel, New York.

Oklahoma State Medical Association Journal, Muskogee

October, VIII, No. 5, pp. 153-184

126 Phases of Pellagra. F. S. Clinton, Tulsa.
127 Pellagra in Oklahoma and Comparison with Statistics from Elsewhere. C. R. Day, Oklahoma City.
128 Local Anesthesia. D. E. Little, Eufaula.
129 Surgical Anesthesia. T. C. Burns, Oklahoma City.
130 Local Anesthesia in General Surgery; Prevention of After Pain and Shock. L. F. Watson, Oklahoma City.

Public Health Journal, Toronto

October, VI, No. 10, pp. 477-530

131 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto
132 Pasteurization of Milk. J. Race, Ottawa.
133 Tuberculosis and Bacteriology of Every Day Life. J. Grant, Ottawa.
134 Registration of Tuberculosis. E. Dyke, Toronto.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

October, XXIII, No. 10, pp. 285-308

135 Pyelitis in Infancy and Childhood. J. O. Segura, Houston, Tex.
136 Present Status of Tonsil Surgery. J. O. McReynolds, Dallas, Tex.

United States Naval Medical Bulletin, Washington, D. C.

October, IX, No. 4, pp. 547-746

137 Epidemiology of Outbreak of Measles at Naval Training Station, Norfolk, Va. C. E. Riggs, U. S. Navy.
138 Present Status of Hospital Corps. W. E. Eaton, U. S. Navy.
139 Use of Hospital Ships in Time of War. R. J. Straeten, U. S. Navy.
140 Venereal Disease Aboard Ship. G. F. Cottle, U. S. Navy.
141 Some Dangers in Passing Ureteral Catheter to Kidney. B. C. Willis, U. S. Navy.
142 Shanghai and Yangtze River Hospitals. R. H. Laning, U. S. Navy.
143 Some Medical Aspects of Upper Yangtze River Country. D. C. Post, U. S. Navy.
144 Some Medical Conditions in China. R. G. Davis, U. S. Navy.
145 Ambulance Motor Boat for Hospital Ships. E. M. Blackwell, U. S. Navy.
146 Unusual Type of Typhus on U. S. S. Monocacy; Report of Case. W. B. Hetfield, U. S. Navy.
147 Injury by Dynamite Explosion. G. C. Thomas and L. W. Johnson, U. S. Navy.
148 Case of Hemorrhagic Pancreatitis. G. C. Thomas and L. W. Johnson, U. S. Navy.
149 Salvarsan in Treatment of Schistosomiasis; Report of Case. D. C. Post, U. S. Navy.
150 Unusually Severe Case of Urticaria. W. E. Eaton, U. S. Navy.
151 Early Reinfection with Syphilis. T. W. Richards, U. S. Navy.
152 Fatal Case of Cecal Ulceration with Extensive Complications. W. L. Mann, Jr., U. S. Navy.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 2, II, No. 2857, pp. 493-524

1 *Injuries of Superior Longitudinal Sinus. G. Holmes and P. Sargent.
2 Treatment of Gunshot Wounds of Head, with Special Reference to Apparently Minor Injuries. J. E. H. Roberts.
3 Treatment of Gunshot Wounds of Head. G. G. Tabuteau.
4 *Treatment of Septic Wounds by Continuous Oxygenation or Irrigation. W. A. Wood.
5 Sandfly Fever and Bacteriology; Vaccine Treatment. C. J. Stocker.
6 Adaptable Eye Shade for Microscopic Use. S. G. Shattock.

1. Injuries of Superior Longitudinal Sinus.—Up to the present Holmes and Sargent have seen over seventy cases in which the longitudinal sinus was injured or the circulation in its venous tributaries disturbed in its immediate neighborhood, that is, in the lateral lacunae, or in cases in which the veins enter it. In many of these cases there was no direct damage to the brain, either by the projectile or by depressed fragments of bone, but in others the disturbance of the venous circulation was associated with gross cerebral lesions. The symptoms in these cases have varied much according to the severity of the injury and the region in which the sinus was damaged. In many cases in which the chief symptoms were due to injury of the longitudinal sinus or its tributary veins, associated lesions of the brain existed. The most common type of injury is a gutter or tangential wound at the middle line of the head, which may be either sagittal, coronal or oblique. Frequently, however, the injury was a perforating wound or an in-and-out-wound of the skull, the entrance and exit being on opposite sides of the middle line and close to it, with considerable comminution of the bone between them; here the sinus was generally lacerated, and in certain instances it was completely cut through by the missile, but it was occasionally only compressed by indriven fragments of bone.

The distribution of motor symptoms is unusual and the type of motor paralysis likewise. The extent of the palsy varies according to the site, severity and extent of the lesion; in twenty cases all limbs were affected; in thirty-one both legs and one arm were weak; in sixteen only the lower limbs were affected; in six the symptoms were mainly hemiplegic and in five one leg alone presented any palsy. The distribution of the paralysis and its relative severity in different segments of the limbs is, however, peculiar, and differs from that of the cerebral palsies, most commonly seen in civil practice. The more proximal segments of the upper limbs are most seriously paralyzed, and the weakness diminishes distalward. In this respect the paralysis contrasts strongly with that seen in the ordinary hemiplegia due to vascular lesions, in which the distal segments of the upper limbs are almost invariably more severely affected than the proximal and recover less rapidly. Further, a definite paresis of the face or tongue is extremely uncommon, and is at the most transient, while speech is never affected in the pure sinus injuries. The trunk muscles may be, however, affected, especially those of the back; the patient is then unable to sit up and often cannot roll over in bed.

The distribution of the palsy in the legs is the converse of that of the arms; here it is always the distal movements that suffer more severely, and in slight cases and during the recovery of more severe ones the authors have repeatedly seen complete paralysis of the toes and ankle only, with the knee movements only relatively weak and those of the hips strong. Even more striking than the unusual distribution of the paralysis is the rigidity which is almost always associated with it. It is generally coextensive with the paralysis, and closely related to it in its degree. The early onset of this rigidity is another striking point; the authors have seen it well marked within twenty-four hours of the infliction of the wound, and in some instances at least it has been noticed by the patient almost at once. It has shown no tendency to increase after the patients have reached the base hospitals; that is, usually within forty-eight hours, but, on the other hand, it gradually diminishes *pari passu* with any return of power that may occur.

The rigidity is often so great that the resistance to passive movement is extreme; it may, for instance, be quite impossible for a man of moderate strength to separate the knees. Peripheral stimulation, as pricking the sole or palm, increases the rigidity and the legs may become more rigid when the patient coughs or attempts any strong voluntary movement with his arms. Despite the great rigidity, there seems to be little tendency for contractures, that is, organic shortening of the muscles, to develop. The sensory disturbances in these cases are almost always those of a pure cortical lesion unaccompanied by any shock effect. In a certain number of cases the functions of the bladder were affected. As a rule, the functions of the cranial nerves were unaffected, but in several patients the ocular movements were disturbed. The general symptoms of intracranial pressure have been as a rule pronounced.

4. **Septic Wounds Treated by Continuous Oxygenation or Irrigation.**—A severely lacerated and septic wound about the knee in a child was treated by Wood by continuous oxygenation under pressure. A rubber bag constructed open at both ends and provided with sleeves at the ends and with a valve through which the oxygen can be introduced, was slipped over the leg like a stocking and the two ends were rendered gas-tight by firm bandaging. Oxygen was introduced from a cylinder up to the pressure of 3 to 4 pounds. With ordinary bandages the bag remained inflated with oxygen for about twelve hours, with rubber bandages, for longer. The wound rapidly cleaned and the granulation tissue assumed a most healthy appearance in a shorter time than one would have expected. The discharge collects at the bottom of the bag and can be either drawn off by a drain tube, or the bag can easily be removed, boiled, replaced and refilled within a short time and without pain.

Indian Medical Gazette, Calcutta

September, L, No. 9, pp. 321-360

7 Some Experiences in War. H. Watts.
8 Review of Year's Medicolegal Work in Calcutta Morgue, 1914 (Including Comparative Figures for Triennium 1912-1914). O. S. Moses.
9 Serodiagnosis of Syphilis. W. D. Sutherland and G. C. Mitra.
10 Acidosis and Edema in Its Relation to Glaucoma. H. Smith.
11 Case of Malingering. A. W. Overbeck-Wright.
12 Case of Typhoid and Paratyphoid. M. L. Treston.
13 Operation of Shortening Round Ligaments for Cure of Retrodisplacements of Uterus. T. Jackson.
14 Second Cesarean Section. E. J. Murphy.
15 Method of Treatment of Hemorrhage from Lateral Sinus. S. Sen.
16 Hemorrhage into Pericardial Sac. L. Fink.
17 Abnormal Labor Cases. D. J. Asana.

Lancet, London

October 2, II, No. 4805, pp. 739-794

18 Operative Findings in Twelve Cases of Chronic Intestinal Stasis. W. S. Bainbridge.
19 Prevention of Fistula in Ano. P. Lockhart-Mummery.
20 Duration of Treatment in One Thousand and Five Hundred Cases. J. Rae.
21 *Two Cases of Plumbism from Unusual Sources. A. J. Hall.
22 *Tonsils and Chronic Cervical Adenitis. H. Gardiner.
23 Shrapnel Located at Back of Orbit; Successful Extraction. W. J. Collins.
24 Massage in After-Treatment of Wounded. J. B. Mennell.
25 Case of Traumatic Tetanus. J. D. Hayward.
26 Cartridge Shot in Appendix. C. C. Boyle.
27 Breathing and Physical Exercises for Use in Cases of Wounds in Pleura, Lung and Diaphragm. C. MacMahon.

21. **Plumbism from Unusual Sources.**—In the first case cited by Hall the patient drank for some years "horehound beer." While formerly they had sold it in stone jars, recently they had kept it in large barrels in the cellar and "drawn" it up into the shop by an ordinary "beer-tap." This meant several feet of lead piping for the acid solution to pass through. A sample of the "horehound beer" as drawn from the tap for the consumer contained 1 grain of lead per gallon. The second patient was fond of his garden, and in order to protect his fruit and flowers from the birds carried with him an air-gun to shoot the birds whenever he went into the garden. In every suit of clothes he reserved the right-hand vest pocket for the little lead pellets used in his gun, so that at any time he could quickly have a shot at any bird he saw. He had also acquired a habit of constantly putting the finger and thumb of his right hand into this vest pocket and fingering these pellets.

22. **Tonsils and Chronic Cervical Adenitis.**—Gardiner claims that in the majority of cases (80 per cent.) of chronic cervical adenitis in cases in which no obvious source of infection is present, the tonsils are infected. The size of the tonsil makes no difference as to their infectivity, except that the small fibrotic variety is likely to be more dangerous than the large. The number of cases in which tubercle bacilli are present is relatively small, but is larger than in simple cases of enlarged tonsils. The frequent presence of other organisms than the tubercle bacillus in these cases suggests that a large proportion of the so-called chronic tuberculous glands are in reality chronic septic glands. The organisms are present in the deepest parts of the gland, and are, therefore, only removed by operations involving complete enucleation.

Practitioner, London

October, XCV, No. 4, pp. 449-588

28 Treatment of Acute Gonorrhea. C. Gibbs.
29 Iritis. A. W. Ormond.
30 Treatment of Wounds in War. H. S. Souttar.
31 Acute Mastoiditis. W. M. Mollison.
32 Permeating Mastoiditis. J. B. Pike
33 Nuclear Segmentation of Neutrophil Leukocytes in Health and Disease. F. E. Taylor.
34 *Dangers of Tuberculin. W. C. Wilkinson.
35 *Emetin Hydrochlorid. W. B. Robinson.
36 Valuation of Therapeutic Results. E. Hughes.
37 Vicious Circle of Habitual Constipation. J. B. Hurry.
38 Case of Traumatic Subdural Hemorrhage. H. V. O'Shea.

34. **Dangers of Tuberculin.**—The question defended by Wilkinson is that, in the hands of experts, tuberculin is not only free from the dangers which have been associated too lightly and erroneously with its administration, but is at once a valuable aid in diagnosis and an invaluable and indispensable remedy in treatment. He does not contend that it is the *ne plus ultra*, but the irresistible evidence of an experience extending over five years in hundreds of cases of tuberculosis of all forms and in all stages, leaves not the smallest doubt in his mind that an independent and impartial inquiry would disabuse the medical mind of the imaginary evils alleged to arise from its use. Such an inquiry would, in his opinion, dispel many of the errors still hindering a solution of a difficult problem, which has not yet been

approached and analyzed in accordance with the rules of logic and science, and would be the first step toward the general exploitation of tuberculin as a valuable diagnostic agent in doubtful cases of tuberculosis and as an invaluable remedy in a disease which is so widespread and so difficult to treat with success that no useful remedy should be left untried.

35. **Emetin Hydrochlorid.**—Robinson has used this drug with good results in mucous colitis, dysmenorrhea, phthisis and intestinal hemorrhage.

Bulletin de l'Académie de Médecine, Paris

September 21, LXXIV, No. 38, pp. 307-324

39 *Early Disinfection of Wounds. T. Tuffier.
40 Iron Bead in Glove Finger, Connected with Telephone, Locates Foreign Body. (Application de la balance de Hughes.) T. Tuffier.
41 Three-Day Fever Among the Troops at the Dardanelles. (Dengue d'orient.) A. Sarrailhé, P. Armand-Delille and C. Richet fils.
42 *The Gait with Artificial Legs. (Etude cinematographique de la marche chez les sujets amputés de la cuisse ou de la jambe.) Ducroquet.

39. **Early Disinfection of Wounds.**—Tuffier's remarks were summarized in the Paris Letter, p. 1473. He declares that it can never be reiterated too often that infection can be nipped in the bud, while allowed a few hours to develop and spread, it gets quite beyond our control. To nip infection in the bud, the more recent workers have found a hypertonic salt solution most effectual, thanks to its osmotic properties, but it does not check the development of the streptococcus. Tuffier himself prefers Carrel and Dakin's method applied at once and completed within twelve hours. It is proving astonishingly effectual in warding off suppuration, he says.

42. See Paris Letter, p. 1473.

Presse Médicale, Paris

September 23, XXIII, No. 44, pp. 361-368

43 *Tests of Reserve Force of the Heart. (L'aptitude militaire des cardiaques.) A. Martinet.
44 War Delirium in Typhoid. (Les délires guerriers dans la fièvre typhoide.) Devaux and Logre.
45 *Improved Technic for Serodiagnosis of Syphilis. (Une "sensibilisatrice" syphilitique thermolabile; modification de la technique de la réaction Bordet-Gengou-Wassermann.) V. Busila.
46 Severing Tendon in Treatment of Gunshot or Shell Wound. (Des sections tendineuses dans les traumatismes de guerre.) D. de Fortunet.

September 27, No. 45, pp. 369-376

47 *Phagocytosis-Enhancing Action of Magnesium Chlorid. (Cytophylaxie.) P. Delbet and Karajanopoulo.
48 Tardy Hemorrhage After Wound of Artery. (Ouverture tardive des artères dans les plaies par projectiles de guerre.) R. Grégoire.
49 Diplococcus Septicemia. (Diplococcémie.) Broquin-Lacombe and Vulquin.

September 30, No. 46, pp. 377-384

50 *Research on Antiseptics in Treatment of Infected Wounds. H. D. Dakin.
51 *Albuminuria not a Constant Sign of Meningeal Hemorrhage. E. Macris.

43. **Determination of the Reserve Force of the Heart.**—Martinet says that the ordinary methods of examination do not reveal whether the heart will be able to stand sudden stress. Some hearts, even with organic disease, are able to sustain extra strain while others apparently valid break down under it. Clinicians have grown gray, he remarks, studying this subject, but certainty has not yet been realized. The findings with various tests are subjective (dyspnea under exercise), or they are tardy (enlargement of the liver, edema, etc.), or they are not pathognomonic (oliguria, enlargement of the liver, etc.). The only exploratory means at our disposal which yield objective results are the pulse rate and the arterial tension, noting the curves for each, measured as the patient reclines, then again as he stands, and then again after a special exercise (bending the legs twenty times), and then again after reclining anew. In taking these measurements, he waits each time until two successive measures give the same figure, thus eliminating the emotional factor. The curves for the pulse and for the arterial pressure are given for a series of such tests applied to a healthy person and to one with a weak heart. With the former the pulse figures were respectively 76, 80, 96, 76 and 60, while the corresponding pulse with the weak heart was 104, 122, 148, 124 and 120. Between these extremes lies a broad field in which the figures reveal whether the heart is capable of extra effort or will break down under it, thus permitting the sifting out of the men still capable of military service although their cardiovascular system is not intact.

45. **Improved Technic for Serodiagnosis of Syphilis.**—Busila relates that syphilitic serum may contain a sensitizer that resists heating and also one that is destroyed by heat. The deviation of complement and Wassermann tests do not discriminate with sufficient precision between these two sensitizers, while the preponderance or absence of one or the other has a pronounced influence on the outcome of the tests. In order to eliminate error from this source, Busila has modified the technic and states that his method is applicable to all serums and requires only two hours or two and a half from the moment the blood is drawn. Instead of heating, to suppress the human complement, he titrates it simultaneously with the reaction. When the serum is heated this destroys the thermolabile sensitizer, and it is in the cases in which this sensitizer predominates, that the syphilis is most difficult to diagnose. Hence his modified technic is particularly useful, he declares, in cases of latent, imperfectly treated, or "nervous" syphilis.

47. **Cytophylaxis Under Magnesium Chlorid.**—Practically the same article was summarized in these columns October 23, p. 1492.

50. **Technic for Sodium Hypochlorite Disinfection of Wounds.**—The main points in this communication have already been summarized in The Journal, Oct. 2, 1915, p. 1221.

51. **Albuminuria with Meningeal Hemorrhage.**—Macris' article was summarized on p. 986, Sept. 11, 1915.

Revue Médicale de la Suisse Romande, Geneva

September, XXXV, No. 9, pp. 469-532

52 *Constitutional Iodism and Its Relation to Exophthalmic Goiter. A. Oswald.
53 The Pseudodiphtheria Bacillus. (De la résistance du bacille pseudodiphtérique à la decoloration, moyen de diagnostic différentiel d'avec le bacille diphtérique.) Reh.
54 Bradycardia from Heart Block in Boy of 9. A. d'Espine and Cottin.
55 Trauma as a Factor in Tuberculosis. Meyer.

52. **Constitutional Iodism.**—Oswald discusses the phenomena liable to develop after administration of iodin internally, saying that the Zurich region seems to be the headquarters for this type of disturbances. They were first systematically described in Rilliet's classic work with the above title, published in 1860. The syndrome he described occurs mostly in persons over 40. Besides this, there is a syndrome which resembles exophthalmic goiter in every respect; it develops in the young, and in those who have never had any previous symptoms of exophthalmic goiter, and it usually subsides in time after suspension of the iodin treatment. The entire literature on the subject has been studied by Oswald and he relates considerable personal experiences. Everything seems to indicate that the iodin stimulates the thyroid, and possibly other glands with an internal secretion, to extra functioning. The result is thus the same as in primary exophthalmic goiter, which is now ascribed to extra functioning of the thyroid. Both syndromes are the result of an excess of thyroid secretion being poured into the circulation, and there is no reason for surprise that iodin thus can induce the true Basedow syndrome. A predisposition is necessary for both, but it is not necessary to assume for either that the thyroid is producing an abnormal secretion; an excessive amount of a normal secretion is enough to explain all the symptoms observed, given an abnormally sensitive nervous system. With iodin hyperthyroidism the nervous system is suffering from the iodin, and it recuperates when the iodin is withdrawn. With true exophthalmic goiter, the nervous system is suffering from the chronic oversupply of thyroid secretion and the nervous factor is thus both a predisposing and the provocative ele-

ment in the clinical syndrome. Recuperation is consequently more difficult.

55. **Traumatic Tuberculosis.**—Meyer relates the case of an apparently robust young man who seemed entirely healthy until a shell wound of the chest, which was followed by hemoptysis and tubercle bacilli in the sputum. There is every reason to assume that the tuberculosis might not have developed if it had not been for the chest wound, which evidently roused to virulence some latent tuberculous focus.

Berliner klinische Wochenschrift

September 20, LII, No. 38, pp. 989-1012

56 *Indications and Prognosis in War Wounds of the Nervous System. (Indikationen zu den Maassnahmen bei den Kriegsverletzungen des Nervensystems und Prognose dieser Verletzungen an sich und nach den verschiedenen Eingriffen.) L. Bruns.

57 *Influence on Metabolism of Acute Serous Meningitis in a Diabetic. L. Lichtwitz.

58 *Miostagmin Reaction in Cancer. O. Wissing.

59 Influence of Antityphoid Inoculations on Incidence and Course of Typhoid in German Army. (Einfluss der Typhusschutzimpfungen auf die Typhuserkrankungen bei der—Armee im Herbst und Winter, 1914/15.) A. Goldscheider and K. Kroner. Commenced in No. 36.

60 Improved Casts for Fractures. (Vorschlag zur Behandlung der Schussfrakturen im Felde.) G. Frank.

September 27, No. 39, pp. 1013-1032

61 *Sham Cysts in Spinal Meninges. (Meningeale Scheincysten am Rückenmark.) K. Bonhoeffer.

62 Serum Diagnosis of Glanders. (Zur Rotzdiagnose.) W. Pfeiler.

63 Some Judicial Decisions Affecting Physicians in Germany. (Aerztliche Rechtsfragen.) H. Lieske.

56. **Gunshot and Shell Wounds of the Nervous System.**—Bruns is consultant neurologist in the tenth German army corps, and here reviews what he has learned from study of 900 cases traced over considerable periods. The outcome in a large proportion of the cases has been favorable beyond all anticipations, even after wounds of the brain itself. He takes up in turn the injuries of the peripheral nerves, brain and skull and spinal cord and vertebrae, the disturbances from ischemia and other injury of the muscles, the cases of neurasthenia, hysteria, etc., tetanus and other diseases of the nervous system, and cases of aggravation or simulation of such, and the indications for treatment based on these experiences.

57. **Influence of Intercurrent Febrile Diseases on Diabetes.**—The diabetic man of 26 had been able to stand the stress of the campaign for a time, but the lack of proper diet brought weakness and loss of thirty pounds in weight. Then came a mild typhoid and during convalescence febrile serous meningitis developed. Under the influence of the fever and loss of appetite he received only 30.2 calories per kilogram of weight while the output of sugar rose abruptly to such a height that only 19.2 calories remained to be utilized. There must have been destruction of 189 gm. of albumin.

58. **The Miostagmin Reaction in Malignant Disease.**—Wissing has applied the stalagmometer in 115 cases to ascertain the changes in the drop-forming property of the serum in various pathologic conditions. He has modified Ascoli's original technic for this miostagmin reaction by refraining from heating the serum. The reaction is more reliable at room temperature, and the findings during the first hour are the criterion. The reaction is not specific for cancer, but none of the other conditions in which it is likewise positive are liable to be confounded with cancer, except possibly when there is jaundice. The reaction is always positive with the latter, but it disappears with the cholemia, while in malignant disease it persists without change. The miostagmin reaction was found constantly negative in conditions difficult to differentiate from cancer, such as benign tumors, gastric ulcer, chronic inflammation of the stomach or bowel, leg ulcer, afebrile surgical tuberculosis, chronic inflammatory conditions in the female genital organs, and syphilis.

61. **False Cysts in Spinal Meninges.**—Bonhoeffer relates the details of two cases of spinal-cord trouble in which the discovery of cysts in the pia and arachnoid apparently explained the disturbances. But the lack of any benefit from their evacuation and other circumstances justify the assumption that the cyst-like protuberances had developed casually in the course of the laminectomy, in consequence of the abnormal pressure in the subdural space, and had not existed before. In any event they had nothing to do with the previous clinical picture. The actual disease of the spinal cord has progressed since, unmodified by the laminectomy and draining of these sham cysts. Necropsy in one case further confirmed these views.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 25, XLV, No. 39, pp. 1217-1248

64 Varieties of the Babinski Toe Reflex and Their Import in Diagnosis. R. Bing.

Deutsche medizinische Wochenschrift, Berlin

September 23, XLI, No. 39, pp. 1145-1176

65 *Action of Morphin on the Diseased Heart. (Die fördernde Wirkung des Morphiums auf die heterotope Reizbildung im Herzen.) H. E. Hering.

66 Bacteriotherapy of Puerperal Infections. III. R. Kraus and S. Mazza.

67 Technic for Bacteriologic Diagnosis of Typhoid. (Die Verwertbarkeit der "Schrägagarröhrchen-Typhus-Diagnose.") K. Halbey.

68 Collective Inquiry on the Question of Sexual Abstinence. A. Neisser.

69 Specificity of the Abderhalden Reaction. E. Herzfeld.

70 Radiotherapy of Lupus and Other Tuberculous Disease of the Skin. (Höhensonnenbehandlung tuberkulöser Erkrankungen der Haut.) G. A. Rost.

71 *"Scrofula." (Wesen und Behandlung der Skrofulose.) H. Schelble.

72 Localization of Foreign Bodies. (Einfacher Apparat zur Ortsbestimmung von Fremdkörpern.) H. Günther and G. Vogel.

73 *Improved Technic for Hospital Construction and Ventilation. (Einige Ratschläge für den Bau von Krankenhäusern.) W. Block.

65. **Action of Morphin on the Heart.**—Hering discusses the experimentally demonstrated fact that morphin in large doses, by increasing vagus tonicity, may indirectly induce a heterotopic impulse for the heart action, that is, induce ventricle automatism. The effect of the morphin varies as the heart is sound or diseased, the pathologic heart responding more readily. Hence extra caution is necessary when giving morphin in cases with a tendency to abnormally located impulse production. The sudden onset of fibrillation is a reasonable explanation in many cases of an immediately fatal attack of angina pectoris, and morphin, by promoting the tendency to fibrillation, that is, to heterotopic impulse production, may prove a factor in the fatal outcome. At the same time, he warns that the valuable aid from morphin in angina pectoris should not be discarded, but only that the dosage should be supervised with special care. He remarks parenthetically that the action of drugs on animals has been studied too exclusively on healthy animals. Diseased organs respond more readily to smaller doses.

71. **"Scrofula."**—Schelble discusses the old conception of scrofula, showing that when one has eliminated from it tuberculous affections of the skin, soft parts, bones and lymph glands, there is nothing left of the "scrofula" syndrome but the facies scrophulosa. This, he asserts, belongs to the exudative diathesis, and it is still a question whether tuberculosis is involved in this or not. Clinical experience seems against it. The cases should be designated as the exudative diathesis in connection with measles, with vaccination, with catarrhal infection, or the like. This affords insight into the individual cases and promotes causal treatment. The fine results obtained by treatment of the exudative diathesis and the provocative factors, ignoring the hypothetic tuberculosis, testify to the correctness of the above assumption, especially in cases of conjunctivitis with phlyctenas. All observers agree that signs of the exudative diathesis are manifest in all cases of phlyctenous conjunctivitis, and that the exudative diathesis is always in a severe form. It is hard to explain, however, why the phlyctenas develop so late, later than the other manifestations of the exudative diathesis, sometimes not until long after puberty. In these cases tuberculosis may be the provocative factor. It would be interesting to learn whether the phlyctenas are more rebellious to treatment in the cases with a positive response to tuberculin than without. The treatment is discussed in detail and the point emphasized that when the exudative diathesis

is known to exist, every aggravation of the condition should be early recognized and appropriate measures enforced. By the exudative diathesis he means Czerny's original clinical picture, confirmed in thousands of cases, the congenital anomaly consisting in a tendency to exudation in the skin and mucosa, plus hyperplasia of the lymphoid organs, without tuberculosis as a primary factor. He warns against attempts to remove the enlarged glands in the neck even when they are known to be tuberculous. They are frequently secondary to pathologic changes in the mouth or tonsils and retrogress under appropriate treatment of the latter. If the lymphoma has softened it will heal under a mere incision. Only when the suppuration involves adjacent tissues is more of an operation required. Many of the leading surgeons now denounce all attempts at operative removal of enlarged glands in the neck and commend conservative measures, including radiotherapy. Rollier's fine results with heliotherapy conservative treatment bring to mind the tragic histories of recurrence after extensive operative procedures.

73. **Construction of Hospitals.**—Block gives a number of practical suggestions which were carried out in the construction of a large hospital at Hannover and have proved their usefulness during the year since the hospital has been in service. The floors are made of asphalt and covered with cork linoleum. Various advantages are claimed for this combination, including superior elasticity, waterproof properties and that the linoleum can be laid twenty-four hours after the asphalt has been applied. Sheets of cork on both sides of the wall effectually deaden the sounds between adjoining rooms. The ventilation contrivance found practical and serviceable is to have double windows, each with a cover opening inward. The cold air entering low down in the outer window is warmed by a radiator below and rises to emerge through the broad opening high up in the inner window. The radiators should not be too far apart, and their surface should be smooth to facilitate keeping them clean. For the same reason they should stand a few inches from the wall. Soiled clothes shafts disseminate odors, and it is much better, he insists, to collect the linen in airtight metal cans.

Medizinische Klinik, Berlin

September 19, XI, No. 38, pp. 1039-1064

74 *Experiences with Typhoid Among the Troops. (Erfahrungen und Gedanken über Typhus und Typhusbehandlung im Felde.) A. v. Hecker and C. Hirsch.
75 Gas Phlegmons in the Wounded. P. Sackur. Commenced in No. 37.
76 Relapsing Fever. (Rückfallfieber.) L. v. Korczynski. Concluded in No. 39.
77 Paralysis of Abdominal Muscles with Acute Anterior Poliomyelitis. (Zur Frage der Bauchmuskellähmungen bei Heine-Medinscher Krankheit.) K. Halbey.
78 *Serotherapy in Epidemic Cerebrospinal Meningitis. M. Kurak.

74. **Typhoid Among the Troops.**—In the typhoid service in charge of Hirsch and Hecker the mortality was only 5.4 per cent. excluding the cases suffering from long transportation, and 7.4 per cent. including all the cases. Saline infusion rendered valuable service; also systematic ingestion of salt. Some of the more seriously sick, with recurring collapse, were given 200 or 300 injections (camphor, caffein, digitalis) and finally recovered, without displaying any signs of drug intoxication. The main point is ample nourishment plus careful supervision of the heart and vasomotors. The severer cases were in men who had been inoculated against typhoid while they were in the incubation stage. The course of the disease was milder, the longer the interval since the last inoculation. Another rule which seemed to prevail also was that relapses were more numerous the milder the primary disease. The fever curve in the inoculated seems to lose its characteristic features.

78. **Serotherapy of Meningitis.**—Kurak reports from Vienna that in seventy-five cases of epidemic meningitis in the last thirteen years, forty-three were treated by serotherapy and the proportion recovering jumped from 31 to 56 per cent.; all but 39 per cent., however, were left with some permanent defect. The dosage of the antiserum had been small, the maximum 60 c.c. In the last series of twenty cases the doses were materially increased. These cases are described in detail to emphasize the far better results obtained when the serotherapy is begun early and when three or four injections of 80 c.c. each are made (40 c.c. intralumbar and 40 c.c. intramuscular) on successive days. All recovered of the six given from 160 to 300 c.c., although one was left with deafness. In the total twenty cases, there were six deaths (33.3 per cent.).

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

October, XLII, No. 4, pp. 287-388

79 Technic for Obstetric Internal Examination; One or Two Fingers? (Zur Frage der inneren Untersuchung mit einem oder zwei Fingern.) B. S. Schultze.
80 *Roentgen Measurement of the Pelvis. (Zur röntgenologischen Beckenmessung.) E. Runge and E. Gruenhagen.
81 *Dystocia from Deformity of the Uterus. (Geburtsstörungen durch Entwicklungsfehler der Gebärmutter.) T. H. Van de Velde.
82 *Loosening Up and Rupture of the Symphysis. E. Kehrer.
83 Management of Laceration of the Cervix During Delivery. (Intermediäre Trachelorrhaphie als Prophylaktikum gegen die mitunter auftretenden unangenehmen Erlebnisse infolge von Cervixrissen.) H. J. Boldt (New York).

80. **Roentgen Estimation of Measurements of Pelvis.**—Runge and Gruenhagen think they have solved the problem of measuring the diameters of the pelvis by a stereoscopic Roentgen technic which they describe in detail. The patient lies comfortably flat on her back. The tube is slightly displaced for the second, the stereoscopic, picture, but the impression from both negatives is taken on a single sheet of paper, and the measurements are calculated by an algebraic or geometric formula. They give a table with the measurements computed for the different figures usually obtained, and state that the method ensures absolute accuracy, or at most an error of a small fraction of a millimeter. They have had no opportunity to test the method on women since they have completed their computations, but have found it absolutely correct on men; some of them were examined postmortem and the figures obtained were identical with the computed findings or varied only from four to six tenths of a millimeter.

81. **Abnormal Childbirth from Defective Development of the Uterus.**—Van de Velde discusses the various forms of double uterus in their bearing on delivery at term, and also dystocia from defective development of the uterus, or from congenital deformity of the cervix. The uterine musculature is liable to be weak, the cervix rigid and the axis of the fetus and uterus slant in respect to the pelvic inlet. This combination readily explains the rupture of the uterus in certain rare cases. The diagnosis in these abnormal conditions is misleading; in Tissier's case external version had been done and the placenta separated by hand without suspicion that the uterus was double, until this was revealed by the laparotomy. In a personal case described the fetus had developed to term in a double uterus which had no opening into the vagina in the gravid half. The finger could be introduced into the empty other half and the child was safely delivered by vaginal cesarean section. The woman passed through several pregnancies later, twice in the other half and once in this, but none developed to term. Tuberculous peritonitis followed in later life and compelled laparotomy before recovery, and the anatomic conditions were minutely inspected. The few somewhat similar cases on record are compared with this case, but no answer is suggested for the question why this half of the uterus with atresia permitted conception although it had never apparently participated in menstruation. After the artificial opening had been made, menstrual hemorrhages issued from it as regularly and normally as from the normal half.

82. **Rupture of the Symphysis.**—Kehrer has compiled quite an extensive literature on rupture of the symphysis during delivery, and gives the details of 100 cases. He adds to the series a case personally observed. The patient was a previously healthy tertipara with contracted pelvis. Her children had all been stillborn and the high forceps had been applied repeatedly at this time, with external impression of the head into the pelvis, the woman in Walcher's position. On failure of the high forceps again, perforation and cranioclast extraction at once had been planned, but the symphysis ruptured

during the high forceps. The urethra was torn loose and slit almost its entire length, and the neighboring ligaments were also torn. The sound of the tearing was audible and unmistakable, and a gap over an inch wide could be felt in the symphysis. The head came through at once, and the bleeding in the region of the rupture was arrested by tamponing. The patient died sixteen days later from embolism in the pulmonary artery. In conclusion Kehrer summarizes fourteen cases of traumatic rupture of the symphysis, all but one in men.

Three degrees of rupture of the symphysis have been observed; partial rupture of the ligaments, occurring during delivery and, exceptionally, during pregnancy; complete rupture occurring acutely during delivery or supplementing a previous partial rupture. The third type of rupture is that from overstretching and loosening up of the symphysis ligaments, with or without gaps in the cartilage. The result is a kind of flail joint, developing during a pregnancy or returning in successive pregnancies. A distinct noise is usually heard, and the woman feels as if something had torn. The sound is made mostly by air rushing in as the vagina is torn. When this does not occur and the symphysis ruptures while the woman is under the influence of an anesthetic, the cause for the pains and tenderness in the region may not be suspected for days. The sudden dropping down of the fetus' head is characteristic, and the skin over the symphysis can be pressed down in the form of a long groove. The gap is most evident, however, on palpation through the vagina. After rupture of the symphysis the legs turn outward, so that the knees and feet lie on their outer side. Tearing of the urethra and bladder complicate the rupture at times beyond repair. Gangrene of the foot was observed in one case; fatal embolism in two, and in a few cases bone or cartilage sequesters were expelled months afterward. The ultimate outcome is about the same as after subcutaneous symphysiotomy.

The obstetrician cannot be held responsible for the rupture unless possibly in most exceptional cases of application of extreme force, and then only presumptively, as the records show that such ruptures have occurred with spontaneous births, also spontaneously during pregnancy and delivery, and during delivery under the hands of the most experienced obstetricians. Even when the physician fails to recognize the rupture, and fever and other symptoms develop, these may be masked by puerperal fever or parametritic exudates. A partial rupture during delivery may become complete days or weeks later. It is not always easy to determine whether suppuration at the symphysis is the result of rupture during labor or a puerperal metastatic process. The patient must be kept absolutely still on her back; if the gap is not large it may grow up in two weeks. At future deliveries, conditions favoring rupture must be avoided. The pelvis must be held up with a supporting band and spreading of the knees avoided.

Münchener medizinische Wochenschrift, Munich

September 21, LXII, No. 38, pp. 1277-1308

84 Agglutination in Diagnosis of Typhoid in the Inoculated. (Wert der Agglutinationsprobe bei Typhusgeimpften.) E. Reiss.
85 Open Puncture of the Pleura. A. Schmidt.
86 Gunshot and Shell Wounds of the Joints, and Treatment. (Gelenkverletzungen, Gelenkeiterungen und ihre Behandlung.) E. Payr. Concluded in No. 39.
87 Antitoxin Found in Serum during and soon after Tetanus. C. T. Noeggerath and E. Schottelius.
88 Harmlessness of Antityphoid Vaccination. (Unschädlichkeit der Typhusschutzimpfungen.) E. Laqueur.
89 *Futility of Disinfecting Field of Operation as a Rule. (Wert der Desinfektion des Operationsfeldes.) M. zur Verth.
90 *Open Treatment of Gunshot and Shell Wounds. (Offene Wundversorgung.) Härtel.
91 Anamnesis of So-Called War Psychoneuroses. R. Laudenheimer.
92 Medicomechanical Appliances to Use in Bed. Fuchs.
93 Roentgenoscopy of Gas Phlegmons. B. Döhner.
94 Partial Amputation of Foot According to Sharp. A. Harf.
95 Amputation Technic. Merkle.
96 Handkerchiefs as Sources of Infection of Others. (Zur Vorbeugung der epidemischen Genickstarre.) J. Petruschky.

89. **Disinfection of Field of Operation.**—Zur Verth declares that before disinfection can be done there must be infection and it is by no means certain that the skin of the field of operation is already infected. As a rule this is not the case, and hence measures to disinfect are superfluous and do merely harm. It is better, he insists, to omit this alleged disinfection of sound skin until we have some method for disinfection which is actually harmless. Wounds with much destruction of tissue require mechanical disinfection. The iodin technic represents progress as it simplified and crowded out more harmful measures. But the experience in this war has shown that the iodin is far from harmless. He adds that, while denouncing our present methods of chemical disinfection, he still emphasizes the dire importance of contact infection.

90. **Open Treatment of Wounds.**—Härtel is enthusiastic over the advantages of leaving wounds open to the air, merely covering them with a single layer of gauze to keep flies away and veil the lesion. The gauze is held up by a light wire support, the "wire butterfly," and the patients are grateful that they are spared the painful changes of dressings, while the physician appreciates it as he can thus keep the lesion under his eye all the time. There is no odor from the lesion. It is indispensable, however, that the limb should be immobilized. This leaves the organism free to devote all its energies to repair, and it does this without requiring the aid of chemicals.

Zentralblatt für Chirurgie, Leipzig

September 25, XLII, No. 39, pp. 705-720

97 Walking Prothesis after Amputation. O. Orth.

October 2, No. 40, pp. 721-736

98 Temporary Gastrostomy for Draining the Stomach in Ileus. (Ueber Magendrainage durch Gastrostomie.) G. Nyström (Stockholm).

Zentralblatt für Gynäkologie, Leipzig

September 25, XXXIX, No. 39, pp. 683-698

99 External Version with Placenta Previa. (Einiges zur Kritik der von Zalewski empfohlenen Steisstherapie der Placenta praevia.) W. Hannes.

October 2, No. 40, pp. 699-714

100 Mechanism for Inhibition in Urogenital Apparatus. W. Benthin.

Brazil-Medico, Rio de Janeiro

September 15, XXIX, No. 35, pp. 273-280

101 Leprosy in Form of Syringomyelia. J. Candido.

Hospitalstidende, Copenhagen

September 22, LVIII, No. 38, pp. 949-980

102 Tetanus in Boy of 4; Recovery under Serotherapy and Magnesium Sulphate. J. Nordentoft.

September 29, No. 39, pp. 991-1014

103 *Differential Diagnosis of Leukemic and Leukemoid Blood Pictures; Four Cases. H. Buhl. Commenced in No. 38.

103. **Differential Diagnosis of Leukemic Blood Picture.**—Buhl gives the minute details of four acute cases suggesting a generalized disease of the blood-producing apparatus. He compares them with the classic types, and discusses the views of various clinicians on the leukemic and leukemoid blood pictures. The article is illustrated. In each of his four cases the blood picture was that of one-sided neutrophil leukemia, but the numbers of leukocytes never reached the typical leukemic figure. The cases, thus, were of the transitional type between simple neutrophil leukocytosis and true leukemia. The patients were young men of 19 and 21 and two women of 24 and 25. The necropsy findings in two of the cases are also given. Death occurred after the first symptoms in nineteen days in one case, but the intervals were longer in the others. Radiotherapy seems to be contraindicated in primary "neutroleukemia," as a change in the blood picture to this type in true leukemia under benzol, radium or Roentgen treatment is generally regarded as a signal warning to suspend these vigorous measures. Benzol was tried in two of the cases here reported, but the results discourage further attempts in this line. In any event, one is on the safe side in taking the behavior of the eosinophils as a guide in treatment, in connection with large numbers of leukocytes. Subleukemic leukocyte figures may occur likewise with complications (sepsis), during remissions of leukemia, and under the influence of treatment.

Hygiea, Stockholm

LXXVII, No. 17, pp. 961-1024

104 Some Attempts to Produce Exophthalmos Experimentally. (Några försök att på experimentell väg framkalla exoftalmus.) A. Troell.
105 Pneumothorax after Exploratory Puncture in Typhoid. I. Holmgren and S. Orell.
106 Local Abscess Five Months After Injection of Friedmann's Anti-Tuberculosis Vaccine. K. Frumerie.

Norsk Magazin for Lægevidenskaben, Christiania

October, LXXVI, No. 10, pp. 1177-1304

107 *Research on Heredity in Norway. (Arvelighetsundersøkelser i Norge.) K. Bonnevie.
108 Syphilis Contracted Anew for the Third Time. R. Krefting.
109 The New Ophthalmologic Clinic at Christiania. (Rikshospitalets øienklinik.) H. Schiøtz.

107. **Research on Heredity.**—Bonnevie devotes nearly fifty pages to a study of various families in Norway showing inheritance of anomalies such as polydactylism, harelip, hemophilia, twin births or dwarf growth. His work to date is fragmentary, he admits, and is mainly to stimulate interest in the subject. He says that conditions in the families of Norway permit such research through several generations better than is possible elsewhere. The large families and the stable residence in remote hamlets facilitate the tracing of Mendel's laws of heredity. He urges that research of this kind should be planned to be carried on through future generations. Material should be accumulated now to serve as the bases for research workers ten or twenty years from now, and still later. The family trees he here presents will be far more significant when carried on further after an interval of twenty years. Cooperation between physicians and biologists is necessary for this, and the work must be organized and correlated. He suggests a central headquarters for the purpose, a heredity institute, to which single reports from different districts can be made, and where the data can be classified and correlated. He adds that Lundborg has already done considerable work in this line in Sweden, studying the hereditary development of myoclonus-epilepsy in certain rural families. His charts, published in 1913, embrace 2,232 persons in the Blekinge province; the myoclonus-epilepsy is shown to be recessive.

Ugeskrift for Læger, Copenhagen

September 16, LXXVII, No. 39, pp. 1545-1570

110 *Practical Suggestions for Sanatorium Treatment. N. J. Strandgaard.
111 *A Portable "Dark Room." (Et transportabelt Mørkekammer.) K. K. K. Lundsgaard.

110. **Practical Points in Sanatorium Treatment.**—Strandgaard draws some practical conclusions from his experience at the Boserup sanatorium in Denmark. He reiterates that a sanatorium is a combination of a hospital and a rural health resort, and would still maintain its usefulness even if a specific cure for tuberculosis should be discovered. Nowhere else could it be applied to such effect. He makes no attempt at overfeeding, merely striving to bring the patient's weight up to the standard of the life insurance tables. It generally soon reaches this spontaneously, and keeps there. He says that percussion and auscultation do not require complicated instruments or methods; the simplest are the most instructive. The main thing is to examine exactly symmetrical points, the patient sitting on a high stool without a back, and told to cough lightly as each point is auscultated. The stethoscope should be applied systematically at successive points; he enumerates a series of six regions in front, nine at the back and three at the side to be ausculted in turn. For recording the findings he lauds Bang's system of signs; the principles can be learned in five minutes, and several years' experience has confirmed the practicability and great value of the method. It saves fully an hour's work each day in the sanatorium. In comparison with Sahli's and other systems of signs, he has found the Bang method much more of a time-saver.

The prognosis of tuberculosis depends, he declares, on the benign or virulent character of the infection even more than on the stage it has reached. The patient's carelessness, abuse of alcohol, or similar accidental factors explain the recurrence in many cases. One young man, dismissed as clinically cured, had recurrence of trouble after a serious bicycle accident. In several other cases the family did not appreciate the necessity for sparing the recently "cured" patients and set them to hard physical labor which soon brought recurrence, as also return to unhygienic occupations or home privations. These points are familiar to all, but can never be reiterated too often, as also the pernicious influence of worry and care. A fracture heals whether one is happy or sad, but psychic factors may turn the scale with a tuberculous process in the lung. In some cases related the patients' homesickness counteracted the benefits of sanatorium treatment; in others, under grief at the death of some member of the family, or fear of scandal, the lung process flared up anew. In another case a young man worried over his wife's approaching confinement and long failed to benefit from the sanatorium treatment. His condition began to improve as if by magic after the baby came. Emotional factors are particularly potent for good or ill in women, both young and old.

111. **Portable Dark Chamber.**—Lundsgaard has found very useful for ophthalmoscopy in the sickroom and elsewhere a dark chamber contrived from an umbrella made with a deep curtain all around. An illustration is given of the one he uses.

Upsala Läkareförenings Förhandlingar

May 31, XX, No. 5, pp. 271-330

112 The Blood Pressure in Cats after Nephrectomy and Excision of Part of Remaining Kidney. (Blodtryckets förhållande efter njurexstirpation och njurresektion.) E. L. Backman.
113 Oxygen Tension in Body Fluids of Sea Anemone. (Om syrgasens tension i kroppsvätskan hos Coelenterater i fritt tillstånd i hafvet och efter vistelse i akvarium.) E. L. Backman.
114 Principles for Correction of Astigmatism. J. W. Nordenson.

September 8, No. 6-7, pp. 331-385

115 *Comparison between the Sugar Content of the Blood under Oral and Rectal Intake of Dextrose. (En jämförelse mellan blodsockerhalten vid oral och rektal tillförsel af dextros.) G. Jahnson-Blohm.
116 *Importance of Exposure to Tuberculosis during Childhood. (Till frågan om betydelsen af den tuberkulösa expositionen under barnaåldern.) A. Wallgren.
117 Technic for Bloodless Determination of the Blood Pressure in Animals. (Till tekniken vid oblodig blodtrycksmätning på djur.) E. L. Backman.
118 Shape of the Lower Jaw in Man. (Bidrag till kännedomen om underkäkens typologi hos människan.) G. Backman.

Supplementary Number

119 Food of the Populace in Germany during the War. (Om folknäringsfrågan i Tyskland under kriget.) O. Hammarsten.

115. **The Sugar Content of the Blood after Oral and after Rectal Intake of Dextrose.**—Blohm's tests were made on three healthy men of 24 and two diabetic men of 44 and 73. They took 10 gm. of dextrose by the mouth, or were given 30 gm. by rectal injection, all in an isotonic solution. These amounts were given at a single dose or fractioned. The sugar content of the blood rose at once after ingestion of the dextrose by the mouth, both in the diabetics and in the healthy, but no increase was perceptible in either after the rectal injection of the sugar. There seems to be thus some marked difference in the behavior of sugar in the body according as it is absorbed by the upper or lower bowel. The fact of the absorption by the rectum was established beyond question, but the cause of its different behavior after absorption at this point is still a mystery.

116. **Exposure to Tuberculosis as a Factor in Tuberculosis Later.**—Wallgren found a history of tuberculosis in the family before the age of 15 in 51 per cent. of 100 tuberculous persons, and in 13 per cent. of 100 healthy, all under the age of 40. A history of exposure to tuberculosis before the child was 5 years old was ascertained in 15 per cent. of the tuberculous and in only 1 per cent. of the healthy. Among the 100 tuberculous one or both parents had been tuberculous in 27 per cent.; a brother or sister in 6 per cent., and other relatives in 11 per cent. Among the 100 healthy persons only 2 per cent. had a history of a tuberculous parent; 2 per cent. had a tuberculous brother or sister, and 3 per cent. other relatives. The sexes were represented about equally in both series.

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ELECTIVE LOCALIZATION OF STREPTOCOCCI *

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The general systemic distribution of micro-organisms in certain diseases with a localized focus is well established, but the factors which determine the localization of bacteria after they gain entrance into the circulation are obscure.

In this paper I wish to record a summary of the results obtained from the intravenous injection, under a standard technic, of streptococci isolated from appendicitis, ulcer of the stomach and duodenum, cholecystitis, rheumatic fever, erythema nodosum, herpes zoster, epidemic parotitis, myositis and endocarditis, and to discuss the bearing of these results on localization of streptococci.

TECHNIC

The streptococci were usually grown from sixteen to twenty-four hours at 37 C. in tall columns of ascites (10 per cent.) dextrose (0.2 per cent.) broth (0.6+ to 0.8+) to which sterile tissue (guinea-pig kidney or heart muscle) was often added; the sterility of the ascites fluid and broth containing the tissue was always proved beforehand. After incubation smears were made, the cultures were centrifuged in the containers in which they were cultivated,[1] the supernatant fluid was decanted and the sediment suspended in sodium chlorid solution so that 1 c.c. of the suspension contained the growth from 15 c.c. of broth. The doses for rabbits (ear vein) were usually from 0.5 to 3 c.c., and for dogs (leg vein) from 1 to 5 c.c. of this suspension. The injections were made quite rapidly through a rather fine needle (22 gage), usually within an hour after the suspension was made. Blood agar plate cultures were made at the time the suspensions were injected to study the character of the organisms, to test their viability and to save them from further study. This is an important precaution because negative results have at times proved to be due to early death of the recently isolated organisms in the broth cultures. In the accompanying table, "when isolated" indicates the first or second and, occasionally, the third or fourth cultures, or the first culture after one animal passage. "Later" indicates that the strains were cultivated for a week or longer. "After animal passage" indicates usually from the second to the sixth animal passage.

The strains tested from appendicitis, ulcer of the stomach, cholecystitis, rheumatic fever, erythema nodosum, myositis and endocarditis include strains isolated from the characteristic lesions as well as from the apparent atrium of infection. Those from herpes zoster were from the tonsils and spinal fluid, and those from epidemic parotitis were obtained by catheterizing Steno's duct and from the tonsils. The strains from miscellaneous sources were usually from tonsils approaching the normal condition; and the laboratory strains were streptococci or pneumococci cultivated on artificial mediums for a long time and had lost all apparent virulence. The figures in the lowest line of the table represent the average percentage incidence of lesions in individual organs following injection of various strains of streptococci except those from the specific disease. Thus the first figure indicates that 5 per cent. of the animals, injected with the various strains except those from appendicitis, showed lesions in the appendix.

Care was exercised to obtain growths from the depths of the supposed primary focus with as little contamination from the surface as possible, the cultures being made from the material expressed from the tonsils or from emulsion of extirpated tonsils after thorough washing in sodium chlorid solution. The material from the depths of pyorrheal pockets was obtained by means of a pipet.

For the study of pathogenicity of the cultures, dogs and rabbits were chiefly used, being killed with chloroform at the desired time, usually in from twenty-four to forty-eight hours. Postmortem examinations were always made as soon after death as possible. A thorough inspection in a bright light with the unaided eye or with the aid of a hand lens was made for focal lesions. The exact character of the lesions and the presence of the streptococci in each of the various diseases have been determined by microscopic study of sections. Cloudy swelling is not included in the results given in the table. Hemorrhage, localized necrosis, exudation and infiltration were the usual lesions. Thus, in case of the joints, hemorrhage about the joint or turbidity of fluid, as determined with a pipet, or both, were considered as evidence of arthritis. Hemorrhages in the pericardium and turbidity of pericardial fluid, due to leukocytes, were considered as evidence of pericarditis. The postmortem study of animals often symptomless is essential to obtain accurate knowledge of the pathogenicity of a culture, and must supplant the older method of merely finding out whether a culture produces death or not, a method still too much in vogue. The table includes data only from those animals in which the postmortem was comprehensive, and does not include some of the earlier experiments, especially on endocarditis.

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* From the Memorial Institute of Infectious Diseases, Chicago, and the Mayo Foundation, Rochester, Minn.

[1] The common 8-ounce nursing bottle is used both as a culture flask and centrifugal tube, and serves the purpose admirably.

Increase in mortality rate, earlier death and greater degree and distribution of lesions following standard dosage were considered as proof of high virulence. Changes in the spleen and liver were so rare following injection of the strains as isolated, except those from cholecystitis, that they are not included in the table. Acute splenitis and such changes in the liver as focal necrosis, parenchymatous and bile duct hemorrhages and acute degeneration with marked acidity occurred, however, after the strains had acquired greater virulence from animal passage. In the earlier experiments not sufficient attention was paid to the occurrence of lesions in the thyroid, thymus, suprarenals and lymphatic glands. Later a closer search for lesions in these structures was made, especially after it was found that lesions in the thyroid followed intravenous injection of bacteria isolated from goiter. It must be said, too, that strains of streptococci from rheumatic fever, myositis and cholecystitis produce hemorrhages in the thyroid quite commonly, while those from other sources rarely produce them.

ELECTIVE LOCALIZATION OF STREPTOCOCCI

Source of Streptococci		Strains (220)	Animals Injected (833)	Percentage of Animals Showing Lesions in																
				Appendix	Stomach	Duodenum	Gallbladder	Pancreas	Intestines	Joints	Endocardium	Pericardium	Myocardium	Muscles	Kidney	Lung	Skin	Tongue	Eye	Parotid
					Hemor.	Ulcer														
Appendicitis	When isolated	14	68	**68**	6	1	1	0	9	29	21	0	9	12	0	0	0	0	3	0
	Later	8	26	15	19	15	4	0	0	22	19	0	12	23	0	0	0	0	0	0
	After animal passage..	7	22	45	45	30	40	0	20	36	20	0	20	25	10	0	0	0	0	0
Ulcer of stomach in man	When isolated	18	103	2	**60**	**60**	20	3	7	16	12	4	5	0	5	0	0	0	0	0
	Later	8	22	5	5	0	5	0	0	18	14	0	0	0	0	0	0	0	0	0
	After animal passage..	7	39	0	23	33	30	15	15	21	5	0	3	3	8	15	0	0	0	0
Cholecystitis	When isolated	12	41	0	29	15	**80**	5	17	17	10	0	2	7	5	5	2	0	0	0
	Later	5	14	14	28	14	7	0	0	21	14	0	0	0	7	0	0	0	0	0
	After animal passage..	4	16	0	31	13	56	19	13	25	19	0	13	0	13	6	0	0	0	0
Rheumatic fever	When isolated	24	71	8	23	18	3	3	13	**66**	**46**	**27**	**44**	27	39	4	6	0	10	0
	Later	8	14	0	14	21	0	0	0	21	21	0	28	0	21	0	0	0	0	0
	After animal passage..	5	19	21	37	21	5	21	0	37	53	32	37	16	42	21	0	0	11	0
Erythema nodosum	When isolated	6	20	0	10	0	0	0	5	20	20	10	0	35	10	5	**90**	0	5	0
	Later	3	9	0	22	0	11	0	0	11	11	0	0	0	0	0	22	0	0	0
	After animal passage..	6	14	0	21	0	50	0	7	50	14	7	14	50	7	43	43	0	0	0
Herpes zoster	When isolated	11	61	10	29	8	16	2	8	11	5	11	5	11	5	21	**70**	15	15	0
	Later	6	15	0	13	7	7	13	7	60	7	0	20	40	7	20	7	0	13	0
	After animal passage..	4	7	0	28	10	0	0	0	43	0	14	0	28	0	43	28	14	0	0
Mumps	When isolated	9	19	15	21	5	21	42	10	42	15	0	37	3	5	15	15	0	0	**73**
	Later	5	8	12	0	0	0	12	12	24	24	0	12	12	0	12	12	0	0	24
Myositis	When isolated	3	40	2	4	10	2	7	7	20	10	0	**35**	**75**	2	0	7	0	8	0
Endocarditis	When isolated	8	44	0	7	0	5	0	15	15	**84**	4	20	0	20	20	2	0	0	0
Miscellaneous	When isolated	34	41	3	17	0	4	0	4	17	20	0	15	7	7	7	0	0	0	0
"Lab." strains	Before and after animal passage	5	100	2	18	5	2	2	2	45	49	0	15	12	10	17	2	0	6	0
Average percentage of animals injected with non-specific strains showing lesions in individual organs				5	20	9	11	6	8	27	14	2	10	12	9	11	2	1	3	0

RESULTS

A study of the table shows that streptococci from the various diseases often have a most striking affinity or tropism for the organs or tissues from which they are isolated. Thus, fourteen strains from appendicitis produced lesions in the appendix in 68 per cent. of the sixty-eight rabbits injected, which is in marked contrast to an average of only 5 per cent. (given in lowest line of table) of lesions in the appendix in the animals injected with the strains as isolated from sources other than appendicitis. Eighteen strains from ulcer of the stomach or duodenum produced hemorrhages in 60 per cent. and ulcer of the stomach or duodenum in 60 per cent., a combined total of 74 per cent. of the 103 animals injected, in contrast to an average of 20 per cent. hemorrhages and 9 per cent. ulcer following injection of other strains. Twelve strains from cholecystitis produced lesions in the gallbladder in 80 per cent. of the forty-one animals injected, in contrast to an average incidence of lesions here of only 11 per cent. with the other strains. Twenty-four strains from rheumatic fever produced arthritis in 66 per cent., endocarditis in 46 per cent., pericarditis in 27 per cent., and myocarditis in 44 per cent. of the seventy-one animals injected, in contrast to an average of arthritis in 27 per cent., endocardial lesions in 14 per cent., pericarditis in 2 per cent. and myocarditis in 10 per cent. of the animals injected with strains from sources other than rheumatic fever. Six strains from erythema nodosum produced lesions of the skin in 90 per cent. of twenty animals injected, in contrast to an average of 2 per cent. in the animals injected with the strains from sources other than erythema nodosum and herpes zoster. Eleven strains from herpes zoster produced herpetiform lesions of the skin, lips, tongue or conjunctivae in 77 per cent. of the sixty-one animals injected, in contrast to the average of only 1 per cent. of what seemed to be herpes of the skin with the other strains. Nine strains of streptococcal organism from epidemic parotitis produced lesions in one or both parotid glands in 73 per cent. of the nineteen animals injected intravenously, in contrast to no instance of lesions here with the other strains. Three strains from cases of true myositis produced myositis in 75 per cent. and myocarditis (chiefly of the right ventricle) in 35 per cent. of the forty animals injected, in contrast to an average of myositis of 12 per cent. and myocarditis of 10 per cent. following injection of strains from sources other than myositis or rheumatic fever; and eight strains of *Streptococcus viridans* from chronic septic endocarditis produced lesions in the endocardium in 84 per cent. of the forty-four animals injected, in contrast to an average of 15 per cent. with the strains other than those from endocarditis. The results following injection of the miscellaneous strains (usually the first culture from tonsils) and the laboratory strains serve as a basis of comparison with those following injection of the strains from the various diseases, and correspond roughly with the total average incidence of lesions in the various organs as given in the lowest line of the table.

While the incidence of lesions in the organs following injection of the strains isolated from such organs is high, as shown by these figures, the appearances at the necropsy are even more significant. In many instances in which the animals survive the injection for some time, no other focal lesions could be found except those in the organ in question; and when the animal died early, these lesions were the marked feature and the associated ones were relatively insignificant. Frequently the injection of a very small dose was sufficient to prove the elective localization. This elective property was shown not only by the cultures from tissues and foci but also by the bacteria contained in the foci, directly injected in other animals.

In many cases of both acute and chronic diseases the apparent atrium of infection was found to harbor streptococci having elective affinity; in the former usually only at the time of the attack, in the latter in some instances for months. The elective affinity, however, was less marked in the strains isolated from the supposed focus than in the strains isolated from the lesions in the various organs. The rather wide range of lesions, as indicated in the table, following the injection of the strains from herpes zoster and parotitis is due to the fact that often primary mixed cultures from tonsils and pyorrheal pockets were injected.

Attempts to find a method which would preserve the original tropic property, while only partially successful, have shown that it may be preserved for some weeks in the deeper colonies of the original shake cultures and for as long as seven months by keeping the suspensions containing sterile tissue in the ice chest, thus maintaining the bacteria in a condition of latent life.

The localization of the strains from appendicitis, ulcer of the stomach and cholecystitis as isolated, after cultivation and after animal passage, is of particular interest and will be discussed in a separate paper. It should be stated here, however, that these strains resemble one another very closely indeed in cultural and other respects. Those from appendicitis are the least virulent, those from ulcer occupy a middle position and those from cholecystitis are the most virulent. The virulence seems to be one of the factors that determines their place of survival after intravenous injection. Now if the localization is dependent to a certain extent on virulence, then the occurrence of ulcer and cholecystitis should become greater as the strains from the appendix are passed through animals, and appendicitis should occur oftener after the strains from ulcer and cholecystitis lose virulence from cultivation on artificial mediums. This is found actually to be the case (see figures in table). In this connection other facts should be mentioned. None of the strains from appendicitis produced pancreatitis. The strains from ulcer and cholecystitis as isolated (mostly those from acute cases) produced pancreatitis in 3 per cent. and 5 per cent., respectively, of the animals injected. After animal passage, pancreatitis occurred in 15 and 19 per cent., respectively, while after cultivation on artificial mediums pancreatitis in no case was obtained.

Lesions in the intestines, exclusive of the duodenum, were more common with the strains from cholecystitis and rheumatism than with those from appendicitis, and all the strains produced intestinal lesions (chiefly of the mucous membrane and lymphoid structures) quite commonly after they had been passed through animals, whereas, after cultivation for a time, no noteworthy lesions were found in the intestinal tract.

The streptococci studied by me from parotitis resemble the organism described by Herb[2] and, like hers, produced the characteristic picture of mumps in dogs when injected into Steno's duct. Intravenous injection of these organisms produced marked edema and hemorrhage in and surrounding the parotid. The affinity was so great that the streptococci were found in pure culture in the enlarged parotid in three of five full-time puppies removed from the uterus of a dog which was chloroformed during a marked parotitis following injection into Steno's duct. Antigens prepared from a number of these strains were found to bind specifically complement in serum from parotitis (Howell).

Lesions in the skeletal muscles occurred in 75 per cent. of the animals injected. The number of lesions in the muscles and myocardium in the animals injected with strains from myositis was often in proportion to the quantity injected, and occurred mostly in the tendinous portion and in the right ventricle.

Lesions in the kidney were especially common after injections of streptococci from rheumatic fever (39 per cent.) and from endocarditis (20 per cent.). These occurred chiefly in the medullary portion (Rosenow[3]) in the former and in the glomeruli in the latter.

Lesions in the lung, consisting usually of hemorrhages and edema, were rare following injection of the strains when isolated and after they were cultivated on artificial mediums but, just as was found previously (Rosenow[3]) they occurred oftener after the virulence was increased by animal passage.

That the streptococci are the underlying cause of the diseases from the lesions of which they were isolated is indicated further by the fact that they have elective affinity for the corresponding structures in animals. Moreover, the fact that the same streptococcus may be made to localize in different organs is in consonance with the knowledge that streptococci may cause diseases with different symptomatology. The possibility, however, that they are secondary invaders to some ultramicroscopic, filterable organism has to be considered. Filtrates of the streptococcal cultures from various diseases were injected intravenously. In some instances the filtrates produced lesions in the organs from which the strains were isolated; the lesions, however, were not due to living organisms because the broth which was inoculated and incubated with the tissues failed to produce any lesions. The results, while inconclusive, may be said to indicate that streptococci produce substances which cause injury specifically in the tissues from which the strains are isolated.

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[2] Herb, Isabella C.: Experimental Parotitis, Arch. Int. Med., September, 1909, p. 201.

[3] Rosenow, E. C.: Experimental Infectious Endocarditis, Jour. Infect. Dis., 1912, xi, 210; Immunological Observations in Staphylococcus and Pneumococcus Endocarditis, ibid., 1909, vi, 245; Transmutations Within the Streptococcus-Pneumococcus Group, ibid., 1914, xiv, 1.

GENERAL DISCUSSION

The results obtained are in harmony with the facts that (1) "septic sore throat" is due to streptococci having peculiar properties;[4] (2) certain epidemics of throat infection, due to streptococci, are more frequently complicated by sinusitis than others; (3) distinct differences in the character of the lesion in the lung and mortality rate in pneumonia, as shown by Cole,[5] are due to pneumococci so nearly alike as to require sensitive biologic tests to differentiate them; (4) hemolytic streptococci frequently have a marked affinity for joints, and (5) Friedländer bacilli in arthritis show elective affinity for joints in animals when other strains do not (Dick[6]). The "organotropic" condition of streptococci is analogous to the affinity of the tetanus toxin for the motor ganglion cells, of the diphtheria bacillus for the faucial tonsils, of the meningococcus for the meninges, of the pneumococcus for the lung, of the typhoid bacillus for lymphatic tissues, of the virus of rabies for the central nervous system, of the organism of anterior poliomyelitis for the anterior horns of the spinal cord, of the malarial parasite for the red blood corpuscle, and of the *Trichina spiralis* for muscles. The results, moreover, are in accord with the well-known fact that chemicals when injected intravenously also localize unequally in various organs.[7] The changes in the distribution of lesions as the streptococci are altered by cultivation on artificial mediums or by animal passage are similar to the changes in localization of various chemicals or dyes depending on chemical constitution, as observed by Ehrlich.[8] In my experiments advantage was taken of the opportunity afforded to study the nature of selective action from the standpoint of living bacteria.

Flexner[9] has shown that the functioning organ may be especially favorable to the growth of certain bacteria although the organ extracts may inhibit their growth; hence the growth of bacteria in various organs may be related to function and blood supply. Streptococci of low virulence but highly sensitive to oxygen are found to produce lesions in tissues whose blood supply and therefore oxygen and food requirements are low (heart valves, tendinous portion of muscles and the structures about joints). Streptococci of greater virulence are found to produce lesions in tissues whose blood supply and therefore oxygen and food requirements are high (kidney, lung, etc.); hence localization and production of injury seem to be closely related to the amount of available oxygen in a given tissue. The fact that lesions occurred far more frequently in the right ventricle (containing venous blood) than in the left ventricle (containing oxygenated blood) is in accord with this hypothesis. Might not the predisposing action of trauma (locus minoris resistentiae), of exposure to cold and of a drunken bout, to infection be best explained on the basis of lack of oxygen?

The changes observed, as hemorrhage, cloudy swelling and necrosis, from a purely chemical[10] as well as from a colloid-chemical[11] point of view, are identical with the changes of tissue asphyxia. I have found that pneumococci when grown and autolyzed under anaerobic conditions produce a much larger quantity of toxic material than when grown or autolyzed under aerobic conditions. Moreover, pneumococcus extracts proved to be toxic to warm-blooded animals (guinea-pigs), have the same inhibitory effect on the development of fertilized eggs of arbacia as does lack of oxygen. Since bacteria and their products are powerful reducing agents,[12] one of the chief effects of the bacteria and their products very likely is interference with the normal cell respiration, and possibly the greater the virulence the more powerful this interference.

Although the circulation is an important factor in determining localization, the tissues themselves play an even more important rôle. The question whether the lesions in the organ for which a particular strain appears to have elective affinity are due to the lodgment of a larger number of bacteria here than in the other organs, or whether the bacteria lodged in equal numbers in the various organs but survive only in the one showing lesions, is now under study. The evidence already obtained, however, points strongly to the former mechanism. It appears that the cells of the tissues for which a given strain shows elective affinity take the bacteria out of the circulation as if by a magnet—adsorption.

This remarkable tropic condition tends to disappear quite promptly both on cultivating the streptococci on artificial mediums and on passing them successively through animals, and this may occur without demonstrable changes in morphology, grouping or character of chain formation. I have previously shown[13] that the ability of *Streptococcus viridans* and staphylococci to produce lesions in the endocardium is due partly to physical clumping. Evans[14] has shown that the action of vital stains of the benzidin group is related to the size of colloidal particles. A careful study of smears of the suspensions injected in these experiments revealed no constant relation between localization and clumping or size of the bacteria.

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[4] Davis, D. J., and Rosenow, E. C.: An Epidemic of Sore Throat Due to a Peculiar Streptococcus, The Journal A. M. A., March 16, 1912, p. 773. North, Charles E.; White, Benjamin, and Avery, Oswald T.: A Septic Sore Throat Epidemic in Cortland and Homer, N. Y., Jour. Infect. Dis., 1914, xiv, 124. Rosenow, Edward C., and Moon, V. H.: On an Epidemic of Sore Throat and the Virulence of Streptococci Isolated from the Milk, Jour. Infect. Dis., 1915, xvii, 69.

[5] Cole, Rufus M.: Pneumococcus Infection and Lobar Pneumonia, New York Med. Jour., 1914, xcix, 23.

[6] Dick, George F.: Multiple Arthritis Due to a Friedländer Bacillus, Jour. Infect. Dis., Chicago, 1914, xiv, 176.

[7] Brown, W. H., and Pearce, Louise: On the Pathological Action of Arsenicals upon the Adrenals, Proc. Nat. Acad. Sc., 1915, i, 462. Corper, H. J.: Action of Sodium Sulphocyanate in Tuberculosis, Jour. Infect. Dis., 1915, xvi, 38.

[8] Ehrlich: Studies in Immunity, Transl. by Charles Bolduan, New York, John Wiley & Sons, 1910.

[9] Flexner, Simon: The Bacillus (Leptothrix?) Pyogenes Filiformis (Nov. Spec.) and Its Pathogenic Action, Jour. Exper. Med., 1896, i, 211.

[10] Hoppe-Seyler, F.: Bemerkungen zur vorstehenden, IV Mittheilung von Herrn T. Araki, über die Wirkungen des Sauerstoffmangels, Ztschr. f. physiol. Chem., 1894, xix, 476. Araki, T.: Ueber die Bildung von Milchsäure und Glycose im Organismus bei Sauerstoffmangel, Ztschr. f. physiol. Chem., 1891, xv, 335 and 546. Fletcher, W. M., and Hopkins, Gowland: Lactic Acid in Amphibian Muscle, Jour. Physiol., 1906-1907, xxxv, 247. Woodyatt, R. T.: The Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis, The Journal A. M. A., Dec. 17, 1910, p. 2109. Graham, Evarts A.: Late Poisoning with Chloroform and Other Alkyl Halides in Relationship to the Halogen Acids Formed by Their Chemical Dissociation, Jour. Exper. Med., 1915, xxii, 48.

[11] Fischer, Martin H.: Edema and Nephritis, New York, John Wiley & Sons, 1915.

[12] Smith, T.: Reduktionserscheinungen bei Bakterien und Beziehungen zur Bakterienzelle, nebst Bemerkungen über Reduktionserscheinungen in steriler Bouillon, Centralbl. f. Bakteriol. u. Parasitenk., Part 1, 1896, xix, 181.

Individual variations in resistance to infection were found in the injected animals. The effects of these conditions in the host as determining factors in localization are important; they are probably expressions of differences in metabolism, oxidation rates, etc., which influence the soil for bacteria. The tendency of virulent bacteria, temporarily or permanently, to render this soil less favorable for their growth is well established. There is some evidence, on the other hand, which goes to show that certain bacteria of very low virulence (commonly found in chronic foci of infection) tend actually to make this soil more favorable. But, in the light of my results, it must be considered that differences in the host may afford the peculiar type of reaction, or that the individual harbors a particular form of focus of infection which is favorable for bacteria to acquire elective properties. The following facts support the latter view: (1) the common occurrence of certain noncontagious diseases, such as herpes zoster, ulcer of the stomach, etc., during definite age periods; (2) the fact that foci of infection afford opportunity for bacteria to grow under varying grades of oxygen pressure and in mixed culture, both of which have been shown to cause changes in virulence and other properties of bacteria,[15] including the streptococcus group;[16] (3) the occurrence of systemic infections such as rheumatic fever, appendicitis, ulcer of the stomach, etc., usually after the acute symptoms in follicular tonsillitis (hemolytic streptococci), have subsided, and (4) the finding in the focus and involved tissues at the time of the systemic infection, streptococci having elective affinity for these structures in animals.

Since different bacteria may acquire simultaneously affinity for the same tissue, diseases which resemble each other more or less closely, such as the different forms of arthritis, may be due to bacteria of different species each having elective affinity for the particular structures involved.

The figures in the lowest line of the table represent the results of numerous experiments (833) with streptococci (220) from a wide range of sources, and may therefore be regarded as an index of the liability of the various organs to infection. Thus, joint lesions occurred more often (27 per cent.) than lesions in other organs, corresponding to the frequent occurrence of spontaneous arthritis in man and animals. The occurrence of lesions in the stomach (20 per cent.), valves of the heart (14 per cent.), myocardium (12 per cent.) and skeletal muscles (12 per cent.) correspond in a general way to the occurrence of infection in these organs in man. The very infrequent involvement of the skin, tongue and the parotid in the animals is in keeping with the rarity of embolic infections in these structures. The character of the lesions and their occurrence simultaneously in the joints, heart, muscles and kidney, and the development of chorea (7 per cent. mostly in young rabbits) following injection of the streptococci from rheumatic fever, parallels quite closely the phenomena of rheumatic infection as observed in man. The strains from erythema nodosum resemble those from rheumatic fever, producing a relatively high incidence of arthritis, pericarditis and myositis, a fact which supports the view held by clinical observers,[17] that the causative agents of rheumatic fever and erythema nodosum must be similar.

The tendency to localize electively within a limited range, "monotropism," is most highly developed in the relatively nonvirulent strains isolated from chronic lesions. In the more virulent strains from acute lesions and after animal passage, this tendency is less highly developed, the lesions occurring over a wider range, "polytropism." The fact that the elective property is more highly developed in streptococci isolated from the organ involved, than in those isolated from the probable focus of infection, is in accord with the results obtained by Forssner,[18] who showed that when streptococci are grown in kidney and kidney extracts they acquire a special predilection for the kidney when injected intravenously. Since the bacteria which have grown in a given tissue acquire greater affinity for this tissue, the likelihood of these bacteria to involve other structures is relatively slight; hence the secondary focus, a cholecystitis, for example, would appear to be less important as a distributer of bacteria than the primary focus; if, however, the secondary focus happens to be in a joint, of which there are many, it may play an important rôle in causing extension to uninvolved joints and in preventing recovery.

The bearing that these results have on the specific treatment of these diseases is evident. The injection of a streptococcus vaccine or antistreptococcus serum without regard to the tropic condition of the infecting strain or the one used in their preparation is, in the light of these results, far from an exact method of treatment. However, the occasional, seemingly good result observed by some may be due to the use of a serum or vaccine made from strains in the same tropic condition as the one infecting the individual so treated.

The results detailed in this and in previous papers seem to bring the necessary experimental proof that chronic foci of infection play a most important rôle in causing systemic disease, a fact which has been observed and frequently commented on by different observers, but has been recognized in its full clinical significance especially by Billings.[19] A focus, such as a pocket in the tonsil which cannot heal for mechanical reasons and which is constantly filled with pus and necrotic material, teeming with bacteria, must be regarded in the light of these findings as a culture tube with a permeable wall affording abundant opportunity for the entrance of bacteria and their products.

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[13] Rosenow, E. C.: Experimental Infectious Endocarditis, Jour. Infect. Dis., 1912, xi, 210; Immunological Observations in Staphylococcus and Pneumococcus Endocarditis, ibid., 1909, vi, 245.

[14] Evans, H. M., and Schulemann, W.: The Action of Vital Stains Belonging to the Benzidine Group, Science, 1914, N. S., xxxix, 443.

[15] Smith, T.: Modification, Temporary and Permanent, of the Physiological Characters of Bacteria in Mixed Cultures, Tr. Assn. Am. Physicians, Philadelphia, 1894, ix, 85.

[16] Rosenow, E. C.: Transmutations Within the Streptococcus Pneumococcus Group, Jour. Infect. Dis., 1914, xiv, 1.

[17] Osler, William: On the Visceral Manifestations of the Erythema Group of Skin Diseases, Am. Jour. Med. Sc., 1904, cxxvii, 1.

[18] Forssner, G.: Renale Lokalisation nach intravenöse Infektionen mit einer dem Nierengewebe experimentell angepassten Streptokokkenkultur, Nord. med. Ark., 1902, 3. f., ii afd. 2, No. 18, p. 1; abstr., Inn. Med., 1902, lv, 45.

[19] Billings, Frank: Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med., April, 1912, p. 484; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, The Journal A. M. A., Sept. 13, 1913, p. 819; Focal Infection: Its Broader Application in the Etiology of General Disease, ibid., Sept. 12, 1914, p. 899.

INFLUENCE OF PEPTONE ON TOLERANCE OF THE BODY FOR HOMOGENOUS OVARIAN TRANSPLANTS*

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Much work has been done recently on the subject of the survival of foreign grafts, and interesting results have been obtained concerning the nature of the reaction by which the host destroys the engrafted tissue.

Tuffier[1] reports twenty-four attempts at homogenous grafts of ovarian tissue in man with failure in every case, the same technic being used by which uniformly successful results were obtained in autogenous grafts. He states that as a foreign body the graft is destroyed by macrocytes, and if the macrocytes could be prevented from attacking the graft, it might be possible to obtain success.

Castle and Phillips[2] conclude from experimental work on guinea-pigs and analysis of clinical results that homogenous transplantation of ovaries is not practical in domestic animals and man, unless the tolerance of the body to foreign tissue can be raised. Out of 141 guinea-pigs ingrafted with foreign ovaries, only three gave a functional result.

Davidson[3] reports success with autogenous transplants, but no permanent growth of homogenous grafts, and concludes, "It is a much more difficult thing to obtain permanent growth and function of homotransplants." Marshall and Jolly reached the same conclusions in working on animals.

Murphy has shown that the destruction of heterogenous tissue is brought about by the action of lymphoid tissue of the host,[4] and has had marked success in inhibiting the reaction against these foreign grafts[5] by the use of Roentgen rays and the injection of benzol (benzene, C_6H_6). (Repeated injections of benzol were quite harmful to the host.)

Leo Loeb[6] offers a very illuminating article on the behavior of tissues in a changed chemical environment. His conclusions are as follows: (*a*) In autogenous transplants, some of the tissue may live and grow, but in homogenous transplants only very rarely does this occur; and when it does, the metabolism of the graft becomes much altered in its new environment. (*b*) Different tissues may show different resistance to autotransplantation and homotransplantation, and different experiments may bring out variations of individual reaction between the tissue and the new host. (*c*) For the first week, there is little difference in the behavior of autotransplants and homotransplants; then a gradual destruction of the latter sets in, or the metabolic disturbance in the graft due to the shock of transfer may be great enough to prevent its ever recovering. (*d*) Destruction of the graft is brought about by a secondary reaction on the part of the host, and is accomplished by increased activity on the part of the connective tissue of the host. The action of the two factors is interdependent, but in a given case, one or the other predominates. (*e*) Function of corpus luteum is reduced after autotransplantation; in case of the latter, it is reduced by injurious action of the body fluids. Loeb further states that the toxic action of the body fluids of the host is not a factor in destruction of homografts. Ingebrigtsen,[7] in working with tissues in vitro, observed that normal autogenous serums offer better mediums for growth of tissue than similar serums which have been heated to a degree which causes destruction of complement (56 C. for 30 minutes), and that the reverse is true of foreign serums.

Carrel and Ingebrigtsen[8] found that the fluid of cultures in vitro containing a heterogenous serum has in five days acquired the power to hemolyze the red blood cells of the animal furnishing the heterogenous serum, while the serum of controls remains nonhemolytic. They attribute the development of hemolysis to the presence of antigen. This reaction of the graft is in turn met by the reaction on the part of the host, which we see manifested by a round-cell infiltration of the tissues of the graft, and which leads to the ultimate destruction of the graft.

Vaughan[9] also states that "any foreign protein (in this case ingrafted tissue) which can grow and multiply in the body of a given animal may prove pathogenic to the animal." He believes that some of the body cells in preparing for their combat with foreign protein develop a new function: that of elaborating a new and specific ferment which will digest and destroy the foreign protein.

In work done by Carrel[10] it was found that the limbs transplanted on an infected host were more apt to live than were those transplanted on an uninfected host. This would indicate that the action of the infecting bacteria had some inhibitory influence on the reaction of the host against the graft. Furthermore, since Besredka, Ströbel and Jupille[11] have shown that the action of complement on bacteria gives a substance which is identical in many of its physiologic actions to the substance obtained by the action of complement and peptone, it does not seem unreasonable to suppose that injections of Witte's peptone should have a similar effect on the reaction of the body against ingrafted tissues.

It was therefore thought that it might be profitable to undertake the following animal experiments in order to determine whether or not the repeated periodic injections of a solution of Witte's peptone would increase the tolerance of the body to grafts of foreign tissue.

TECHNIC

Operation.—The rabbits were operated on in pairs in order to make possible the immediate transfer of the grafts. The strictest aseptic technic was followed. A lower median incision was made through which both ovaries were completely removed. Great care was taken to leave no native ovarian tissue behind. The pedicle of the gland was clamped with

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[1] Tuffier, Theodore: Transplantation of Ovaries, Surg., Gynec. and Obst., 1915, xx, No. 1, p. 30.

[2] Castle, W. E., and Phillips, J. C., referred to in Ovarian Transplantation, editorial, The Journal A. M. A., Jan. 10, 1914, p. 131.

[3] Davidson, H. H.: Transplantation of Ovary in Human Being, Med. Rev., 1913, lxii, No. 8, p. 297.

[4] Murphy, James B.: A Source of Defense to Heteroplastic Tissue Grafting, The Journal A. M. A., Jan. 17, 1914, p. 199.

[5] Murphy, James B.: Heteroplastic Tissue Grafting Effected Through Roentgen-Ray Lymphoid Destruction, The Journal A. M. A., May 9, 1914, p. 1459.

[6] Loeb, Leo: The Influence of Changes in the Chemical Environment on the Life and Growth of Tissues, The Journal A. M. A., Feb. 27, 1915, p. 726.

[7] Ingebrigtsen, Ragnvald: The Influence of Heat on Different Sera as Culture Media for Growing Tissue, Jour. Exper. Med., 1912, xv, 397.

[8] Carrel, Alexis, and Ingebrigtsen, Ragnvald: Production of Antibodies by Tissues Living Outside of the Organism, The Journal A. M. A., Feb. 17, 1912, p. 477.

[9] Vaughan: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea & Febiger, 1913, pp. 22, 23.

[10] Carrel, Alexis, quoted by Tuffier (Footnote 1).

[11] Besredka, A.; Ströbel, H., and Jupille, F.: Anaphylatoxin, Peptotoxin, und Peptone in ihren Beziehungen zur Anaphylaxie, Ztschr. f. Immunitätsforsch., 1913, xvi, No. 3, p. 249.

Kelly forceps and ligated below the forceps, and then cut between the ligature and forceps. Multiple simple grafts were used. One ovary was discarded and the other sectioned for grafts into the other rabbit. The ovary which was used for grafts was held by the pedicle and was not touched by instruments or gloves. The method of cutting the grafts differed and will be detailed later in each case, but the cardinal points observed were:

1. To minimize the traumatic shock and the danger of infection to the ingrafted tissue, by having it come in contact with nothing except the sectioning instrument, and the use of a very sharp sectioning instrument.
2. To minimize the time which the graft was in contact with the air between removal from the donor and implantation into the host.
3. To obtain good contact between the cut surface of the graft and a portion of peritoneum where the possibility of vascularization was good.

The grafts were left free in order to avoid trauma incident to suturing them in place. The abdomen was closed in layers with linen.

Peptone Injections.—Peptone injections were made at the time of operation and thereafter every four days until the animal was sacrificed for necropsy. The injections were made intraperitoneally under aseptic precautions, and the dose used was approximately 1 c.c. of a boiled 10 per cent. solution of Witte's peptone to each 100 gm. of the rabbits' weight.

The rabbits used as controls underwent the same operative technic as experiments, but received no peptone injections.

Following the peptone injections, the animals showed a reaction which was manifested by labored breathing, restlessness, and general bodily weakness similar to that described[11] as following the injection of an attenuated dose of peptotoxin which had been formed by the reaction of complement and peptone outside of the body. In every case after the animals had received from three to four injections, they showed a condition of reduced metabolism evidenced by a loss of body weight and marked thinning of the coat. This was not noticed in the controls, which were otherwise subject to similar conditions.

Ten rabbits were operated on; five were used for peptone injection and five for controls. The experimental rabbits and their controls in each case were operated on in pairs and subjected to similar conditions. The controls of Experiments 1 and 4 were lost through postoperative death.

SUMMARY OF EXPERIMENTS

Experiment 1.—Rabbit 1 (nineteen days' duration). Large en masse graft, consisting of one-half ovary, on mesentery of large bowel. At necropsy the graft had a large area of central necrosis surrounded by ovarian tissue which showed signs of beginning destruction. All of the ovarian tissue remaining was invaded by a new blood supply. The invasion by round cells had already taken place. This experiment was not controlled.

Experiment 2.—Rabbit 2 (controlled by Rabbit 3; six weeks' duration). Multiple small graft on mesentery. Grossly, the grafts in the animal injected with peptone had acquired a more profuse blood supply than those in the control in which no peptone had been injected, and were larger and felt more firm. On microscopic section it was found that destruction of ovarian tissue was complete in them, while there were small areas of ovarian tissue remaining in the grafts of the control. The invasion by round cells and connective tissue was more marked in the rabbit receiving peptone injections.

Experiment 3.—Rabbit 4 (controlled by Rabbit 5; eight weeks' duration). Multiple millet seed grafts in peritoneal cavity. These grafts were firm and healthy in appearance, and had a much more profuse blood supply than their controls; but microscopic sections showed all of their ovarian tissue to be necrotic, while there was still some ovarian tissue remaining in the controls. The cellular infiltration was more marked in the grafts of the injected animal.

Experiment 4.—Rabbit 6. Single en masse graft on broad ligament. Twelve weeks' duration. Twenty peptone injections. The graft had undergone complete destruction and had been almost entirely absorbed.

Experiment 5.—Rabbits 7 and 8; of only a few days' duration. Interrupted by the incidence of peritonitis, and the grafts had evidently lost their viability owing to the peritonitis, rather than to the usual reaction of the body against foreign tissue.

COMMENT

As has been seen, there are many references in the literature to the nature of the mechanism of the reaction by which homografts are destroyed. Tuffier explains the process by the action of macrocytes. Loeb believes that such grafts are destroyed by mononuclear invasion and proliferation of connective tissue. Murphy has shown that the presence of lymphoid tissue is essential before the host can destroy a foreign graft. In the foregoing experiments, the grafts were not attacked by macrocytes. Mononuclear infiltration and connective tissue proliferation were uniformly present. I can see no reason, however, to suppose that these evidences of reaction on the part of the host are the essential factors in the destruction of the graft. I am rather inclined to take exception to the further statement of Loeb that the toxic action of the body fluid of the host is not a factor in the destruction of these grafts. Several of the observations quoted above would indicate that the serum plays the primary rôle in the destruction of homografts.

1. Ingebrigtsen found that if complement was exhausted from foreign serum, it offered a better culture medium for tissues than normal serum, and that the reverse was true for autogenous serum.
2. There is no evidence of reaction against foreign tissues until just that period of time has elapsed after their introduction into the body which is necessary for the development of specific immune bodies. This led to the hypothesis that the tissue cells might be destroyed by a lytic action of the serum involving Erlich's side chain of the third order. The round-cell infiltration and connective tissue invasion, which was observed in all instances, may be explained as the usual reaction against any tissue in the body which becomes necrotic.

It was on the basis of this theory and the observation of Carrel that bacterial infection inhibited the reaction of the host against homografts that the foregoing experiments were undertaken, because Besredka, Ströbel and Jupille have shown that peptone exhausts complement from the serum and has a similar action to bacterial intoxication.

CONCLUSIONS

As the result of the experiments, we may reach the following conclusions:

1. Peptone injections, as they were made, tend to intensify rather than inhibit the reaction of the host against homogenous grafts of ovarian tissue.

2. Such injections of peptone produce a condition of reduced metabolism in the animal, but not to such an extent as to prove dangerous to life.

3. An abundant blood supply to the graft does not indicate that it is viable in its new environment, but may rather be evidence of an intense reaction against it on the part of the host.

4. The destruction of the graft is practically complete by the sixth week, both in animals injected with peptone and in those not injected.

5. The host primarily reacts to the presence of the graft by revascularization of its tissues, and the further reaction which evidently involves the destruction of the graft is evidenced by round-cell infiltration and proliferation of the connective tissue of the host.

6. The presence of peritonitis within a few days destroys the viability of intraperitoneal grafts.

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DETACHMENT OF THE RETINA

WITH A PRELIMINARY REPORT ON A NEW OPERATIVE PROCEDURE *

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Detachment of the retina is a condition of such seriousness, and its treatment is so unsatisfactory, that we feel justified in placing on record even a small number of cases.

There are three principal theories as to the causation of retinal detachment:

1. Von Graefe in 1854 assumed that a hemorrhage occurred behind the retina, basing his conclusion on the sudden appearance of the condition. Arlt considered that the fluid behind the retina was due to a secretion or exudation from the choroid pressing against the vitreous humor and thus bringing about its gradual absorption. The present theory, which has a large following, assumes a primary retroretinal exudation with compensatory diminution of volume in the vitreous.

2. Leber's theory, which embodies Müller's theory of fibrinous degeneration of the vitreous, and Iwanof's theory of detachment of the vitreous and shrinking, and Arlt's theory of rupture, or tear. Leber argued that given the shrunken fibrillary vitreous attached more extensively and firmly than normal to the retina, with its pool of fluid representing the amount of shrinking, the train is laid for an acute spontaneous detachment. A sudden rent occurs and through this the preretinal fluid rapidly becomes retroretinal and the detachment is accomplished.

3. Raehlmann's theory, which assumes a primordial alteration in the constitution of the vitreous, whereby, through the influence of osmosis, the watery constituents pass through the retina seeking to equalize with the juices of the choroid, which are rich in albumin.

Each of these theories has had its followers, but so far histologic examination has done little to establish any one of them. Our present point of view must rest on deduction and inference from well-known clinical phenomena. Speaking of retroretinal exudation, Schöbl[1] says:

> It is inconceivable that so large an exudation can be thus formed in a few moments, and even if this were possible and this exudation can overcome the normal pressure of the vitreous humor and press the retina inward, the intra-ocular tension must needs be enormously increased, and that is the condition that is hardly ever found in retinal detachment.

This point seems not to be well taken. Exudation from the choroid probably can occur rapidly. Intra-ocular tension depends not so much on excessive secretion as on the blocking of the outflow, so that even if we assume a choroidal exudation, increase in tension would not necessarily follow. Iwanof found in highly myopic eyes a detachment of the vitreous humor at the posterior pole, and his explanation of this fact was that the vitreous could not increase in volume as rapidly as the posterior part of the sclerotic was distended, and in consequence serum would have to fill the gap. If this were the active factor in myopic detachment, the lesion would invariably take place at the posterior pole, which is not the case. Also evidence goes to show that it is possible for the vitreous to increase rapidly in volume through imbibition of serum. This occurs in the rapid increase of tension during trephine operations in old glaucomatous eyes. Even if the anterior chamber is open, the pressure rises, and a prolapsed iris cannot be replaced. Also, after a loss of vitreous during cataract extraction, it is well known that almost all cases which heal up do not show detachment of the retina for some weeks, or even months. Such cases are invariably found with the eye plumped up to normal dimensions as soon as the wound is closed, generally on the following day. Iwanof thinks that the exudation behind the vitreous humor finally lacks room and must filter into the humor itself or pass backward through the retina and thus lift this membrane from the choroid. However, as Schöbl remarks:

> This explanation is incorrect and against all physical laws, since the fluid between the vitreous humor and the retina must exert an equal pressure in all directions and, therefore, could press the retina more firmly against the choroid, but could never detach it from this membrane.

A great deal of stress has been laid on rents in the retina, and it must be admitted that given a retinal rent it is conceivable that serous fluid might in such a case find its way through the rent between the retina and choroid. Many cases of detachment, however, show no demonstrable rents in the retina, and when one considers how much traction the retina can bear in old inflammatory conditions without showing any rent, it seems much too fantastic to assume the existence of a rent from traction when the most careful examination with the ophthalmoscope will not show any evidence of traction in the vitreous. In fact, most idiopathetic detachments have a sacculated, or rounded, appearance, which is suggestive of pressure from beneath, but has not the faintest resemblance to a condition which might be produced by traction bands in the vitreous. The commonest form of traction is that which occurs in the ciliary region from old inflammatory exudates, and while traction from exudates may occur, it is certainly very doubtful if it is in any sense a factor in the ordinary idiopathic detachment. The status of the so-called retinal rents has not as yet been

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[1] Schöbl: Norris and Oliver's System, iii, 534.

satisfactorily established. A few have been observed in the periphery of the retina, but the causal relationship between rent and detachment is by no means settled. In one of our cases a well-defined "V"-shaped rent could be seen, across which ran a retinal vessel. As the direction of the retinal rent, which was roughly in the shape of a very obtuse angle, extended at right angles to the direction of greatest tension in the detachment, it seems more reasonable to assume that the rent was due to the pressure of the fluid from beneath and that it was a secondary feature.

The clinical course of many detachments is about as follows: The detachment occurs rather rapidly, and on our first ophthalmoscopic examination we find a perfectly clear vitreous with a sacculated spot in the retina and a vision which is reduced entirely out of all proportion to the local condition. One would think that a detachment which did not involve the macula and did not hang in front of it in the vitreous, would not reduce the vision. The vision is frequently very much reduced, however, and may become progressively worse in the early stages of the condition, so that the lymphatic derangement is far more serious than the local appearance would lead us to believe. In the detachment which occurs alongside of a sarcoma of the choroid, and which is manifestly due to the transudation of serum, the appearance and clinical characteristics are exactly the same as in the ordinary detachment, and these cases must be looked on as a still further proof of the distention theory. After detachment has existed for a certain length of time, floating bodies appear in the vitreous, and iritis and other inflammatory changes supervene. Traction bands may then form from degeneration of the vitreous. The diffusion theory "presumes differences in tension in two fluids, one of which is in front and the other behind an animal membrane. These conditions exist when the retina is detached. Behind the retina there is a relatively albuminous fluid, while in front of it in the vitreous chamber there is a fluid that contains but little albumin, the diffusion taking place more rapidly the greater the difference in density of the two fluids" (Schöbl).

Parsons[2] says:

> In most cases, according to some investigators in all, the retina is ruptured and fluid passes through the rent from the vitreous. It is certain that in many cases no rupture of the retina can be seen ophthalmoscopically, and it is probable that it is not an indispensable factor. If so, the fluid must be derived from the choroid or from the vitreous by a process of osmosis. Such experiments as have been made on the latter possibility have not been conclusive.

Vail[3] has recently written a comprehensive paper on the subject of treatment of retinal detachment which bears quotation in this connection. This paper is based on replies received from 281 oculists, 250 representing, according to the author's estimate, an average of twenty years of practice, and an experience averaging five cases a year, or about 25,000 cases in all, with the employment of every known line of treatment, "and not a single case of permanent cure in the lot." On the other hand, 31 oculists have secured cures; 25 each had a single cure; 4 secured 2 cures, and 2, 4 cures, making in all 41 patients reported cured. Two of these patients had detachment due to albuminuria in pregnancy, and they were cured after abortion. They should not be counted, as treatment is not applicable except in these unusual circumstances. This leaves 39 cures. In about one-half of this number the cure is not convincing from the records submitted, leaving, say, 20 cases, or less than 1 cure in every 1,000 cases. The author considers that these figures show conclusively that there is no proper treatment for this condition.

De Schweinitz, in a personal letter, says:

> The treatment that I have found most satisfactory has been posterior sclerotomy, with drainage of the subretinal space; rest in bed; and the injections subconjunctivally of saline solutions. In recent years I have added to this dionin, sometimes sweats, usually with pilocarpin.

Vail's theory is that there is a paralysis of the secretory function of the ciliary processes. This means that the secretion of aqueous is suddenly arrested. There being nothing wrong with drainage channels within the eye, the watery elements find ready egress, thus giving a minus tension. Leber found 90 per cent. had minus tension. The withdrawal of normal tension causes passive hyperemia of the blood vessels of the tunica vasculosa. This allows diapedesis and transudation. The vitreous contracts because it loses its percolating supply of aqueous, which soon drains off through the efferent channels which are wide open, and the fibers of the vitreous naturally contract like a sponge would after losing its water. The subretinal transudation is highly albuminous. The watery elements ooze away and are replaced by fresh serum, a poor substitute for aqueous. The tissue colloids and circulating colloids imbibe all the moisture they can. The reaction of the transuded juices becomes altered to a less than normal alkaline or an actually acid state. Vail further says that the causes of such a paralysis of the secretion of the ciliary body may be acute local and systemic, or chronic local. Acute local cases are from blows; certain drugs, like belladonna, when the patient has idiosyncrasy or a preceding equatorial choroiditis, or myopia. Acute systemic cases might arise from certain toxemias, like those of albuminuria, diabetes, etc., which have a paralyzing effect on the secretory function of the ciliary body. "Chronic local" from slowly progressive atrophy of the secreting epithelium of the ciliary processes. Vail's conclusions are that surgical treatment is not founded on scientific principles; that detachment of the retina is not a disease, but a symptom; that the disease is paralysis of functions of the ciliary processes, causing an arrest of aqueous secretion within the eye. The treatment should be the use of those measures, and only those, which have for their objects the reestablishment of the lost function of the ciliary processes. Vail rather advocates subconjunctival injections of sodium citrate, after M. H. Fischer's ideas.[4] This treatment is supposed to reestablish the aqueous flow by rendering alkaline the intra-ocular juices.

While this theory has a very attractive sound, it must be remembered that it is for the most part nothing more than a theory, and while it fits certain clinical aspects of the cases, so far as treatment is concerned, little benefit apparently has been secured. Sodium citrate injections, or any form of subconjunctival injections have given not the faintest glimmer of hope in our hands. We are, however, prepared to subscribe to the theory that the transudation of serum beneath the retina is but a symptom of a deeper intra-ocular disorder, but cannot altogether feel that it is a progressive degeneration. There is reason to believe that the actual detachment has something to do with lowering the nutrition of the eye and subjecting it to the well-known degenerative processes which supervene in a large proportion of cases—floating opacities of the vitreous, iritis and cyclitis, and later cataract. All these come on after the detachment has existed for some time, and are, as a rule, the more prone to occur the larger the detachment. The clinical course of the ordinary idiopathic detachment does not suggest a progressive degenerative process. If such were the case, there would be no reason why a detachment should not appear gradually and gradually enlarge. On the other hand, the detachment appears suddenly and, as a rule, remains approximately the same size until further degenerative symptoms set in. It seems, therefore, as if the exudate came from a sudden attack which subsides, leaving the exudate in situ, and that further degenerative processes are due to the presence of the detachment.

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[2] Parsons: Pathology of the Eye, iv, 1166.

[3] Vail: An Inquiry into Results of the Established Treatment of Detachment of the Retina, and a New Theory, Ann. Ophth., 1913, xxii, 1.

[4] Fischer, M. H.: Glaucoma, Tr. Am. Acad. Ophth. and Otolaryngol., 1911.

We wish to record our belief that the clinical evidence is in favor of the choroid as an origin for the subretinal fluid. It may be asked that if the choroidal fluid filters into the subretinal space, why should it not also filter into the suprachoroidal space, and that is exactly what it does. As long ago as 1830, William Mackenzie in his treatise on Diseases of the Eye, said: "It has been ascertained by dissection that a watery fluid is sometimes present between the sclerotica and the choroid." This fact appears somewhat to have been lost sight of by later writers, as is perhaps natural, considering the fact that the condition cannot be discovered with the ophthalmoscope, and the ordinary puncture operations have simply allowed the fluid to escape without giving any light as to the true situation of the fluid. In trephining the sclera, it is in many instances found that a gush of fluid escapes before the choroid is punctured. The histologic examination of enucleated eyes for simple detachment of the retina is naturally rare. It will usually, however, be found that in the process of hardening, the anatomy of the detachment as observed during life is entirely obliterated. This is especially apt to occur in recent detachments before shrinkage and degeneration of the retina have occurred, and it is just in these cases in which such an examination would be of most value. We have not been able to find, in the limited number of cases examined, any definite adhesions, and definite localizations of the detachment by adhesion between the retina and choroid, nor any suggestions as to the origin or amount of the fluid.

Kuemmel[5] gives a very interesting account of the histologic examination of an enucleated eye with retinal detachment. He deduces some interesting theories, which to a certain extent harmonize with Vail's ideas, but the patient presented at the time of the enucleation a sharp atack of secondary glaucoma. Moreover, the fact that the process was an old one to a certain extent introduces elements which must be taken into consideration. He found inflammatory changes of a proliferating character in the iris, ciliary body, and choroid, and considers that these various changes are at the bottom of the choroidal effusion which leads to detachment. He further says:

> On account of these changes in the choroid and the ciliary body, disturbances must arise in the vitreous body, which, although it cannot be shown that they lead to disturbance of the fibrillae in an atrophic sense, still cause abnormal connections of this body with the surface of the retina, as is shown in the specimen. This is especially conspicuous in the anterior portion. On account of these unequal connections at the juncture of these two structures, there must arise differences in the tension, which must remain latent as long as the retina is connected.

He further argues that given a diminution of tension of the vitreous there must be a heightened tension in the choroid, which is made apparent by the increased blood supply. (If this principle were true, detachment of the retina should follow more frequently attacks of choroiditis, especially when accompanied by diminished tension.) Thus, a decrease of tension arises from the direction of the choroid to the vitreous body. He further says:

> We may accordingly assume that the retinal detachment arises by virtue of pressure from behind, due to the retroretinal transudate, as well as by traction on the part of the vitreous body from the opposite side.

Taking all of this into consideration, it seems to us that in the present state of our knowledge, we are not justified in assuming anything more than that retinal detachment occurs as the result of a lymphatic derangement leading to exudation from the choroidal vessels. It has been argued that in the cases of detachment following a blow, the degenerative condition predisposing to the detachment were already existent. This may be perfectly true, but, on the other hand, the manner in which traumatic detachment forms seems directly to support the theory of a choroidal effusion and directly to controvert the theory of vitreous traction. Traumatic detachments show at least that detachment can occur without participation of the vitreous body. It seems somewhat unreasonable to presuppose choroidal disease in traumatic detachments, for, if such were the case, we should have evidences of choroidal disease followed by later detachments in the fellow eye, which clinically do not occur. Cases of traumatic detachment have been observed for years, in which no detachment occurred in the fellow eye. This would not be the case if a degenerative uveal process were at the bottom of the detachment, for it is hardly conceivable that such a process as has been supposed to exist could occur in one eye alone. The clinical course of traumatic detachments also tends to support the idea that the secondary degenerations are due to the presence of the detachment. For secondary degenerations, uveitis, cataract, etc., occur in traumatic detachments just as they do in the idiopathic detachments. In myopia the question is a much more complicated one. It cannot be denied that the structure of the retina makes it less extensible on account of its rich connective tissue supporting the framework. And yet, as Schöbl has pointed out, if detachment was due solely to the lack of extensibility of the retina, it would occur invariably at the posterior pole. It seems probable, therefore, that the elongation of the myopic eye is merely a predisposing factor and that the exudation from the choroid takes place in these cases in somewhat the same manner as in the idiopathic and traumatic ones. It must, of course, be clearly understood that the class of cases in which disease of the choroid, or ciliary body, or both, lead to floating opacities in the vitreous, diminished tension, etc., that the detachment is apt to occur as a degenerative symptom from the general lymphatic disturbance, from the pulling of old organized exudates, etc.

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[5] Kuemmel: Ann. Ophth., 1913, xxii, 437.

These cases, while bearing certain points of similarity, are clearly to be placed in an entirely different category from the ordinary idiopathic detachment. In other words, a clear distinction should be made between the cases in which the inflammatory symptoms antedate the detachment and those in which the detachment antedates the inflammatory symptoms.

It seems to us that we are justified in the two following assumptions: First, the presence of the detachment in itself leads to lymphatic disturbances and further complications of a degenerative nature. Second, the evidence on all sides, so far as it goes, is in favor of some operative procedure which withdraws the subretinal and suprachoroidal fluid. In the past when simple sclerotomy has been done and the fluid evacuated, it has been the rule to find a marked improvement in an attempt, however feeble, at reattachment. To be sure, when patients are allowed to get out of bed, the retina promptly redetaches, but this may be due to other factors. It seems probable to us that the fluid has not, in these cases, been removed completely enough to allow the retina to assume its normal position. The vision usually has improved, however, and the conditions have been promising for a time, and this has not been the case with any other means of treatment in our hands. With pilocarpin sweats, and rest in bed—in other words, a drastic elimination treatment—the fluid has at times undergone partial resorption, but this has never in our experience led to more than temporary relief, and has the serious objection of being greatly depressant, so that it has been abandoned by us, as by most surgeons within our knowledge. Good results have been reported by various surgical measures from time to time, but in all of these, puncture of the sclera occupies an important place, and he would indeed be venturesome who asserted that the scleral puncture was not the main, or perhaps the only cause of the improvement secured. Casey Wood[6] says:

> Scleral puncture seems to have held its own to the present time, and alone, or in conjunction with other forms of treatment, is practiced more frequently in detached retina than most of the surgical procedures about to be mentioned. Cures following its performance are not uncommon and when practiced within proper scleral areas, it is practically devoid of danger.

He also says (page 1356):

> Quite a number of brilliant and permanent cures have followed persistent treatment and a repetition of operations, in spite of these relapses. . . . No surgical intervention should be undertaken unless all parties to it are willing to have the patient submit to repeated operations as long as there is a chance of recovery. Deutschmann, for example, has finally succeeded in several cases of relapse, after operating a dozen times or more.

Acting on the foregoing ideas, we have endeavored to secure permanent drainage by means of a trephine opening in the sclera, through which the subretinal fluid could be completely removed by aspiration with a small syringe. This aspiration could be repeated several times, if necessary.

Trephining for detachment has also been done by Walter R. Parker,[7] and probably by others, with good results; but the incision of the choroid heretofore practiced seems likely to lead to reaction and vitreous hemorrhage, so that aspiration has been substituted.

It is a well known fact that the subretinal fluid in detachment tends to gravitate to the lower part of the globe. There are several points of doubt in connection with this phase of the subject, but it is probable that detachment is not a purely local process and that where several detachments occur, their shape is determined by more or less imperfect adhesions between the retina and choroid, and that the entire area beneath the retina is to a certain extent in communication. Frequently a detachment in the upper part of the field will subside, leaving the retina over the site of the old detachment apparently reattached, and the fluid will gravitate to the most dependent position—the lower part of the eyeball. It seems wiser, therefore, to select for the site of operation the most dependent position possible, which is within the area of the detachment, and this will usually be a point about equidistant from the external and the inferior recti muscles, or a corresponding point between the internal and the inferior recti. The trephine opening should be made as far back as possible, and this is naturally more easily accomplished when the operation can be done between the external and inferior recti muscles than on the opposite side. No speculum is necessary. An assistant inserts a strabismus hook and retracts the lower lid and tissues of the external canthus. A curved incision is made through the conjunctiva with the convexity in the direction of the cornea, and the tissues are taken up down to the sclera. It is wiser at this juncture to put in a single silk suture at the summit of the flap, as otherwise the capsular tissue underneath the flap is apt to be rolled up and the ultimate flap will then be composed of nothing but conjunctiva, leaving more or less thickening and adhesions in the episcleral tissues, which tends to seal up the trephine opening. The entire thickness of tissue is taken up, down as far as the sclera, and dissected well back. The assistant then holds this flap back by means of the suture. The trephine opening is then made with a 2 or 3 mm. trephine. We are of the opinion that a larger opening is better, but experience is necessary to decide this point. On the removal of the trephine button, there is in many instances a gush of serous fluid from the suprachoroidal space. Examination of the eye usually shows considerable subsidence of the detachment after this fluid has escaped. The flap is then sutured into place and the eye bandaged and the patient put to bed. It goes without saying that the pupil should always be well dilated with atropin before the operation, both for purposes of examining and to keep the eye as free as possible from the tendency to inflammation. There is usually very slight reaction after the trephine operation. In a week or ten days later, the patient is put on the operating table and the needle of a small aspirating syringe is inserted into the subretinal space through the conjunctiva and choroid. The subretinal fluid is then forcibly aspirated, after which the patient is put to bed for a day or two, as circumstances require. The aspiration operation is followed by practically no reaction and can be repeated as long as the trephine opening remains free. In this connection, it is very important to have the flap properly made, as, if capsular tags are allowed to roll up under the flap, it is difficult to see where the opening lies and to enter the needle requires a great deal of stabbing around in the dark. If the conjunctival flap heals properly, the trephine opening shows as a small dark spot, which is easily identified. It does not show, however, so plainly as a trephine opening at the corneal margin, on account of the greater thickness of the conjunctival and capsular tissues in the flap. In some of the cases presented, a single aspiration was sufficient, but in others there was reaccumulation of fluid and the aspiration had to be repeated.

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[6] Wood, Casey: Ophthalmic Operations, Chicago, Cleveland Press, 1911, ii, 1,360.

[7] Parker, Walter R.: Tr. Am. Ophth. Soc., 1914, p. 661.

It is evident that this procedure, in order to be successful, must be undertaken before the detachment is old enough to have undergone degenerative changes. A shrunken and contracted retina will, of course, not fall back into position, even if the fluid be withdrawn; nor is there any probability of success if inflammatory changes have set in, especially if the intra-ocular tension has fallen much below the normal. It is, also, hardly conceivable that the operation would be successful in high degrees of myopia, although on this point experience is lacking. The rationale of the operation, however, is in recent traumatic or spontaneous detachments where there seems a likelihood that the fluid accumulation is acting to keep up the condition.

REPORT OF CASES

Case 1.[8]—B., a bookkeeper, aged 21. Family history negative. Sept. 22, 1914, he noticed blurring in the sight of the left eye. September 26 he visited a hospital but did not receive any treatment. He visited Dr. Curtin, October 1. There was no history of trauma. Urinalysis, Wassermann and von Pirquet all negative. Blood pressure 128. R. V., 20/40. L. V., hand movements in the lower and outer parts of the field. There was low myopia in each eye. A large detachment of the lower and outer part of the retina was found in the left eye. The retina was bluish-white and thrown into folds with loss of the light reflex of the vessels. The disk was still visible, but the detachment extended nearly to the macular region. There were a few floating vitreous opacities. He entered the Manhattan Eye, Ear and Throat Hospital, October 2, and was put to bed, pupil dilated with atropin and pressure bandage applied. Pilocarpin sweats were given every second day. October 12, no improvement being apparent, he was operated on by Dr. Curtin. Under cocain, a button of sclera, 2 mm. in diameter, was removed by the trephine from under a conjunctiva flap over the site of the detachment and as far back as possible between the inferior and external recti muscles. The choroid and retina were not punctured. The conjunctival flap was united by two silk sutures and a moderate pressure bandage applied. He continued in bed until October 22, having had but a moderate amount of reaction. On that date, a medium-sized aspirating syringe was pushed through the conjunctiva and scleral opening and choroid, and 25 minims of serous fluid withdrawn. This subsequently was found to resemble serous fluids in general. The fundus of the eye was immediately examined and the retina was seen to have fallen back into place. The patient was returned to bed and kept there until November 4. The vision on the following day was found to be "fingers at 8 feet." There was hardly any reaction, and the eye did not even redden. The vision gradually increased. He was allowed to get out of bed November 4. November 16 his vision and retraction were as follows: Right, 20/40 : 20/20 with a minus 1.50 cyl. axis 180 degrees; left, 20/70 + : 20/40 with a minus 1.00 cyl. axis 180 degrees.

December 22, vision in the left eye was 20/30. January 27, the left lens was increased to — 1.50 cyl., which gave him vision of 20/20. At the time of writing (March 15, 1915) his vision has remained 20/20 with his correction. Externally the eye is normal in appearance, except that at the lower and outer aspect of the globe can be seen a small bluish circle, the site of the trephine opening. The conjunctiva is slightly chemotic over this area.

Ophthalmoscopically, the retina is entirely attached except in a small area in the lower and outer field, which is probably at the site of the scleral trephining. This can only be seen with the pupil dilated and the patient looking markedly downward. Small white striae can be seen in the retina in the lower macular region and lower parts of the fundus, the former site of the detachment.

There are a few floating opacities in the vitreous that can still be seen. The patient no longer observes flashes of light or disturbances in the eyes or contour of objects and readily reads the test type, in contradistinction to his earlier tests when he would deliberate and study the letters for a short time before pronouncing them.

As his record shows, his vision has gradually increased so that today it is slightly better than normal.

The patient has changed his occupation to that of salesman. He returned to work Nov. 23, 1914, and travels around the city on the various surface, subway and elevated trains, and has taken no special precautions regarding jarring, and his eye, to date, shows no indication of any redetachment.

Case 2.—J. W., a clerk, aged 23. Family history good. He smokes and drinks moderately. Three years ago he had pneumonia. Nov. 13, 1914, he was accidently struck in the right eye by a companion. Immediately following it pained for about one-half hour. Two weeks later he noticed when going out into strong sunlight a black spot appeared before his vision. He tested the eye and noticed that day by day the vision was failing, so that by December 8, he could see very little. On this date he came to the hospital. Vision in the left eye was 20/20. In the right eye "fingers at 1 foot" in the upper field. Examination showed a large detachment in the upper and outer part of the fundus, with general edema of the entire retina, and with some slight detachment apparent below the macula. Three diameters to the nasal side of the disk, there was a patch of dark pigment, and through the center of this a whitish mass projected forward into the vitreous. Above this at the outer side could be seen grayish-white striae extending upward and inward, and down from this mass, which looked like a rather atypical form of retinitis proliferans, the retina was bluish-white and detached. The patient entered the hospital on December 12 and a scleral trephine was done by Dr. Thomson, between the inferior and external recti. December 22, the subretinal fluid was aspirated. At first there was no change in the vision, but after the aspiration the vision had increased to 20/200, and the field was enlarged. Twenty minims of fluid had been withdrawn. This was found to have the usual characteristics of serous fluids. He was kept in bed for a week, at which time the vision equalled 20/70 in a field extending to 50 degrees laterally on each side, 30 degrees above and 70 below. At present the retina is entirely reattached in the upper field. There is still a detachment below the mass. The vitreous is slightly hazy. The mass is apparently unchanged, except that at the apex can be seen a few small vessels, and several dark striae run to the posterior surface of the lens. Externally the eye appears normal. The pupil reacts to light, and the trephine opening can be seen through a slightly chemotic conjunctiva. Urinalysis, Wassermann and von Pirquet negative.

Case 3.—J. Z., a baker, aged 42. About the middle of October he noticed the sight of the right eye was becoming dim. He did nothing until December 16, when the vision was so badly reduced that he could not count fingers. December 23 he came to the hospital. There were two large detachments occupying the entire lower half of the right fundus. The disk was partly obscured. The form field could not be made out, and the light field was obscure in the larger portion. The patient gave a history of chronic rheumatism, although his health had been good for the past two years. The tension was reduced in the right eye. Vision of the left eye was 20/20 —. Urinalysis, von Pirquet and Wassermann negative. The patient was put to bed with atropin and a pressure bandage. On January 5, Dr. Curtin did a trephine operation, making a 2 mm. opening between the external and inferior recti muscles. Very little fluid escaped when the trephine button was removed, so the needle of the aspirating syringe was entered through the choroid, and 20 minims of serous fluid was withdrawn. The following day the patient could count "fingers at 3 feet." His vision increased so that at the end of a week it was 20/200, and the field contracted only in the upper half. He was kept in bed a week, but after he got up the detachment increased and vision failed gradually to "fingers at 4 feet." January 16, 15 minims of fluid were again aspirated, without, however, securing a reattachment of the retina. February 4, 15 minims more of fluid were aspirated. Following this aspiration, the reaction was more severe and he was put to bed and iced cloths applied to the eye. A week later the ophthalmoscope showed that a hemorrhage into the vitreous had occurred and vision was reduced to hand movements. At present the eye is white. The trephine opening can be seen as a small bluish spot. The tension is normal. The vitreous is so clouded that details of the fundus cannot be seen. The field for light perception is good.

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[8] The following case was reported in the Ophthalmic Record, February, 1915.

Besides these cases, about ten similar operations were done in old cases of detachment, most of which had lasted a year or more. It has not been thought worth while to report these cases in detail, nor was it to be expected that any marked success would be attained. However, a certain number of facts of interest have been determined.

The reaction seems entirely confined to the trephine operation and is very slight. The aspiration seems to cause no perceptible reaction, even when repeated at fairly frequent intervals, unless, as in one of the cases reported, a hemorrhage occurs following its performance. This accident seems rather unlikely to occur, however, and has not been noted in any other case.

The amount of fluid withdrawn seems to have very little influence on the amount of the reaction. In one case, 40 minims were withdrawn, and the following day the eye was hardly even flushed.

We have come to no very definite conclusion as to whether it is better to aspirate immediately or when the reaction has subsided. Where suprachoroidal fluid exists in any amount, which has been in more than half of the cases, it is perhaps as well to postpone the aspiration, but if when the trephine button has been removed no fluid comes away, showing that the entire amount is beneath the retina, it is probably as well to aspirate then and there. This course does not greatly increase the external redness of the eye, but it cannot be doubted that the lymphatic disturbance is greater when trephining and aspiration are done at the same sitting, and this point should, of course, receive due consideration.

In several of the cases, especially when the flap was not carefully dissected up in its entirety—that is to say, so as to include the conjunctiva and capsule of Tenon in one flap—the trephine opening was later found partially occluded and it was difficult to introduce the aspirating needle. In most cases, however, the opening can usually be found and the introduction of the needle is attended with but little difficulty. In conclusion, it must be emphasized that this procedure gives promise of results only in recent cases, when the light perception in the retina is still retained; when no inflammatory products are thrown out into the vitreous; when the tension is not materially reduced; and when a high degree of myopia does not exist.

A Favorable Death Rate.—Neither the state nor any of its municipalities should regard its death rate as favorable when about 50 per cent. of the deaths, according to present-day knowledge are preventable.—Rep. Pub. Health Com. Minnesota Pub. Health Assn.

SCLEROTREPHINE OPERATION FOR DETACHED RETINA

CLINICAL REPORT OF ELEVEN CASES *

WALTER R. PARKER, B.S., M.D.
DETROIT

After observing the results obtained by Colonel Elliot in treating glaucoma by his corneoscleral trephining operation, it seemed possible that scleral trephining might be utilized in the treatment of detachment of the retina.

May 19, 1913, the first operation was performed, and since that time fifteen operations have been made on eleven patients, all of which are included in this report.

Two operations were performed in Case 7, also in Case 8, and three in Case 9. In Cases 1 and 2, the sclera was trephined over the site of the detachment without incising the choroid and retina. In all the other cases, in addition to trephining the sclera, an incision with a cataract knife was made in the choroid or the choroid and retina, and the subretinal fluid, and, in most instances, a few drops of vitreous, were allowed to escape.

TECHNIC

The operation may be described in detail as follows: The conjunctiva and the underlying tissues are grasped with a pair of forceps at a point corresponding as nearly as possible to the lowest portion of the detached retina, and by a single cut with a pair of scissors, a triangular incision is made down to the sclera. Before losing the grip with the forceps a suture is passed through the apex of the triangular flap. This procedure not only enables the operator to include in the suture all the tissue incised, but affords a ready means of retraction. The suture can be held by an assistant, or a pair of artery forceps can be applied and so placed that the proper pull will be exerted to give a good view of the field of operation. After the sclera has been bared, a 2 mm. trephine opening is made, and the choroid, or choroid and retina incised in such a manner as to avoid injuring the large vessels. The free escape of the subretinal fluid may be followed by a few drops of vitreous. The needle on the suture previously passed through the apex of the flap is now passed through the subconjunctival tissues and the conjunctiva and the wound closed. A single suture on each side completes the operation. The after-treatment consists of rest in bed for ten days in such a position as to favor the replacement of the retina.

The cases are all from my service in the ophthalmic clinic of the University of Michigan, and are in no way selected.

A brief outline of the history of each case is as follows:

REPORT OF CASES

Case 1.—*History.*—The patient, N. N., female, aged 50, presented herself for examination in the ophthalmic clinic of the University of Michigan, May 12, 1913, complaining of failing vision for a year, and almost blindness for eight months.

Family history negative. Personal history, uterine prolapse and poor general health.

Examination.—Vision, right eye, 5/30; left eye, l. p., with poor projection. Tension normal in both eyes. Pupillary reflexes active to direct in right eye, and to consensual in left eye; feeble to direct in left eye and to consensual in right. Accommodative reflexes normal in both eyes. Transillumination negative.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

Ophthalmoscopic Examination.—Right eye: Beginning nuclear cataract; otherwise no gross lesion. Left eye: Media clear, retina detached from opposite 2, around below and up to 10, upper border of detachment being on line of junction of upper and middle third of disk. Detached portion of retina fluctuates, and the vessels can be easily traced over it.

Visual Field (Fig. 1): Candle field, taken at distance of 1 meter.

Treatment.—May 19, 1913, trephine operation for detachment of retina performed. Stephenson's trephine used; 2 mm. disk removed. Choroid not incised. Almost no reaction followed. On the eighth day patient thought sight a little better, but the gain, if present, did not hold.

June 7. No improvement seen with ophthalmoscope. Vision l. p.

June 14, 1914. Patient returns with vision l. p. and loss of projection.

Result: Failure.

DISCUSSION

This case presented an uncomplicated detachment of the retina, and except for the extent of the detachment should have been favorable for operation. The absence of reaction was doubtless due to the fact that the choroid was not incised, thus making infiltration impossible.

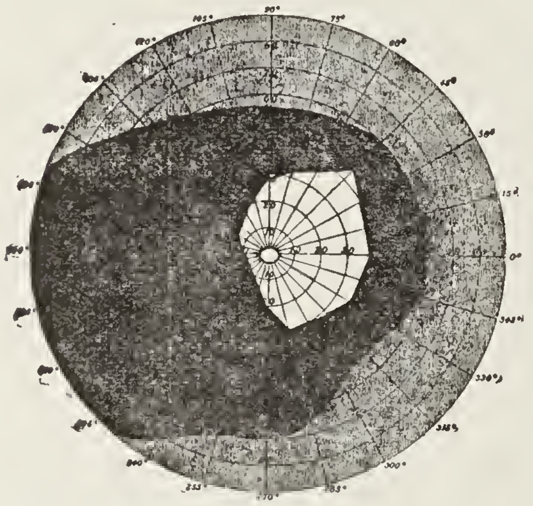

Fig. 1.—Case 1. Field before operation. May 13, 1913. Vision, light perception. Candle field. Left eye.

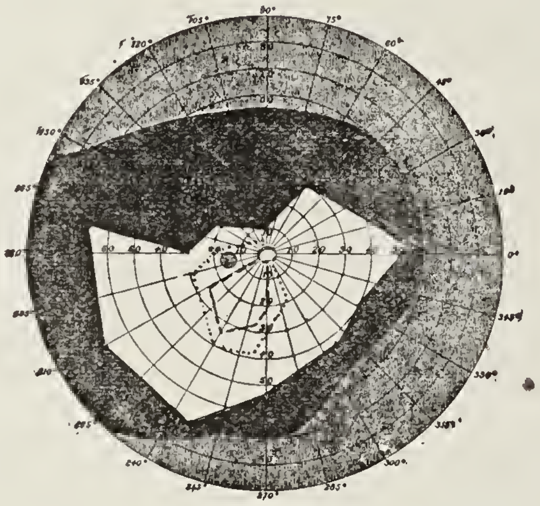

Fig. 2.—Case 2. Field before operation. Left eye. June 24, 1913. Vision, 2/60; 30 mm. object. In this and following figures solid line represents green, dotted line red, and dash line blue.

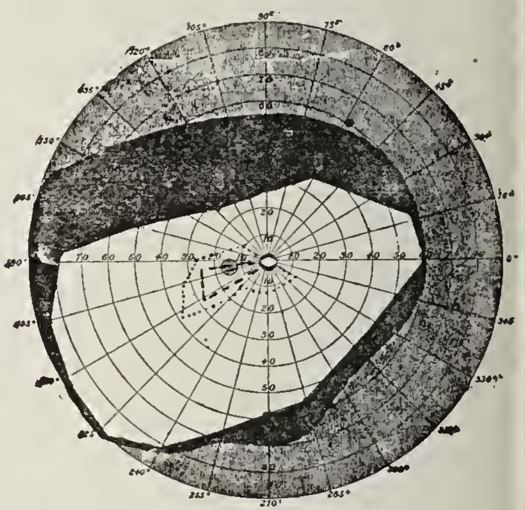

Fig. 3.—Case 2. Field after operation. Left eye. July 14, 1913. Vision, 2/60; 10 mm. object.

Case 2.—*History.*—E. T., male, aged 67, presented himself at the clinic June 23, 1913, complaining of cloud effect before the left eye coming on eight months previously. Vision now blurred; large floaters constantly present.

Family history negative. Personal history, hernia; gonorrhea thirty years ago. No history of trauma.

Examination.—Vision, right eye, 5/15; left eye, 2/60. External appearance of eye and conjunctiva normal. Pupillary reflexes active in both eyes. Tension normal. Transillumination negative. Wassermann negative.

Ophthalmoscopic Examination.—Right eye: Lenticular cortical opacities; many floating opacities in vitreous, both large and small, reticular and granular. Disk and retina edematous, foveal reflex faint; two corkscrew-like macular vessels; there were some slight atrophic changes in the choriocapillaris.

Left eye: Beginning lenticular cortical opacity; many floating opacities of vitreous, fine granular and reticular in character. Inferiorly, retina detached; nasally, detachment extends from a level above the disk slightly downward, following lower border of disk, thence temporally and upward at an angle of 45 degrees.

Diagnosis.—Right eye, incipient senile cataract. Left eye, incipient senile cataract and extensive detachment of retina, involving all except superior quadrant.

Visual Field. Field in left eye (Fig. 2) showed nearly all upper half gone, and peripheral contraction except down. Only small area below macula shows color perception.

Medical Examination.—Wassermann negative. Arterial sclerosis; blood pressure 166. Urine shows a few hyaline casts; otherwise negative.

Treatment.—July 3, 1913, trephine operation for detachment of the retina; choroid not incised.

July 11: No reaction followed the operation. No improvement in vision.

Ophthalmoscopic examination showed marked improvement in extent of detachment, the upper portion being two disk diameters below disk margin.

Form Field (Fig. 3): Slight improvement. Vision 2/60.

Result: Improvement in field. Vision unchanged.

DISCUSSION

This case presented a detachment of unknown origin of eight months' duration, complicated by degeneration of the vitreous. The choroid was not incised and no reaction followed the operation. While the vision remained the same, the visual field taken with a 10 mm. object was larger than the original one taken with a 30 mm. object.

Case 3.—*History.*—H. H.,[1] male, aged 46, came to the ophthalmic clinic of the University of Michigan September 23, 1913, complaining of a progressive loss of vision in the left eye, which began one year previously as a crescent-shaped shadow, convexity downward, in the upper part of the visual field. There had been no trauma, no pain, no photophobia.

Family and personal histories: Negative.

Examination.—Vision, right eye, 6/15; left eye, 4/60. Pupillary reflexes normal. Tension normal. No external pathology in either eye.

Ophthalmoscopic Examination.—Right eye: Some fine and reticular vitreous opacities; otherwise media clear. Physiologic depression present, lamina cribrosa showing faintly. Disk slightly edematous. Arterial reflex stripe most conspicuous in macular vessels. Arteriovenous compression with some distal dilation; foveal reflex present.

Left eye: Innumerable fine dust-like opacities in vitreous; few larger and rounded, all of same type, but variable in size. Disk hyperemic; physiologic depression present; lamina cribrosa faintly seen; scleral and choroidal rings blurred. Arterial reflex stripe conspicuous. Silver wire macular artery nearly developed just above fovea. Retina about disk hyperemic and swollen, whole retina edematous. Below fovea, retina is folded and floats free from choroid. Detachment extends from about one disk diameter below disk downward and outward as far as can be seen.

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[1] Published in Archives of Ophthalmology, September, 1914.

Visual Field. Field (Fig. 4) showed marked contraction in superior nasal portion.

Medical examination negative.

Operation.—Oct. 16, 1913, scleral trephining operation performed.

Postoperative History.—During the night the patient complained of some pain and the conjunctiva became very much congested, swollen and edematous, the chemotic conjunctiva covering the limbus completely. The eye was iced for twenty-four hours.

After five days the swelling and chemosis were greatly reduced except at the site of operation, which showed bulging for five days longer, at the end of which time the eye was quiet and the stitches were removed.

Fundus examination made three weeks after operation showed many minute granular opacities in vitreous. Whole fundus slightly hyperemic; retina somewhat edematous. Arteriovenous compression present. Superior macular vessels showed silver wire characteristics. Very slight if any foveal reflex; macular region practically normal except slightly granular about the fovea. A glistening white spot with a bright annular whitish line nearly surrounding it was seen about three or four disk diameters temporally and about one disk diameter from the fovea. No area of detachment could be discovered, the retina being apparently completely reattached.

Three weeks after operation vision in left eye 6/15, and field for form and color nearly normal in extent.

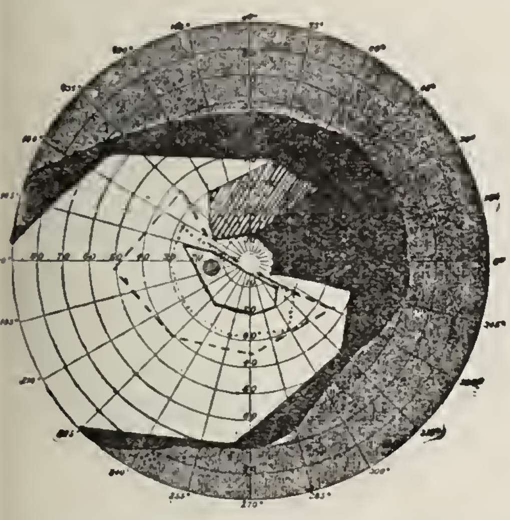
Fig. 4.—Case 3. Field before operation. Left eye. Sept. 23, 1913. Vision, 4/60; 10 mm. object.

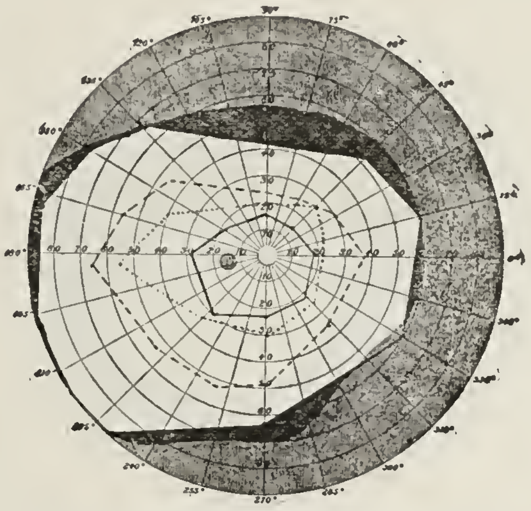
Fig. 5.—Case 3. Field after operation. Left eye. March 29, 1915. Vision, 5/7.5; 10 mm. object.

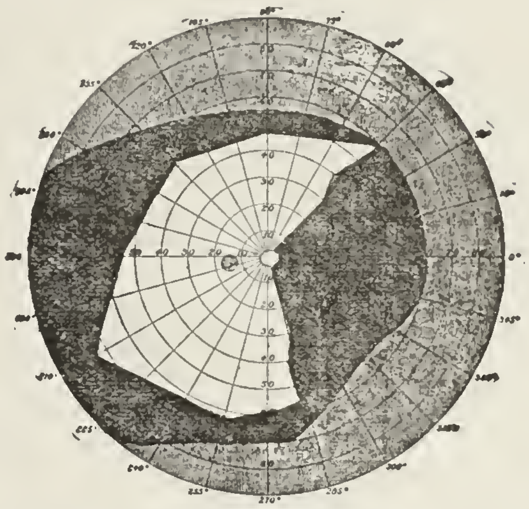
Fig. 6.—Case 4. Field before operation. Left eye. Oct. 28, 1913. Vision 1/120; candle light.

Refraction: Left eye + 0.50 sphere. Tension: Right eye, 20 mm. mercury; left eye, 20 mm. mercury.

The last observation, made seventeen months after time of operation, showed vision 6/7.5, tension 20 mm. mercury both eyes, and visual field nearly normal (Fig. 5).

Ophthalmoscopic Examination.—Same as three weeks after operation.

Result: Good after seventeen months.

DISCUSSION

The etiology in this case was unknown, although a well marked neuroretinitis was present, with many fine dust-like vitreous opacities. The detachment was of one year's duration and involved about the lower one-third of the retina. A marked reaction followed the operation and did not entirely disappear for ten days. Although there was an escape of a small amount of vitreous, no trace of an incision in the retina could be found. The vision improved from 4/60 to 6/7.5 pt. and the field to practically normal.

Case 4.—*History.*—M. K., male, aged 62, entered the University Hospital, Oct. 15, 1913, with a history of having undergone an operation for cataract on the right eye seven years previously. On the third day a hemorrhage occurred, followed by an inflammation and loss of vision. The vision in the left eye has gradually diminished until on admission the patient was nearly blind.

Family History.—Father had cataracts in both eyes.

Personal History.—Negative.

Examination.—Vision, right eye nil, left 1/120; projection very poor. Tension, right eye, 8 mm.; left, 15 mm. Whole lens of left eye more or less granular and irregularly opaque. A well-marked iris shadow was present. Transillumination negative.

Oct. 16, 1913. Combined operation for cataract extraction. Moderate loss of fluid vitreous.

October 23. Pupil well dilated, coloboma free, eye quiet and in good condition.

Ophthalmoscopic Examination.—October 27. Left eye: Retina detached temporally and down; elevated 6 diopters; retinal vessels traced over detachment, which fluctuates with eye movements. Retinal vessels tortuous. Disk borders indistinct. Whole retina edematous.

Visual Field (Fig. 6): Large nasal and marked temporal contraction.

Nov. 21, 1913. Typical ophthalmoscopic picture of detachment of retina, including whole lower portion of globe. Transillumination negative.

November 24. Trephine operation for detachment of the retina opening in sclera, down and out. Choroid and retina incised with cataract knife after removal of scleral disk. Moderate amount of fluid escaped, followed by several drops of thin vitreous.

November 26. Slight reaction followed the operation; eye quiet.

Ophthalmoscopic Examination.—Detachment of retina more extensive.

March 29, 1914. Vision l. p. Candle field improved nasally; not changed temporally (Fig. 7).

The detachment in this case apparently followed the loss of fluid vitreous sustained at the time of operation for removal of cataract. The condition of the vitreous together with the rapid increase in the extent of the detachment from October 23 to November 21 made the case an unfavorable one for any operation.

Case 5.—*History.*—M. B., female, aged 40, entered the hospital, Dec. 4, 1913, complaining of specks before right eye during past nine months, with progressive loss of vision. There had been no trauma, no pain or photophobia.

Family History.—Mother and one brother had cataracts.

Personal History.—Negative.

Examination.—Vision, right eye, fingers at 3 feet; left eye, 6/5. Pupillary reflexes normal; tension, right eye, 22 mm.; left eye, 24 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Lens clear, many fine vitreous opacities, mostly posterior. Disk hyperemic, lower border blurred, elevated and continuous with detachment of retina. Localized area of proliferating retinitis just outside macula, with radiating folds and bands. Whole inferior half of retina detached and drawn into folds.

Left eye: Lens clear, floating opacities of vitreous, mostly long and thread-like; slight arteriovenous compression.

Visual Field (Fig. 8): Entire absence of right upper field, with marked peripheral contraction.

Medical examination, negative.

Operation.—Dec. 11, 1913, trephine operation for detachment, choroid and retina incised. December 15, marked chemosis, extending to fornix, followed operation.

December 25, eye quiet.

Ophthalmoscopic Examination.—Retina reattached, except immediately below macula and in extreme periphery. Fields (Fig. 9) show marked improvement, excepting large scotoma corresponding to area of proliferating retinitis. Vision, fingers 6 inches.

Result: Vision same. Marked improvement in fields.

DISCUSSION

The failure to improve the vision in this case could be accounted for by the nearly central proliferative changes in the retina.

Case 6.—*History.*—E. S., female, aged 36, entered the clinic Dec. 22, 1913, complaining of loss of vision in the right eye, especially below. First noticed four years ago when it was nearly as marked as at the present time.

Family history, negative.

Personal History.—Struck in the right eye when aged 12.

Examination.—Vision, right eye, 1/60; left eye, 5/10. Pupillary reflexes normal. Tension, right eye, 16 mm.; left eye, 16 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Media clear. Disk edematous. Arteries tortuous, arteriovenous compression present. Center of fovea shows cherry red spot surrounded by grayish ring which marks beginning of an area of elevation which extends downward and outward. Area of detachment retains nearly normal color and choroidal interspaces show temporally. Both choroid and retina appear to be detached in lower outer quadrant. Left eye: No gross lesion.

Visual Field (Fig. 10): Field taken with 10 mm. object shows marked contraction for form up and nasally, and slight contraction temporally. Color fields present only in outer lower quadrant.

April 2, 1914. Admitted to hospital. On ophthalmoscopic examination the findings were confirmed.

Operation.—April 6, 1914, trephine operation for detachment of retina performed. Choroid and retina incised. The escape of a moderate amount of fluid was followed by some loss of vitreous. Slight edema of conjunctiva followed the operation.

Postoperative History.—April 8, eye quiet. Pupil well dilated.

Ophthalmoscopic Examination.—Area of detachment somewhat diminished. Whole retina more edematous. Detached area grayish in color and distinctly tesselated. Choroidal interspaces clearly seen through retina, and elevated only 3 or 4 diopters.

Visual Field (Fig. 11): Visual fields taken April 23, 1914, showed nearly complete restoration of form fields and very marked increase in size of color field. Vision, O. D. 5/60, O. S. 5/4.

DISCUSSION

The marked improvement in the visual fields in a case of detached retina of four years' duration is of special interest.

Case 7.—*History.*—J. S., male, aged 64, entered hospital, May 8, 1914, complaining of loss of vision in both eyes for the past three years, following a kick in the face by a horse.

Family history, negative.

Personal History.—No constitutional diseases.

Examination.—Vision, right eye, fingers at 3 feet; left eye, l. p. Tension normal. Transillumination negative. Right eye, well advanced senile cataract.

Ophthalmoscopic Examination.—Left eye, large number of floating opacities in vitreous. Disk outline obscured at nasal border by fold of detached retina. Arteries small, veins tortuous, marked arteriovenous compression. Retina detached throughout with exception of upper outer quadrant.

Visual Field (Fig. 12): Candle field showed marked contraction up and in.

Operation.—May 15, 1913, trephine operation for detachment of retina; opening made down and out 12 mm. from limbus. Choroid and retina incised. On second day following operation, eye quiet. Fundus could be seen with S + 1.00 diopter lens. On fourth day, detachment had reappeared and could be seen plainly with S + 7.00 diopter lens. Candle field, taken on fifteenth day after operation, nearly identical with one shown in Figure 12.

May 29, trephine operation repeated; a moderate amount of fluid escaped.

June 12. Marked reaction followed operation.

Ophthalmoscopic Examination.—Many fine vitreous opacities. Disk blurred and edematous. Retina no longer overlaps disk border, whole detachment appearing less in amount. Form field, 10 mm. object. Figure 13 shows marked increase over candle field. Vision, fingers at 3 feet.

Result: Fields improved. Vision unchanged.

DISCUSSION

The condition of the vitreous alone could account for the failure to improve the vision in this case. The final field, taken with a 10 mm. object shows a decided improvement over the first, taken with candle.

Case 8.—*History.*—D. D., male, aged 28, presented himself at the hospital May 19, 1914, complaining of rapid failure of vision in the right eye for one year. Now nearly blind. Thirteen years previously the patient was struck in left eye, which resulted in immediate loss of vision in that eye. Later a

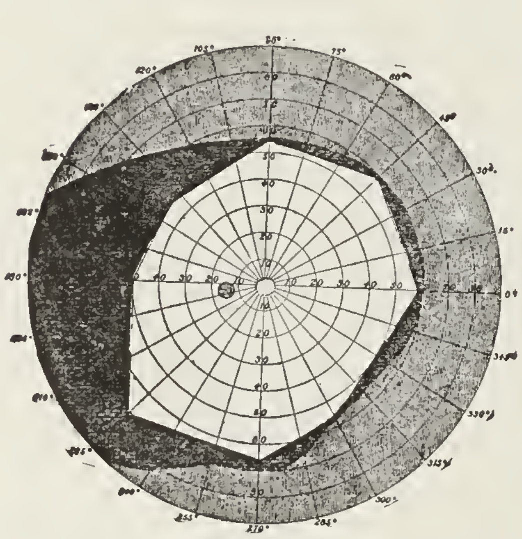

Fig. 7.—Case 4. Field after operation. Left eye. March 29, 1914. Vision, light perception. Candle field.

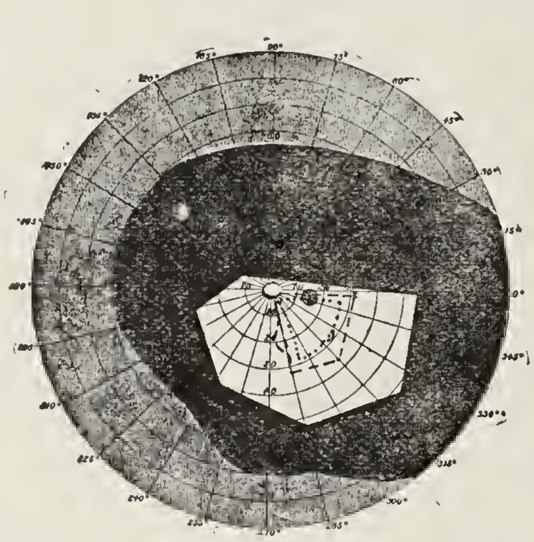

Fig. 8.—Case 5. Field before operation. Dec. 4, 1913. Vision, fingers at 3 feet; 10 mm. object.

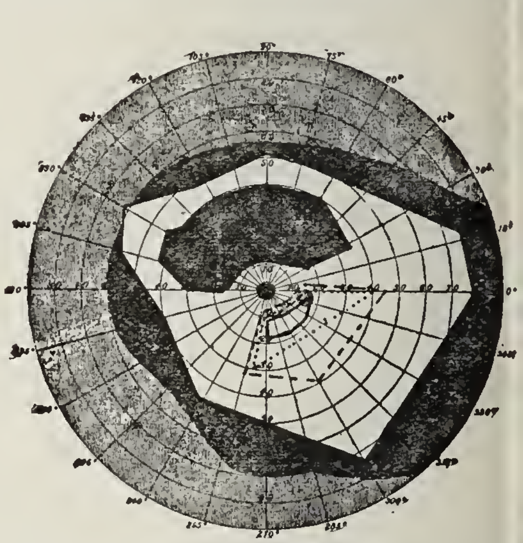

Fig. 9.—Case 5. Field after operation. Right eye. Vision, fingers at 6 inches; 10 mm. object. Dec. 22, 1913.

cataract developed which was removed five years prior to admission without restoration of sight.

Family history, negative.

Personal History.—Treated for syphilis.

Examination.—Vision, right eye, l. p.; left eye, blind. Projection in right eye good. Tension normal. Pupillary reflexes: Right eye reacts moderately to direct, slightly to consensual stimulation. Left reacts to consensual only.

Ophthalmoscopic Examination.—Right eye: Beginning cortical cataract. Many vitreous opacities. Disk obscured, located only by convergence of central vessels. Retina detached throughout lower half. Detached portion of retina in folds with contraction bands present, both nasally and temporally. In places, detached portion of retina nearly normal in color, giving appearance of an associated detachment of choroid. Left eye: Lens absent. Total detachment of retina.

Visual Fields: Right eye (Fig. 14), form field, taken with a 20 mm. object, showed absence of nasal field with marked peripheral contraction temporally.

Medical Examination.—Positive Wassermann. Leukoplakia and adenopathy. Given salvarsan.

Operation.—June 1, 1914, trephine operation for detachment of retina performed. Opening in sclera made down and out about 12 mm. from limbus; choroid incised. No escape of fluid followed removal of scleral button, but a large amount of amber colored fluid followed incision of choroid.

Postoperative History.—Considerable reaction followed operation, but no complications. Twenty-eight days after operation the field (Fig. 15) taken with a 20 mm. opening, was more contracted than before operation.

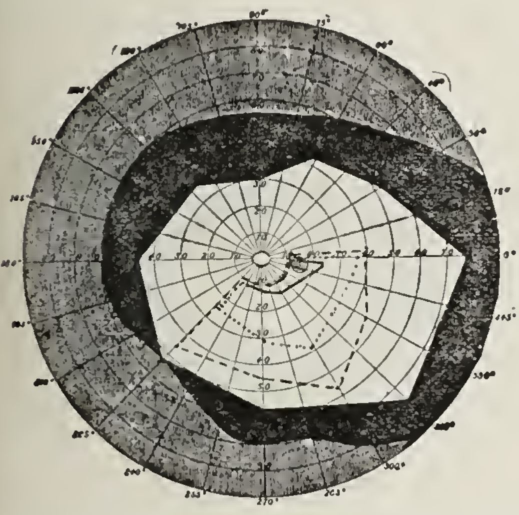

Fig. 10.—Case 6. Field before operation. Right eye. April 23, 1914. Vision, 5/60; 10 mm. object.

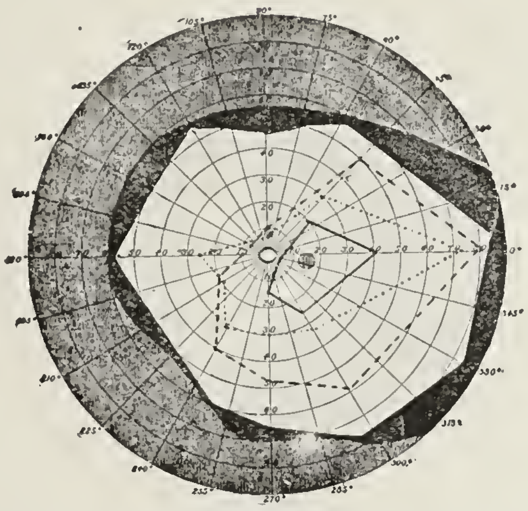

Fig. 11.—Case 6. Field after operation. Right eye. Dec. 12, 1913. Vision, 1/60; 10 mm. object.

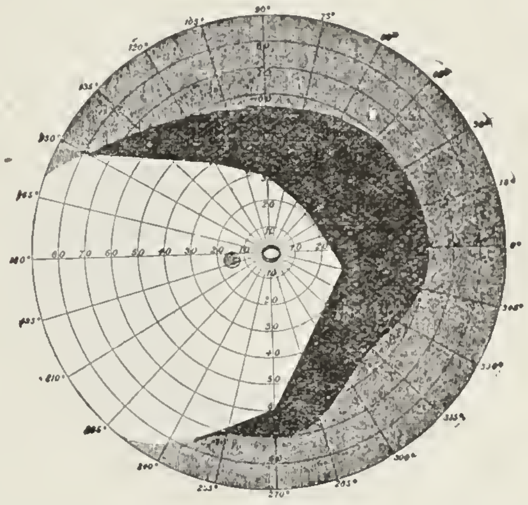

Fig. 12.—Case 7. Field before operation. Left eye. May 14, 1913. Vision, light perception. Candle field.

Nov. 12, 1914. Vision, l. p. Lens cataractous. Candle field (Fig. 16) about the same as field taken previously with 20 mm. object.

November 20. Trephine operation repeated. Marked reaction followed, but cleared up without treatment, leaving eye quiet after ten days, with the exception of some chemosis at site of trephine opening. Filtration good.

Dec. 20, 1914. Eye quiet. Vision, barely l. p. Field could not be taken, due to opacity in lens.

Result: Failure.

DISCUSSION

The condition of the vitreous, the presence of organized bands in the retina, together with the general condition of the patient, made this a most unfavorable case for operation. Apparently the formation of the cyclitic cataract was hastened by the operation.

Case 9.—*History.*—L. W., male, aged 14, presented himself at the clinic, May 19, 1914, with a history of loss of vision in left eye following blow on head three months previously. Was struck in same eye by fragment from dynamite cap three years previously.

Examination.—Vision, right eye, 5/5; left eye, l. p.; divergent, 20 degrees. Tension both eyes normal. Reflexes present, but restricted in left eye.

Roentgen-ray examination shows presence of foreign body posterior to sclera opposite superior temporal quadrant. Transillumination, negative.

Ophthalmoscopic Examination.—Right eye, normal; left, a few fine radiating lenticular opacities present. Two long organized bands (like retinal striae in appearance) hang from superior portion of vitreous; exact source not made out. Below disk several bands running downward in vitreous, similar to those seen above. Disk blurred, rings absent except down and out. Arteries contracted, veins engorged and tortuous. Central area blurred, obscuring all details. Down and nasally the retina and choroid detached 8 to 10 diopters, while down and temporally retina only detached.

Visual Fields (Fig. 17): Right eye normal. Left eye, marked contraction taken with 50 mm. object (20 mm. object not visible).

Medical history, negative.

Operation.—May 25, 1914, trephine operation for detachment of retina performed. Opening in sclera made directly down. Moderate outflow of clear fluid followed incision in choroid. Very slight reaction followed operation.

Postoperative History.—Thirteen days after operation, vision was 1/60. Field of vision (Fig. 18) much improved. Taken with 20 mm. object.

Ophthalmoscopic Examination.—Made sixteen days after operation. White bands observed at first examination unaffected. Temporally many vertical wrinkles and folds in retina. Along inferior nasal vein a striation apparent, not visible before operation. Detachment appreciably lessened below, especially temporally. Four weeks after operation detachment had same appearance as at last examination. Lamina cribrosa could be seen, however, and vision was 2/60.

July 3, 1914, thirty-nine days after operation, vision, 2/60. Field (Fig. 19) taken with 20 mm. object, more contracted above.

July 6, 1914, trephine operation repeated, opening being made down and out. Small amount of fluid escaped after incision in choroid.

July 10, 1914. Chemosis was slight.

July 25. Vision, 4/60. Field (Fig. 20) taken with 10 mm. object, much improved up and nasally.

Aug. 10, 1914. Vision, 5/60. Field (Fig. 21) taken with 10 mm. object, more contracted nasally, holding temporally.

November 8. Vision, 2/60. Detachment more marked below.

November 9. Trephine operation repeated second time. Sclera opened down and slightly cut. Moderate amount of fluid escaped after incision in choroid.

Dec. 1, 1914. Vision, 3/60. Field (Fig. 22) taken with 10 mm. object; marked contraction; somewhat smaller than first field taken with 50 mm. object. Eye quiet.

Ophthalmoscopic Examination.—Appearance same as after first operation.

Result: Slight improvement.

DISCUSSION

The organized bands in vitreous and retina made this case unfavorable from the first. The temporary improvement following the first operation led to the hope that some permanent gain might be made. The final improvement, however, was very slight.

Case 10.—*History.*—J. S., female, aged 21, presented herself at the clinic, Nov. 11, 1914, complaining of sudden total loss of vision in right eye nine days previously. After four days she could distinguish light; now sees objects. No trauma. No pain.

Examination.—Vision, right eye, fingers at 4 feet; O. S. 1/60, W. C. 6/15. Tension both eyes, normal. Pupillary reflexes: Right eye, almost absent to direct, active to consensual. Left eye, active to direct, nearly absent to consensual. Both react in accommodation.

Ophthalmoscopic Examination.—Right eye: Many fine vitreous opacities. Disk indistinct, seen best with S — 12.00 D. Whole lower portion of retina detached, most elevated immediately below macular region seen with S + 5.00 D lens. Superiorly, fundus somewhat tesselated. Left eye: Media clear, disk vertically oval, seen best with S — 12.00 D. Myopic crescent along lower temporal border with myopic choroidal changes in macular region. Peripheral portion of fundus tesselated.

Visual Fields (Fig. 23): Candle field; contraction temporally and above.

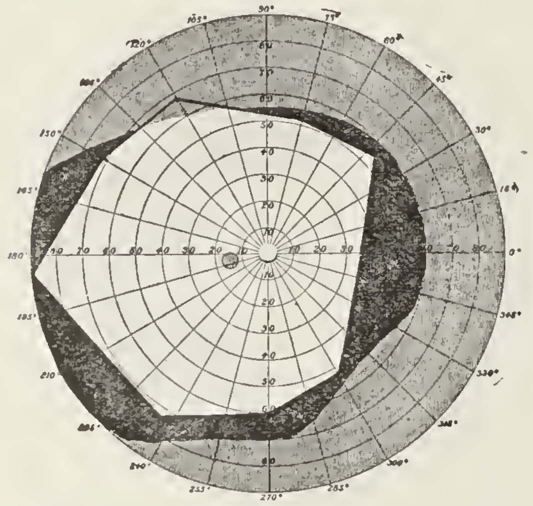
Fig. 13.—Case 7. Field after operation. Left eye. June 11, 1913. Vision, fingers at 3 feet; 10 mm. object.

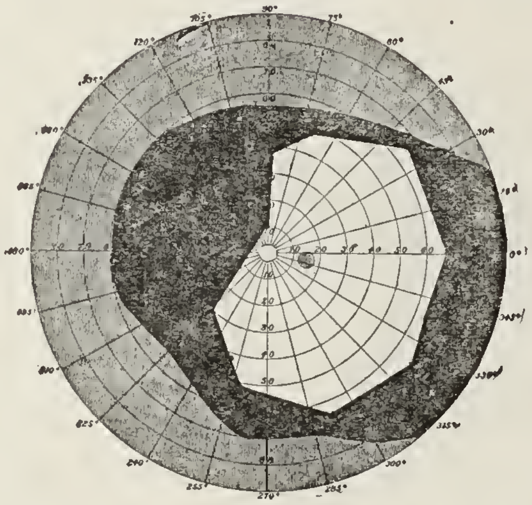
Fig. 14.—Case 8. Field before operation. Right eye. May 19, 1914. Vision, light perception; 20 mm. object.

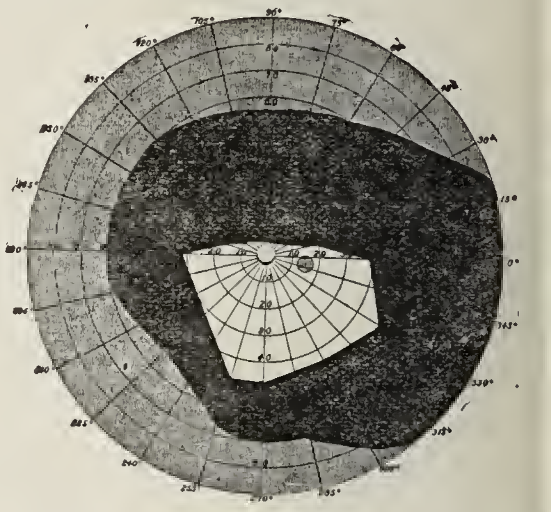
Fig. 16.—Case 8. Field after second operation. Right eye. Nov. 14, 1914. Vision, light perception. Candle.

Treatment, rest in bed.

Nov. 18, 1914. Vision, 4/60. Visual field, 10 mm. object, less contraction than former candle field. Small field for blue; red and green not attempted.

November 29. Vision, 6/40.

Ophthalmoscopic Examination.—Unchanged. Visual field not more contracted than at last examination.

Operation.—Nov. 30, 1914, trephine operation for detachment of retina performed. Scleral opening made down and out. Escape of yellowish colored fluid followed incision in choroid.

Postoperative History.—Slight injection and edema over trephine area. Twelve days after operation, eye quiet. Ophthalmoscopic examination showed marked improvement, retina replaced, excepting peripherally, down and in. Vision, 2/60.

Jan. 11, 1915. Vision, 5/60, with and without correction. Many thread-like and mossy vitreous opacities, apparently remnants of hemorrhage. Retina detached below. Fields, 10 mm. object. Practically the same as field shown in Figure 23.

March 26, 1915. Vision, right eye, fingers at 2 feet.

Ophthalmoscopic Examination. — Marked increase in extent of detachment now extending up and in, down to disk border, and up and out, to superior temporal artery, which seems to limit the detachment. Vitreous contains many fine and a few stringy opacities. Disk obscured.

Visual Field (Fig. 24): Field taken with a 10 mm. object shows marked loss in all directions, especially temporally.

Result: Failure.

DISCUSSION

The interesting feature in this case is the associated myopia. No other etiologic factor could be found as a possible cause of the detachment.

Case 11.—*History.*—M. W., female, aged 64, presented herself at the clinic, Feb. 8, 1915, complaining of loss of vision in left eye. Five months previously first noticed flashes of light before eye, which gradually disappeared. One month later, vision was practically lost for a period of from two to three weeks, when sight returned for objects, where it has since remained.

Examination.—Vision, right eye, W. C. 6/7.5. Left eye, fingers at 2 feet. External appearance of both eyes, normal. Pupillary reflexes, normal. Tension, right eye, 25 mm.; left eye, 22 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Few striae in lens periphery. Few fine vitreous opacities. Peculiar flaky retinal changes of indefinite character over whole fundus. Otherwise negative. Left eye: Lens swollen and granular. Many fine reticular vitreous opacities. One large central opacity. Retina detached from just below disk border temporally and down. Peripherally detached portion of retina, grayish; centrally pale red.

Visual Fields: Right eye, slight contraction above; left eye (Fig. 25) with 30 mm. object, upper nasal half practically hemiopic. Marked peripheral contraction throughout.

Medical examination, negative.

Operation.—February 15. Trephine operation for detached retina performed. Several drops of straw-colored fluid and a small amount of vitreous followed incision of choroid and retina.

Postoperative History.—Considerable congestion and chemosis over trephine area. At end of ten days patient could see much better, counting fingers readily. No exact record made. On eleventh day, chemosis had disappeared. Apparently filtration had ceased. Vision much worse. Visual fields (Fig. 26) 10 mm. object larger than first taken with 30 mm. object. Most marked improvement nasally where hemiopic character of field had disappeared. Vision: Counts fingers at 3 feet.

DISCUSSION

The final field taken with a 10 mm. object showed a marked improvement over the first one taken with a 30 mm. object. The failure to secure a more marked improvement in vision could be accounted for, in part, at least, by the changes of the lens and vitreous.

SUMMARY OF RESULTS

Vision			Fields	
Improved	Unimproved	Made Worse	Improved	Made Worse
4	5	2	8	3

In three cases (3, 5 and 7) very good results were obtained. In Case 3 the vision was increased from

4/60 to 6/7.5 and the field almost completely restored. The last observation was made seventeen months after the time of operation. In Case 5 the field was almost completely restored except for a large central scotoma which corresponded to an area of proliferating retinitis, accounting for no increase in the acuity of central vision. In Case 7 the field was greatly improved, but the condition of the vitreous was such as to prevent improvement of vision.

The vision was made worse in two cases (4 and 10). Case 4 had a fluid vitreous, a portion of which had been lost one month previously during operation by me for the extraction of cataract. Case 10 had a high degree of myopia.

The field was made worse in three cases (1, 8 and 10). In Case 1 the detachment was very extensive and the choroid was not incised. Case 8 had contraction bands in the retina and a partial detachment of the choroid. There was also present a total detachment in the other eye and the Wassermann was positive. Case 10 had a high degree of myopia with a spontaneous detachment.

In three cases (6, 8 and 9) the detachment of the retina was associated with a partial detachment of the choroid. In Case 6 there was a slight improvement in the vision and a marked improvement in the field both for form and color. Case 8 was unfavorable for any operative procedure, while Case 9 showed slight improvement after the second operation in both vision and fields. The organized bands in the vitreous in Case 9, the result of a foreign body passing through the globe, made any marked improvement impossible.

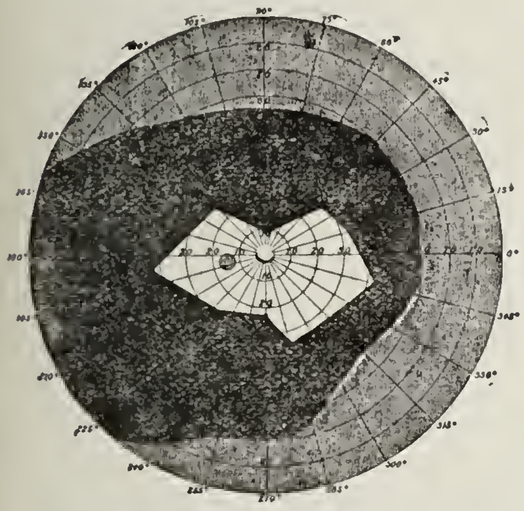

Fig. 17.—Case 9. Field before operation. Left eye. May 22, 1914. Vision, light perception; 50 mm. object.

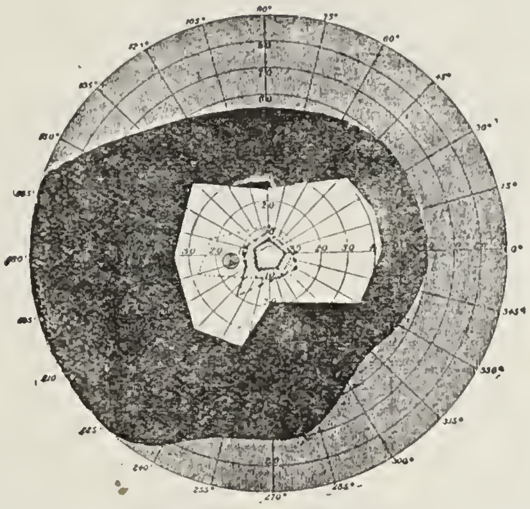

Fig. 18.—Case 9. Field after first operation. Left eye. July 7, 1914. Vision, 1/60; 20 mm. object.

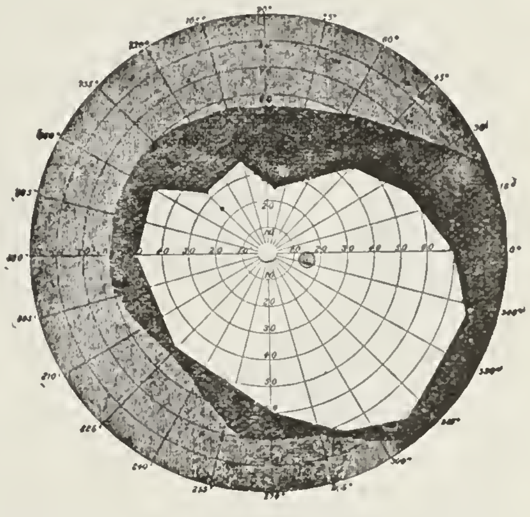

Fig. 23.—Case 10. Candle field before operation. Right eye. Nov. 29, 1914. Vision, 4/60; 10 mm. object.

In two cases (1 and 2) the choroid was not incised. In each case the vision was unchanged, while the field was slightly improved in one and made worse in the other.

The object of this operative procedure has been to secure an opening in the sclera and choroid which will allow free drainage of the subretinal fluid for a sufficient length of time to permit the retina to become reattached. If the secretory process is dormant, and all the subretinal fluid evacuated at the time of the operation, reattachment may occur without edema of the conjunctiva. But if the secretory process is active, or if any amount of the subretinal fluid is left behind, a certain amount of reaction must necessarily follow or the retina will again be separated from the choroid and failure result. In each of the cases in which a good result was obtained, the operation was followed by a marked edema which did not entirely disappear until the tenth day.

The procedure seems to be unattended by any danger, either of impairing the integrity of the globe, or, in uncomplicated cases, of increasing the extent of the detachment. On theoretical grounds at least it would seem desirable to drain off the subretinal fluid without injuring the retina. In the cases reported, however, the best results were obtained when escape of the subretinal fluid was followed by a discharge of a small amount of vitreous.

The results obtained in the eleven cases here reported, as compared with those obtained from any like number of cases previously treated, compel the author to look on the operation as one of distinct value in the treatment of detachment of the retina.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THOMSON AND CURTIN, AND PARKER

Dr. Clinton T. Cooke, Seattle: I take direct issue with the statement that Vail's theory fits certain clinical aspects of the case. Has Vail shown conclusively that the hypotony is due to arrest of secretion and not to a free exit of aqueous through a patent ligamentum pectinatum? Minus tension is an undoubted fact. But has he shown the necessary connection between it and arrest of secretion? As to "Passive hyperemia with albuminous transudate, beneath the retina," does the assumption of the arrest of secretion and minus tension require us to assume also that the subretinal albuminous fluid is transudate, brought about mechanically, and is not an inflammatory exudate of toxic origin? It is possible for contraction of volume of the vitreous to occur in at least three ways; by a general loss of its water, by a formation of circumscribed areas or cavities in its substance, by a liquefaction of its peripheral portion, from a diffusion to it from the choroid of a toxin, or by reason of an interference with its supply of nutriment plus liquefaction. In either case its place is taken either by aqueous or by transudate or exudate, or else the sclera contracts on it. If this latter does not occur, room is afforded for the subretinal accumulation if the channels for aqueous escape are unblocked. How an albuminous transudate of choroidal origin is to bring about diffusion of water from the vitreous to the choroidal side of the retina in the face of an alleged acid reaction, I fail to see. Vail's treatment by sodium citrate is based on its alleged acid reaction. Fischer finds that even a slight acidity causes a rise in tension equal in certain concentrations to an amount sufficient "to burst the great sclera" and that the change or reaction is a most important factor in producing a rise in tension in glaucoma. I think Vail does not follow Fischer. Furthermore, I think that Fischer's work effectually disposes of Vail's theory. In my opinion, the theory of Drs. Thomson and Curtin is vastly preferable. With the rest of the paper I am in agreement, particularly where they call attention to the not infrequent association of a subchoroidal exudate with the subretinal fluid; that is, of a choroidal detachment. This accords with a case recently observed by myself and operated according to the technic of Dr. Walter Parker, in which I trephined over the site of detachment and observed the gush of fluid before puncture of the choroid. This patient secured increase of vision and partial reattachment of the retina. In the future I contemplate following the technic of the authors of this paper, although I see no reason, even in the cases of subchoroidal exudate, to defer aspiration of the subretinal fluid to a subsequent time.

Dr. Vard H. Hulen, San Francisco: The operation presented by Dr. Parker, and that described by Dr. Curtin are the same excepting the aspiration, which does not appeal to me. We are distinctly in need of some method of treatment for detachment of the retina which is really hopeful. Nothing heretofore, in my experience, has been of that nature. Dr. Parker performed his first operation within a few days of the date on which I had recommended the same procedure to a patient, the idea having occurred to me independently some time before as it probably had to others.

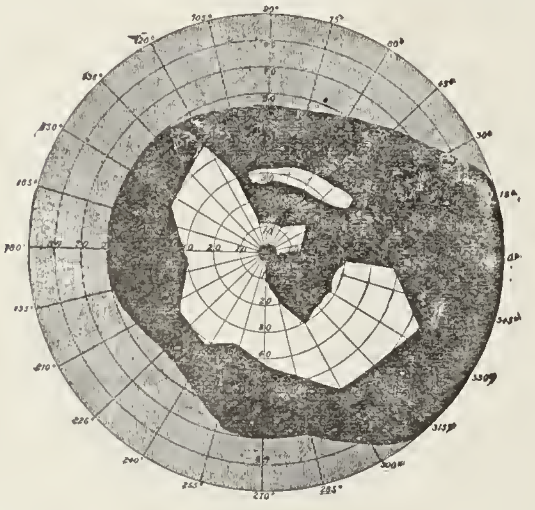

Fig. 24.—Case 10. Field four months after operation. Right eye. Vision, fingers at 2 feet; 10 mm. object.

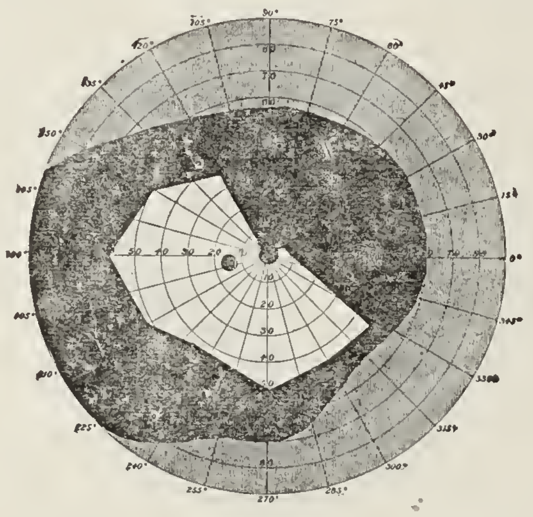

Fig. 25.—Case 11. Field before operation. Left eye. Feb. 12, 1915. Vision, fingers at 4 feet; 30 mm. object.

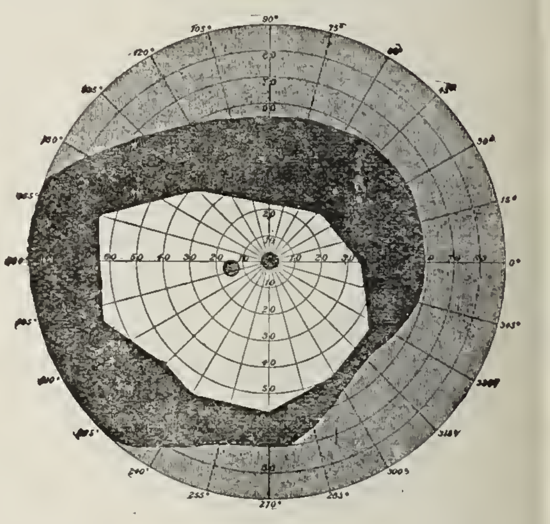

Fig. 26.—Case 11. Field one month after operation. Left eye. March 4, 1915. Vision, fingers at 3 feet; 10 mm. object.

I have one experience only to report and it appears favorable to this operation. This patient, female, aged 46, came to me in July, 1911, stating that she had noticed a blur over her right eye for four or five years or longer. At this visit her vision was 20/70. The field, irregular, roughly; nasal 30 C.; temporal, 50 C.; up, 20 C.; down, 30 C. The eye appeared normal except that the ophthalmoscope revealed a small, typically appearing detachment of the retina above and to the temporal side, 8 diopters in elevation. While the location was not usual for detachment and the outlines exceptionally clear cut and its height rather great for its area, I proposed the usual treatment for simple detachment. Later, no constitutional or local cause having been discovered, I mentioned a growth as a possible cause of the detachment. Negative results having followed nonoperative treatment, scleral punctures were proposed. The vision having dropped to 16/200 I suggested in June, 1913, the operation as now described by Dr. Parker. The tension has always been normal and conditions unchanged excepting some increase in the detachment with floating opacities in the vitreous. Many months elapsed and then the patient returned and said great failure of vision had recently followed a pelvic operation under ether. I then found the entire lower half of the retina detached. May 10, 1915, I trephined the sclera below and to the temporal side 10 mm. from the limbus. A large quantity of typical subretinal fluid escaped on the withdrawal of the trephine. The lower detachment was completely dissipated, but the first "detachment" remained unchanged. As no reaction followed and the vision was now 10/200, I suggested as a final measure the same procedure over the site of above and this was done June 9. In sharp contrast to my first experience, the trephining was followed by the loss of no fluid, and incising the dark object through the opening caused merely a little oozing of blood and there was a feeling of resistance. I now thought the diagnosis of sarcoma of the choroid confirmed and proposed immediate enucleation. To date this has been declined though strongly urged in addition by two of our most skilled confréres. Neither of them, however, will make a positive diagnosis of tumor from their examination of this eye. The retina below remains attached, media and "tumor" unchanged, eye quiet, but the contrast in appearance of the two trephined areas calls for radical and immediate action. My experience with this case encourages me to try this operation again in cases of simple detachment. One point in the technic recommended by Dr. Parker's comparatively large experience I feel should be accepted with caution, for it may be a mistake to puncture the retina as a routine procedure. To evacuate the subretinal fluid by trephining, without injuring the retina or the loss of vitreous, the eye, I believe, has been put in the most favorable condition for recovery.

Dr. G. C. Savage, Nashville, Tenn.: Let every man bear the consequences of his own sins. I bear reproach myself for using the citrate of sodium subconjunctivally. I want to say in defense of Vail that I believe his theory is the only one that should appeal to us. Any change in the eye that will lessen the contents of the vitreous body would predispose to the detachment of the retina. The watery constituents of the eye go into the vitreous and aqueous chambers and are emitted slowly as a secretion. Any other fluid such as a transudation of serum in the eye would make the eye opaque. The ciliary glands, like any other glands of the body, might fail in secretory power, and thus fail to keep the chambers of the eye properly filled. Not knowing about Vail's line of thought I promptly wrote him that I had never cured a case. About that time a young man came from Vanderbilt University complaining of loss of vision in one eye. The diagnosis was easily made—simple detachment of the retina. I said to him if I knew the reaction of the detaching fluid I might be able to do something for him. His vision was practically nothing. He said: "Take advantage of your guess that it is acid and do whatever you want to do for me. I do not want to lose my eye." I gave the citrate of sodium by subconjunctival injection, with marvelous improvement within twelve hours. These were repeated frequently, improvement continuing. It has been about three years, and that man is now able to read ordinary print. The injection of citrate of sodium was what brought about the improvement. I concluded that something ought to be done to improve the nutrition of the eye so I gave him 1/100 grain of mercuric chlorid and 1 grain of potassium iodid after each meal. I then wrote Vail again that I was curing a case. Later I found that his theory and my practice fitted into each other perfectly. In the past three years I have had more cases of detachment of the retina than in all my other years of practice. Some cases have not improved at all. Cases that had clear vitreous improved. Some improved very remarkably, others less remarkably, and I believe all patients with clear vitreous would have gotten well if they had persisted in the treatment, including the agents that I believe are best for improving the nutritive power of the ciliary body. Vail in his theory of causation is right.

Dr. Milton K. Thompson, Muskogee, Okla.: I had a peculiar case. I want to make this report and get the opinion of the elders such as Dr. Savage and others. The patient suddenly went blind. The ophthalmic examinations showed a distinct retinal detachment of a rounded character, but we did not know what nature of a tumor it was. Several of us decided it was a tumor. On questioning the young man we found that he had a specific history. We put him on treatment with neosalvarsan and inside of a month's time the tumor had gradually gone down and he had very good vision, except central, at the point of tumor where the choroidal scar showed. Now I want to know why that did that way and what condition existed?

Dr. Kaspar Pischel, San Francisco: I would like to express my gratitude to Dr. Parker for the very accurate table he has presented. He shows his failures there along with his successes—the bad as well as the good. The results are good enough for us and we should all try it. I shall certainly do so at my first opportunity. Naturally I will use the trephine or trepan in connection with the dental engine which I showed this morning. The trepan on the dental engine works so much faster and, with my stop, is so much safer that I will never return to Elliot's original hand trepan.

Dr. Thomas H. Curtin, New York: Dr. Thomson and I wish to apologize for simply recording three cases, but we have recorded only those cases which we thought were applicable for this operation, namely, recent cases of spontaneous or traumatic origin. We have operated in ten or twelve cases, however, in which from the outset we expected no results, although we have, even in these cases, had improvement in the fields of vision. Just before I left New York a patient with myopic detachment with vague light perception in the upper field, after being operated on twice, had a vision of fingers at 4 feet. In answer to Dr. Cook, I wish to say that we do not try to defend Dr. Vail's theory and have founded our belief as to the causation of retinal detachment on the results of our own clinical experience. I want to say, regarding the operation, that we think it is a bad plan to puncture the retina in any operation for the cure of retinal detachment. Holt, in 1911 in the *Transactions* of the Ophthalmic Section at Heidelberg, did trephining for myopia with and without detachment. He came to the conclusion that patients who had tears in the retina gave no results from the trephine operation. In regard to subconjunctival injections, as has been stated in the paper, we have consistently and conscientiously used them. We have tried various solutions, saline, dionin, citrate of soda, cyanid of mercury and glycerin and none of them has given us the least result.

Dr. Walter R. Parker, Detroit, Mich.: Cases of detachment of the retina due to intra-ocular tumor were not included in my report. Dr. Savage has been more fortunate in his results from subconjunctival injection than many others. Certainly if medical treatment will cure detachment of the retina, surgical interference should not be thought of. Personally I have never permanently cured a case of detachment, except by the method described in my paper. Trephining the sclera alone has been done before, but the results were unsatisfactory. My suggestion is to combine an incision of the choroid with the trephine operation.

Authority to Compel School Inspection.—The objection that the state has no right to permit or require medical inspection of the children in the schools will not bear close scrutiny or logical analysis. The authority which has the right to compel attendance at school has the added duty of insisting that no harm shall come to those who go there.—*Wisconsin State Board of Health Bulletin,* April-June, 1915.

METHODS OF WEIGHING PARTS OF THE LIVING HUMAN BODY *

C. D. SPIVAK, M.D.

DENVER

The problem which I essayed to solve can be better understood if I recite the course of reasoning I followed: A man weighing 150 pounds is placed on a certain diet and he gains 10 pounds. The question arises, How can we locate the gain? In other words: How have the 10 pounds distributed themselves over the body? Have they spread themselves uniformly through the body or not? If the additional mass has not been distributed uniformly, is there a definite relative increase in the various sections of the body? Have 3 pounds been added to the upper extremity and 7 pounds to the lower extremity or vice versa? The same question is, of course, applicable to a man who has lost 10 pounds. As far as I could trace in the available literature, not only has there never been made an attempt to solve this problem, but it has never even been propounded.

The student of metabolism differentiates between the increase in the mass of the body which takes place during the period of growth and the increase in the mass of the body which takes place after the period of growth has terminated. The first growth is a fundamental biologic property implanted in the race and transmitted by heredity. It is involuntary. The second, the increase in mass after growth has ceased, is wholly artificial and may be influenced by diet, exercise, environment, etc. It is to a great extent under control and therefore voluntary. I am concerned with the latter only.

Now, the increase in mass manifests itself in two ways, in weight and in measure. The result of the added 10 pounds has hitherto been measured by means of the scales and the tape measure. Neither of these methods is capable of throwing light on our problem. The scales show an increase in the body of 10 pounds, but they do not show where they are located. The measurements made by the tape, no matter how carefully made and how numerous, will not give even an approximate idea of the increase in the bulk either of the entire body or of a part of the body.

As the development of the art of measurement is older than the art of weighing, so has the solution of the problem dawned on me first through the glimmering light of measure.

Having evolved a method of measuring the bulk of the whole human body and of its certain parts and sections by means of the volumometer, and having also suggested the use of a new ponderal index in anthropometry,[1] I naturally turned my attention to the actual weighing of parts of the living human body. Here the difficulties, mechanical, physical and mathematical, confronted me at every step, and I have made but slow progress. I have consulted physicians, engineers and mathematicians. They all became attentive and interested, and, to use a hackneyed expression, sat up and took notice. But alas, they gave me only much warmth and but little light.

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* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] Spivak, C. D.: The Specific Gravity of the Human Body, Arch. Int. Med., April, 1915, p. 628.

I have constructed scales for weighing parts or sections of the living human body which consist of (*a*) a board, (*b*) a stand and (*c*) two ordinary platform scales.

The board is 7 feet long and is provided on its lower surface with two transversely grooved steel bars running alongside of its margins.

The stand is made of an iron frame, the upper surface of which ends in a knife-like projection which fits into the grooves of the bars and serves as a fulcrum.

The board is placed on the fulcrum in about its middle portion, and the two scales are so placed that each of the two extremities of the board rests on or is suspended over their platforms. The scales on which the longer arm of the board is resting will indicate a certain amount of weight, and, by shifting the board to the right or to the left, one is able to adjust it so that neither of the scales will indicate any weight. The board then will be balanced, or in other words, the center of gravity of the board will have been determined. The scales represent a lever of the first order.

Now when a man weighing, say, 150 pounds, is placed on the balanced board, the upper extremities in the anatomic position, one or other of the scales will indicate a certain amount of weight. By shifting the subject to the right or to the left we are able to adjust it so that neither of the scales will indicate any weight, or, in other words, the center of gravity of the man in the horizontal position will have been determined. We then mark on the body of the subject the line of the center of gravity. We shift the subject a distance (*a*) to the right of the fulcrum, and we note the amount indicated on the right hand scales, and then we shift the subject a distance (*b*) to the left of the fulcrum, and we note the weight indicated on the left hand scales. From the known quantities (1) the weight of the entire body, (2) the center of the gravity, (3) the distance *a* and the distance *b* and (4) the two weights when the body is shifted to the right and to the left, we should be enabled to find the unknown weight of the part of the body on either side of the fulcrum. Dr. I. J. Schwatt, professor of mathematics at the University of Pennsylvania, to whom I submitted the problem was kind enough to prepare the following four equations:

Given the four equations:

(1) $W(l-d)+P_1x=W_1d+P_2y$

(2) $W(l-d-a)+P_1(x-a)=W_2(d-a)-P_2(y+a)$

(3) $W(l-d+a)+P_1(x+a)=W_3(d-a)+P_2(y-a)$

(4) $P_1+P_2=P$

Required to solve for the unknowns, P_1, P_2, x and y.

SOLUTION[3]

First, eliminate y, as follows:

Add (1) and (2).

(5) $\therefore W(l-d)-Wa+2P_1x-P_1a=d(W_1+W_2)-W_2a-P_2a$

Add (2) and (3).

(6) $\therefore 2W(l-d)+2P_1x=(d-a)(W_2+W_3)-2P_2a$

Second, eliminate x, as follows:

Subtract (5) from (6).

(7) $\therefore a(W+P_1)=\frac{d}{a}(W_3-W_1)-a(W_2+W_3)+a(W_2-P_2)$

Solve (7) for P_1.

(8) $\therefore P_1=\frac{d}{a}(W_3-W_1)-(W+W_3+P_2)$

Substitute (8) in (4).

$$\therefore \frac{d}{a}(W_3-W_1)-(W+W_3)-2P_2=P_1$$

$$\text{i. e., } P_2=\frac{1}{2}\left[\frac{d}{a}(W_3-W_1)-(W+W_3+P)\right]$$

Substitute this value for P_2 in (8).

$$\therefore P_1=\frac{1}{2}\left[\frac{d}{a}(W_3-W_1)-(W+W_3-P)\right]$$

Hence from (6)

$$x=\frac{a\,[d(W_1+W_2)-2W(l-d)+a(W-W_2+P)]}{d(W_3-W_1)-a(W+W_3-P)}$$

And from (1)

$$y=\frac{a\,[d(W_2-W_1)+a(W-W_2+P)]}{d(W_3-W_1)-a(W+W_3+P)}$$

In conclusion, I desire to beg of you to consider all that I had to say in reference to the weighing of parts of the living human body as merely preliminary. I may be right and I may be wrong. I may be wending my way to the land of the Eureka, or I may be drifting into a fool's paradise. I do not know.

1421 Court Place.

ABSTRACT OF DISCUSSION

Dr. T. Brailsford Robertson, Berkeley, Calif.: I would like to ask Dr. Spivak whether, in order to measure his new ponderal index, it is necessary totally to immerse the subject?

Dr. Joseph Erlanger, St. Louis: I would like to know how much of a factor in the measurement of the mass of the body changes in the distribution of the blood in the body may be, and also how much of a factor variation of the gaseous content of the cavities of the body may be, and whether these factors have been taken into account by Dr. Spivak?

Dr. C. D. Spivak, Denver: The new ponderal index which I recommend is made up of the old ponderal index, which represents the ratio between the height and the weight of the body in air, and the volume of the body measured in water. The new ponderal index takes cognizance of the specific gravity of the body as one of the trinity of measurements. The problem of weighing parts of the human body is to be solved by engineers and mathematicians and may be represented as follows: Given a mass of homogenous consistency, we can judge the weight of any of its parts by measuring or weighing the amount of water which that part displaces. Given a mass that is not symmetrical and not homogenous in consistency, wanted to find the weight of certain sections of that body: I claim that mathematics and mechanics will jointly come to our assistance and give us, if not the exact weight of such parts, at least an approximate weight.

The question of the specific gravity of the body has been studied very carefully, mainly by the Germans. There is an article in English by an American, a teacher of swimming, who studied the question from his particular standpoint. Professor Spitzig of Cleveland informs me that he and Rev. Frederick Odenbach of St. Ignatius College of Ohio City have carried on investigations and they have arrived at the conclusion that the specific gravity of the human body is so low that it takes only a little bit of buoyancy to keep it afloat, which is in perfect accord with my findings. The question as to whether the air in the lungs has any influence on the specific gravity has received due consideration at the hands of German investigators. It was found that the volume of air in the lungs equals the volume of air in the intestines, and consequently there is a perfect balance between the specific gravity of the two halves of the body—that above and that below the diaphragm.

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[3] The solution was kindly prepared by Dr. G. E. F. Sherwood, Professor of Mathematics, School of Mines, Golden, Colo.

CHRONIC RETENTION OF URINE IN CHILDREN *

EDWIN BEER, M.D.
NEW YORK

During the past five years a number of children[1] suffering from chronic vesical urinary retention have come under my observation. Invariably the condition had been unrecognized, and the children were steadily deteriorating in health. As the picture presented by these cases seems to be quite characteristic, even though the etiology of the condition may vary from case to case, I have thought it well worth while to report this series and to call attention to the syndrome.

The picture presented by these cases is very suggestive of chronic interstitial nephritis. The patients become pale and pasty. Frequently they are apathetic. Usually there is some difficulty in urination. The little patients complain of pain, or their parents note that they take a long time to complete the act. In some cases the straining is so great that the patient shows collapse symptoms with excessive pallor and weakness. On physical examination a globular mass is felt in the hypogastrium; it varies in size, but never disappears spontaneously. If infection is present, the mass may be tender. When a catheter is passed, this tumor vanishes. There is regularly residual urine. The walls of the bladder are hypertrophied, though this may not be evident late in the disease when excessive dilatation takes place. On palpation one may feel the bladder contract and become hard, behaving like the pregnant uterus. If no infection has set in, the urine may be clear, suggesting the urine in chronic interstitial nephritis. Eventually all the patients seem to become infected. As a secondary and constant development, the ureter openings become patulous and the ureters dilated. Unilateral or bilateral hydronephroses develop, and the enlarged kidney or kidneys become palpable. With infection setting in, the kidneys partake of the trouble, and infected hydronephrosis with or without multiple abscesses develops.

Neurologic examination of these patients frequently shows nothing abnormal; in others, distinct evidence of a cord or of a brain lesion is found. Even in cases in which the most complete examination fails to reveal a definite disturbance in the nervous system, postmortem examinations (three cases) have shown definite cord lesions.[2] Many of the cases without neurologic signs so closely simulate those with definite neurologic symptoms, as well as those adult cases of contracture of the neck of the bladder, due to some neuromuscular disturbance (arteriosclerosis of the cord, poliomyelitis, etc.), that, reasoning from analogy, one feels compelled to view these cases as due to neurologic disturbances, provided no local physical obstruction is present.[3]

In some cases a local examination may demonstrate an obstruction at the prepuce or in the urethra (stricture, folds, new growth). This should regularly be excluded, if possible. A minute meatus may be associated with a neuromuscular disturbance and, as in one of the following cases (Case 3), have nothing to do with the retention. The ready passage of an instrument into the bladder probably precludes the possibility of a mechanical obstruction, whereas, in conditions of sphincter spasm, such as most of these cases probably are, no obstruction is usually felt. This corresponds to the adult cases as well as to similar spasms in other parts, notably cardiospasm.[4] That the condition is frequently one of spasm (or perhaps better disharmony between the detrusor and sphincter muscles or relative hypertonicity of the sphincter) can frequently be demonstrated by passing a good-sized bougie into the bladder after the patient has voided. As soon as the sphincter is well stretched and the bougie is withdrawn, the bladder may be emptied voluntarily (except in cases with a diverticulum, etc., as Case 2). Again, that the detrusor is not paralyzed can be readily proved by starting the stream by forcible expression. After the sphincter spasm has been overcome the patients may void in a good stream.

Roentgenographic studies of these cases with silver salts will regularly show a fair-sized bladder and dilated ureters, provided the condition has lasted a sufficient time. If the cause of the retention is a diverticulum (Case 2), the Roentgen-ray cystograph will readily assist in making the diagnosis.

From the foregoing it is clear that these cases present a definite clinical picture due to varied etiologic factors. Before reporting and analyzing the series here brought together, it would be well to tabulate the etiologic factors:

1. Mechanical obstructions:
    A. Extravesical, as congenital folds and strictures, including tight prepuce, small meatus, etc.; new growths.
    B. Intravesical, as diverticulum of bladder, vesical stone.
2. Neuromuscular:
    A. Brain disease.
    B. Spinal cord disease.
    C. Spasticity of sphincter without definite neurologic signs;[2] probably disease of sacral cord.

The cases due to extravesical obstruction are well known, and in the literature there are many examples of such cases.

CASE 1.—*Chronic retention of urine; congenital stricture in penile urethra; dilatation. Cured.*—Boy, aged 7 years, since the age of 2 has been dribbling urine. Has no pain. No trauma or local disease. Physical examination shows a large, tense globular mass filling the hypogastrium. On catheterization this disappears. The meatus of the urethra is small. No neurologic symptoms are present, and no evidence of a neuromuscular disturbance can be detected. The urine is cloudy, albumin is present, also an occasional hyaline cast, and many pus and red blood cells. The Roentgen examination shows no calculus.

Meatotomy was performed, and 1½ inches behind the meatus a stricture was detected. This was stretched and kept open with an indwelling catheter (No. 12 French). October, 1913: After catheter had been used in this way for fourteen days, patient was able to empty his bladder and was discharged.

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* From the Mount Sinai Hospital Surgical Service.

[1] The opportunity to study three of the following cases, I owe to Drs. A. G. Gerster and H. Koplik, for which I take great pleasure in thanking them. In addition to the nine cases included in this series, I have seen several other cases belonging in this group, but as they were not adequately studied, they have been excluded from the report.

[2] Blum, V.: Zur Kenntnis der Harnretention im Kindesalter und zur Frage der Pyocyaneussepsis, Wien. med. Wchnschr., 1907, lvii, 2257.

[3] The series of cases has been so arranged as to emphasize this interpretation, which I trust will convince even in those mentioned in Legueu's paper (Arch. urol. de Necker, 1913-1914, i), where the changes in the urinary tract in these cases are attributed to a probable congenital anomaly or malformation of the ureters, etc. In Bransford Lewis' recent analysis of similar cases in adults (Prostatic Obstruction and Vesical Atony, Ann. Surg., March, 1915) he announces the same conclusions which I have reached.

[4] The analogy between cases of cardiospasm and those under discussion is quite striking. An esophageal probe, stomach tube, etc., can be passed over a silk thread (Mixter technic) through the spastic cardia without the operator detecting any obstruction. Here, too, the obstruction leads to dilatation of the passage above, and the dilated hypertrophied esophagus may assume enormous proportions.

Much rarer are cases of chronic retention due to intrinsic conditions, as diverticula, which is well illustrated in Case 2.

Case 2.—*Chronic retention of urine; diverticulum of bladder; excision; reimplantation of left ureter. Cured.*—Boy, aged 10 years, five or six days before admission had slight terminal hematuria and pain on urinating. He feels that he cannot empty his bladder. Has some pain in hypogastrium. The patient is markedly pale. The hypogastrium is filled by a globular mass which does not disappear completely after urination. There are a penile hypospadias and slight right lumbar tenderness. The neurologic status is negative. The urine is turbid, and contains a heavy trace of albumin, much pus and many epithelial cells. The residual urine is between 60 and 90 c.c. Phenolphthalein test shows 45 per cent. excretion in two hours.

March, 1915: Argyrol cystograph shows a well-developed diverticulum of the bladder and a dilated right ureter. The diverticulum is as large as a peach, and appears to be a little to the left of the midline and behind the bladder.

March 24, 1915: Cystoscopy shows that the right ureter meatus is patulous. Near site of left ureteral meatus is the opening of the diverticulum. The left ureter seems to open into the diverticulum close to the mesial lip, as indicated by the discharge of indigocarmin in good concentration. The right kidney excretes a good stream well colored at fourteen minutes.

March 27, 1915: Extraperitoneal excision of diverticulum of bladder and reimplantation of left ureter in bladder. The bladder was exposed in the usual way through a suprapubic incision, and dissected free from the peritoneal covering. The bladder was gradually drawn into the wound, and the diverticulum found to lie between the trigon and the rectum. As the lower 1 inch of the left ureter was intimately adherent to the diverticulum, it had to be sacrificed and excised with the inflamed diverticulum. The position of this pouch was such that, whenever it was full, it compressed both ureters, and in that way induced bilateral hydro-ureter (and nephrosis). At operation both ureters showed evidence of this, and the left was found markedly dilated. (Roentgenoscopy revealed condition on right side.) The ureter (left) was implanted in the posterior wall after ligating the neck of the diverticulum and burying it in the bladder wall. A suprapubic Kader cystostomy for drainage was made, and when the drainage tube was withdrawn, the cystostomy opening (valvular) closed at once without leakage.

April 26, 1915: Urine is clear. Bladder is completely emptied and patient is absolutely well.

May 12, 1915: Cystoscopy shows excellent function of the ureteroneostomy, which looks like a small, red, nipple-shaped protrusion of mucous membrane on posterior wall, and through its central lumen an intense stream of indigocarmin is emitted in normal fashion.

As illustrative of the neuromuscular group of cases with retention of urine due to a definite discoverable lesion in the nervous system, let me cite the following case under Group 2 A, due to cerebral disease:

Case 3.—*Retention of urine; Little's disease; spastic sphincter of bladder.*—Boy, aged 6 years, complained of difficulty in urinating. Patient was born by face presentation, asphyctic, remaining so for one and one-half hours. Anuria followed, lasting a week (?), and thereafter dribbling. At 2 years of age there was pain on urination. At 3 years of age he began to walk. Parents noticed that left side of body was weak. Patient must urinate frequently and strains so hard as to cause weakness, pallor and general distress. He was an underdeveloped, pale, pasty-looking boy, suggesting chronic nephritis.

Local examination showed a small meatus. In hypogastrium was a hard tumor, extending well up to the umbilicus. It disappeared on catheterization. Meatotomy was performed without changing the condition. Kidneys were negative.

Neurologic examination revealed weakness of left side of body, bilateral Babinski, apparently the residue of a Little's (or left cerebral hemiparesis).

Cystoscopy May, 1912, revealed a trabeculated bladder. Delayed excretion of indigocarmin in feeble concentration.

A diagnosis of retention of urine due to neuromuscular disturbance (sphincter spasm of cerebral origin [Little's]) was made. Diminished kidney function (beginning bilateral hydro-ureter and hydronephrosis).

An attempt was made in this case to overcome the spastic sphincter by progressive dilatation with bougies. After these had been passed, the patient was able to empty his bladder. This was kept up for some time, No. 18 French being used.

March, 1915: Patient was again seen. He had the peculiar pallid appearance of a nephritic. Bladder was two-thirds to umbilicus, and on straining the patient could void only one-half ounce of urine, which was perfectly clear. Neurologic signs of left hemiparesis persisted.

The following case illustrates very satisfactorily the group in which the chronic retention is associated with a well-marked and readily detectable spinal cord lesion, or Group 2 B.

Case 4.—*Retention of urine; incomplete transverse myelitis.*—Boy, aged 11 days, was born by foot presentation, and was delivered by traction (midwife). On the eleventh day parents noticed that he failed to pass urine. Physical examination showed a large globular hypogastric mass which disappeared on catheterization.

Neurologic examination revealed both lower extremities paralyzed. The flat muscles of the abdominal wall, especially on the right side, were paralyzed. Bilateral Babinski and exaggerated knee jerks were readily elicited. Examination of the spine was negative. Subsequent Roentgen examination of the spine was also negative.

Owing to absolute retention, the little patient had to be catheterized every twelve hours for several weeks, when some urine (overflow?) was voided. Catheter always entered without striking an obstruction. When the patient was 3 months old there was slight improvement in the neurologic symptoms, but no marked change in urinary retention. The bladder was always palpable, filling the hypogastrium; it contracted firmly under the palpating hand, and on pressure urine could be expressed. As soon as the stream was started, that is, the spastic sphincter overcome, the baby was able to void in a good stream. The urine up to date shows no sign of infection of the urinary tract.

In my experience, by far the largest group of cases of chronic retention of urine in children shows no other symptoms referable to the nervous system, though in the only two cases hitherto recorded which have come to complete necropsy, the sacral segments of the spinal cord showed definite lesions:

Case 5 (v. Blum, Frankl-Hochwart).[2]—Boy, aged 13 years, wets himself day and night. When 3 years old he had acute attack with tonic and clonic spasms, unconsciousness and urticaria. This lasted one day. He was always weakly and nervous. In the fifth year, he fractured his frontal bone above the right eye and had concussion. Then he was four weeks in bed. Subsequently he had scarlet fever. No disturbance in urination was noted until tenth year, when increased frequency and urgency developed. When 11½ years old, there was hematuria with pains in kidney regions. This disappeared after rest, but ever since there has been incontinence with dribbling and hypogastric pain.

Physical examination, Jan. 21, 1907, reveals an underdeveloped boy, looking about 6 or 7 years old. Pallor of skin and mucous membranes. In hypogastrium there is a rounded protrusion extending above umbilicus, produced by a full bladder. No obstruction to catheter's passage through urethra (No. 14 French). Urine is clear, no albumin, specific gravity 1.006; microscopically, many leukocytes and flat epithelial cells.

Neurologic status is negative except for exaggeration of knee jerks and ankle clonus. On passing catheter into bladder, patient voided 200 c.c. under good pressure, and on withdrawing catheter, patient voided another 40 c.c. in good strong stream.

Patient became infected and died of pyocyaneus sepsis. Necropsy showed no obstruction in the urethra, cystitis, bilateral infected hydro-ureters and hydronephrosis together with other septic foci.

In the spinal cord (Professor Obersteiner) definite changes were found in the lower sacral segments (see original). These consisted of pathologic changes in the anterior cornua as well as of a congenital anomaly of the central canal.

Case 6 (Frankl-Hochwart).—Boy, aged 15 years, antecedents psychopathic. Patient weakly, underdeveloped. As a child had enuresis. Since one year, pains in glans penis and incontinence. Bladder was chronically distended and was expressible. Uremia led to death.

In posterior urethra, necropsy revealed a moderately developed semilunar fold (apparently out of proportion to the symptoms). Trabeculated bladder, dilatation of both ureters and pelves of kidneys. Spinal cord shows moderate dilatation of central canal and definite degenerative changes in the anterior cornua, second to fifth sacral segments.

The close analogy between these cases and those which follow, as well as the observation of similar spastic sphincter activities in adults in connection with spinal cord disease, suggests very strongly that the cases of Group 2 C are due to isolated disease of the sacral cord (sympathetic centers?).[5] Until we obtain more necropsies of these cases, the final proof will be lacking. Unfortunately, up to date I have been able to obtain only one cord (but no peripheral nerves, etc.) in this type of case (Case 8), and though this was not complete, the evidence it offers is very striking and corroborative of the foregoing point of view.

The end-result of all these cases, if nothing is done to relieve them, is infection of the kidneys and death. Under this Group, 2 C, I wish to describe briefly five cases. The first case presented some signs of a neurologic disturbance, and serves as a good link between Group 2 B and Group 2 C.

Case 7.—*Chronic retention of urine; bilateral pyonephroses; uremia.*—Man, aged 23, was very small at birth ("as long as a spoon") and was blue. Great efforts had been made to keep the patient alive. He was always very feeble. For fifteen years prior to his death his urine had been milky. Examinations showed this due to pus. Of late there had been some pain on urination and some bleeding. During the six months prior to his death, he began to show signs of failing kidney function, increasing pallor, drowsiness, weakness and apathy.

Patient was admitted in wretched shape. Respirations were exceedingly frequent and fairly deep and noisy. Pulse very feeble. Mind perfectly clear. General twitchings; very little urine secreted. Blood pressure 145 mm. Blood urea markedly increased. Cerebrospinal fluid was clear. Urine was full of pus; no sugar and no acetone.

Neurologic examination revealed both knee jerks markedly exaggerated; there were bilateral ankle clonus, left-sided Babinski and bilateral Kernig. Wassermann positive.

The patient soon became unconscious and died uremic.

Necropsy showed marked hypertrophy of the bladder, which was trabeculated and inflamed. The ureter openings were patulous, and both ureters and kidneys distended and infected (bilateral infected hydronephrosis). Careful examination of the urethra showed no mechanical obstruction. Unfortunately, the cord could not be examined.

Case 8.—*Chronic retention of urine; pyo-ureteronephrosis.*—Boy, aged 4½ years, has always had bladder trouble, more or less retention and dribbling. Hypogastric mass noted two weeks before admission. Passes urine frequently and has marked thirst. Two weeks ago fell down and after that parents first noted distended bladder.

Physical examination reveals a pale, underdeveloped child, with aged facies. In hypogastrium an ovoid mass, tense, elastic, feeling like a full bladder. Urine can be expressed by pressure on mass.

Neurologic status is negative.

Temperature is from 102.4 to 103.8 F.

Roentgenoscopy of spine for spina bifida occulta[6] was negative.

To relieve condition, patient was catheterized regularly, and from 250 to 450 c.c. were obtained.

Repeated attempts to relieve the spasm at the bladder neck with papaverin (from one-fifth to one-half grain) failed. Residual urine remained between 4 and 5 ounces.

Patient began to have higher temperatures, and a permanent catheter had to be inserted. No obstruction was encountered at any time in passing catheters. Subsequently patient developed right costovertebral tenderness, and urine became more and more turbid. Phenolphthalein test 15 per cent. in two hours.

Patient lost ground rapidly and died within two weeks of admission, despite permanent catheter and bidaily or daily irrigations.

No complete necropsy was permitted, but a small part of the lower spinal cord was obtained and examined by Dr. I. Strauss, who reports as follows:

There is a degeneration of both pyramidal tracts. The sections are about third, fourth and fifth sacral segments. Sections of the cauda equina show no root degeneration.

Case 9.—*Chronic retention; hypertrophied bladder; bilateral hydronephroses.*—Boy, aged 15 months. Physical examination reveals a globular tumor mass in the hypogastrium. It is always present except when emptied by a catheter, that is, distended, hypertrophied bladder. In left lumbar region is a mass corresponding to the position of the kidney. This is probably a hydronephrotic organ. No neurologic symptoms were elicited.

Cystoscopy (February, 1912) reveals bladder trabeculated, otherwise normal. No obstruction in urethra. Indigocarmin does not appear until four and three-quarters hours after injection, which suggests a bilateral kidney involvement.

Diagnosis of chronic retention, hypertrophied bladder, bilateral (probably) hydronephroses, due to spasm of vesical sphincter.

Case 10.—*Chronic retention of urine; pyonephrosis.*—Boy, aged 5½ months. Normal birth in 1910. Globular tender mass presented in hypogastrium, a trifle more marked on right side than on left. With the impression that this was an abscess (appendicular), an exploratory incision was made. This incision demonstrated that the tumor was a full bladder, and it was emptied with a catheter. The bladder filled again and remained distended throughout our observations; residual urine approximately 60 c.c. Later a mass developed in the left kidney region which proved to be an infected pyonephrosis.

No neurologic symptoms were elicited.

Case 11.—*Chronic retention; bilateral infected hydro-ureters and hydronephroses.*[7]—Boy, aged 5 years, had a fever four months before admission. Shortly thereafter there were blood in urine and in stools (prolapse?), and pain in right lumbar region. Condition had gradually become worse.

Physical examination was negative. No neurologic symptoms were elicited. Urine contained pus and pyocyaneus bacilli.

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[5] In patients who have had infectious diseases, for instance, diphtheria, in making the diagnosis the possibility of a detrusor weakness due to chronic peripheral neuritis should be borne in mind.

[6] Compare case of Muchamisky: Urolog. Jahrb., 1913, p. 403.

[7] This case has been rather fully reported by Henry Heiman: A Case of Bilateral Hydroureter, Chronic Pyocyaneus Infection, Arch. Pediat., November, 1913, and by Leo Buerger: Congenital Hydroureter and Hydronephrosis, Internat. Clin., iv, Series 24.

Aug. 16, 1911: Cystoscopy and bilateral ureter catheterization. Bladder full of purulent urine washed clean before introduction of small cystoscope. Left ureter opening is patulous and seen to discharge purulent urine (infected hydronephrosis, tuberculosis?). Right ureter meatus is slit-shaped, normal. Indigocarmin excretion is negative in forty-five minutes, speaking probably for a bilateral renal involvement. Both ureters catheterized. Urine from right kidney was clear, from left, many pus cells, no tubercle bacilli, no growth on culture mediums.

As repeated examinations failed to show tubercle bacilli, the patient was treated with bladder irrigations, and urine became less purulent. Autogenous vaccines (from bladder urine) were also employed.

In August, 1912, the child was again admitted. There was a residual urine of 4 or 5 ounces, and urine was turbid with pus.

Almost fourteen months after the first cystoscopy, the second examination was made (Dr. Buerger), and it demonstrated that the condition had progressed. Both ureter openings were now patulous. The left orifice was enormously dilated; the right was also very much enlarged, although it still retained some of the natural outline of a normal ureteral orifice.

The development of the same condition on the right side as had existed fourteen months earlier on the left suggested bilateral hydronephroses and hydro-ureters, and with the aid of an argyrol roentgenogram, this was beautifully verified. At no time did we obtain any evidence of obstruction in the urethra, as all instruments passed into the bladder readily.

The condition of the patient gradually became worse, and in July, 1914, he died.

Necropsy (incomplete) showed bilateral infected hydronephroses. The left kidney was more enlarged than the right and was full of pus. The ureters were also markedly distended and tortuous. Both meatus were much dilated. The bladder was very much dilated, looking like an enormously enlarged adult bladder, and its walls were thinned. The urethra showed nothing abnormal.

Before saying a few words concerning the therapy in these cases, the question arises as to whether a unilateral renal involvement may obtain in this condition. Judging from the cystoscopic examination as well as from the urinary and necropsy findings in Case 11 as well as the course of Case 10, it would seem that the process for a time might be limited to one side or asymmetrically developed. This is of importance in trying to understand a case recently reported from Zuckerkandl's clinic by Bachrach:[8]

Case 12 (Bachrach).—Woman, aged 27, since childhood never urinated normally. Had to strain and wait at times one-half hour before finishing the act. After exposure, developed cystitis with right kidney pains.

Physical examination showed feeble, atrophic patient. Bladder extended 3 inches above symphysis. Catheter entered easily.

Cystoscopy revealed bladder inflamed, and trabecular hypertrophy with multiple diverticula. Left ureter meatus was normal, whereas the right ureter meatus was patulous. (No neurologic status mentioned.)

Collargol cystograph showed ascent of silver into right dilated ureter and pelvis.

Diagnosis: Infected hydronephrosis and hydro-ureter with "atonic" (Schlaffer) dilatation of vesical orifice.

This case showed what appears to be, but is not definitely proved to be, a unilateral involvement ascribed to atony by the author, basing his interpretation on J. Israel's conception of dynamic as opposed to mechanical obstructions. And this, despite the fact that he states that Israel believes such dilatations follow the repeated futile attempts of the contracting bladder[9] to empty itself in a normal way. The increased intravesical pressure forces one or both ureter openings: ureteral dilatation develops. Superimposed vesical infection probably hastens the process. In Bachrach's case, strange to say, no neurologic data are given. A survey of the essential facts of this incompletely described case will demonstrate a close similarity to the cases reported under Group 2 C. The second case reported in Bachrach's paper, also without neurologic status, presented a picture similar to my cases with bilateral hydro-ureter and hydronephrosis, and seems to belong in this group.[10]

Case 13 (Bachrach).—Girl, aged 16. Up to fourteenth year nocturnal enuresis. Since beginning of menses that has ceased, but there is difficulty in urinating. After exposure, urine became turbid and frequency developed (every ten minutes).

Physical examination reveals signs of incomplete urinary retention in bladder. Urine is cloudy with pus. Combined kidney function is lowered. (Indigocarmin in thirty-five minutes.)

Cystoscopy reveals trabeculated, inflamed bladder with numerous diverticula. Both ureter openings are widely patulous. Catheterization of ureters reveals a residual urine of from 100 to 120 gm. (partly reflux?).

Roentgenoscopy with collargol reveals ascent of silver salts into dilated ureters and pelves from bladder.

Diagnosis: Bilateral infected hydronephrosis and hydroureters with atonic dilatation of ureters.

THERAPY

When we come to treatment of these cases, a distinction must be made between Groups 1 and 2. In cases belonging to the former group, much can be accomplished. Mechanical obstruction, intrinsic and extrinsic, can usually be obviated. If such strictures cannot be reached through the bladder or the perineum, which will be seldom, if ever, a temporizing cystostomy operation will be in place. In cases belonging to Group 2, therapy is pretty well baffled. Medicinal treatment, for example, potassium iodid, perhaps mercury, and antispasmodics (papaverin) will have to be tried, together with dilatation of the sphincter; and if all attempts fail, a cystostomy will be indicated, perineal or suprapubic, with section of the bladder's neck. This operation should be done to save the progressive changes in the ureters and kidneys. Should a kidney become infected, it should be nephrotomized rather than taken out, whenever feasible, in view of the usual symmetrical development of the disease.[11]

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[8] Bachrach, R.: Ueber atonische Dilatation des Nierenbeckens und Harnleiter, Beitr. z. klin. Chir., 1913, lxxxviii.

[9] Frequently seen in various types of cystitis as well as in neuromuscular disturbances.

[10] There are a number of other cases in the literature which appear to fall into Group 2 C, for example, J. Daland's case cited by Osler, in his Practice. From personal communication, Jan. 29, 1915, I learn that no obstruction was found, and the patient had the usual bilateral hydro-ureteronephroses. Unfortunately, no cord examination was made. E. Holt (Diseases of Infancy and Childhood, 1898) describes 8 cases of hydronephroses in 726 consecutive necropsies. In a series of 10 cases, in 7 only the left side was affected, and in 3 both sides. He says this condition is due to obstruction in ureter, bladder, urethra or prepuce, but in only 3 cases could sufficient or adequate obstruction be demonstrated. Double hydronephroses of congenital type result in death within the first year.

[11] In addition to the references already given, the following will be found of interest:

Walker, J. W. T.: Atony of the Bladder without Obstruction or Signs of Organic Nervous Disease, Ann. Surg., 1910, lii, 577.

Burkhardt, E.: Handbuch für Urologie, 1906, iii, 1.

C. G. Cumston (Ann. Surg., November, 1910) cites Edes' cases.

A STUDY OF IMMUNITY FOLLOWING THE USE OF TYPHOID VACCINES AND SEROBACTERINS

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In order to gain more information regarding the immunizing value of the various sensitized and nonsensitized typhoid vaccines in use at the present time, a series of experiments on rabbits was undertaken. Following the inoculation with such vaccines, blood was withdrawn at regular intervals, and estimations of the opsonic index and the agglutinating and bactericidal powers were made.

HISTORICAL

Clinicians are generally agreed regarding the immunizing value of typhoid vaccines and serobacterins, and such reports as those of Major Russell, of the U. S. Army, and the numerous data from other armies and institutions are convincing. Occasional failures to obtain immunity, as reported by Trowbridge, Finkle and Barnard,[1] may perhaps be explained by the use of a vaccine improperly prepared or improperly administered.

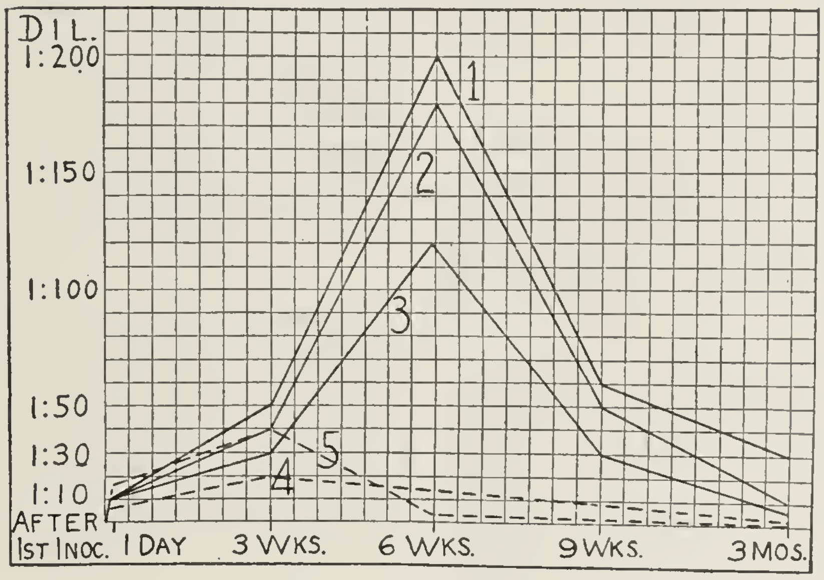

Chart 1.—Agglutinins.

There is a discord in the opinions of men treating typhoid with vaccines. On the one side we have Elmer[2] and others condemning, and on the other Krumbhaar and Richardson[3] (who collected reports of 1,806 cases) and others recommending their use.

No good index of immunity exists, but a great deal of careful work has been done to throw light on the subject. Estimations of the immune bodies in the blood following the injections of vaccines have been made. In man, Wollstein[4] shows the height of the bactericidal power, and Moon,[5] Wade and McDaniels,[6] and Dyer[7] the height of the agglutinating power to be about two months after the first dose of vaccines. Some serums were negative as early as four months after the first injection, and most of them negative within one year. Still, we know that immunity usually outlasts this period. This resistance is probably due to a degree of sensitization of the body cells. It is also known that persons who have had typhoid fever previously react severely to immunization with typhoid vaccines, probably for the reason just given.

Animal experimentation, though small, has largely borne out the foregoing data obtained from human serum. Freshly isolated cultures of *Bacillus typhosus* do not agglutinate as readily as subcultures, but McIntosh and McQueen,[8] and Gay and Claypole[9] found that inagglutinable strains, when injected into animals, led to the production of typhoid agglutinins which had no action on themselves but agglutinated heterologous strains freely. Johnston[10] found an increase in the bactericidins and a rise in the opsonic index to 4.7 following typhoid vaccination in rabbits. Thus, although there is of necessity a difference in the reactions found in human as opposed to rabbit blood, there is also an analogy.

It has been found by Cecil[11] and Stone[12] that vaccines killed by the addition of phenol (carbolic acid) or tricresol are more potent than those killed by exposure to heat. Cecil[11] also found that sensitized typhoid vaccines when injected intravenously have only one-third the virulence of nonsensitized typhoid bacilli, probably because the former undergo phagocytosis and bacteriolysis more rapidly.

The Besredka sensitized living typhoid vaccine is apparently most active. It does not produce typhoid fever or typhoid carriers if the strain is an old one, as shown by Nichols,[13] Castellani,[14] Metchnikoff and Besredka,[15] the latter having been unable to immunize chimpanzees except with this type of vaccine. In 745 persons whom they vaccinated, no carriers and no cases of typhoid developed.

Nègre,[16] working with rabbits, found that after the use of ether-killed vaccine the serums showed a very high agglutinating power with low bactericidins and antibodies, whereas the living sensitized vaccine produced low agglutinins but high bactericidins and antibodies. Typhoid vaccine killed by heat produced high agglutinins and low bactericidins.

MATERIALS AND METHODS

For this study, twelve rabbits from two litters of about the same age and weight were taken. Two rabbits served as controls, and the remaining ten were divided into pairs, one rabbit from each litter, and were injected intravenously with the following vaccines:

Vaccine 1: This vaccine was prepared by growing typhoid bacilli on agar slants for twenty-four hours, washing off the growth with salt solution, and then killing and standardizing in 0.6 per cent. phenol.

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[1] Trowbridge, E. H.; Finkle, B. A., and Barnard, E. M.: Report of Typhoid Epidemic Occurring Three Months After the use of Prophylactic Vaccine, The Journal A. M. A., Feb. 27, 1915, p. 728.

[2] Elmer, W. P.: Study of a Recent Typhoid Epidemic, with Especial Reference to the Use of Antityphoid Vaccines, The Journal A. M. A., April 3, 1915, p. 1147.

[3] Krumbhaar, E. B., and Richardson, R.: Am. Jour. Med. Sc., 1915, cxlix, 406.

[4] Wollstein, Martha: Jour. Exper. Med., 1912, xvi, 315.

[5] Moon, V. H.: Experimental Immunity in Relation to the Agglutination Reaction in Typhoid, The Journal A. M. A., June 7, 1913, p. 1764; Jour. Infect. Dis., 1914, xiv, 56.

[6] Wade, E. M., and McDaniels, O.: Am. Jour. Pub. Health, 1915, v, 136.

[7] Dyer, A. W.: Indian Jour. Med. Research, Calcutta, April 1, 1914.

[8] McIntosh, J., and McQueen, J. M.: Jour. Hyg., 1914, xiii, 409.

[9] Gay, F. P., and Claypole, E. J.: Induced Variations in the Agglutinability of Bacillus Typhosus, The Journal A. M. A., April 12, 1913, p. 1141.

[10] Johnston, J. A.: Jour. Med. Research, 1912-1913, xxvii, 177.

[11] Cecil, R. L.: Jour. Infect. Dis., 1915, xvi, 26.

[12] Stone, W. J.: Typhoid Immunity and Antityphoid Inoculation, The Journal A. M. A., Oct. 16, 1909, p. 1253.

[13] Nichols, H. J.: Jour. Exper. Med., 1914, xx, 573.

[14] Castellani: Lancet, London, Aug. 21, 1909.

[15] Metchnikoff and Besredka: Ann. de l'Inst. Pasteur, March 25, 1911.

[16] Nègre: Compt. rend. Soc. de biol., 1913, lxxiv, 1177.

Vaccine 2: This vaccine was made as Vaccine 1, but killed by heating at 56 C. (132.8 F.) for one hour, and then standardized in 0.4 per cent. phenol.

Vaccine 3: This vaccine was made as Vaccine 2, but before the bacilli were killed they were washed till the filtrate gave a biuret negative test.

These three vaccines were made from the same strain of typhoid bacillus and standardized by the hemocytometer method, the Helber blood-platelet counter being used. Injections of 500 million, 1,000 million and 1,000 million were given at weekly intervals.

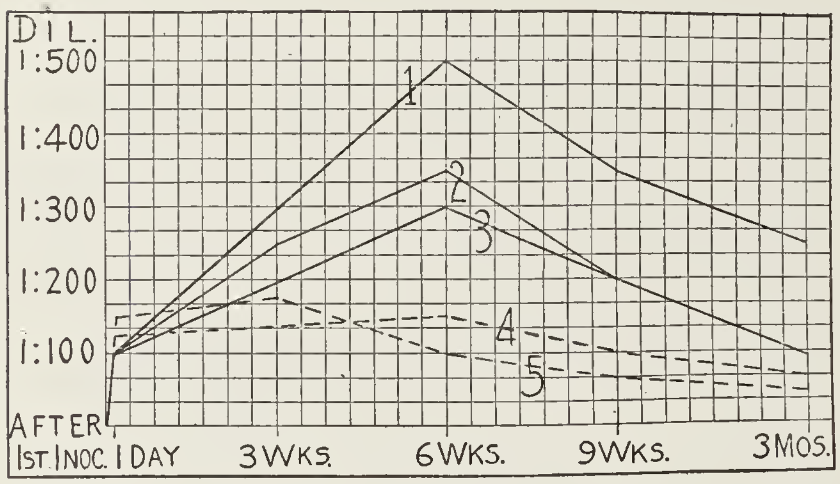

Chart 2.—Bactericidins.

Vaccine 4: This vaccine was kindly furnished by the California State Board of Health. It is sensitized vaccine made according to the method of Gay and Claypole, and given according to their directions in three doses of approximately 750 million typhoid bacilli every other day.

Vaccine 5: This vaccine was the Typho-Serobacterin Mulford immunizing package, bought in the open market. It was administered according to the directions accompanying the package.

The rabbits were kept separated and were fed alike. Rectal temperatures were taken and blood collected at regular intervals. The rabbit's ear was flipped vigorously for a few minutes, washed with xylene and alcohol, and one of the marginal veins punctured; in this way sufficient blood for the test was easily secured. The bacteriologic tests were made on the same day that the blood was drawn.

General reactions, such as a fever of from 2 to 2.5 degrees and loss of appetite for two or three days, occurred in all four rabbits receiving Vaccines 1 and 2, but only after the first injection. There was a slighter reaction in one of the rabbits receiving Vaccine 3, and in the other rabbits receiving the same vaccine the reaction was mild, extending only over the day of administration of the vaccine. There was no general reaction after any succeeding doses, neither was there any sign of general reaction in the rabbits receiving the sensitized Vaccines 4 and 5. The serums were tested with the same cultures of typhoid bacilli from which Vaccines 1, 2 and 3 were made. The agglutinins were tested according to the usual microscopic methods, with a time limit of thirty minutes.

The bactericidins were tested by making progressive dilutions of serum, mixing them with equal parts of a twenty-four hour culture of bacilli, and incubating at 37 C. (98.6 F.) for fifteen minutes. This was plated, and the number of colonies estimated after twenty-four hours. The opsonic index was made according to Wright's method, and 100 cells were counted.

It was found that none of the rabbits before the injection had agglutinins to typhoid, and that the bactericidins were not present above a dilution of 1:5.

The results of the tests for agglutinins, bactericidins and opsonins are given in the accompanying charts; the numerals refer to the vaccines used and are the same as those used above in describing the preparation of the vaccines.

1. Nonsensitized vaccine killed by the addition of 0.6 per cent. phenol.
2. Nonsensitized vaccine killed at 56 C. standardized in 0.4 per cent. phenol.
3. Nonsensitized washed vaccine.
4. Sensitized vaccine, Gay and Claypole method.
5. Sensitized vaccine, Typho-Serobacterin Mulford, Immunizing.

No negative phase was observed in this series. Taken as a whole, both the agglutinins and the bactericidins in this series were lower than those obtained by the majority of other workers. These individual variations can largely be accounted for by the use of different strains of bacteria and some differences in the methods used. The aim of this study has been toward simplicity. It may be possible that the apparent lack of immunity after the administration of sensitized vaccines is due to the fact that the serums were tested with a culture different from that used in the manufacture of the vaccine, that is, the culture from which Vaccines 1, 2 and 3 were made, and with which the serums were tested.

SUMMARY

There is a slight reaction following the injection of nonsensitized vaccines in rabbits, which is absent following the injection of sensitized vaccines.

Vaccines killed by heat seem to be less active than those killed by the addition of phenol only.

Washing the vaccine does not seem especially to influence its immunizing value.

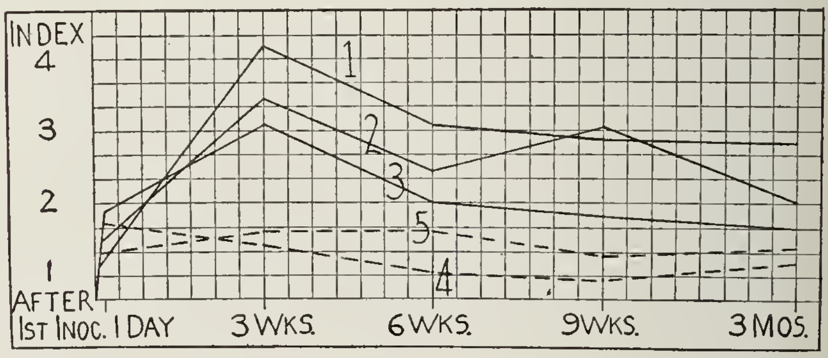

Chart 3.—Opsonins.

The height of the immunity curves occurs earlier after sensitized than nonsensitized vaccines, but the former appear to be only about one fourth as potent.

The agglutinins practically disappear within three months after the first injection, while bactericidins and opsonins can be detected much longer.

Opsonins increase more quickly than do agglutinins and bactericidins.

Opsonins and bactericidins remain more permanent than agglutinins, and immunity is more likely due to the former than to agglutinins.

Sensitized typhoid vaccines are less potent than nonsensitized typhoid vaccines, probably because the bacteria of sensitized vaccines undergo phagocytosis and bacteriolysis more rapidly.

CONCLUSIONS

In conditions in which a prolonged reaction is desired, as in conferring immunity, the nonsensitized vaccines seem preferable.

In conditions in which no general reaction is wanted and a quick response of the protective powers desired, as in active typhoid fever, a sensitized vaccine would seem preferable.

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THE ACETONE BODIES IN DIABETES MELLITUS

INFLUENCE OF LOW AND HIGH PROTEIN INTAKE ON THE EXCRETION OF ACETONE, DIACETIC ACID AND BETA-OXYBUTYRIC ACID

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INTRODUCTION AND REVIEW OF LITERATURE

I have frequently noted that the administration of increased amounts of protein to diabetics often increases the amounts of acetone, diacetic acid and beta-oxybutyric acid excreted in the urine. Magnus-Levy[1] has had a similar experience, and asserts that the increased excretion of the acetone bodies does not mean that they have been formed from the protein but on account of the high protein content of the diet, which makes an extra tax on the oxidizing powers of the body and diverts these from the combustion of the acetone bodies.

It is now firmly settled that the acetone bodies are mostly derived from the fats and especially from the fats composed of the lower fatty-acids.[2] Knoop,[3] Ringer[4] and others have shown that in the catabolism of fatty acids the carbon chains are broken down by the oxidation of the third carbon atom from the end, that is, in the beta position, and the two end carbon atoms are then split off. It follows that two carbon atoms are separated at a time, and therefore every fatty acid which contains an even number of carbon atoms can be converted into beta-oxybutyric acid.

TABLE 1.—RESULTS OF TESTS *

Case Number	Day	Urine				Intake		
		Glucose, gm.	Acetone, gm.	Diacetic Acid, gm.	Beta-Oxybutyric Acid, gm.	Protein, gm.	Fat, gm.	Carbohydrate, gm.
1	1	1.6	0	0	0	135	220	45
1	2	1.8	0.58	0.42	0	135	220	45
1	3	0	1.22	1.06	3.0	175	220	45
1	4	12	1.34	1.28	2.6	175	220	75
1	5	8	0.52	0.31	+	90	220	75
1	6	0	±	±	0	90	220	45
2	1	80	+	+	...	135	220	10
2	2	78	1.62	0.92	1.3	135	220	10
2	3	74	1.48	1.02	0.9	135	220	10
2	4	77	1.72	1.03	0.8	135	220	10
2	5	77	1.65	0.94	1.2	135	220	10
2	6	83	1.24	0.87	1.1	135	220	10
2	7	67	1.11	0.76	0.7	135	220	10
2	8	82	1.38	0.92	0.9	135	220	10
2	9	70	3.20	2.60	2.3	185	220	10
2	10	82	3.09	2.07	1.9	185	220	10
2	11	70	3.17	1.99	2.4	185	220	10
2	12	60	3.45	3.65	2.9	185	220	10
2	13	70	4.18	2.17	3.4	185	220	10
2	14	46	3.27	2.18	2.7	185	220	10
2	15	80	4.20	3.15	2.9	185	220	10
2	16	68	3.18	2.16	2.3	185	220	10
2	17	65	3.40	2.02	2.1	185	220	10
2	18	49	3.18	2.72	1.5	185	220	10
3	1	40	1.49	1.82	1.0	135	220	45
3	2	25	1.17	0.92	0.7	135	220	45
3	3	20	1.15	0.74	0.5	135	220	20
3	4	20	1.02	0.17	0.7	135	220	15
3	5	9	1.04	0.62	0.8	135	220	15
3	6	0	2.17	2.29	1.7	180	220	15
3	7	0	3.26	4.32	2.7	180	220	15
3	8	0	4.22	4.29	3.2	180	220	30
3	9	0	4.18	3.96	3.7	180	220	30
3	10	0	1.08	0.82	0.9	135	220	30
4	1	18	0	0	0	135	220	10
4	2	9.3	0	0	0	135	220	10
4	3	0	0.72	0.54	±	135	220	15
4	4	0	0.91	0.53	±	135	220	15
4	5	0	0.64	0.82	±	135	220	15
4	6	0	0.82	0.95	±	135	220	15
4	7	0	1.43	1.37	0.9	135	220	15
4	8	0	2.94	2.82	1.2	180	220	15
4	9	0	4.42	3.30	1.9	180	220	15
4	10	0	4.70	3.94	3.0	180	220	15
5	1	50	0	0	0	135	220	45
5	2	8.2	0	0	0	135	220	45
5	3	5.4	±	±	±	135	220	45
5	4	4.3	0.72	0.33	±	135	220	15
5	5	0	0.64	0.42	±	135	220	15
5	6	0	0.85	0.36	±	155	220	15
5	7	0	1.74	1.82	0.7	150	220	15
5	8	0	3.34	3.47	2.7	190	220	45
5	9	0	4.32	2.70	3.5	190	220	45
5	10	0	5.68	3.12	4.2	190	220	75
5	11	0	1.74	1.62	0.9	150	220	75
5	12	0	0.72	0.14	±	135	220	75

* A trace is indicated by +, and a faint trace by ±.

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[1] Magnus-Levy: Bull. Johns Hopkins Hosp., 1911, xxii, 46.

[2] Excellent reviews of acidosis are given by Ewing, James: Acidosis and Associated Conditions, Arch. Int. Med., November, 1908, p. 330; Lusk, Graham: Metabolism in Diabetes, ibid., February, 1909, p. 1; Magnus-Levy: Ergebn. d. inn. Med. u. Kinderh., 1908, i, 374; Gigon: Ibid., 1912, ix, 285, and Rosenbloom: New York Med. Jour., 1915, cii, 294.

[3] Knoop, quoted by Porges: Ergebn. d. Physiol., 1910, x, 6.

[4] Ringer: Jour. Biol. Chem., 1913, xiv, 43, 525.

Normal fatty acids which contain an odd number of carbon atoms cannot yield beta-oxybutyric acid.

The acetone bodies might readily be formed from proteins, by separation of the NH_2 group from the amino-acids.[5] It was formerly thought that they could be formed from carbohydrates, as is the closely related lactic acid, but we now know that this is not true.[6] It is to be remembered, therefore, that theoretically the acetone bodies may be formed at the expense of proteins or fats, but that usually they are formed from the fats and in severe diabetes from the fatty acids produced by the deaminization of amino-acids.[7]

TABLE 2.—COMPOSITION OF OX MEAT

	Per Cent.
Glycocoll	2.06
Alanin	3.72
Valin	0.81
Leucin	11.65
Prolin	5.82
Phenylalanin	3.15
Aspartic acid	4.51
Glutamic acid	15.49
Serin	?
Tyrosin	2.20
Arginin	7.47
Histidin	1.76
Lysin	7.59
Ammonia	1.07
Tryptophan	Present

It has been asserted by several observers[8] that sugar produced from protein can inhibit the formation of acetone bodies just as well as carbohydrate can. This statement is based on the fact that with an increase of protein catabolism the acetonuria is lessened, if at the same time the protein given does not drive up the glucosuria and thus do away with the inhibitive action that the protein sugar would exert.[9] In health the catabolism of large quantities of protein can dissipate acidosis on account of its partial conversion into sugar, but in diabetes protein does not act so, as the sugar is not burned up.

Borchardt[10] found that protamin, histon, egg albumin, pancreas and casein, which contain monamino-acids, increasing in the order named, when given to healthy subjects, showing acidosis from carbohydrate starvation, produced different effects on the amount of the acetone bodies excreted. Protamin increased the acidosis, while casein reduced it. Rosenthal[11] found that when meat, casein, egg albumin or thymus were added to a high protein diet they all increased the acetonuria. He thought the higher the glycogen-producing quantity of the protein and its content of monamino-acids, the less is its ability to produce acetone. Lüthje[12] asserted that calf thymus reduced diabetic acidosis, while casein increased it. Labbé,[13] Cammidge,[14] von Noorden,[15] and Hugounenq and Morel[16] have all shown that a high protein feeding to diabetics has a ketogenic influence which in time may be of serious import. Moorhouse, Patterson and Stephanson[17] have recently shown that in experimental diabetes in dogs the course of the acetone excretion bears a close relation to the protein metabolism, and they think that the acetone excretion depends on the character of the proteins fed, as they found that when feeding erepton, the acetone excretion was high. On feeding caseinogen, the amount of acetone excreted fell, and on feeding gelatin the acetone was markedly diminished.

METHODS

The standard strict diets of von Noorden[18] were used in this work. The increased amount of protein added to the diet was always given as meat. The glucose was estimated by Benedict's[19] method, the acetone and diacetic acid by Folin's[20] method, and the beta-oxybutyric acid by Shaffer's[21] method.

EXPERIMENTAL

Table 1 presents the results obtained in this study. All of the five cases studied show a marked increase in the amounts of the acetone bodies excreted in the urine when the protein intake was increased; and when the protein intake was lowered, the amount of the acetone bodies excreted was lessened.

TABLE 3.—COMPOSITION OF GELATIN

	Per Cent.
Glycocoll	16.5
Alanin	0.8
Valin	1.0
Leucin	2.1
Isoleucin	..
Phenylalanin	0.4
Tyrosin	0
Serin	0.4
Cystin	..
Prolin	7.7
Oxyprolin	3.0
Aspartic acid	0.6
Glutamic acid	0.9
Tryptophan	0
Arginin	7.6
Lysin	2.8
Histidin	0.4
Ammonia	0.4

These results may also explain partially the remarkable effects of the so-called green days and oatmeal days in lessening the amount of acetone bodies excreted in the urine. As both of these diets contain very little protein (typical green days 30 gm., and typical oatmeal days 51 gm.), it may be that part of the lessened excretion of acetone bodies is due to the lowering of the protein intake.

It is most likely that the increased excretion of the acetone bodies produced by increasing the protein intake is due to the fact that some of the amino-acids present in the protein act as ketogenic substances. In Table 2 is given the most complete analysis of ox meat.[22]

It is well known that of these constituents the *leucin*, *tyrosin* and *phenylalanin* are ketogenic, and it may be that the increased excretion of the acetone bodies is due to the presence of these amino-acids in the increased amount of meat protein ingested.

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[5] Fittipaldi: Zentralbl. f. d. ges. Physiol. u. Path. d. Stoffwechs., 1901, v, 161. Emden and Engel: Beitr. z. chem. Phys. u. Path., 1907, xi, 323.

[6] Satta: Beitr. z. chem. Phys. u. Path., 1905, vi, 1, 388. Waldvogel: Die azetone Körper, 1903. Schwarz: Deutsch. Arch. f. klin. Med., 1903, lxxvi, 233.

[7] Blumenthal and Neuberg: Beitr. z. chem. Phys. u. Path., 1902, ii, 238. Orgler: Beitr. z. chem. Phys. u. Path., 1900, i, 583. Embden, Salomon and Schmidt: Beitr. z. chem. Phys. u. Path., 1906, viii, 129.

[8] Talma: Therap. d. Gegenw., 1901, p. 385. Hirschfeld: Ztschr. f. klin. Med., 1895, xxviii, 176. Waldvogel: Ibid., 1899, xxxviii, 506. Rosenfeld: Centralbl. f. inn. Med., 1895, No. 51.

[9] Von Noorden: Metabolism and Practical Medicine, 1907, iii, 590.

[10] Borchardt: Arch. f. exper. Path. u. Pharmakol., 1905, liii, 388.

[11] Rosenthal: Centralbl. f. inn. Med., 1908, 185.

[12] Lüthje: Ztschr. f. klin. Med., 1900, xxxix, 397.

[13] Labbé: Semaine méd., 1911, p. 506.

[14] Cammidge: Lancet, London, 1913, ii, 1319.

[15] Von Noorden: Med. Klin., 1913, ix, 612.

[16] Hugounenq and Morel: Semaine méd., 1911, p. 505.

[17] Moorhouse, Patterson and Stephanson: Biochem. Jour., 1915, ix, 171.

[18] Von Noorden: Die Zuckerkrankheit und ihre Behandlung, Berlin, 1912.

[19] Benedict: Jour. Biol. Chem., 1911, ix, 57.

[20] Folin: Jour. Biol. Chem., 1907, iii, 177.

[21] Shaffer: Jour. Biol. Chem., 1908, v, 211. Shaffer and Marriott: Ibid., 1913, xvi, 265. Pribram: Ztschr. f. exper. Path. u. Therap., 1912, x, 279, 284. Cook and Gorslin: Jour. Biol. Chem., 1911, x, 291.

[22] Osborne and Jones: Am. Jour. Physiol., 1909, xxiv, 438.

Another reason to suspect that this is the case may be found in the results obtained by Moorhouse, Patterson and Stephanson. They found that, of the various proteins studied in regard to their effect on the excretion of acetone in dogs rendered diabetic, gelatin produced a marked diminution in the excretion of these bodies. I think the explanation of this result is due to the fact that gelatin contains very small amounts of *leucin, tyrosin* and *phenylalanin,* as may be seen from the analysis[23] given in Table 3.

The importance of restricting the amount of protein in the diet in diabetes has long been well known in regard to the sugar excretion.[24] I present in this paper data showing the importance of restricting the protein intake in diabetes in relation to lessening the amount of excretion of the acetone bodies in the urine. It is possible that by selecting proteins free from those amino-acids that are ketogenic we may be better able to control the formation of the acetone bodies in this disease.

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THE PREVENTION AND TREATMENT OF RINGWORM AND FAVUS OF THE SCALP

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In a recent case report of "Two Favus Families,"[1] I illustrated some of the results of neglecting to attend properly to every case of favus of the scalp as soon as it is discovered.

Ringworm and favus of the scalp are not common diseases in many of our smaller cities and towns. The importance, therefore, of properly caring for the early cases, in order to prevent their spread, is often insufficiently appreciated by the health authorities and physicians of such localities.

In addition to this, the profusion of drugs recommended for these diseases, as well as the lack of detailed information of the method of carrying out the treatment and of what is expected from it, leave the physician, who is unfamiliar with these diseases, uncertain what to do.

As ringworm and favus are closely related, and as their treatment is similar, they may well be considered together. Both are children's diseases and preeminently diseases of the school age. Ringworm of the scalp heals spontaneously at the approach of puberty, and is almost never found in an adult. Favus almost always begins in childhood, but unlike ringworm, does not usually heal spontaneously until it has destroyed all the hair of the scalp, which frequently is not until late in life.

These diseases do not affect the general health, and their importance consists chiefly in the loss of education to the individuals affected, as the children are usually excluded from school. In the case of favus this exclusion generally includes the whole school life of the child, if he is not properly treated.

The objects to be sought in the management of these diseases are the prevention of their spreading to others and the cure of the affected individuals.

In order to prevent their spread:

1. All cases should be reported to the health authorities, who should have the power of supervising them. Diseases which are excluded from this country by the federal government are not too unimportant to be noticed when they are found here.
2. Whenever a case is discovered in a school, all the children in the room should be examined. This is more necessary in the case of ringworm than in that of favus, as it is much more contagious than the latter, which is usually contracted only by members of the immediate family.
3. Whenever a case is found, it should be ascertained whether there are other children in the family or house, and if there are, all these children should be examined, for it is the exception for only one child of a family to be affected in the case of ringworm, and in the case of favus more than one are frequently affected. This is easily understood, as both diseases are especially found in unhygienic and crowded quarters.
4. Houses in which cases have been found should be thoroughly disinfected after the disease is cured or when they are vacated.

Other precautions for the prevention of the spread of the diseases naturally come under the head of treatment and will be considered there.

The modern and only satisfactory rapid method of curing these diseases is by the use of the Roentgen ray, but as it can be employed only by a skilled roentgenologist who has had an opportunity of previously seeing its application, and as it is not practicable in localities in which there are only a few cases to be treated, it will be simply mentioned in this place.

Strickler[2] of Philadelphia recently reported good results in ringworm with a vaccine treatment, which will be of great value if further use confirms his results.

Before considering the treatment in detail, it will be well to consider some of the difficulties to be contended with. In the first place the fungi are extremely tenacious of life when removed from the scalp. Ringworm can ordinarily be produced from crusts which have been preserved for from three to six months, and instances of successful inoculation have been known to take place after eighteen months, though the spores are always dead after two years. The life of the fungus in the hair is longer, and spores in removed hairs will usually grow after fifteen or eighteen months. Favus spores have been found living in scutula after two years.

In locations in which they can be reached by antiseptics, the fungi are easily destroyed, but in both diseases a large number of the fungi are buried deeply in the hair follicles and in the interior of the hairs. When we consider the fact that in the case of ringworm "soaking the hair in absolute alcohol for as long as twelve hours will not inhibit the growth of the fungus," we are not surprised that "the resistance of the parasite in the hair follicle has up to the present time remained almost absolute to all chemical agents." This statement may be extended to include the Roentgen ray, which does not kill the parasites.

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[23] Fischer, Levene and Aders: Ztschr. f. physiol. Chem., 1902, xxxv, 70. Kossel and Kutscher: Ibid., 1901, xxxi, 165. Fischer and Boehner: Ibid., 1910, lxv, 118.

[24] Kossel: Deutsch. med. Wchnschr., 1898, p. 58. Müller and Seeman: Ibid., 1899, p. 209. Stiles and Lusk: Am. Jour. Physiol., 1903, ix, 380.

[1] Lane, J. E.: Two Favus Families, The Journal A. M. A., Oct. 16, 1915, p. 1362.

[2] Strickler, Albert: The Vaccine Treatment of Ringworm of the Scalp, The Journal A. M. A., July 17, 1915, p. 224.

From these facts is easily seen the futility of all treatment by antiseptics alone, in whatever form they may be used. They are necessary but, without the removal of the deep-seated fungi, they are unable to effect a cure of either disease. In this connection it may be well to quote Sabouraud,[3] to whom all who say anything about these diseases must acknowledge their indebtedness. He says that "the frequent observations of favus cured without depilation by various applications must assuredly be ranked as fables," and that "when an author claims to have cured a tinea tonsurans in three weeks, he evidently does not know what he is talking about, and the only reply that can be made is, that it takes at least six weeks to affirm that it is cured."

TREATMENT

1. The hair should be cut short over the whole head, but it should not be shaved, as this would prevent effectual depilation. This is essential in all cases of favus and in all cases of ringworm, except those of very limited extent. In these the hair must be cut well around the edges of the affected area. The purpose of this is cleanliness, prevention of the spread of the disease, easier discovery of new patches, and facilitation of the treatment.

2. When crusts are present they must be removed. This is best accomplished by soaking the head with oil for a day or two to soften them. Cottonseed oil, to which 1 per cent. of betanaphthol has been added, serves the purpose admirably. The head is then washed with an antiseptic soap for which the following formula may be used:

℞	Betanaphtholis	3 parts
	Sulphuris praecipitati	10 parts
	Saponis mollis	q. s. ad 100 parts

3. Depilation is the most important as well as the most difficult and tedious part of the treatment, except when the Roentgen ray is used. The most satisfactory method of depilation is still that of the thumb forceps, although many easier and quicker methods have been tried. In extensive cases of favus, the whole head must be depilated and redepilated as fast as any hair grows, for at least three months. In early cases with small areas involved the depilation may be limited to the affected areas and a circumference of half an inch. In the case of ringworm, depilation of the patches cannot be completely accomplished, as many of the hairs are broken off and the rest are so fragile that they break when this is attempted. But all patches should be kept as completely depilated as possible, together with the surrounding area, as in the case of favus.

4. The value of antiseptic applications lies in the destruction of the superficial fungi and in preventing the spread to other spots and to other individuals. They also serve the additional purpose, in the case of ringworm, of irritating and causing some inflammation in the affected areas, which facilitates the expulsion of the stumps of the broken hairs that cannot be pulled out. The affected areas are painted daily with:

℞	Tincturae iodi	20 parts
	Alcoholis	80 parts

and the following ointment applied to the whole head:

℞	Hydrargyri praecipitati flavi	1 part
	Sulphuris praecipitati	1 part
	Resorcinol	1 part
	Olei cadini	10 parts
	Adipis lanae	10 parts
	Petrolati	10 parts

5. The head should be washed daily or every other day with the antiseptic soap for which the formula has been given. If crusts persist in forming they are softened and removed as often as necessary.

6. The following additional precautions should be taken: It is hardly necessary to say that individual toilet articles should be used. Keeping the hair cut short removes any necessity for the use of comb and brush. Affected children should sleep alone. Other children should not be allowed to wear the hats of the patients. The heads should be isolated as well as possible, and for this purpose there is nothing better than a tight-fitting cotton cap which can be boiled or thrown away when soiled. The scalps of persons affected with these diseases bear irritation remarkably well, and there is usually no occasion for interrupting the treatment. However, if the heads become sore from it, it is stopped for a few days, and petrolatum applied till it is resumed.

If these steps are carried out faithfully for a long enough period of time, the diseases will be cured and their spread pretty well limited. In extensive cases, the time necessary for cure is not likely to be less than two years, except in some of the rarer varieties of ringworm. When a case after vigorous treatment is apparently cured, treatment should be suspended for a month or six weeks. If there are no signs of recurrence at the end of that time, the patient should be examined occasionally for another six weeks before he is pronounced cured. If, in the meantime, any unhealed spots become visible, treatment should be at once resumed.

This is not an easy way to cure these diseases, but the more thoroughly it is realized that, with the exception of the Roentgen ray, there is no easy way of curing them, the better shall we take the precautions necessary for preventing their becoming so numerous as to present a serious problem.

The applications mentioned are no better and no more efficient than many others. They may be varied ad libitum with perfect confidence that many others are just as efficient in keeping the surface clean, and just as inefficient for affecting the disease in the hair follicles.

The difficulties encountered in the treatment of ringworm have been well stated by Martin[4] as follows:

1. The multiplicity of treatments proposed.
2. The confusion in the diagnosis of the different varieties.
3. The certainty of an ultimate spontaneous cure.
4. The depth of the anatomic seat of the lesion.
5. The difficulty of diagnosis, especially of an early diagnosis.
6. The difficulty of diagnosis of cure.
7. The difficulties of prophylaxis.

All of these difficulties are considerable in the case of ringworm, and for the most part equally so in the case of favus.

I have avoided adding to the confusion by mentioning any new drugs or combination of drugs that are still constantly being suggested with claims for the remarkable results referred to by Sabouraud as "fables." A few of the statements made here are not strictly applicable to some of the rarer varieties of ringworm, but it seemed best not to complicate the subject by calling attention to exceptional cases.

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[3] Sabouraud: Les teignes, Paris, 1910.

[4] Martin, quoted by Sabouraud: Les teignes, p. 758.

NEPHRITIS

A NEW SERIES OF CASES WITH A REVIEW OF RECENT LITERATURE *

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RESULT OF AUTHOR'S INVESTIGATION

The material for this investigation has been collected since the reading of my first paper. On the whole the method of investigation and the class of cases covered has been the same, but in this instance the anatomic research has been supplemented by a careful study of the clinical histories.

The material comprises eight cases of amyloid disease associated with chronic parenchymatous nephritis, thirty-four cases of general arteriosclerosis with cardiac hypertrophy, in which the kidneys were slightly involved in twelve and moderately diseased in twenty-two cases. In addition there were eight cases of general arteriosclerosis with more extensive renal lesions of the type described in my first paper as arteriosclerotic nephritis. The most interesting group was that of thirty-two cases of glomerulonephritis of which four were acute, eight subacute, seventeen chronic; in addition, belonging to the last group, there were three cases in children which it was difficult to classify on account of the peculiar mixture of subacute and chronic lesions in them.

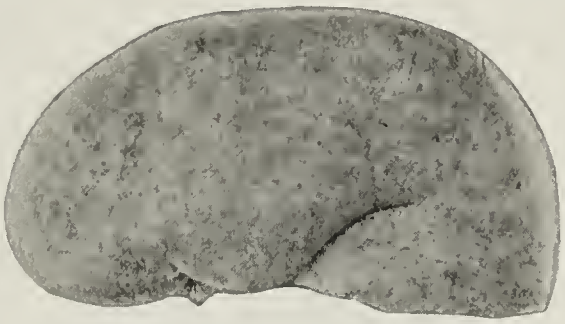

Fig. 1.—Case XVII, 188, acute glomerulonephritis; one-half normal size.

SUBACUTE AND CHRONIC PARENCHYMATOUS NEPHRITIS

These cases certainly, of themselves, form a separate group, both anatomically and clinically. They represent the "nephroses" of Volhard and Fahr.[4] Their most characteristic feature, histologically, is the extensive epithelial degeneration with granular change and development of double refractile lipoid droplets. The diseased tubules are usually full of casts. Amyloid was found again in all my cases, although in some the amount of amyloid in the glomeruli was not very large. In all cases amyloid was also found in the spleen or liver or both. The etiologic factors in all of them were the usual causes of amyloid disease (chronic tuberculosis in three, chronic syphilis in one, malignant tumor in one, chronic suppuration in three).

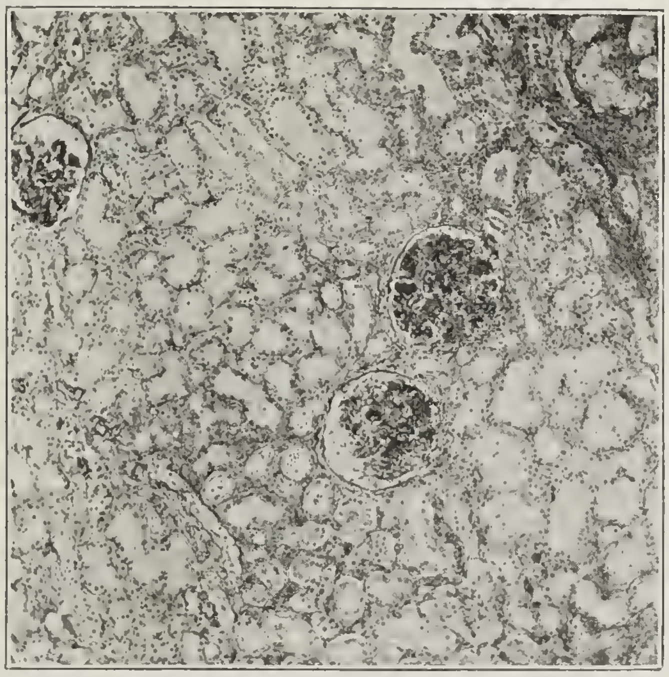

Fig. 2.—Case XVIII, 158, acute glomerulonephritis; magnified 57 times.

From the very beginning, as emphasized in my previous paper, these cases show inflammatory lesions in and about the glomeruli. In the early stages there may even be a very heavy infiltration of the glomeruli and of the interstitial tissue with polymorphonuclear leukocytes. Connective tissue proliferation sets in early and eventually may lead to considerable shrinkage of the kidneys, which at first are very large and white. On account of these inflammatory changes, the occurrence of which in the later stages is acknowledged by Volhard and Fahr, I believe that their appellation "nephrosis" is faulty and I still prefer the term acute, subacute or chronic parenchymatous nephritis with, or possibly without, amyloid.[5]

Clinically these cases are characterized by very pronounced urinary findings (much albumin, many casts), marked edema (although very emaciated cases may remain "dry"), absence of hypertension and a small heart.

GLOMERULONEPHRITIS

1. Acute glomerulonephritis: Figure 1 shows a characteristic gross specimen of this condition and Figure 2 is a photomicrograph taken in a typical case. The kidneys in these cases are usually considerably swollen, hyperemic, edematous, somewhat opaque.

Petechial hemorrhages are frequently found in the cortex, but they vary considerably in number. The best descriptive term to apply to these kidneys is large variegated kidney, because their discoloration contrasts strongly with the extreme pallor of the amyloid kidneys (large white kidney).

The histologic features of the process are acute inflammatory lesions in and about the glomeruli, inflammatory hyperemia, and edema of the interstitial tissue, blood, leukocytes and casts in the tubules. The epithelium is more or less degenerated. The presence of numerous neutrophilic and of some eosinophilic leukocytes in the affected glomeruli and in the tissues plainly show the inflammatory character of the condition.

The urinary findings are very pronounced; there may be edema. Blood vessels and heart are still normal except for accidental lesions.

The condition is caused by septic infection, usually with streptococci, and the death of the patient is due to the overwhelming infection, the nephritis playing a minor part in the clinical symptom-complex.

Even at this early stage a certain degree of anemia may have developed on account of the underlying septic infection.

In three of our cases the acute *diffuse* glomerulonephritis was the result of a final exacerbation of a chronic diplostreptococcus endocarditis.

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* From the Pathological Laboratory of the Leland Stanford Junior University, School of Medicine.

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* Because of lack of space the review of the literature has been omitted in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

[4] Volhard and Fahr: Die Brightsche Nieren-Krankheiten, Berlin, 1914.

[5] In this consideration I have eliminated the purely toxic forms of nephritis like the corrosive sublimate kidney, etc., on account of lack of suitable material.

2. Subacute glomerulonephritis: In these cases the kidneys are also large, more or less opaque and variegated. Some of them are studded with minute hemorrhages (Fig. 3) others are more pale as in Figure 1. Histologically the glomeruli show hyaline necroses of some of their loops, intracapillary and extracapillary proliferation (Fig. 4). The tubules are in the same condition as in the acute cases. The infiltration of the interstitial tissue with neutrophilic and eosinophilic leukocytes is often very severe and there are evidences of a beginning diffuse proliferation of the connective tissue. The blood vessels locally and generally are still normal except in the late cases, when a local involvement of the blood vessels may be noticed. The blood pressure rises gradually to 180 to 200 and there may be seen at necropsy a commencing hypertrophy of the left ventricle.

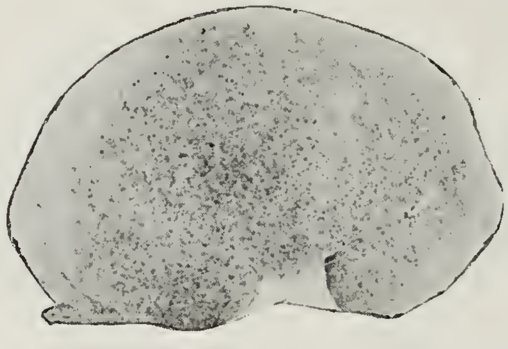

Fig. 3. — Case XVIII, 166, subacute glomerulonephritis; one-half normal size.

The urinary findings are very marked and in one of our late cases there was evidence of a beginning polyuria. The anemia is also more noticeable.

The etiology in all cases is very evident in a comparatively recent history of tonsillitis, rheumatism and other forms of streptococcus infection with or without endocarditis. The latter was present in four of our eight cases. One of our cases, a very pronounced diffuse subacute glomerulonephritis in a baby of 2 months, was remarkable on account of the absence of streptococcus infection. In this case the lesion must be attributed either to a severe colon bacillus pyelitis or possibly to congenital syphilis, of which there was definite clinical and anatomic evidence.

Edema is often marked, but is not always present. One late patient in whom the condition had been running for about six years had an albuminuric retinitis and died in uremic coma. Most of the patients, however, died within one year of the infection, but there were three late patients who lived thirteen months, four years and six years, respectively. In several of these late subacute cases the symptoms of the original infection had more or less subsided and the symptom-complex was dominated by the nephritis.[6]

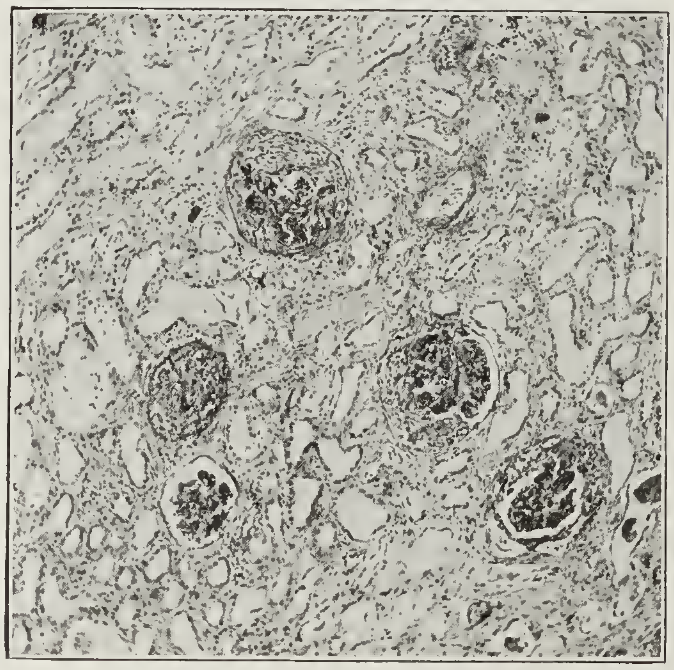

Fig. 4.—Case XIV, 34, subacute glomerulonephritis; magnified 57 times.

In both acute and subacute cases diplostreptococci can often be found in the urine.

3. Chronic glomerulonephritis: In chronic glomerulonephritis the kidneys show marked evidence of contraction which is either diffuse, and then the surface of the organ remains smooth (Fig. 5), or irregular, producing a granular (Fig. 6), or sometimes even coarsely nodular, surface. The capsule is thickened and adherent. The color varies from dark red with numerous hemorrhages to a pale putty color. Quite often one notices a distinct brownish tinge on account of hematogenous pigmentation of the epithelium and other tissues. Some of the kidneys are more or less cystic. The cortex is narrow and the markings on the cut surface are indistinct.

The microscope (Fig. 7) shows a marked diffuse proliferation and fibrous transformation of the connective tissue with atrophy of many tubules. Other tubules may remain large or even become hypertrophic. Many of them still contain leukocytes and red blood corpuscles. There may be much epithelial degeneration and many casts. The glomeruli become more and more fibrous and eventually are transformed into small solid nodules of hyaline connective tissue. Even at this stage, however, one usually encounters at first many, later few, glomeruli with subacute lesions; which finding materially assists in the histologic diagnosis.

The blood vessels in the kidney show most remarkable differences. In some very old and far-advanced cases they remain practically normal, in others they show intense lesions very early. These vascular lesions develop into extreme degrees of endarteritis both in the small and in the larger arteries. The disease of the blood vessels remains localized in the kidneys and the renal arteries in the majority of cases (ten in our series of fifteen with marked vascular lesions) but there are some in which a very pronounced degree of general arteriosclerosis develops eventually.

The blood pressure is always elevated and runs up to 200, more rarely to 250. The heart is usually enlarged, but within moderate limits. The wall of the left ventricle, however, may show a very evident concentric hypertrophy. There were three cases with normal or even small hearts.

The urine continues to show considerable albumin, more or less constantly. Casts may be present at all times or in showers. Red blood corpuscles and leukocytes are found frequently. Practically all our cases showed a marked polyuria and some definite hyposthenuria. The phenolphthalein excretion when measured was always found considerably diminished and sometimes almost entirely suppressed.

Edema is a very common symptom, but there are "dry" cases. Uremia is often observed (eleven cases out of seventeen); retinitis albuminurica more rarely (three out of seventeen).

Anemia, with very few exceptions, is well developed; it being very common to see a reduction of red blood corpuscles and hemoglobin to one half or less. The character of the anemia is that of a severe secondary anemia.

It is natural, that in these old cases it is much more difficult to detect the original infection which caused the nephritis, unless it persists palpably in the form of an old endocarditis or, as in one of our cases, in the shape of an old septic infarct of the spleen, full of influenza bacilli. A careful study of the clinical record, however, usually reveals a very definite history of repeated attacks of tonsillitis, rheumatism or other septic troubles, and it is suggestive that the better the record the more commonly is there note of such conditions. In some cases it may be possible to discover the old septic focus at necropsy, although this may not always be an easy matter. In some cases the urinary tract itself may afford a hiding place for the streptococci, they being found more or less constantly in the urine, and at necropsy in smears from the slightly inflamed renal pelvis or urinary bladder. The more intensive study of this series of cases has greatly strengthened my previous conviction that all these cases are due to septic and mostly streptococcic infections in the last resort, and also the idea that it is the continuance of this infection in more or less hidden foci which keeps the process in the kidneys going.

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[6] Volhard and Fahr distinguish between a more severe form of subacute glomerulonephritis with much extracapillary proliferation in the glomeruli and a milder form with intracapillary lesions only. I believe this is an unnecessary refinement, but there is no question that the cases with much extracapillary proliferation are the severer ones.

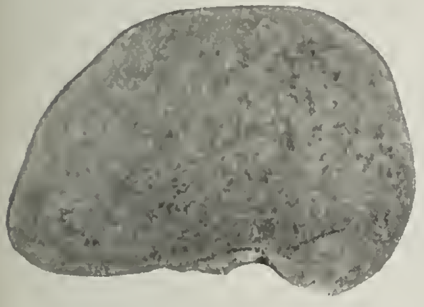
Fig. 5.—Case XVI, 10, chronic glomerulonephritis; diffuse contraction with smooth surface; one-half normal size.

4. Subacute and chronic glomerulonephritis in children: This small separate group of three cases of glomerulonephritis in children is especially interesting for several reasons. The etiology was very evident in all three cases, in one a general diplostreptococcus sepsis with an infectious aneurysm of the abdominal aorta without history of tonsillitis, in another repeated attacks of tonsillitis and in the third, a boy of 6 years, nephrolithiasis with development of a large calculus in the bladder and streptococcus infection of the urinary tract.

The rise of blood pressure in these three cases was well marked (about 150) and the cardiac hypertrophy very definite, in fact, more pronounced than in adults, as one would expect in the youthful organism. This in the absence of all signs of general arteriosclerosis and in one case of all local vascular change in the kidneys definitely proves that the hypertension in nephritis is not the result of arteriosclerosis. In two cases there was very marked local arteriosclerosis in the diseased kidneys without any further involvement of the arteries elsewhere, proving also that the arteriosclerosis in the kidneys in these cases is purely the result of local conditions.

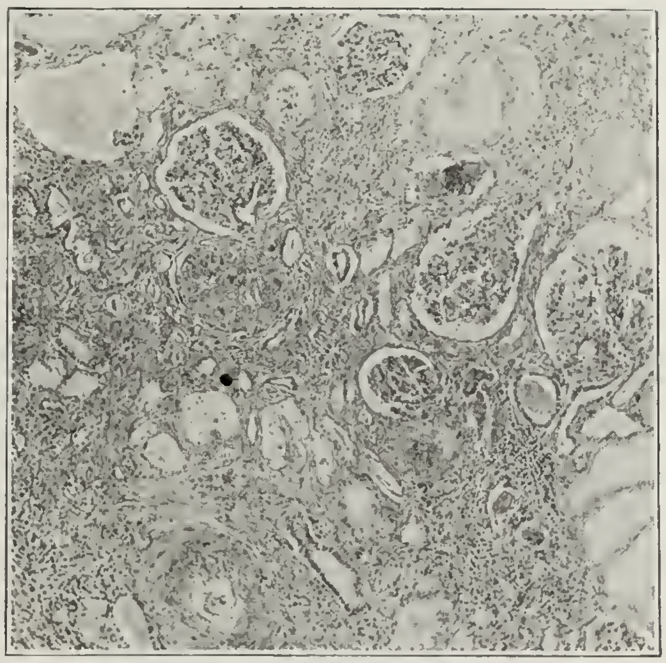
Fig. 7.—Case XVIII, 19, chronic glomerulonephritis; magnified 57 times.

5. Focal hemorrhagic glomerulonephritis (Löhlein): In subacute or chronic bacterial endocarditis, Löhlein[7] has described glomerular lesions which he believes to be essentially different from those in true glomerulonephritis. Baehr,[8] who studied the kidneys in twenty-five cases of bacterial endocarditis, found this condition in twenty-three of them and gave a very complete description of the process. The characteristic feature appears to be a hyaline necrosis of a circumscribed portion of a certain number of glomeruli, associated with hemorrhage. The hyaline material is later organized and replaced by fibrous tissue. Löhlein suggested that the condition might be of embolic origin, due to the detachment of very small pieces of septic thrombus from the heart valves, but he was unable to find any bacteria in the hyaline material which fills the capillaries of the glomeruli in these cases. Since then Baehr has actually demonstrated the diplostreptococci in the affected loops in five of his more acute cases, in specimens that were fixed in alcohol. The bacteria, however, seem to disappear very rapidly in the lesions; as Baehr says: "In the later stages of the lesions, bacteria were never found; apparently they underwent destruction during the early stages when the glomerular structure was disintegrating." Inflammatory lesions in and about the affected glomeruli are usually absent or much less intense than in ordinary glomerulonephritis, but when the condition involves the major part of a glomerulus and is associated with a more intense reaction, as sometimes happens, it is difficult to distinguish it from true glomerulonephritis. The focal character of the disease also varies a good deal in different cases, sometimes a few glomeruli being affected, at other times a great many. If a great many glomeruli are involved rather severely, it becomes difficult to distinguish this form from diffuse glomerulonephritis both histologically and clinically, and I believe, in the descriptions laid down in literature, one can find all intermediate stages between focal and true diffuse glomerulonephritis. The differences are purely quantitative in character and I cannot help but feel that this focal hemorrhagic glomerulonephritis is merely an abortive form of true glomerulonephritis.[9] The knowledge of the frequent occurrence of this type of disease in subacute and chronic endocarditis is of considerable practical importance, as it will prevent the clinicians from diagnosing a serious diffuse glomerulonephritis merely on the basis of possibly transitory urinary findings.

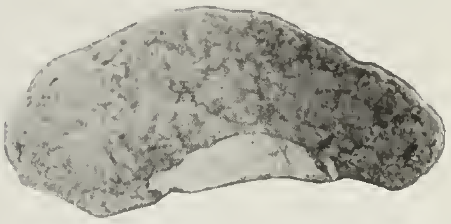
Fig. 6.—Case XVII, 68, chronic glomerulonephritis; granular contracted kidney; one-half normal size.

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[7] Löhlein: Pathologische Anatomie der haematogenen Nephritis, Ergebn. d. allg. Path. u. path. Anat. (Lubarsch und Ostertag), 1910, xiv, No. 2, p. 874.

[8] Baehr: Glomerular Lesions in Subacute Bacterial Endocarditis, Jour. Exper. Med., 1912, xv, 330.

[9] Löhlein's statement that in true diffuse glomerulonephritis *all* glomeruli must show evidence of disease, is certainly an exaggeration. The lesions usually affect a majority of the glomeruli, but all subacute and chronic cases show clear evidence of a more gradual involvement of glomeruli, apparently in repeated crops.

Cases of this kind have been found not only in diplostreptococcus endocarditis but also in ordinary streptococcus infections and even in colon bacillus sepsis.

It is interesting to note that in the three acute cases of diffuse glomerulonephritis of our series which were the result of chronic diplostreptococcus endocarditis, old focal lesions of the character just described were found in all. Evidently in these cases, for a considerable time, the kidneys were involved to a minor degree only, until a sudden recrudescence lighted up the process and caused more acute *diffuse* lesions and incidentally the death of the individual.

6. Histogenesis of glomerulonephritis: There remain to be discussed a few problems connected with the histogenesis of glomerulonephritis. There are especially two important questions which arise naturally: first, How are the so important lesions produced in the glomeruli? Second, Is there any explanation for the later involvement of the blood vessels?

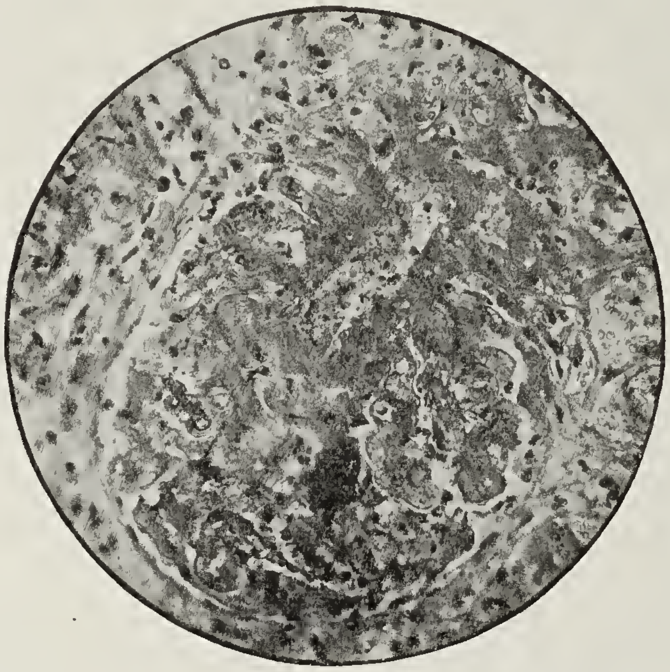

Fig. 8.—Case XVI, 212, hyaline deposit and degeneration extending beyond glomerulus along vas afferens; magnified 210 times.

As stated before, Löhlein had postulated an embolic origin for the lesions observed in focal glomerulonephritis, and his deductions seem to have been confirmed by the actual finding of bacteria in the early stages of the condition both by Baehr[8] and by Fahr.[6] I do not see any reason why this idea could not be extended to all cases of glomerulonephritis or at least to the majority of them. In practically all my cases during the more acute stages, some and often many loops of the affected glomeruli are more or less completely filled with peculiar hyaline masses[10] which have been described by many previous investigators, and the wall of these capillaries undergoes a peculiar form of hyaline necrosis with karyorrhexis of the nuclei of the endothelium and other cells. The origin and meaning of this peculiar form of thrombosis has been the source of much discussion. From a study of the early cases I have become convinced that this thrombosis and subsequent hyaline necrosis of the capillary wall precedes all other changes in the glomeruli, which is in full agreement with the opinion of previous investigators. The only difficulty in the way of assuming an infectious, embolic origin for these lesions is the fact, which I can confirm from my own experience, that in spite of the most careful search one cannot find any bacteria in these masses. The detection of isolated bacteria is, however, made somewhat difficult by the numerous small fragments of chromatin scattered through the hyaline material. Still, in the embolic focal glomerulonephritis we encounter the same difficulty and the assumption is made, and I believe justly, that in the majority of instances it is the rapid destruction of the bacteria which accounts for their absence.

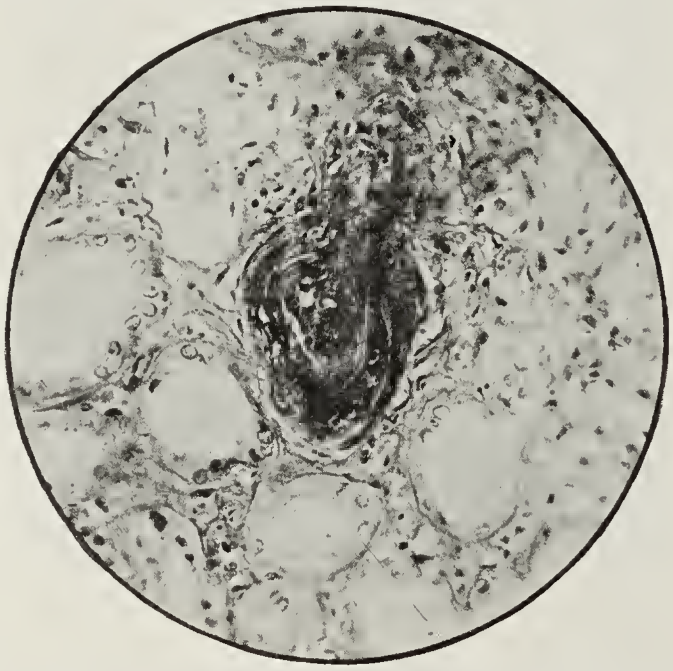

Fig. 9.—Case XVIII, 70, hyaline thrombosis of a small artery with complete obstruction; magnified 210 times.

When one considers in addition that in these cases of chronic septicemia, especially when they are associated with endocarditis, small clusters of bacteria necessarily must be in the circulation all the time, the mere fact that they cannot be found in the glomeruli is, to my mind, a strong argument for the belief that they must be destroyed in them because similar material in other cases is so apt to be found lodged in these structures. This line of reasoning suggests itself especially in those cases in which bacteria can be demonstrated easily in other capillaries of the same kidney but not in the glomeruli. Among my series there are several such cases in which many of the ordinary capillaries are full of diplostreptococci, but in which the diseased glomeruli are free from them.

In view of the actual finding of the bacteria in focal glomerulonephritis in which the reaction is less intense, I believe that we are justified in developing the following hypothesis: In cases of chronic septicemia the endothelium of the glomeruli gradually acquires strong bacteriolytic properties. When in such cases suddenly large numbers of the bacteria are thrown into the glomeruli, an explosive bacteriolysis takes place which liberates large amounts of bacterial toxins. These cause blood destruction resulting in hyaline thrombosis, hyaline necrosis of the wall of the capillaries and the inflammatory reaction about them.[11]

This theory, if true, would solve many difficulties which we otherwise encounter in an attempted explanation of the renal lesions. If we believe that the affection of the kidneys is purely toxic, it is difficult to understand how the poisons could ever become so concentrated in the blood that they would produce these intensely inflammatory conditions in the kidney, and in no other organs, but even more difficult to explain in case of a general intoxication would be the fact that all glomeruli are not affected similarly and simultaneously.

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[10] I wish to state here positively that these masses have nothing whatever to do with amyloid, as I was misled to assume in my previous paper.

[11] An experimental confirmation of this idea is at present being attempted in our laboratory.

The relation of the disease of the small arteries to the rest of the renal lesions has also been the subject of much contention. It is evident from our specimens that the endarteritis cannot be the direct result of the inflammatory changes in the tissues about them, because, in some cases, the arterial lesions are early and extensive, in others the inflammatory changes in the connective tissue may be far advanced and the arteries remain practically normal. The great question here, as in other forms of arteriosclerosis, has always been whether the condition was due to toxic or to mechanical causes.

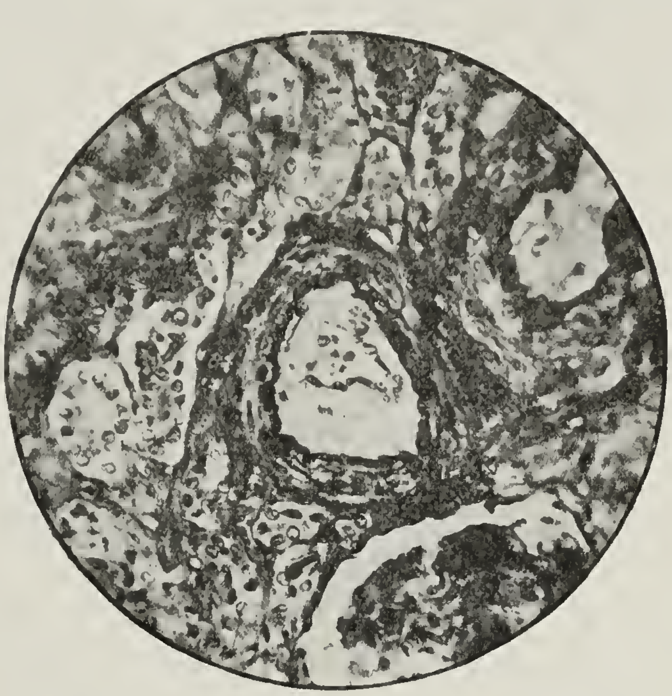
Fig. 10.—Case XVIII, 61, thrombotic masses containing leukocytes and red blood corpuscles underneath endothelium in small artery; magnified 210 times.

The careful study of some of my cases suggests what I believe to be a new and better solution of this question, so far as the arterioles are concerned. It brings the lesions in them into close connection with those in the glomeruli. The occurrence of peculiar hyaline masses in the wall of the diseased arterioles in chronic nephritis has been emphasized by several previous investigators. These hyaline masses were especially well marked in one of my cases (XVI, 212) of early chronic glomerulonephritis, and in this instance the relation of the arterial lesion to that in the glomeruli was especially evident. Many of the glomeruli were the seat of a very extensive hyaline necrosis which involved the vasa afferentia at their point of junction with the tuft, but differently from what one sees in the loops of the tufts—the hyaline material in the small arteries did not occlude the lumen entirely, but left a small open space in the center as shown in Figure 8, and could be followed back in the wall of the artery for quite a distance.

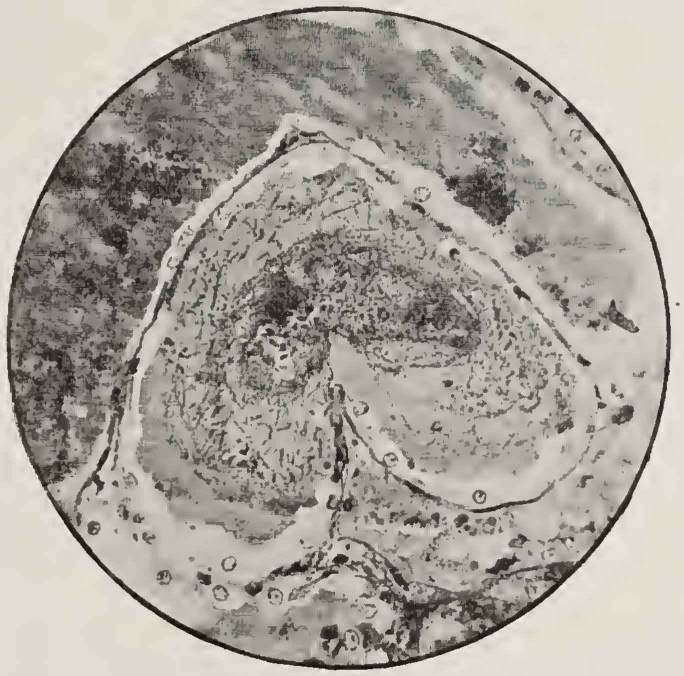
Fig. 11.—Case XVIII, 70, fibrin both thready and hyaline in tubule; magnified 210 times.

Sometimes the lumen of the arterioles is entirely closed by this process, as shown in Figure 9; most commonly, however, a small central lumen remains open. This lumen is either merely spared out of the heavy masses of hyaline fibrin deposited on the wall, or in many cases a more or less perfect layer of endothelial cells can be demonstrated on the inner surface of the fibrin. In some way the coagulable material must get in behind the endothelium. That this material is really derived from the contents of the blood vessels is shown by the fact that blood corpuscles, white and red, are carried behind the endothelium, as shown in Figure 10, in which several groups of red blood corpuscles are seen between the endothelium and the inner elastic layer. The same idea is borne out by the fact that the material which transudes into the tubules from the glomeruli partly coagulates in the form of ordinary fibrin, partly in the form of similar hyaline masses as shown in Figure 11.

This hyaline material in the arteries is gradually organized (Fig. 12) and eventually it is entirely replaced by fibrous tissue in which gradually elastic fibers develop as is clearly shown in Figure 13. The process, then, in the arterioles in this and in several other cases of my series, is evidently the result of the organization of a hyaline material furnished by a peculiar form of lateral thrombosis, and I imagine that such must be the case in other instances.

So far I have not been able to collect any data in explanation of the gradual extension of the disease from the arterioles to the larger arteries. That similar thrombotic processes in small and even large arteries are not uncommon in cases of chronic glomerulonephritis is evident in several of my cases.

In some of them, scattered small anemic necroses in the kidneys are shown; in others, anemic necroses and later scars in the heart muscle. These lesions in the heart muscle may give rise to clinical symptoms of myocarditis.

In one case (XVIII, 61) in addition to these myocardial changes there was clinical evidence of similar disturbances in the arteries of the brain (hemiplegia) and in the arteries of one leg (dry gangrene of the foot). Unfortunately we were not permitted to determine the exact condition at the necropsy.

PRIMARY ARTERIOSCLEROTIC CONTRACTED KIDNEY

I may be very brief on this point, as my subsequent experience entirely confirms the result of my previous observations. In these cases the general arteriosclerosis is the principal feature. The renal disease is more or less incidental and varies in intensity, anatomically, almost independently of the clinical conditions, although naturally an extreme involvement of the kidneys will aggravate the clinical symptoms.

The clinical signs are those of hypertension and of secondary circulatory disturbances. The urinary findings are comparatively slight and transient and the patients have no "kidney" history. There is little or no anemia. The development is insidious and the disturbances usually set in with cardiac distress and edema. None of my cases showed any definite uremic symptoms, although, of course, if the destruction of the kidneys is unusually extensive uremia might supervene. The etiology is entirely obscure.

These are the cases which show very high blood pressure and extreme cardiac hypertrophy; nevertheless, it must be emphasized again that there is by no means any direct correlation between the extent of the lesions in the arteries anatomically, the severity of the clinical symptoms and the amount of circulatory disturbance developing eventually.

Very interesting to me were two cases in women, in whom long-continued hypertension of 200 and more had been observed for years and still there was no cardiac hypertrophy detectable at necropsy.

COMBINATION FORM (VOLHARD AND FAHR)

I have reserved to the last a short discussion of the important problem whether, from an anatomic standpoint, there is any justification for the establishment of an additional group of cases of nephritis which would correspond to the combination form of Volhard and Fahr. It is the conception of these authors that there is a definite group of cases which develop primarily insidiously on an arteriosclerotic basis, but which eventually develop signs, both anatomically and clinically, of true nephritis. These cases, however, as Volhard emphasizes, from the beginning show a more rapid progress and a more malignant development than the ordinary cases of arterial hypertension. This fact alone would suggest that, from the very beginning, they cannot be entirely identical with them; in other words, that they do not commence as cases of uncomplicated arteriosclerosis.

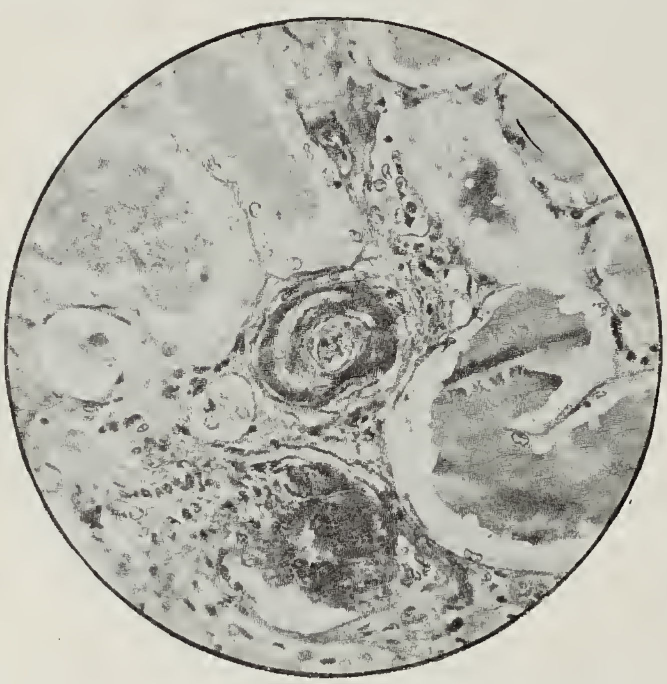
Fig. 12.—Case XVIII, 70, lateral hyaline thrombotic deposit in small artery in process of organization; magnified 210 times.

The difficulty, of course, resides in the fact that in these more chronic cases which come to necropsy, when the destruction of the renal tissue is practically complete and all acute lesions have subsided, it is very difficult to decide in which way the process actually developed, whether on an arteriosclerotic basis or as an unusually chronic form of glomerulonephritis with extensive arterial involvement.[12]

In fact, it has been claimed again and again by eminent authority, that such a distinction eventually becomes impossible as it would be impossible, for instance, in a burnt-out building to find out how the fire originated. Among my series naturally there were several such puzzling cases and it was not until after repeated effort and considerable hesitation that they were eventually placed in one or the other category. I may say here that the segregation was made always on anatomic grounds without regard to the clinical history.

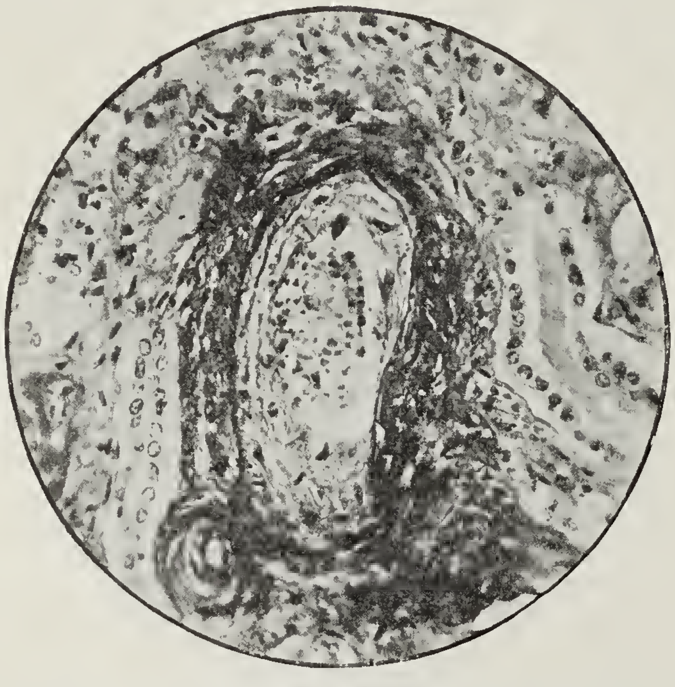
Fig. 13. — Case XVIII, 70, thrombotic deposits in small artery, completely organized. Beginning formation of elastic fibers; magnified 210 times.

In some of these cases I was at first misled by the belief that the structure of the fibrous remnants of the glomeruli afforded some clue as to the nature of their mode of destruction, in this way, that in arteriosclerosis the glomerulus itself merely collapsed and became necrotic, which process was followed by a more or less crescentic fibrous thickening of the capsule; whereas in glomerulonephritis, on account of the more diffuse connective tissue proliferation, a much less definitely defined, diffusely fibrous nodule resulted, in which there often might be seen remnants of the original hyaline material. This is certainly true in the majority of cases, but I eventually recognized that this is by no means a reliable guide. My mind was first disabused of the correctness of this assumption by a study of a case (XV, 120) in which in spite of the fact that in a child of 6 a general arteriosclerosis was very unlikely and was actually absent, the glomeruli in the old lesions showed the "arteriosclerotic" picture. It became clear to me that when the glomerulonephritis is largely capsular, eventually a picture is produced exactly like that in arteriosclerosis. Having once clearly recognized this fact it became much easier to place the cases, and subsequent study only helped to confirm my growing belief that all cases in which one could detect definite inflammatory lesions in the glomeruli, even in a few of them only, belonged from the beginning in the group of glomerulonephritis.[13]

In these cases the finding of granular leukocytes, especially eosinophils in the interstitial tissue, the presence of neutrophilic leukocytes in the tubules, the occasional hemorrhages, the nature of the changes in the arterioles, the sometimes apparent etiology, all pointed in the same direction, and also the fact that once included in the series of chronic glomerulonephritis, it became impossible to sift them out again by repeated reviews of this series.

The fact that in this way all cases showing severe renal symptoms eventually became included in this class and none which had a cardiovascular history may also be looked on as corroborative of the correctness of the classification.

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[12] How little one can depend in making this distinction on the points of difference laid down by Jores between true arteriosclerosis and endarteritis is shown in very many of my specimens. In one and the same section some of the arteries may show the picture of "endarteritis" and others of true "arteriosclerosis" according to Jores' definition, and it is very evident, from a careful study of such specimens, that the age of the lesion has much more to do with the histologic appearances than the nature of it. The older the lesions the more the picture of Jores' true arteriosclerosis is approximated.

[13] A careful review of the specimens on which I based my first paper has convinced me that in the group of arteriosclerotic nephritis in this publication there are a few cases which I now would classify as chronic glomerulonephritis. The same is true of several of the cases reported in Gaskell's paper.

Whether it will appear advisable, on the basis of more elaborate clinical observation, to subdivide the cases in this group of chronic diffuse glomerulonephritis into two subdivisions, a more acute and a more chronic one, is, of course, another question beyond the reach of my experience. I can only emphasize that from an etiologic and anatomic point of view such a subdivision, at present, appears uncalled for.

In conclusion I wish to emphasize that I do not look on acute, subacute and chronic glomerulonephritis as different stages in development but as different forms of the same disease.

The following is a brief summary of my findings:

1. Nephritis from an anatomic point of view may be best subdivided into: *a*, acute, subacute and chronic *parenchymatous nephritis* which is very frequently associated with amyloid; *b*, acute, subacute and chronic *glomerulonephritis* to which class belong most of the cases with continued definite urinary findings, renal hypertension, uremia and other definite symptoms of renal disease.

2. Hypertonic cardiovascular disease may involve the kidneys more or less extensively, often causes certain functional disturbances in the kidneys, may cause contracted kidney, but should be segregated entirely from true nephritis.

3. The cause of true nephritis is continued bacterial septicemia, and the lesions in the kidneys are probably due to rapid bacteriolysis and incidental liberation of large doses of toxic material in and about the affected glomeruli.

4. The lesions in the arterioles, in at least some of the more chronic cases, are due to the organization of a hyaline (thrombotic?) deposit on the inner surface of the arteries which at times is found underneath the endothelium.

ABSTRACT OF DISCUSSION

Dr. Joseph Von Werthern, San Francisco: I would like to ask Dr. Ophüls if there is any danger in the use of vaccines of having a disastrous effect on the kidney from the introduction of a large amount of such preparations at various times?

Dr. Lawrence Selling, Portland, Ore.: May I ask Dr. Ophüls' opinion on the combination form of Volhard and Fahr?

Dr. William Ophüls, San Francisco: So far as the vaccine is concerned, I really could not answer that question. I have no data on which to base any answer. So far as the combination form of Volhard and Fahr is concerned, it is discussed in my paper, which I abstracted, and I may say that I believe that the cases which they classify as the "combination form" are true cases of nephritis of a particularly slow and insidious type, and that on this account the clinical picture resembles more that of the cardiovascular cases. In these very chronic cases, if you have a good clinical history, you will often find evidence of a preceding infection, sometimes as long as twenty or twenty-five years. Frequently clinical evidence of such infection has recurred at intervals, and when you study the cases histologically, carefully, you find very convincing proof of *old* inflammatory lesions in the kidneys. I may say that I hesitated quite a little in some cases, whether I should classify them under the arteriosclerotic group, or within the inflammatory group. But after I had once made up my mind to put these cases into the inflammatory group, I could not get them out any more. I mean to say that I have gone over the chronic cases of the inflammatory group at least half a dozen times, trying to find cases that could be separated from the rest of them, but it was absolutely impossible. I was perfectly willing to follow Volhard and establish a combination form, but in my series it did not seem to work out that way.

RAYNAUD'S DISEASE

REPORT OF A CASE OF SYMMETRICAL GANGRENE OF UNUSUAL SEVERITY

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CHICAGO

Whether the condition known as Raynaud's disease is to be considered of rather frequent occurrence or whether it is to be regarded as an extremely rare affection must necessarily depend on one's conception of this disorder. That many cases have been reported in which the diagnosis rests on an unstable foundation, there is no doubt.

Raynaud,[1] in his famous essay, makes three classifications of the disease which bears his name. He states there may be merely local syncope which usually has a brief existence though it is likely to be recurrent; (2) there may be local asphyxia which is not necessarily preceded by local syncope or (3) there may be symmetrical gangrene. Any one of these conditions of the extremities may occur without being followed or preceded by one of the others.

In local syncope the fingers or toes—more frequently the former—become blanched, presenting a white, waxy, swollen appearance. There is a sensation of burning or tingling in the parts affected and pain even may be extremely severe. This type is practically identical with the condition sometimes found in chilblains and is not infrequently described as "dead fingers."

The second stage, or local asphyxia, appears to be a severer degree of the same pathologic condition, but, as the name implies, the parts assume a cyanotic aspect. As a rule the skin first becomes a reddish purple and then it may return to normal or continue to darken until a blue-black color is attained. As in the first stages, pain may be troublesome and hot applications may afford relief.

The third stage, symmetrical gangrene, is the one with which this paper is chiefly concerned. And in order to put a check on the reporting of miscellaneous conditions as Raynaud's disease, it might be advisable to limit that title to this particular type. In this connection I quote Riggs[2] who says that "the occurrence of local syncope and local asphyxia, either separate or associated, constitutes what is known as 'Raynaud's phenomena,' but the additional element of gangrene is necessary to justify a diagnosis of Raynaud's disease." Now if we are to accept Riggs' definition, and also Raynaud's original view that symmetry of the lesions and absence of demonstrable changes in the blood vessels are two essential features, then in fulfilling those requirements for a diagnosis, it will be found that extremely few cases of Raynaud's disease have been reported in this country. In England, France, Russia and Germany, however, symmetrical gangrene of the extremities seems to be much more frequently encountered.

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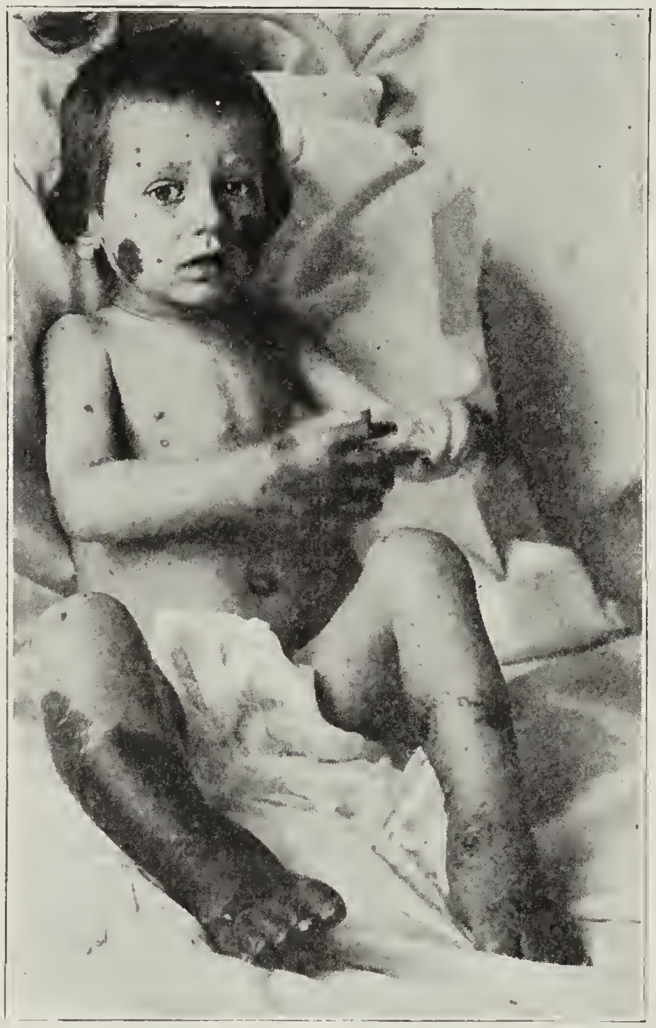
1. Raynaud: De l'asphyxia locale et de gangrène symétrique des extrémités, Thesé de Paris, 1862.
2. Riggs, C. E.: Reference Handbook of Medical Sciences, New Ed., New York, William Wood & Co., 1900, vi, 844.

In a review of the literature here, we find a variety of conditions reported as Raynaud's disease. Some authors[3] cite as cases conditions which appear to be due solely to certain occupations, while others[4] describe asymmetrical Raynaud's disease in which trophic ulcers, diabetes and other pathologic changes are clearly set forth. Numerous instances can be given in which the diagnosis is at least clouded in doubt. Not only is gangrene usually lacking but in many "cases" there is even failure to establish the existence of Raynaud's phenomena.

In looking over the clinical records of the Cook County Hospital, an institution which treats about 30,000 patients annually, as far back as the records are available (1911), I found but three cases with a diagnosis of Raynaud's disease. This is of interest in that: (1) it indicates how rare the condition really must be and (2) it illustrates how a diagnosis of Raynaud's disease may be made though the clinical evidence does not seem to entirely warrant it. All three of the cases just referred to were in adult males. One patient was in the hospital for eight days; ankles and knees were both swollen, while his chief complaint seems to have been pain in the rectum. Weiss has described the latter symptom in a case. In Case 2 the patient had rheumatic pains in ankles and shoulders. He was in the hospital twenty days and the history states that he had "rheumatism six times before." The third patient applied for admission to the hospital at 11:40 a. m. and left at 12:30 p. m. the same day. He was in the hospital forty minutes; he refused to allow a physical examination and left. The diagnosis on his clinical record is Raynaud's disease.

Osler[5] says that in a period of twenty years at the Johns Hopkins Hospital there were but nineteen cases among about 20,000 patients admitted. Of thirty-two cases reported as Raynaud's disease in the United States, previous to 1900, twelve, or about 37 per cent., had symmetrical gangrene, and of the twelve, there appears to have been only one[6] in which all four extremities were involved simultaneously. Hyde[7] reported three cases of "hand and foot disease" in which all four extremities were involved, but there was no true gangrene, the chief characteristic, apparently, having been an onychauxis.



Symmetrical gangrene, fourth day. Remains of old varicella lesions are also shown.

Of ninety-seven cases in the literature, gangrene occurred in forty-nine, but in only thirty-three of these cases was it symmetrical and in many of these latter instances it was extremely superficial. In twenty-one of the thirty-three symmetrical cases, the lower extremities were involved, in nine the upper, in two,[6, 8] both upper and lower and in one,[9] one upper and both lower extremities showed gangrenous changes while the tip of the nose and a portion of one ear was discolored.

ETIOLOGY

Very little is known concerning the etiology. Cases are more frequent in the cold months following exposure. Nevertheless, changes of temperature within doors, which are almost imperceptible, may be sufficient to bring on an attack.

Monro states that heredity is a factor in 8 per cent. of the cases. Nationality also appears to play a part. Of the reports reviewed by me, among which seventeen patients were reported as of foreign birth, more than 50 per cent. were Russians, and in my own case the child was of Polish parentage. Apparently the most severe cases are among foreigners. The disease may occur at any age[10] from infancy up. Of eighty-nine cases in which the age was given, approximately 11 per cent. were under 20 years, 17 per cent. over 50 years and 72 per cent. between the ages of 20 years and 50 years. It is quite generally stated that females are much more frequent sufferers than males. In a review of ninety-five cases, however, I found conditions diametrically opposite, the males being in the majority with 56 per cent., while the cases in females totaled but 44 per cent. It is not necessarily the weak and debilitated who are the victims of this disease.

Some of the predisposing factors are thought to be fright, epilepsy and various neurotic conditions. Anemia, syphilis, tuberculosis and malaria are also frequently mentioned and the invasion of pathogenic bacteria, as in the common infectious diseases of childhood, resulting in a lowered vital resistance, deserves careful consideration. The condition has been preceded by injury and hemorrhages, though under such circumstances there is likely to be some doubt in the diagnosis.

SYMPTOMS

Symptoms have previously been touched on. Pain and an absence of fever at the onset are characteristic.

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[3] Cargile, C. H.: Raynaud's Disease in Stone-Cutters Using Pneumatic Tools, The Journal A. M. A., Feb. 13, 1915, p. 582.

[4] Montgomery, D. W.: Asymmetrical Raynaud's Disease, Jour. Cutan. Dis., 1915, xxxiii, 119.

[5] Osler: Principles and Practice of Medicine, Ed. 8, New York, D. Appleton & Co., 1912, p. 1120.

[6] MacFarland: (Tr. Coll. Phys., Philadelphia, 1898, xx, 160) reports a case of moist gangrene.

[7] Hyde, J. N.: Three Cases of Symmetrical Hand and Foot Disease, Med. News, Philadelphia, 1887, L, 416.

[8] Morgan, J. D.: Symmetrical Gangrene (Raynaud's) Versus Endarteritis Obliterans, The Journal A. M. A., Nov. 29, 1902, p. 1359.

[9] Willson, R. N.: Fatal Vasomotor Gangrene Probably due to Raynaud's Disease, Tr. Coll. Phys., Philadelphia, 1911, xxxiii, 209.

[10] Sachs, B.: Nervous Diseases of Children, New York, William Wood & Co., 1905, Ed. 2, p. 203; Green's Encyclopedia of Medicine and Surgery, William Green and Sons, Edinburgh and London, 1910, vii, 468.

Tips of fingers and toes are most commonly affected; more rarely ears and tip of nose. Contrary to the assertions of most authors, it appears that in the majority of cases reported, the lower extremities were involved. Hyperesthesia to touch is common, and in the first stage or local syncope there is no pitting on pressure.

Loss of sensation in the part affected usually follows when gangrene occurs. While gangrene in Raynaud's disease is presumed to be of the dry variety, some authors state that it may be moist and such was the condition in Macfarland's[6] case. It is not infrequently stated in connection with the symmetrical gangrene of Raynaud's disease that, when tissue death occurs, blebs filled with serum appear on the surface. There was nothing of that character in my case though most reports confirm the assertion. A line of demarcation is usually well developed within a week and the part involved assumes a black, dried, leather-like appearance.

PATHOLOGY

The anatomic cause for true Raynaud's disease is still to be discovered. In 1832, M. Victor Francois[11] of Mons expressed our present knowledge of this condition very aptly when he said "Everything concerning spontaneous gangrene is in a state of distressing uncertainty."

Raynaud believed the condition was caused by a spasm of the arterioles due to some derangement of the central nervous system; that the symmetrical gangrene was due to some error in the innervation of the capillary vessels. Weiss, however, thinks it is not so much the arteries which are contracted as corresponding veins. He also regards the gangrene as trophic, that the vascular spasm is not the cause. Pitres and Vallard[12] found structural nerve changes in cases of symmetrical gangrene. Lustgarten[13] appears to believe that a syphilitic origin is always to be suspected. No pathologic changes, however, should be found in the intima of the vessels in Raynaud's disease. And yet, in spite of this fact, the opinion has been advanced that the condition is due to a proliferation of the endothelial cells. Morgan[8] states there should be no proliferation. It has been suggested by Koga of Japan that an increased viscosity of the blood is responsible for symmetrical gangrene, but such a view is hardly tenable. The theory has also been advanced that the disease is due to some sudden bacterial invasion.

That the central nervous system is partially at fault there can be no doubt. In my case, regardless of what the complete mechanism was, it would seem as though the numerous acute infectious diseases produced a toxemia which impaired the central nervous system either primarily or else secondarily through nutritional changes in the blood.

Granting then that the central nervous system is at fault, it would seem that the origin of many if not all such cases may lie in a depleted blood supply. In other words, the nervous system lacks the proper nourishment necessary to maintain its equilibrium and thus control over the vasomotor system is lost. All reports of symmetrical gangrene seen by me which gave the blood findings showed a marked anemia.

DIFFERENTIAL DIAGNOSIS

If any assignable cause can be given for the affection, it is likely that it is not a case of Raynaud's disease. The following diseases and conditions should be carefully considered and excluded before a diagnosis of Raynaud's disease in any of its forms is made: (1) frost bite, (2) rheumatism, (3) occupational disorders,[3] (4) cardiac defects, (5) embolism, thrombosis, phlebitis, (6) arteriosclerosis, (7) trophic disturbances due to disease of the central nervous system, (8) albuminuria, (9) chronic ergotism or plumbism, (10) diabetes, (11) senile gangrene, (12) traumatism, (13) Morvan's disease, (14) syphilitic endarteritis, (15) sclerodactylia,[14] (16) bilateral ainhum, (17) leprosy, (18) infections including typhoid, malaria, etc., (19) endarteritis obliterans, (20) erythromelalgia, (21) peripheral neuritis, (22) purpura, (23) angioneurotic edema.

Without discussing each of the foregoing, I believe the history in my case will demonstrate that they are all easily excluded. Endarteritis obliterans or thromboangiitis as Buerger[15] terms it, might be considered but this condition is progressive and would hardly develop with such rapidity. Collins[16] has written a valuable paper on the classification of circulatory and trophic disturbances.

PROGNOSIS

The disease usually exists for a number of years and acute fatal cases are extremely rare. Even in cases with severe symmetrical gangrene, the outcome is as a rule favorable despite the fact that one or more limbs may be eventually lost. Nevertheless, Fischer[17] states that while records of cures exist, the diagnosis may always be questioned.

TREATMENT

Practically everything has been tried in the way of treatment, including nerve stretching,[18] the Roentgen rays, galvanism and Bier's[19] hyperemia; atropin, nitroglycerin, thyroid extract, salvarsan, injection of normal salt and Ringer's solution. All have had their advocates. Peyton[20] believes that drugs are of no value.

Symptomatic treatment is all that can be advised. The parts should be kept warm and dry and when gangrene develops the case must be considered from a surgical point of view. The illustration, from a photograph taken June 17, the fourth day of the affection, is of particular interest in showing the distribution of the parts involved.

REPORT OF CASE

S. U., a fairly nourished, light complexioned boy 5 years of age, was admitted to my service at the Cook County Contagious Disease Hospital, May 4, 1915, suffering from scarlet fever of three days' duration. He had been an inmate of an orphanage. No other history was obtainable at that time.

Subsequently the following history was secured. Father and mother, of Polish nationality, were both living and well. Two other children, aged 8 and 6 years, were living and well. The first child died of some "head sickness" in the second year of its life. The mother had never had any miscarriages and was six months pregnant.

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[11] Francois, M. Victor: Mentioned in Barlow's Translation of Raynaud's Article for the New Sydenham Society, London, 1888.

[12] Pitres and Vallard: Arch. de physiol., 1885.

[13] Lustgarten, A.: Jour. Cutan. Dis., 1906, xxiv, 272.

[14] Mix, C. L.: Chicago Med. Recorder, 1901, xx, 356.

[15] Buerger, L.: (Am. Jour. Med. Sc., 1915, cxlix, 210) writes concerning vasomotor and trophic disturbances of the upper extremities with particular reference to thrombo-angiitis obliterans.

[16] Collins, H. N.: Ann. Surg., 1914, lx, 742.

[17] Fischer, L.: Diseases of Infancy and Childhood, Ed. 3, F. A. Davis Co., Philadelphia, 1910, p. 883.

[18] Hendon, G. A.: Kentucky Med. Jour., 1908-1909, vii, 221.

[19] Cushing, H. W.: Boston Med. and Surg. Jour., 1904, cli, 269.

[20] Peyton, D. G.: Am. Med., 1904, vii, 518.

The patient had never been ill before; neither coldness nor blueness of the extremities nor hemorrhages of any character had been either complained of or observed. When minor injuries occurred, the blood always clotted readily.

Physical Examination.—The patient presented a typical rash of scarlet fever and did not appear to be extremely ill.

The tonsils were large and inflamed but there was no membrane. Throat and nasal cultures were negative for diphtheria. There was a moderate cervical adenopathy but all other findings were negative.

When admitted to hospital, patient's temperature was 103 F., pulse 126, respiration 32.

The temperature showed a gradual decline until on the fifth day after entrance it began to rise. This elevation of temperature continued for four days when the eruption of measles appeared on the eighth day after admission to hospital. The patient, then, was in the hospital but four days before the onset of measles and consequently contracted this disease outside.

On the fifteenth day after entrance, it was noted on the clinical record that the extremities were cold. On the seventeenth day after entrance, about twelve days following the measles onset or twenty-one days after the onset of scarlet fever, a double otitis media was evidenced by discharge from the ears. The temperature had been normal since the eighth day following the measles onset and there was no elevation of temperature accompanying the involvement of the ears. The child's condition was such that he was allowed to be up and about the ward on the twentieth day after entrance.

Six days later, or twenty-six days after admission, some swelling in the region of the right parotid gland was observed and it was believed the patient had contracted mumps. There were no cases of mumps in the hospital at this time but there had been one case in the same ward several weeks previously. There was no fever at this period nor was the region of the left parotid swollen at any time.

From May 30 till June 6, the temperature continued normal, but on the latter date, an eruption of varicella appeared. The lesions were profuse and the temperature rose to 104. The child had a good vaccination scar. On June 6, the patient coughed a good deal and on the following day a whoop was noticed. In the meantime the varicella lesions continued to appear in fresh crops daily until June 11. During this period the temperature remained high for the greater part of the time but on June 11 it had again reached normal. At this time the patient was somewhat anemic but otherwise his condition was fair. The whooping cough was not of a severe type, the paroxysms being comparatively few in number.

About 8 a. m., June 14, the forty-sixth day after the onset of scarlet fever, the thirtieth day after the onset of measles, the ninth day after the onset of varicella and the seventh day after the beginning of whooping cough, large patches of a bluish black hue appeared on the dorsum of the feet near the base of the toes. Smaller patches on the back of the right wrist were also evident and a small area of discoloration on right cheek. These areas were at first thought to be purpuric in character. The following examinations on this morning with their results follow: heart absolutely negative. Blood count showed 54,000 white cells (due to pertussis), with a differential count of 82 per cent. small lymphocytes, 6 per cent. large lymphocytes and 12 per cent. polymorphonuclear neutrophils. The coagulation time of the blood was about seven minutes. The urine showed a slight amount of albumin with hyaline and granular casts. There was no sugar, no hemoglobinuria. Blood was not present in either the urine or feces.

By evening of June 14, the areas had enlarged. The entire right lower extremity was involved from about one half the distance from the knee down, slightly more posteriorly than anteriorly, the greater part of the calf being affected. The left lower extremity was less affected, the big toe and second toe not being included in the process which did not extend up beyond the ankle except for a separate patch situated posteriorly about the middle third of the calf. During this first day an area, identical in appearance with the others, had developed on the left cheek. This was about the size of a quarter while the patch on the opposite cheek was as large as a silver dollar. All areas described were rather sharply defined and extremely painful. Proximally for some distance above the cyanotic areas on all four extremities the skin had a swollen, tense, waxy appearance. It looked edematous but was rather hard, did not pit on pressure and was very painful. All the affected parts were icy cold from the first. The temperature on this day did not go above 99, pulse 106, respiration 24.

Second day, June 15: Both ears were now discolored over the upper half and became black and cold. The lower extremities began to look gangrenous but there was no extension of the process. In the upper extremities, the left two ulnar and the right three ulnar fingers were black and cold. No blebs containing bloody serum as frequently noted in these cases were observed on any of the areas involved.

At the beginning of the process it was thought to be of a purpuric nature and horse serum was given intramuscularly in 10 c.c. doses every six hours until the end of the second day. On the second day the temperature rose to 101.8 in the evening. The urine showed a faint trace of albumin and there were some hyaline casts.

Third day, June 16: The only change in the lesions was a deepening of the black color, the parts affected remaining ice cold. An examination of the chest disclosed a bronchopneumonia; temperature 103, urine negative. Patient looked very anemic and a blood count showed red cells, 1,840,000; hemoglobin, 35 per cent. (Sahli); white cells, 41,550. Differential: small lymphocytes, 49 per cent.; large lymphocytes, 10 per cent.; polymorphonuclear neutrophils, 37 per cent.; eosinophils, 2 per cent. and transitionals, 2 per cent. On this day the left thumb and thenar eminence appeared very pale and waxlike. Lines of demarcation were being established. The areas on the cheeks appeared improved but the right forefinger had become cyanotic as far as the first phalangeal joint. The patient's general condition appeared greatly improved on this day in spite of his bronchopneumonia. The temperature was 102.2 F., pulse 148, respiration 48. The pain was greatly decreased. He had a good appetite and was much interested in everything about him.

June 18, the fifth day, the boy managed to get the dressings loose and chewed off the tip of the third right digit. There was no bleeding, the finger end resembling a piece of old leather. The gangrenous areas had an offensive odor at the lines of demarcation. The urine continued negative. The pulmonary condition was less favorable. Temperature rose to 103, pulse 144, respiration 58.

June 19, the sixth day, suppuration at the lines of demarcation was evident but all of the original areas were in a state of dry gangrene. The patient had involuntaries. Temperature 102 to 104 F.

June 20, the seventh day, the patient was irrational. The gangrenous portions showed no extension and were assuming the dried leather boot appearance. The skin of the affected parts was an ebony black. All parts were dressed with magnesium carbonate and powdered boric and the open-air treatment adopted.

June 21, the eighth day, the gangrenous portions were drying and beginning to separate. There was little change in the general condition.

June 22, the ninth day, the gangrenous portion of the right ear fell off, leaving a clean border. Temperature fell to 98.6, pulse 148, respiration 36.

June 23, the tenth day, the gangrenous portion of the left ear dropped off leaving a clean margin as in the case of the other ear. The uninvolved parts of the left hand looked very pale, swollen and waxlike. The boy was restless and irrational. Temperature 99 to 101.

June 24, the eleventh day, all the gangrenous areas were becoming loose from their adjoining tissue. On the extremities at the lines of demarcation the slough appeared to extend only to the deep fascia.

June 25, the twelfth day, the bronchopneumonia seemed slightly improved. Temperature 99.2. Dr. Joseph M. Patton kindly made an examination of the patient's heart on this day and reported the findings negative.

June 26, the thirteenth day, the gangrenous patch on the right cheek dropped out without much tissue destruction. Blood for a Wassermann was taken which was later reported negative.

June 27, the fourteenth day, the gangrenous patch on the left cheek extended to a slightly greater depth than on the opposite side and the resulting scar was consequently more extensive. The general condition of the patient was considered fair under the circumstances, though the pulse and respiration were rapid and bronchopneumonia was still present. The child, however, seemed to be losing in strength. He was toxic, had involuntaries, but apparently suffered little pain. The involved regions were dry except at the demarcation borders, and were shriveling up and separating. On the evening of this day, the child died as a direct result of the pneumonia, but a general toxemia was of course a strong contributing factor.

Had it not been for the pneumonia, it is possible the patient would have eventually recovered. Nevertheless amputation of both lower extremities, one at the upper third and one at the middle third of the leg, would have been inevitable. It would also have been necessary to adopt a similar procedure with respect to the greater part if not all of both hands.

The blood examination on the last day was as follows: Red cells, 1,650,000; hemoglobin, 27 per cent. (Sahli); white cells, 36,000. Differential, 200 counted, small lymphocytes, 41 per cent; large lymphocytes, 4 per cent.; polymorphonuclear neutrophils, 51 per cent.; eosinophils, 1 per cent.; transitionals, 3 per cent.

NECROPSY

In 1901, Greiwe[21] stated that the number of cases of Raynaud's disease examined postmortem could be summed up on the fingers of one hand. Consequently it is to be regretted that space does not permit the presentation of the complete necropsy findings.

Among the chief points demonstrated by Dr. H. Gideon Wells, who performed the necropsy, are the following:

On cut section, the gangrenous areas over the legs were found to be markedly edematous and to involve all the soft tissues down to the bone, which also showed erosion. The thymus was smaller than normal. The thyroid seemed somewhat enlarged and succulent; no gross changes were noted.

The heart was normal in size. No changes were seen in the aorta. The valves were normal.

The lower lobes and lower half of the upper lobes of the lungs were consolidated.

The kidneys were very pale, somewhat firmer than normal. Cross-section showed them markedly pale but otherwise normal. The adrenals were enlarged.

The large vessels of the lower extremities showed no evidence of thrombosis or embolism. The right femoral vein showed a large antemortem clot.

ANATOMIC DIAGNOSIS

1. Acute symmetrical dry gangrene of both lower extremities, both upper extremities and cheeks, with beginning sequestration.
2. Thrombosis of right femoral vein. Dr. Wells believed this to be of recent formation and secondary to the gangrenous process.
3. Bilateral confluent pneumonia of both lower lobes. Discrete bronchopneumonia of both upper lobes.
4. Acute hyperplasia of peribronchial lymph glands.
5. Perilobular infiltration of liver.
6. Fatty degeneration of the kidneys.
7. General lymphadenoid hyperplasia including glands, spleen and Peyer's patches, the latter of which were pigmented.

Later Dr. Wells reported that the histologic examination gave no definite findings which could throw light on the etiology of the gangrene.

Dr. George Mather, of the Memorial Institute for Infectious Diseases, conducted a bacteriologic examination. He made cultures from the thrombus of the right femoral vein and isolated a green streptococcus and a hemolytic streptococcus. Injected into rabbits, these caused a malignant endocarditis.

25 East Washington Street.

AN UNUSUAL CASE OF SALVARSAN POISONING

Karl C. Eberly, M.D., Fort Wayne, Ind.

Mr. B., aged 36, consulted a physician for lightning pains in the calves of his legs, occurring chiefly at night. Family history was negative. His past history gave no definite evidence of syphilis, although, twelve years ago, he had gonorrhea and thought possibly that he had contracted syphilis at the same time. The Wassermann on the blood was strongly positive. Physical examination was negative. Neural examination showed no other signs than absent knee-jerks. No examination of the spinal fluid was made.

An early tabes was diagnosed and neosalvarsan was chosen for treatment. Through an error 0.6 gm. of salvarsan was mixed in 10 c.c. of freshly distilled water, only a part of it dissolving. This unneutralized solution of salvarsan was injected into the cephalic vein of the right arm. Almost instantly the patient complained of a choking sensation and constriction of the pharyngeal muscles. He became extremely pale, pulse was small, weak and rapid. Respiration was dyspneic. At once the needle was removed, about 5 c.c. having been injected. Within an hour he was markedly prostrated, coughed and vomited and complained of general weakness and pain in the region of the left kidney. Nitroglycerin $\frac{1}{100}$ grain was administered orally every twenty minutes until the pulse improved. Then it was repeated every two hours.

For the next twenty-four hours his general condition remained the same. He voided no urine. A catheterized specimen of 3 ounces showed a trace of albumin but no casts. On the second day the pain in the region of the left kidney and suppression of urine continued. The patient complained of weakness, chilling and a general myalgia. A phlebitis started in his cephalic vein, extending from the point of injection to the shoulder. The arm was swollen, reddened and painful. The vein appeared to be completely obliterated. His temperature and pulse were 100.

On the third day I was consulted over the long distance telephone. Fischer's solution, hot packs, saline cathartic, potassium acetate and digitalis were suggested to increase the elimination and local applications for the phlebitis. Fischers' solution, 6 to 8 ounces, was given every four hours by rectum and 1 dram of sodium bicarbonate every two hours by mouth. The other drugs were administered in the customary dosage. During the next twenty-four hours he excreted 15 ounces of urine, and the pain in the region of his left kidney was much improved. His prostration diminished but the severity of the phlebitis increased. His arm became much more painful and swollen. His temperature was 101, pulse, 105. On the seventh day I first saw the patient. He was a strong, powerfully built man, well nourished but now appeared thoroughly exhausted. He complained of weakness and pain in the right arm. This arm was twice its normal size and severely inflamed. The cephalic vein was palpated as a rigid tube. Physical examination of the heart and lungs was negative. The pulse was rapid—100—but of good volume and tension. Temperature was 102.4. Since the third day the amount of urine had gradually increased to normal. The urine showed a trace of albumin without casts.

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[21] Greiwe: Philadelphia Med. Jour., 1901, viii, 236.

The leukocytes numbered 12,500. The differential gave 80 per cent. polymorphonuclears. The diet had been liquid.

After six weeks the phlebitis subsided, the urine became free from albumin and apparently he has not suffered any permanent lesion from this mistake.

Whether the marked toxic symptoms were due to the acidity of the solution or the salvarsan would be difficult to say. It is of interest, however, to note that the alkaline therapy relieved the anuria and toxic symptoms almost immediately.

Gauntt Building.

TUMOR OF THE HAND CAUSED BY FOREIGN BODY

F. P. Hammond, M.D., Chicago

R. S. S., an American, aged 30, complained of a tumor mass the size of a hazelnut which had been deeply seated in the thenar eminence of the left hand as long as he could remember. Only occasionally did the mass produce any discomfort yet a constant worry possessed him lest some day it should turn into a cancer. About six weeks ago it began to enlarge toward the surface, became slightly reddened and tender and seemed to grow gradually and slowly worse, which alarmed him sufficiently to cause him to seek treatment.

His family history was negative. His past history was negative, except that about two months ago he remembered giving the "lump" an accidental bump while swimming, a fact he had almost forgotten because it caused him so little pain.

For the last six years the patient had been a university student, previous to which time he worked on his father's farm. He denied venereal history.

A general examination was negative in result; there were no other enlargements. Temperature and pulse were normal.

Local examination revealed the tumor to be hard and elastic, movable, with a cone-shaped projection toward the surface, slightly tender and reddened but with no demonstrable fluctuation and apparently no connection with the bone.

The Wassermann test was negative. The Roentgen ray revealed nothing.

Diagnosis of a chronic attenuated infection probably due to a foreign body was made and under local anesthesia the mass was incised. About 1 cm. from the surface the slightest bit of pus exuded. Deep in the center of the mass a locust thorn 8 millimeters in length was discovered and removed.

On seeing the thorn he exclaimed, "Well, let me see, I was about 11 or 12 years old when I got that sliver." It is needless to say an uneventful recovery followed.

30 North Michigan Boulevard.

Removal of Swallowed Foreign Bodies.—The following may be of interest to some on account of the simplicity of the treatment. I claim no originality for it: Mr. C. B., aged 29, came to my office, October 7, complaining of a pricking sensation in the left hypochondrium, annoying him, but felt only occasionally. Twenty-four hours previously, while eating some pudding, he bit on a hard object, which proved to be a piece of glass. He did not think he swallowed any glass, but in view of the history, I concluded that he had. I gave him about 2 or 3 drams of absorbent cotton, with instructions to pick it into small shreds, put them into a glass of milk and drink the mixture. In addition, I gave him half an ounce of magnesium sulphate crystals, with instructions to dissolve in a half glass of water, and take one hour after the milk and cotton. The motions were passed in a vessel, and on examination, a wedge-shaped piece of glass about three-eighths inch long, very sharp, was found entirely covered with cotton. The pricking sensation disappeared. Tacks, pins and other pointed or rough foreign bodies may be easily removed by this means in many instances.

R. Penn Smith, M.D., Pittsburgh.

Therapeutics

TOXICOLOGY OF EMETIN

Dr. F. B. Sigworth, Albuquerque, N. M., writes:

Will you please give me the toxicology of emetin hydrochlorid used in hemorrhage? I wish to test it for its effect in tuberculosis; also to try it out experimentally on guinea-pigs.

Comparatively little has been added to our knowledge of the systemic actions of emetin in mammals during the past few years, and the descriptions in recent text books of toxicology are much like those given by Lewin in 1888.

The following statement is based largely on the statements of Kunkel[1] and von Jaksch.[2]

Emetin is an active local irritant, causing inflammation, and even ulceration of the tissues with which it comes into contact in sufficient concentration. When powdered ipecac is handled, it may give rise to irritation of the eyes and even ulceration of the cornea, and cause burning in the mouth and throat. The inhalation of the powder causes a sense of oppression in the chest and difficulty in respiration (so-called emetin asthma).

The application of an ointment containing emetin or ipecac to the skin causes irritation, progressing to pustulation with the continued application of strong preparations.

The subcutaneous injection of emetin causes pain, swelling and even ulceration.

Emesis following the oral administration is generally attributed to the local irritant action on the gastric mucous membrane; if emesis fails to occur and emetin passes into the intestine, it gives rise to diarrhea, and this may be bloody, the latter effect being augmented by the extreme dilation of the intestinal vessels. If absorption occurs, systemic effects follow.

The systemic effects observed after the entrance of emetin into the blood stream include general depression with failure of respiration, due to paralysis of the center, and cardiac failure due to the direct action of the emetin on the heart and circulation. There is a profound fall of blood pressure because of the cardiac and vascular effects.

The central nervous system undergoes rapid depression and paralysis even in the frog, which is not immediately killed by removal of the heart. Emetin stops the mammalian heart in diastole.

Alterations in the blood have been described; these are attributed to the accumulation of acid products of metabolism, but they are not responsible for the effects just described.

Kunkel describes the effects of toxic doses of from 50 to 100 mg. per kilogram of body weight in the cat and dog, but the results of experiments performed in the laboratory of the writer (unpublished) show that as little as 2 mg. of emetin per kilogram administered intravenously may cause some depression at times, while doses of from 8 to 12 mg. per kilogram cause general depression with weakened and accelerated heart and lowered blood pressure. There is an apparent improvement after a short time, but usually these doses are fatal within forty-eight hours. The effects of the oral administration of emetin in solution are about like those seen after intravenous injection, but death may occur with general paralysis and cardiac failure within three minutes after the intravenous injection of a large dose (15 mg. per kilogram).

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[1] Kunkel: Handbuch der Toxicologie, 1901, p. 841.

[2] Von Jaksch: Die Vergiftungen, Ed. 2, 1910, p. 493.

It is generally stated that emetin causes emesis only through its action on the gastric mucous membrane, but it also causes emesis after the intravenous injection into a dog from which the gastro-intestinal tract has been removed; hence it is also capable of acting on the vomiting center directly.

One observer reported that vomiting, colic, abdominal cramp and collapse occurred, followed by death within an hour and a half after a patient had taken a large amount of wine of ipecac. Hyperemia of the stomach and duodenum were found at necropsy.

Several authors state that the toxicology of emetin is not very important, and von Jaksch states that the prognosis in case of poisoning by it is good. The diagnosis is made by finding the alkaloid in the vomitus.

Emetin is absorbed from the gastro-intestinal tract when given in solution more readily than when administered in the form of a preparation of ipecac. Tannin, in the form of krameria, is recommended as the antidote in such cases.

The following observation of Kunkel's is interesting in view of the date of his writing it and the use of emetin in hemoptysis at present. He says (1901) that it was formerly believed that emetin induced a specific anemia of the lungs from which circumstance it was used in hemoptysis. He states that the belief probably arose from the observation that the pulmonary vessels of animals that had been killed with emetin were empty, which he explains as being due to the maximal dilation of the vessels of the splanchnic area, with the consequent drainage of the pulmonary vessels.

This observation of Kunkel's is at least worthy of attention at this time, in view of the fact that even small doses of emetin are capable of causing depression.

THE SO-CALLED CONCENTRATED SOLUTION OF SILVER IODID

John K. Thum, Ph.G., pharmacist at the German Hospital, Philadelphia, writes:

There is on the market, at the present time, a so-called soluble preparation of silver iodid. That is to say, the silver iodid is in concentration in the form of a solution, and the addition of this solution to a designated volume of water makes a 5 per cent. suspension of silver iodid. Whether this method of dispensing silver iodid possesses any advantages over the usual method is questionable. In my opinion it would be far safer for a patient to receive a freshly prepared precipitate of this chemical, well washed, and held in suspension with the aid of a solution of gelatin, Irish moss, or some other appropriate gummy substance.

This solution of silver iodid is made by taking advantage of the fact that silver iodid is soluble in an excess of potassium iodid. One of the claims made for this preparation is that "it is also less expensive" than preparations of the same salt sufficiently diluted for immediate use. When one considers that the solution of this salt requires *a considerable excess* of potassium iodid (the preparation on the market showing on analysis at least 60 per cent. of free potassium iodid), and then considers the price of potassium iodid even in normal times, one is averse to agreeing with this statement.

It is also well to remember that potassium iodid as found on the market is usually quite alkaline, and while it may be true that such a preparation is painless when introduced into the urethra, this does not prove that it is harmless. It is also well to remember that suspensions of silver iodid are frequently used in eye infections, and for that purpose should be very carefully prepared, the silver iodid first being carefully and thoroughly washed with sterile distilled water. If this technic is not followed, the application of the preparation to an eye condition will result in much irritation, pain and an inflammatory condition which it is difficult to control.

My investigation of this preparation revealed that it can be prepared readily according to the following formula:

	gm. or c.c.	
Silver nitrate..............	3	70
Potassium iodid............	17	00
Distilled water...........ad	25	00

This volume of 25 c.c. solution, when added to 75 c.c. of distilled water, makes a 5 per cent. suspension of silver iodid.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

BISMUTH TRIBROMPHENATE.—Bismuthi Tribromphenas.—Bismuth Tribromphenol.—$Bi(C_6H_2Br_3O)_2OH.Bi_2O_3$.—Basic bismuth tribromphenate.

Actions and Uses.—Bismuth tribromphenate is claimed to be a nonirritant and nontoxic antiseptic. It is said to be useful as an odorless and efficient substitute for iodoform; as valuable in ulcus cruris and all weeping eczemas; internally, in gastro-intestinal catarrh, proctitis, dysentery, bacillary and choleraic diarrhea, cholera infantum, etc.

Dosage.—From 1 to 3 gm. (15 to 45 grains) per day to adults; from 0.12 to 0.3 Gm. (2 to 5 grains) at a dose to children. Externally, as a dusting powder, in bandages, etc., like iodoform.

Nonproprietary Preparation:

Bismuth Tribromphenate, Merck, Merck and Co., New York.

It is a fine yellow, nearly odorless and tasteless powder, neutral in reaction, and unaffected by light. It is only slightly soluble in water, alcohol, chloroform, liquid petrolatum and vegetable oils, but soluble in 2 per cent. hydrochloric acid. By alkalies it is decomposed with the formation of bromide; it is not decomposed by heat at temperatures below 120 C., and therefore may be sterilized.

It should yield not less than 49.5 per cent. of bismuth oxide. If 1 Gm. is boiled with sodium hydroxide T. S. and filtered, the filtrate rendered acid with sulphuric acid and the white, curdy precipitate washed and dried, it should melt at 95 C. (tribromphenol).

It is incompatible with alkaline mediums and should not be heated above 120 C.

BUTYL-CHLORAL HYDRATE (See N. N. R., 1915, p. 77).—The following non-proprietary preparation has been accepted:

Butylchloral Hydrate Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 13, 1915

SUGAR IN NORMAL URINE

With the increasing number of tests for the presence of sugar in the urine has come an attempt at greater delicacy in the reaction involved. Just as Fehling's test far exceeded in sensitiveness some of the older methods for the detection of sugar, so the newer tests recommended from time to time have as a rule been characterized by the property of revealing smaller and smaller amounts of the carbohydrate. With the exception of the fermentation test, most of the reactions are really indirect in indicating the presence of sugar. Most of them are reduction tests involving the use of salts of copper or other metals.

Inasmuch as other urinary components besides sugar may reduce the cupric solutions, it is sometimes difficult to decide whether traces of observed reaction are due to sugar or to other constituents such as creatinin. From this point of view a reagent may sometimes be unduly sensitive and give a false answer in respect to the occurrence of sugar. On the other hand, certain urinary compounds also interfere with the delicacy of the tests by preventing the separation of small amounts of red cuprous oxid on the familiar appearance of which the clinical observer so often depends.

Folin[1] has lately devised a reagent which combines extreme sensitiveness to sugar with the property of removing creatinin and other interfering substances from the urine. In the course of nearly a hundred tests made with this new reagent on the urines of as many different normal persons (students), Folin obtained a positive reduction in every case. This corresponds with the statement occasionally made that traces of sugar are present in practically every urine. Various investigators have succeeded in demonstrating the probability of this by concentrating larger amounts of urine and making tests on suitably prepared fractions thereof.

It would, after all, be strange if an organ like the kidney which responds so readily to very small changes in the usual concentration of blood sugar should retain an absolutely complete impermeability to a sugar level only very slightly lower than that which leads to easily detected glucosuria. It is theoretically easier to conceive of the "impermeability" as being relatively rather than absolutely perfect; or, if one is committed to a different explanation of the sugar-free character of normal urine, a comparable contrast applies with equal force. The demonstration given by Folin's new test therefore need not surprise us. As he says, the amount of sugar present in normal human urine is probably greater than is indicated by the negative findings recorded on the basis of the clinical qualitative tests for sugar in current use. Those who, like life insurance examiners, change their analytical methods from time to time in order to secure greater sensitiveness and detect smaller contents of sugar in urine, must be prepared to reach a point at which they encounter normal rather than pathologic sugar excretion. This is only an added instance of the vague borderline between the normal and the abnormal.

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[1] Folin, O.: A Qualitative (Reduction) Test for Sugar in Normal Human Urine, Jour. Biol. Chem., 1915, xxii, 327.

THE LOCALIZATION OF STREPTOCOCCI

The relation to infection of the affinity of bacteria for certain tissues was discussed recently in these columns.[1] It was pointed out that many of the pathogenic bacteria in their localization manifest a special affinity for some particular tissue or tissues. This elective localization may be conceived to be due to the circumstance that the conditions for growth are more favorable in some tissues than in others. On account of differences in metabolism and chemical composition, there is no doubt that different tissues and places in the body present radically different conditions for bacterial growth and activity. It was pointed out, further, that the work of Forssner and especially the more recent work of Rosenow have established that among the streptococci, which have the power to invade many tissues and to cause a variety of infections, strains may appear which, when introduced into the blood, are found to localize by preference in certain tissues. In his article in this issue of The Journal, Rosenow[2] presents a summary of the results of his experiments of elective localization of streptococci obtained from a wide range of human infections and injected intravenously into dogs and rabbits. The animals were killed soon after the injection, and the facts as to localization of the streptococci determined by systematic, careful examination of the whole body. Obviously this method gives a much better idea of early localization than can be obtained if only the animals that die are examined.

Stated in the simplest way, the results obtained by Rosenow with his method show (1) that streptococci isolated from active lesions in different human organs and tissues, in many instances, have a pronounced affinity for the corresponding organs and tissues in rabbits and dogs, and (2) that streptococci isolated from the tonsils and pyorrheal pockets in persons with active streptococcal infection in the interior of the body may have the same sort of affinities as the streptococci from the internal lesions. In the light of these results, many of which are striking indeed, as may be seen at a glance from the table in Rosenow's article, human streptococcus infections acquire new interest because a road now opens to a better understanding of their genesis and of the difficulties of curing them by the specific means now in use. Obviously a chief danger from chronic foci in which streptococci are present, of which those in the tonsils and about the teeth appear to be the most important because the most common, seems to depend on the fact that in such foci, even when quiescent, streptococci may get into biochemical conditions which fit them for invasion of the blood, to be followed by localization in some tissues rather than in others. Persons going about with chronic, more or less latent foci of this character, consequently, are not only dangerous to themselves in that what one may call internal streptococcal metastasis may occur at any time, but they are also undoubtedly dangerous to others because they scatter about them streptococci of specialized pathogenic possibilities. Hence the efforts now made to detect and then to obliterate all forms of focal infection in the mouth and throat as well as elsewhere in the body, for preventive as well as curative purposes, besides being in accord with sound reasoning from general principles, here receive the support also of strong experimental evidence. When we consider the wide range of action of pathogenic streptococci, the great variety of disease due to their localizations in different tissues according to what Rosenow's work indicates are states of special "elective affinities," no effort should be spared that in any way will tend to reduce the supply of such streptococci and lessen the chance of infection.

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[1] The Relation of Selective Tissue Affinity to Infection, editorial, The Journal A. M. A., Sept. 26, 1915, p. 1114.

[2] Rosenow, E. C.: Elective Localization of Streptococci, The Journal A. M. A., this issue, p. 1687.

At this point it may be well to recall that we owe it especially to Rosenow's work that we now understand more clearly than before the part played by streptococci in causing gastric and duodenal ulcer, cholecystitis, appendicitis, herpes zoster and erythema nodosum, as well as the joint and other infections long accepted as streptococcal in nature. In showing that streptococci cause gastric and duodenal ulcer, herpes zoster and erythema nodosum, Rosenow has broken new ground, and if future work confirms his results, particularly as to gastric and duodenal ulcer, great progress indeed will have been made. To this already formidable list of streptococcal diseases Rosenow now adds still another, namely, mumps, being careful to note, however, that the organism he finds does not seem to differ essentially from that described by Laveran, Herb and others as the cause of this disease. This raises the question whether all the organisms classed by Rosenow as streptococci will be accepted by bacteriologists as entitled to classification as streptococci. It would seem possible that some of these organisms, as, for instance, the one in mumps, may be found to be independent forms with rather constant affinities, such as illustrated by the meningococcus, for example. The fact that the organism isolated by Rosenow from mumps did not localize in the testicles is contrary to expectation, being another point that will require further investigation. Still another question, and one of fundamental importance, remains to be answered, and that is the question as to the antigenic properties of streptococcal strains of different affinities as postulated by Rosenow. Is a streptococcus that has special affinity for articular structures capable of causing the production of the same antibodies and subject to the action of the same antibodies as a streptococcus that has special affinity for the gallbladder? Or are streptococci distinguishable into a number of groups by means of immunologic reactions in the same general way as pneumococci? This question must be answered before any real advance can be made either in serum treatment or in vaccine treatment of streptococcus infections.

It is quite self-evident, so far as vaccine treatment is concerned, that for the present the free use of stock streptococcus vaccines, as advocated with unwarranted assurance by manufacturers, is not justified. The only vaccine to be used in the infections under consideration, if any, is the autogenous, that is, one made from cultures of the organism isolated from the lesion of the patient whom the physician wishes to treat with vaccine. Only by so doing will the right thing be done, because the autogenous vaccine will represent most closely in all its reactions the particular bacterial strain that is to be attacked.

WHY NOSTRUM MAKERS FAVOR SECRECY

Physicians know what the *National Druggist* stands for. For years it has championed the "patent medicine" business and for years, too, it has blackguarded the medical profession generally and the American Medical Association specifically. It is published by Henry R. Strong of St. Louis, who also publishes the *Medical Brief*. Physicians will remember at least some of the pamphlets issued by the *National Druggist* in its attempt to discredit the medical profession: "The Menace of the Dispensing Doctor," "The Machinations of the American Medical Association," "Confiscatory Legislation" and "A Conspiracy to Establish a Physicians' Trust." These were some of the tirades that emanated from this source in the nation-wide attempt to indict the medical profession.

It is not surprising, therefore, to find the *National Druggist* urging "patent medicine" makers to refuse to obey the law that is to go into effect in New York City on the last day of this year. As our readers will remember, the revised health code of New York City requires that on and after December 31, 1915, patent or proprietary medicines must either bear on their labels the names of the active ingredients, or the names of these ingredients must be deposited, in confidence, with the Department of Health. The *Weekly Bulletin* of the New York Department of Health for October 30 reprints a communication "which the publisher of the *National Druggist* is sending to druggists throughout the country." It is an interesting communication. It assumes that "the Health Board wants these formulas to be used as evidence in prosecutions under the Food and Drug laws, not only of the state and city of New York, but of the federal government as well." Being thus convinced that the ordinance is a deep plot, the communication continues:

> "The medical plotters have not yet obtained a conviction in a single case under the Sherley Amendment in which the defendant has put up a fight, for *it is practically impossible to prove that the therapeutic claims made for a preparation whose composition is not known* are 'false and fraudulent.' And since they cannot obtain this information by analysis, they are seeking to inveigle the manufacturers into furnishing it themselves. Once, however, they are given the formulas, they can get as many doctors as is necessary to testify that the preparations made according thereto are not good for the diseases for which they are recommended; and suits may be brought against all who may ship their products to New York City, regardless as to where they live, and manufacturers may have to go to that city to defend themselves." [Italics ours.—Ed.]

Put in other language, the thought conveyed by the foregoing paragraph could be expressed thus: We know that most "patent medicines" are swindles and that the therapeutic claims made for them are false and fraudulent, but so long as we can keep up the element of secrecy regarding composition, the courts will have difficulty in convicting the business! The most avowed enemy of the fraudulent "patent medicine" business has never brought so strong an indictment against the trade as this one, delivered by its friend, the *National Druggist*. The communication closes with the declaration that if the New York ordinance is upheld, other cities and states will be likely to adopt similar measures with the result:

> ". . . manufacturers . . . will have *to give up the trade secrets* upon which the prosperity of their business depends; and more serious still, *they will be supplying evidence which may result in their own undoing.*" [Italics again ours.—Ed.]

All of which means that just so soon as the element of secrecy is removed from fraudulent "patent medicines" the manufacturers will no longer be able to keep out of jail. No wonder the nostrum interests fight the disclosure of formula. No wonder the *National Druggist* fears for its clientele.

THE LECITHINS OF MILK

The nitrogenous and phosphorized fatlike compounds described as lecithins, and more recently designated phosphatids in scientific literature, have been popularly endowed with a variety of potent virtues. In medical advertising, in particular, effects on growth and a number of tonic properties have been ascribed to these "lipoids." There is no doubt that phosphatids are widely distributed in both animal and plant tissues, and in view of this they doubtless play significant parts in various biologic phenomena. Their abundance in nervous tissue, their involvement in the structure of the blood corpuscles, their presence in large amounts in the yolk of the egg — the early nutrient of the young of certain species — point clearly to the importance of phosphatids in the functions of animals.

The question of the existence of phosphatids in milk has been answered in different ways by successive investigators. Presumably competent biochemists have affirmed, others have denied the fact of such occurrence. Even a critical, trained reader would find it difficult to form a judgment on the subject. The reason is largely centered in the methods employed. The detection of the lecithins has ordinarily been indirect in character. Extracts of milk, made with organic solvents, have been tested for phosphorus and nitrogen; and if these elements were detected in so-called "lipoidal" fractions, the presence of a phosphatid was postulated. It happens, however, that such solvents as ether do not always extract true phosphatids from animal tissues and fluids, because these compounds seem frequently to be chemically combined with other substances, such as proteins, from which they need to be liberated before they become "lipoid-soluble." Egg-yolk, for example, yields far more lecithins to the solvent ether if the material has first been treated with alcohol. The nature of these native combinations of phosphatids with proteins is as yet not understood; in any event, they are easily disrupted by so mild a treatment as boiling with alcohol. The facts may be expressed by saying that the lecithoproteins are not soluble in ether; the lecithins are soluble. It will thus be understood that the usual mode of extraction with organic solvents may or may not yield phosphatids, the outcome depending on the preliminary treatment. Hence the discrepant statements of the older literature. In plants, the phosphatids are even combined with carbohydrates in some cases. Thus the chemical problems of these lipoid compounds have become even more complex and uncertain with the progress of knowledge.

The evidence of at least two phosphatids in cow's milk has at length been definitely settled by the excellent investigation of Osborne and Wakeman[1] under the auspices of the Carnegie Institution of Washington. Their unique success has depended on the actual isolation and identification of the compounds made possible by the utilization of hundreds of quarts of milk. One of the phosphatids thus separated contains nitrogen and phosphorus in the 1 : 1 or monamino phosphatid ratio; it yields the nitrogenous base cholin, glycerophosphoric acid and fatty acids, and otherwise resembles the typical lecithin of the textbooks. The other milk phosphatid found contains nitrogen and phosphorus in the 2 : 1 ratio, belongs to the group of diamino phosphatids, and is apparently similar to a compound of this type which has been obtained from egg-yolk, kidneys and other animal organs.

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[1] Osborne, T. B., and Wakeman, A. J.: Some New Constituents of Milk, First Paper, The Phosphatides of Milk, Jour. Biol. Chem., 1915, xxi, 539.

From the failure to extract phosphorus-containing residues from milk solids by treatment with dry ether, it is evident that the phosphatids are not associated with the common fats or glycerids of milk, which has frequently been assumed. Further evidence of this is furnished by the recently announced fact that butter-fat can be freed from all but extremely minute traces of nitrogen and phosphorus by purely mechanical methods.[2]

PHYSIOLOGIC ASPECTS OF SPINAL ANESTHESIA

The advent of a new and manifestly important technic in the field of clinical medicine or surgery almost presupposes a careful experimental study of its scientific aspects. Modern spinal anesthesia belongs to this category. There is a large literature already available on the clinical aspects of this type of procedure, its successes and limitations, and its advantages and disadvantages. Nevertheless the data on the fundamental responses of the organism to spinal anesthesia and their interpretation under conditions of rigid scientific critique are surprisingly meager. The situation is excellently summarized as follows: "The dangers and discomforts of ether anesthesia have long been recognized. Inevitable nausea, possible pneumonia, difficult respiration, renal injuries, make ether anesthesia impossible in certain cases, dangerous in others, and distressing in all. To meet these difficulties, spinal anesthesia was devised for use in fields where general anesthesia is superfluous, such as operations on the perineum. As a rule beneficent spinal anesthesia is nevertheless by exception open to a grave and sudden danger. In the course of surgical procedures otherwise completely successful, the vasomotor apparatus may suddenly give way. The fall in blood pressure is immediate, sometimes profound, always disquieting. Nor can the surgeon predict in what patient it may appear." [3]

It is obvious that the new method, to be completely successful and satisfactory, must suspend sensations of pain without at the same time paralyzing those regions of the spinal cord which are of importance for functions of the body which cannot well be interrupted. These include preeminently the respiratory and vasomotor responses. Vascular changes which will exsanguinate the "master cells" of the spinal bulb are certain to produce untoward results. A drug may affect the respiratory center either directly, or indirectly by lowering the blood pressure to a point where there is not enough of the circulating fluid to supply the nutritive needs and furnish sufficient oxygen to the bulb. Insufficient blood supply to other regions of the cord may affect other vital functions. It is not sufficiently realized that the vascular area of the abdominal viscera alone is so large as to make splanchnic paralysis very serious. Smith and Porter[3] remind us that the dilatation of the arteries controlled by the splanchnic vasomotor fibers may allow so much blood to enter the corresponding veins that not enough is left in the bulb and cord to support their needs. They state that a rabbit, for example, "may be bled to death into its own portal system, by section of the splanchnic nerves."

The injury to nerve cells caused by low blood pressure and consequent impaired nutrition to them depends on the low level to which the pressure falls rather than on the percental or absolute fall. The duration of the low pressure is an added factor, for nerve cells are notably sensitive to lack of nutrient surroundings. Smith and Porter,[3] at the Harvard Medical School's Laboratory of Comparative Physiology, have just published an elaborate study of the blood-pressure changes in spinal anesthesia with novocain or tropacocain. In their experiments, out of twenty subjects (animals), there was only one case in which a moderate but adequate injection in the lumbar region caused a fall of blood pressure which might have been serious. In the cases suitable for this observation, there was no paralysis of respiration after lumbar injection.

There are, however, marked falls in blood pressure. Recovery from them may take place. Of course, injections can be made so as to reduce the blood pressure very materially and paralyze the vasomotor apparatus as effectually as if the spinal cord had been extirpated. For this result one need only enter the vertebral canal at higher levels, such as the cervical region. These are of only indirect interest in a practical way, because the lower regions alone are ordinarily entered in surgery. It is important to learn that after dorsal or lumbar injection the fall of blood pressure is due to paralysis in the splanchnic area, not to involvement of the bulbar vasomotor center.

It would be almost ideal if a spinal anesthetic were found to paralyze the afferent sensory paths alone in the cord; but a strength of drug sufficient to do this will also paralyze the efferent vasomotor fibers. So far as the diffusion of the drugs used is concerned, on the whole, the bulk of the solution seemed to Smith and

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[2] Osborne, T. B., and Wakeman, A. J.: Does Butter-Fat Contain Nitrogen or Phosphorus? Jour. Biol. Chem., 1915, xxi, 91.

[3] Smith, G. G., and Porter, W. T.: Spinal Anaesthesia in the Cat, Am. Jour. Physiol., 1915, xxxviii, 108.

Porter to be of greater importance than its strength. Dilute solutions usually, but not always, spread farther than concentrated ones. Gravity, too, is of some importance, inasmuch as tilting the animal into a head downward posture increases the diffusion of the drug. A greater fall of blood pressure occurred in the cases in which epinephrin was used in connection with tropacocain or novocain. Measures taken to raise the fallen blood pressure were of little value. It was easy to restore the pressure to normal, but the normal level could be maintained for only a few minutes.

It should be distinctly understood that these findings and conclusions represent the outcome of animal experimentation alone. They must be regarded as furnishing the key to the explanation of the most serious symptom attending spinal anesthesia, namely, the occasional serious fall of arterial pressure. Such information is the indispensable prerequisite to any rational progress in the application of the method in surgical practice. The experiments teach that spinal anesthesia can be successful only when the afferent paths are paralyzed, without at the same time paralyzing enough splanchnic cells or splanchnic root fibers to lower the blood pressure to a degree that may threaten the continued activity of the centers situated in the cervical cord and the spinal bulb.

Current Comment

"MAY WE COUNT ON YOUR ASSISTANCE?"

In the Propaganda Department this week, we print an editorial on advertising copied from the *New York State Journal of Medicine.* The conclusion is couched in strong language — but not a whit too strong:

> "When an exploiter places on the market a nostrum of no intrinsic value (excepting the bottle and cork) for which he claims virtues which it does not possess . . . he robs the purchaser of his money and health, thereby becoming a thief of the most despicable order. Any medical journal printing the fraudulent claims contained in the advertisements of the nostrums condemned by the Council on Pharmacy and Chemistry is an accessory to this act of thievery and the subscriber to such journals voluntarily assumes the position of an accomplice."

An appreciation of the subscriber's responsibility, emphasized in the editorial just quoted, may have prompted a Brooklyn physician to write us, "Cast your eye over the enclosed advertisements [from the *Therapeutic Gazette*] and then wonder at the nerve in asking subscriptions from the profession." Almost the same mail brought us, from another New York physician, a similar protest accompanied by advertisements from the New York *Medical Record,* these differing from those in the *Therapeutic Gazette* in degree but not in kind. Still another New York physician sent a collection of advertisements from the *New York Medical Journal.* Some of the advertisements sent us are of the rankest frauds, neither better nor worse than the fraudulent "patent medicine" advertisements appearing in lay periodicals — in fact, some are of "patent medicines" which many of the better lay magazines will not admit to their advertising pages. We hope that our correspondents have expressed their views on the subject to the publishers of the respective journals; nothing will so speedily bring about reform as determined and practical protest from the profession. One of the advertisements enclosed by a correspondent is pertinent here: "May we count on your assistance?" ingenuously inquires the Berlin Laboratory, Ltd., and with cool effrontery continues: "We are telling the layman about Intesti-Fermin. . . . May we count on your assistance in spreading this message to everyone. . . ?" Now who and what, doctor, may "count on your assistance?" Is it the quack and the nostrum manufacturer? Do you want to be an accomplice in what the *New York State Journal of Medicine* terms an "act of thievery"? Do you wish to assist in the promotion of Bell-Ans, Sal Hepatica, Campho-Phenique, Angier's Emulsion, Bromidia, Tongaline, Sanatogen, Sanmetto, Kutnow's Powder, Phenalgin, Micajah's Wafers, Ammonol, Chionia, Formamint, Anedemin, Neurosine, Pasadyne, etc.? If so — lend your support to the medical journals that advertise them. If, however, it is the public — your own patients — that may "count on your assistance," then your course is equally clear: refuse to accept from the mail, subscribe for, contribute to, or in any way countenance the journals that help to keep alive quackery and fraud — and *let the publishers know why!* The result will soon be evident. Do not, however, stop with this negative measure; it is equally important to sustain those journals which, without the backing of professional organization, have cleaned up their advertising pages and freed themselves from the blighting influence of the nostrum evil. If, through inertia and inattention, you permit your mail box and library table to become littered with the unclean swarm of nostrum-purveying journals, clean house. Then help support as many as you can afford of the unofficial publications that are making a creditable stand for decency in advertising. If the medical profession as a whole will manifest its opinion and desires in an unmistakable and practical way, an uplift in medical journalism will speedily be accomplished. Then and not till then can we consistently appeal to lay magazines and newspapers to stop promoting frauds in their advertising pages.

THE PUBLIC IS WAKING UP

A week or two ago we reprinted an editorial from the New York *Sun* on "The Newspaper Press as an Educator in Medicine." The editorial contains one paragraph which is peculiarly appropriate in connection with the comment given above. Here it is:

> "The *Sun* has endeavored to impress upon its readers the fallacy, if not the danger, of accepting prescriptions from doctors who, too indolent or unscientific to think out their own prescriptions, write for 'Kill or Kurem's' Hydrated Phosphate Compound, or C. D. & X. Company's 'Diostenin' or 'Professor Chadelle's Cresolated Compound,' the composi-

tion of which they either do not know at all or accept from the manufacturers. The chief aim of the latter naturally is to popularize these preparations by leaving samples at the doctor's office or offering them in generous quantities for the mere cost of a postal card. This injustice and danger to the lay patient will never be removed, because the medical journals with but a very small exception advertise these preparations, the value and uses of which the manufacturers, with the most brazen effrontery, offer to teach the doctor who will listen."

How many times The Journal has said the same thing. It is encouraging to see that the newspapers are helping to reform the medical profession in this regard. When the average layman wakes up to the fact that his doctor is prescribing a "patent medicine" — for the average layman will not be able to distinguish between many of the so-called "ethical proprietaries" and the common, every-day "patent medicine," any more than we are able to do so — he will either go to a doctor who will give him the benefit of scientific training and individual thought, or he will go to the druggist and purchase his own medicine and read for himself what the manufacturer has to say regarding it.

ASEPSIS AND THE DISH TOWEL

Among the low-priced restaurants and lunch rooms which are numbered by hundreds in our large cities, there is one (it is but a type—there are dozens like it) whose exterior of white brick and plate glass is as sparkling and bright as a newly frosted cake. Within, an expanse of white enamel, resplendent metal and spotless linen proclaims a devotion to cleanliness rivaled only by the surgical ward in a hospital. The waitresses are as neat and trim as uniformed nurses. In this stainless temple of alimentation one of the immaculate priestesses has been seen to pick up a glass just used by a departing guest, polish it with the dish towel at her belt, and calmly replace it on the table to be used by the next patron! One might instance even more horrifying infringements on prandial decency in more pretentious establishments; one might expatiate on the possible dangers of infection from such practices. The establishments do not lose custom thereby, probably because the public, while vaguely impressed with the beautiful ideal of asepsis or perfect cleanliness, has a pathetically inadequate idea of what it means. It is therefore encouraging to read the following, under the heading "The Mischievous Wiping Cloth," in the November issue of the *Journal of Home Economics*:

> The dish towel, even the genteel barred variety, called a tea towel, is in bad repute. Ever since men began to look through the microscope and think in terms of the microscope its fate has been sealed. Only when freshly washed and boiled and used in clean hands to wipe the rims of already scalded and drained dishes is it to be admitted into a modern kitchen. Used in dirty hands till grimy, carried on the arm of a waiter and used to polish a plate or wipe up a table, it belongs to the dark ages, hygienically speaking. In dish washing the household should more and more approach the practice of the laboratory where glassware and porcelain are washed, rinsed in boiling water and placed to drain. No cloth, no matter how well known its antecedents, is allowed to touch them, for they are now absolutely clean and must remain clean.

Perhaps, if such ideas as these are becoming current, we may hope for the day when Bridget will invariably sterilize her dish cloth and scorn the dish towel for her aseptic dishes, while "neat-handed Phillis" will always complete her coiffure beyond all revision before coming to serve our food. At any rate, one may always hope.

THE "CHEMICAL" WAR

The present war has been frequently called — not inaptly — a "chemical war" because so many of the destructive energies at work are due to modern advances in chemistry, particularly in our knowledge of the nitrogen compounds.[1] This designation has seemed, perhaps, a slur on the science of chemistry. It has even been hinted that chemistry is more harmful than beneficial, and that its development represents a serious detriment to mankind. In an address presented at the meeting of the American Chemical Society at Seattle, Dr. L. H. Baekeland[2] discusses some of these imputations. This is by no means the first "chemical" war. The art of killing and robbing became chemical the day gunpowder was invented, how long ago we are not quite sure; but it is certainly over 1,000 years ago and perhaps nearer 2,000 years ago. Napoleon, over 100 years ago, was probably the first to recognize that chemistry and the related sciences might be used to great advantage in giving him decided advantages over his enemies. Incidentally he thus helped to lay the foundation for some important branches of chemical industry. It was not very long, however, before his enemies learned the lessons of chemistry, and he is reported to have stated that "the dogs have learned something from us." The perversion of chemistry to military uses has been only a side issue. Some of the most important advances in military methods have originated in some of the most beneficent steps in progress made by chemistry. Dr. Baekeland insists emphatically that it is not fair to reproach chemistry with "the fact that nitrocellulose, of which the first application was to heal wounds and to advance the art of photography, was stolen away from these ultrapacific and highly laudable purposes for making smokeless powder and for loading torpedoes." Nor is it fair to blame the chemist for the fact that phenol, which in Lister's hands revolutionized surgery, was turned from a blessing to humanity into a fearful explosive after it had been discovered that nitration changes it into picric acid. Curiously enough, many of those who have been engaged in diverting or perverting chemical compounds from usefulness in peace to the greatest destructiveness of war have been convinced that this very destructiveness from its awful character would produce an inevitable reaction which would guarantee peace. Alfred Nobel, the founder of the world peace prize, was a manufacturer of dynamite and made a fortune in high explosives. He fondly hoped that these high explosives would make war so destructive as to put an end to it forever. The old Romans had a maxim that from the abuse of a thing no argument was valid against the use of it. Chemistry has been an immense boon to the human race, even though at times its misuse has led to some of the worst calamities of human history.

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[1] The Artificial Fixation of Atmospheric Nitrogen, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1112.

[2] Baekeland, L. H.: Applied Chemistry, Science, Oct. 22, 1915, p. 547.

THE RÔLE OF THE THYROID IN IMMUNITY

A number of observations have been made in order to determine what rôle, if any, the thyroid plays in immunity. Fassin recorded a diminution in the hemolytic and bacteriolytic properties of the blood after thyroidectomy, and Marbé found that the opsonic and phagocytic powers suffer, while Frouin declared that in dogs there was no loss of antitoxin, although the alexin was diminished. Lerda and Diez found that guinea-pigs are about as resistant to tetanus toxin without the thyroid as with it. Fjeldstad did not observe any interference with the formation of typhoid agglutinins after thyroidectomy in guinea-pigs. Most recently Launoy and Levy-Bruhl[1] have studied the problem in question, using an animal that heretofore has not been made the subject of experiments in this particular direction. These investigators were unable to make out that the removal of the thyroid in the chicken had any effect whatever on the course of a spirochetal infection (spirochetosis gallinarum). In view of the part played by the thyroid in maintaining the health of the body, it would not be surprising if disturbances of the function of this gland should be found to favor the development of infection, if not by direct interference with the formation of antibodies, then in some more or less indirect manner, such as disturbances of the functions of the leukocytes. As shown by this review of experimental work, the results obtained are not in agreement—a circumstance which is not so remarkable when we consider the variety of animals and methods employed. Much more work is required before the question as to the exact rôle of the thyroid in the resistance to infection will be settled. Under any circumstances the results obtained so far do not warrant the direct association of the thyroid with the production of antibodies.

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[1] Launoy and Levy-Bruhl: Ann. de l'Inst. Pasteur, 1915, xxix, 213.

State Control of Sewerage Systems.—The Maryland act of 1914 empowers the State Board of Health to order local authorities to install public systems of water supply, sewerage or refuse disposal in any municipal division of the state whenever the absence or incompleteness of such systems was sufficiently prejudicial to the health or comfort of the community. The local authorities might if they deemed any such order unlawful, unreasonable or unnecessary, bring an action in the courts to set aside the order. In October, 1914, the State Board of Health ordered the county commissioners of Baltimore County to install a sewerage system in a specified area. The commissioners sought in the courts to have the order set aside. They attacked the constitutionality of the law, but did not allege that the order was unreasonable. The supreme court of the state held that the sections of the act attacked were constitutional, but sent the case back to the circuit court to have determined the reasonableness of the order.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

DISTRICT OF COLUMBIA

Home from Serbia.—Dr. Louise Taylor Jones, who has been serving in Serbia with the Red Cross, landed in Boston, October 21.

Measures for Health.—The Public Health Committee of the Board of Trade, in its annual report, has made health recommendations as follows: an appropriation to permit the erection of the proposed municipal hospital; the establishment of dental clinics in connection with the work at all local hospitals; improvement of ventilation in street cars; the establishment of an institution for idiotic, imbecile and feebleminded children; legislation for voluntary commitment for the Government Hospital for the Insane; the provision of a medical psychologist for every reformatory in the District; the erection of public baths in the various schools of the city; the establishment of a hospital for inebriates; the appointment of additional inspectors, the provision of increased laboratory facilities in the health department, and the erection of additional underground public comfort stations.

ILLINOIS

Personal.—Dr. Emmett A. Garrett has been appointed health commissioner of Peoria to succeed Dr. Edward Hasson.——Dr. J. W. Allison, Essex, who was operated on October 29 at Rochester, Minn., for the removal of gallstones, is reported to be doing well.——Dr. C. St. Clair Drake, secretary of the State Board of Health, Springfield, has returned from a trip to the Pacific coast.——Dr. Robert C. Bourland, Rockford, is convalescing from an attack of diphtheria.——Dr. Harrison R. Rogers, Rockford, was operated on for appendicitis in the Presbyterian Hospital, Chicago, October 30, and is said to be doing well.——Dr. William G. Bechtold, Breeze, who has been under treatment for tetanus in St. Elizabeth's Hospital, Carlyle, is reported to be improving.——Dr. James A. Kleinsmid, Aledo, who has been seriously ill as the result of an automobile accident, early last month, is now convalescent.——Dr. Barker Althunian, Joliet, has sailed for Europe, November 3, to work with the Russian Red Cross.

Chicago

Correction.—Dr. Oscar Dodd has been elected president of the Illinois Charitable Eye and Ear Infirmary Alumni Association, and not the Illinois Charitable Eye and Ear Infirmary as erroneously stated in the issue of October 30.

Meeting of Gynecologists.—At the thirty-seventh annual meeting and dinner of the Chicago Gynecological Society October 15, the following officers were elected: president, Dr. Channing W. Barrett; vice presidents, Drs. Franklin H. Martin and Mark T. Goldstine; secretary, Dr. N. Sproate Heaney; treasurer, Dr. Charles B. Reed; editor, Dr. W. A. Newman Dorland, and pathologist, Dr. Arthur H. Curtis.

To Prosecute Quacks.—Thomas S. Hogan of Chicago has been appointed special state's attorney in Cook County to handle violations of the medical practice act prosecuted by the state of Illinois. Mr. Hogan held the appointment of official counsel to the State Board of Health until the position was abolished by a decision of the supreme court. The court decision which in effect abolished the position held by Mr. Hogan with the state board, placed in jeopardy all pending prosecutions against quacks. The appointment had the approval of Governor Dunne.

Institute of Medicine Organized.—The Institute of Medicine of Chicago, the purpose of which is stated to be the encouragement of the advancement of medical science, was organized formally at a dinner at the Hotel La Salle, November 5, which was attended by 150 charter members of the organization. The officers elected were as follows: president, Dr. William E. Quine; vice president, Dr. Ludvig Hektoen; secretary, Dr. John G. Wilson; treasurer, Dr. J. A. Clapp; and board of governors, Dr. Frank Billings, chairman, William Allen Pusey, E. Fletcher Ingals, and William

H. Wilder. The objects of the organization are similar to those of the College of Physicians of Philadelphia, the Academy of Medicine of New York City, the Boston Medical Library, etc. It will conflict with no other medical organization. One of the immediate objects will be the securing of a permanent home for the medical profession of Chicago and vicinity.

INDIANA

Pure Food Violators.—A new policy has been adopted by H. E. Barnard, state food and drug commissioner, who declares that any saloon that violates the pure food law of Indiana and refuses to abide by the orders of the pure food bureau will be closed up the same as a restaurant that refuses to obey the law.

Mural Decorations for Hospital.—The mural decorations for the new Burdsal wing of the City Hospital, Indianapolis, have just been completed by William E. Scott, a colored artist. The work has required many months and is regarded as the most successful which the artist has done in this line. The subjects for the women's ward were "The Four Seasons" and "Nations Coming to Light." For the obstetrical ward Mr. Scott chose the subject of the life of Christ. Three hundred figures were used on twenty-two panels, varying in width from five to forty feet.

The Dispensary and University Trouble.—For several years the board of health of Indianapolis has contracted with the School of Medicine, Indiana University, so that there would be but one free dispensary in Indianapolis, in place of the former City Dispensary and the Bobbs Dispensary at the college. The board of health, however, reserved to itself the right to conduct and supervise this joint dispensary and also the power to discharge all employees and officers. The board of health paid the Medical College $915 a month for its share of the expenses to the dispensary, the college paying the balance, which amounted to nearly $300 per month. Various breaches of the contract recently, although the contract has but two more months to run, have caused the board of health to discontinue its support to the Medical College and to refuse to admit the medical students to the City Hospital. A new city dispensary has been opened at the City Hospital and the staff, officers and employees of the previous joint dispensary are all taken care of in the new dispensary. At the present time the only clinical facilities open to the students of the Medical College are those at the Long Hospital, which has very few patients compared to the City Hospital. A mass meeting of the students was held November 5, to ascertain what the faculty intends to do in regard to furnishing them with clinics. Nothing definite has been done concerning the solution of this problem.

IOWA

Branch Laboratories Established.—Branch laboratories of the State Bacteriologic Laboratory have been established at Davenport and Waterloo. The work of these branches will be superintended by Dr. Henry Albert of the University of Iowa, Iowa City.

Pathological Laboratory Incorporated.—Articles of incorporation of the Davenport Pathological Laboratory were filed with the Scott County recorder, November 2. The organization is not for profit and the officers are as follows: president, Dr. Henry U. Braunlich; secretary, Dr. William A. Stoecks, and treasurer, Dr. Anthony P. Donohoe.

Personal.—Dr. James M. Brooks, Newell, has been made a life member of the Buena Vista County Medical Society. ——Dr. Hobart E. Martin, Clinton, who was operated on for hernia at Mercy Hospital, October 21, is reported to be doing well.——Dr. Edward J. Van Metre, Tipton, was seriously injured by the overturning of the automobile in which he was riding, near Tipton, October 9. His collar bone and three ribs were fractured.

MARYLAND

Medical Societies Merge.—The medical societies of the University of Maryland School of Medicine and the College of Physicians and Surgeons were merged at a special meeting of a committee appointed by the combined faculties, recently. Since the combination of the two schools of medicine has become permanent, it was decided that a single medical society representing both schools would bring about the best results. Dr. Albert H. Carroll was elected chairman of the new society, Dr. Elmer B. Freeman, vice chairman, and Dr. Alexius McGlannan, secretary.

Personal.—Dr. Karl H. Van Norman, first assistant superintendent of Johns Hopkins Hospital, has resigned to accept a captaincy in a Canadian regiment, which is soon expected to be assigned to active duty.——Dr. William B. Hunter, Baltimore, superintendent of Kernan's Hospital and Industrial School for Crippled Children, has resigned, to take up private practice in Wilmington, N. C.——Dr. John D. Fiske, Baltimore, who is employed by the Atlantic Transport Company, while climbing a ladder up the side of a ship, slipped and fell 20 feet, breaking his shoulder.——Dr. Leonard G. Rowntree, assistant head of the department of medicine of Johns Hopkins University, has been appointed professor of medicine and chief of the department in the University of Minnesota, succeeding Dr. Charles Lyman Greene, St. Paul, resigned.——Dr. C. Hampson Jones assumed his duties as chief of the bureau of communicable diseases of the State Department of Health, November 4.——Dr. William Travis Howard, Jr., became assistant commissioner of health of Baltimore, November 4.——Drs. Lewis C. Spencer and Martillus H. Todd of the staff of American surgeons at the Pau Base Hospital, France, returned to Baltimore, October 26. ——Dr. Marshall B. West, Catonsville, is reported to be ill with septicemia.

MINNESOTA

New Bi-County Sanatorium.—On October 18, work was commenced on the Clay-Becker County Tuberculosis Sanatorium at Sand Beach Lake. The cost of the construction of the sanatorium will be about $45,000 and it is to be completed about July 1, 1916. The building will be of brick and reenforced concrete, three stories in height and will accommodate about twenty-five patients.

Personal.—Dr. James F. Hammond, St. Paul, who has been in service on the Gallipoli Peninsula, returned to London in charge of wounded soldiers, September 23, and after a short stay, returned to the Mediterranean.——Dr. William J. Mayo and party ended their cruise on Dr. Mayo's steamer *Oronoco*, at Louisville, October 23, and returned to Rochester by rail. The trip included the Mississippi River from Winona, Minn., to Cairo, Ill., the Ohio and Cumberland rivers as far as Rome, Tenn., and then the Ohio River to Louisville, Ky., where the cruise ended.——Dr. William J. Mayo, Rochester, has been elected president of the Good Roads Organization for Olmstead County which was organized recently.——Dr. Delbert F. Dumas, Cass Lake, has sold the Cass Lake Hospital to Dr. Samuel R. Fraker, Chelsea, Iowa.——Dr. James A. Rippert, Chisholm, lectured before the senior class of the University of Minnesota Medical School, October 27, on "Medical Supervision in Public Schools."

Whole-Time Men in Health Service.—A report of the public health committee of the Minnesota Public Health Association contained the following comment on the reorganization of the health service in Minneapolis, St. Paul and Duluth: Minneapolis is talking of employing several whole-time men and having a complete reorganization of the department, to be effective about Jan. 1, 1916. It is hoped that the talk will materialize into something definite. Outside of their visiting nurse service, and in Duluth the milk inspecting service, the health departments of the three large cities of the state have nothing worth commenting upon. A rating of efficiency of organization by the federal department would be disgraceful to the state of Minnesota. In spite of a lack of organization, poor facilities and inadequate pay, the men in charge of the departments in the three cities are doing excellent work. In all three, Minneapolis, St. Paul and Duluth there should be a complete reorganization with the employment of whole-time men trained in public health work.

MISSISSIPPI

State Board of Health Wants Sanatorium.—The State Board of Health has appointed a committee composed of Drs. Waller S. Leathers, University; L. Wade Glass, Lyon; Harvey F. Garrison, Seminary; James J. Haralson, Forest, and Daniel J. Williams, Gulfport, to draft a bill to be presented to the next legislature, asking for the creation of a state sanatorium for tuberculosis.

Health Day.—Pursuant to a proclamation by Governor Brewer, dated September 14, October 29 was set apart as Health Day at the request of the state educational department. Programs were carried out on that day in the public schools and a six-months' campaign of education prepared by the State Board of Health and the department of education was inaugurated.

MONTANA

Medical Inspection.—The school board at Bozeman has accepted the proposition of the Gallatin County Medical Society to establish medical inspection in one school in Bozeman. The society by resolution agreed to furnish medical inspection for one of the smaller schools of the city and to give detailed report of such inspection to the board of trustees without making any charges. The Hawthorne School has been selected. Bozeman has not heretofore had medical inspection of schoolchildren.

Personal.—Dr. John W. Frizzell, Great Falls, fractured his leg while cranking his automobile, October 18, and also received internal injuries when the car started, crushing him between the car and the garage wall. He is reported to be in a critical condition at the Deaconess Hospital, Great Falls. ——Dr. Charles F. Jump, Bozeman, has returned after postgraduate work in Chicago.——Dr. Willoughby G. Dye, Deer Lodge, has gone to Boston for postgraduate work in Harvard Medical School.——Dr. William L. Renick and Dr. Thomas C. Witherspoon of Butte have recently purchased the ranch of the late Dr. Robert P. R. Gordon, Great Falls, on the Swan River, in the vicinity of Swan Lake. The ranch will be used as a summer residence.——Dr. Herbert H. Judd of Bozeman addressed the Woman's Club at Livingston, November 3, on medical inspection of schoolchildren.

Medical Attention Under Compensation Act.—The attorney-general has given the following opinion to the State Accident Industrial Board regarding medical attention under the provisions of the workmen's compensation act:

> "Whenever an accident occurs and no loss of time results to the injured employe, and the nature of the resulting injury is such as to make it reasonably necessary to secure medical service, attention or medicines, or to give care, attention or treatment to the injured employe, the employer, insurer or industrial accident fund, as the case may be, depending upon the plan adopted by the employer, is liable for the reasonable and necessary expenses incurred for such medical services, attention or medicines, not exceeding in any one case the sum of $50, and not extending over a period of more than two weeks immediately following the accident."

NEBRASKA

Personal.—Dr. John A. Waggener, Humboldt, has been appointed physician to the Soldiers' and Sailors' Home, Grand Island.——Dr. Volney D. Douglas, Crab Orchard, was severely injured by an axe wound of the knee, October 10. ——Dr. Adrian F. Burkard, Omaha, has moved to Soquel, Calif.——Dr. William R. Peters, Stanton, while returning from a professional call, recently, was seriously injured by the overturning of his automobile.

Contagious Disease Hospital for Lincoln.—Following a visit to the Isolation Hospital of Lincoln by a special committee from the Lancaster County Medical Society, the committee has recommended that another hospital for the treatment of contagious diseases be built. Under the present system there is no provision for the care of patients suffering with diphtheria and scarlet fever and the isolation hospital is used chiefly for smallpox. The plan of the committee is to erect a small cottage some distance from the isolation hospital, for the treatment of other communicable diseases.

NEW YORK

Vassar Alumnae Ask Health Work.—Twelve young women, members of the Buffalo Chapter of the Vassar College Alumnae Association, have requested the deputy health commissioner to assign them to work in connection with the extension of the health center movement.

Health Centers for Buffalo.—Health Commissioner Fronczak announces that he intends to designate Dr. Nelson G. Russell as chief consulting physician for Buffalo. He has also decided to inaugurate three additional health centers, one at 1067 Grant Street, one at 591 William Street and a third on the grounds of the Municipal Hospital at 770 E. Ferry Street. The entire scheme is merely a rearrangement and readjustment of the territory now covered by the staff of the health department. The following physicians have been appointed by Dr. Russell to take charge of the tuberculosis work: Dr. James H. Donnelly, chief examiner; Dr. David Cohn, examiner at the Municipal Hospital health center; Dr. George J. Eckel, examiner at the East Buffalo center, and Dr. Harry Mead, examiner at the Black Rock center.

New York City

Home for Cancer Patients.—The new House of Calvary on Macomb's Road in the Bronx, erected at a cost of $120,000, has been formally opened by Cardinal Farley. This home for the cancerous poor was founded many years ago in Perry Street by Adrian Iselin, and was later moved to upper Seventh Avenue.

Personal.—Dr. and Mrs. W. Seaman Bainbridge and Dr. John Van der Poel have returned from Europe.——Dr. Clarence A. McWilliams sailed for France, November 3, to take charge of the French Military Hospital at Passy.——Dr. W. J. Maloney, who was wounded by shrapnel while serving with the Red Cross at the Dardanelles, reached New York on the *St. Louis*, October 31.

Violations of the Drug Law.—A report just made by District Attorney Wilmot shows that since the first of the year there have been 700 convictions in the court of special sessions of persons selling and possessing drugs. This number, however, does not include the many thousand addicts who have been committed by magistrates to hospitals for treatment. Among those convicted there have been fifty druggists and a number of physicians. The report states that the sale of habit-forming drugs has been greatly decreased because of the crusade of the district attorney's office.

Health Department Again Warns Traction Companies.—Dr. Haven Emerson, who has just succeeded Dr. Sigismund Goldwater as health commissioner of New York City, has declared his intention of carrying out Dr. Goldwater's policies. One of his first steps along this line has been to send a notice to the car companies that the order issued by Dr. Goldwater last March calling attention to that section of the city charter which forbids overcrowding is still in effect and that inspectors will begin to ride on the cars shortly and count passengers.

NORTH CAROLINA

Hospital News.—Mrs. Edith Vanderbilt, widow, and W. K. Vanderbilt, executor, of the late George W. Vanderbilt, have executed a deed to the Clarence Barker Memorial Hospital on the site now occupied by the Biltmore Hospital and Dispensary. The deed proposes that the hospital be used continuously for hospital and dispensary purposes for thirty years and that otherwise it shall revert to the estate of the late George W. Vanderbilt.——St. Luke's Hospital, New Bern, has been completed and was formally opened November 1 for public inspection. On the next day the hospital was ready to receive patients.

Personal.—Dr. Herbert H. Purinton, Durham, has been appointed by the British government, health officer to the Leeward Islands, British West Indies, and has left for his new post of duty.——Dr. C. Banks McNairy, superintendent of the State School for Feebleminded, Kinston, was severely injured in an encounter with an enraged bull on the farm attached to the school.——Drs. Watson S. Rankin, Raleigh, secretary of the State Board of Health, and Thomas M. Jordan, Raleigh, have returned after a tour of school inspection systems in eastern cities. Dr. Jordan started on the school inspection work for the State Board of Health, November 1.——Dr. R. H. Crawford, Rock Hill, has returned from service with the American Red Cross in Germany and Austria.

OHIO

Tuberculosis Hospital Donated.—Peter Kuntz, Dayton, has purchased a site for the proposed tuberculosis hospital which he will erect for the use of the people of Dayton at a cost of $500,000. The site selected is on the highlands west of the city.

Western Reserve News.—President Charles F. Thwing of Western Reserve University in his annual report renews a recommendation that a fund be established to take the name of the late Dr. Hunter H. Powell, a distinguished member of the faculty of the school of medicine. To the $40,000 which is expected will be set aside for this fund, President Thwing said that $10,000 may fittingly be added.——He also asks that a special fund be set aside from the $1,000,000 donation to the school of medicine under the name of Dr. Dudley P. Allen, the income of this fund to be used in research in surgery.——The delay in rebuilding the Western Reserve School of Medicine and Lakeside Hospital is contributed to by the "commercial and industrial depressions and uncertainties caused by the European War."

Personal.—Dr. Charles L. Files, Van Wert, who has succeeded Dr. John R. Johnson as superintendent of the District Tuberculosis Hospital, Lima, assumed the duties of his new position, November 1.——At the quarterly meeting of the council of the State Medical Association held in Columbus, October 25, Mr. George V. Sheridan was unanimously elected executive secretary of the organization.——Dr. Joseph G. Fudge, Spring Valley, was seriously burned by the explosion of an acetylene tank, October 23.——Dr. James G. Cullen, Toledo, is reported to be critically ill.——Dr. John N. Calhoun, Lisbon, is reported to be ill with nephritis in Lakeside Hospital, Cleveland.——Dr. Edwin A. Hamilton, Columbus, has returned after four months' Red Cross service in Gleitwitz, Germany.——Dr. Philip D. Wilson, Columbus, has returned after military hospital service in France.——Dr. Charles H. Ross, Alliance, was knocked down by a motorcycle, October 11, fracturing his right leg below the knee.——Dr. Cassius M. Shepard, Columbus, who was operated on for appendicitis, October 2, has made a satisfactory recovery.——Dr. Howard W. H. Nelles has been elected chief of staff and Dr. Joseph J. Sweeney, secretary of the Lucas County Hospital, Toledo.——Dr. Charles G. Souder, has been appointed superintendent of the Lucas County Tuberculosis Hospital, Toledo.

PENNSYLVANIA

Cornerstone Laid.—The cornerstone of the new Children's Building of the Tuberculosis League Hospital, Pittsburgh, was laid by Dr. Samuel G. Dixon, commissioner of health of Pennsylvania, October 29.

State Hospital Officials Meet.—At a meeting held in Philadelphia the week of October 29 of the trustees and superintendents of state and incorporated hospitals for the insane and feebleminded of Pennsylvania, the following officers were elected: president, William M. Donaldson, Harrisburg; vice president, Dr. Harry W. Mitchell, Warren; and secretary, Dr. Henry I. Klopp, Rittersville.

Personal.—Dr. Benjamin Frye, Sharpsville, who has been seriously ill with diphtheria, is reported to be much improved.——Dr. J. Burket Howe, Erie, underwent an operation October 18 and is reported to be doing well.——Dr. Clinton T. Saylor, Rockwood, who was operated on for appendicitis at a hospital in Johnstown recently, is convalescent and will soon resume practice.——Dr. Fremont W. Frankhouser, Reading, who has been incapacitated for some time on account of an automobile accident and then by reason of an operation on the eyes, has recovered and resumed practice.——Dr. Michael George Dewey, Girardville, was seriously injured in an automobile accident, October 12.——Dr. Theresa G. Breene Baum, Oil City, is reported to be critically ill.——Dr. Francis E. DeLong, Bayers, was seriously injured, October 2, by being thrown from his buggy in a runaway accident.

Philadelphia

Personal.—Dr. Frank R. Starkey has returned from a five months' tour of North America and has resumed practice.——Dr. Ray Parker of the Philadelphia Hospital for the Insane has resigned to accept an appointment as first assistant at the State Hospital for the Chronic Insane, Wernersville, where she will succeed Dr. Robert M. Alexander, resigned to enter private practice in Reading, Pa.——Dr. Horatio Connell Jones underwent an operation in the Samaritan Hospital, October 29.——Dr. Bertha Whaland and Dr. Ann T. Gibson have been appointed assistant medical school inspectors by Director Ziegler.

Hospital Wins Suit.—Judge Gummey in the Orphans Court, November 3, awarded to the Episcopal Hospital a bequest of James J. Hope for the establishment of a ward in a hospital devoted to the treatment of contagious diseases. The bequest was frequently referred to as a fifty-thousand dollar legacy, but, according to the adjudication, it amounts to $18,924.90. In January the legacy was awarded to the Philadelphia Hospital for the treatment of contagious diseases and was later set aside and all hospitals invited to submit evidence. Upon the testimony of trustees of the Episcopal Hospital that they intended to alter their buildings for the purpose of treating contagious diseases, the new award was made.

VIRGINIA

Hospital Notes.—The contract between the Abingdon Hospital and the Board of Supervisors of Washington County has been renewed for one year.——The William A. Crowder Memorial Hospital, Petersburg, was formally opened the first week in October.

Washington County Physicians Organize.—Physicians of Washington County met at Bristol, October 22 and organized a medical society with an initial membership of fourteen and the following officers were elected: president, Dr. Andrew F. Horne, Glade Spring; vice presidents, Drs. D. L. Kingsoliver, Green Springs; William L. Gannaway, Abingdon, and W. H. Teeter, Barytes; and secretary, Dr. Paul Kernan, Bristol.

Tri-County Medical Society Organized.—Physicians of King George, Stafford and Spotsylvania counties and the city of Fredericksburg met October 19 at Fredericksburg and organized the Tri-County Medical Society, electing the following officers: president, Dr. William A. Harris, Spotsylvania; vice presidents, Drs. Joseph N. Barney, Jr., Fredericksburg, and Henry W. Patton, Hemp, and secretary-treasurer, Dr. C. Mason Smith, Fredericksburg.

New State Society Officers.—At the forty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 26 to 29, the following officers were elected: president, Dr. Joseph A. White, Richmond; vice presidents, Drs. Marshall J. Payne, Staunton; Edward E. Feild, Norfolk, and Robert M. Wiley, Salem; treasurer, Dr. Mark W. Peyser, Richmond (reelected); secretary, Dr. Paulus A. Irving, Farmville (reelected); delegates to the American Medical Association, Drs. Southgate Leigh, Norfolk, and William E. Anderson, Farmville; Dr. Edwin L. Kendig, Victoria, councilor from the Fourth District; and Dr. John Staige Davis, University, councilor at large. Norfolk was selected as the next place of meeting.

Antituberculosis Work.—The executive secretary of the Virginia Antituberculosis Association in her annual report states that during the year sixty-five lectures were given in sixteen counties of the state. That in six counties, county societies have been formed and that at present sixteen active leagues or committees are at work in the state. Danville has opened a fresh-air school. The association received from the sale of Christmas seals, $3,886.——The Tuberculosis Sanatorium on Reservoir Hill, which is being erected by the Danville Antituberculosis Society and the city of Danville, is practically ready for occupation. At present there are two tuberculosis patients in the camp who have been occupying tents for several months and are showing great improvement.

CANADA

Personals.—Dr. Harold C. Sutton, Cooksville, Ont., has joined the Canadian Army Medical Corps.——Dr. R. W. Bruce Smith, Toronto, inspector of the provincial hospitals for the insane for Ontario, who has been ill since last spring, is now reported to be recovering rapidly.——Dr. J. Arthur Sutherland, who since his graduation from Trinity University in 1896, has been practicing in British Columbia and Fairbanks, Alaska, was in Toronto in October on his way to go into service with the French Army Medical Corps.——Lieut.-Col. Walter T. Connell, Kingston, Ont., on duty with Queen's Stationary Hospital in Egypt, has sailed for Canada.——Dr. Alfred W. Nixon, M. P. P., Georgetown, Ont., has volunteered for active service and has been accepted. He will leave shortly for England to join the R. A. M. C.——Dr. Vernon Lamb, St. Andrews, N. B., is at present attached to the Canadian Cavalry depot at Shorncliffe, England, having 1,500 men in his charge.——Dr. Thomas G. Brodie, University of Toronto, recently returned from England, after a summer with the University of Toronto Base Hospital.——Dr. Darius A. Coon, Elgin, Ont., has resigned as superintendent of the Kingston General Hospital and will enter private practice in that city. He has been succeeded by Dr. M. F. Coglan.——At Woodstock, Ont., November 5, the members of the medical profession of that city gathered at the residence of Dr. A. Beverley Welford to do honor to five of their confrères who had entered the army medical service. All were presented with wrist watches. Capts. Franklin S. Ruttan and Samuel M. McLay are at the front; Capts. David J. McKay, J. McKenzie Cochrane and Jim B. Jupp are in training.——Six doctors have been selected in Toronto to reinforce the Canadian Army Medical Corps. They are: Dr. G. A. Wallace, Bellevue Hospital, New York; Dr. Karl H. Van Norman, Baltimore; Dr. Roy H. Thomas, Toronto; Dr. Albert J. Fisher, New Liskeard; Dr. John Hunt, Sault Ste. Marie, Ont.; Dr. Reginald A. Mathews, Toronto.——Major Frederick Guest, R. A. M. C., St. Thomas, Ont., is home on short leave of absence necessitated by an accident. He will return to the Dardanelles in two months. There are no Canadian troops where he was stationed, at West Mudros on Lemnos, Greece.

GENERAL

Hospital Ship for Fishing Banks.—The Coast Guard Cutter *Androscoggin* has left the Charlestown Navy Yard for Gloucester, Mass., preparatory to a cruise to the Banks of Newfoundland and the coast of Nova Scotia where it will act as hospital ship for the fishing fleet.

Surgeons' Congress at Boston.—At the annual meeting of the Clinical Congress of Surgeons in Boston, the following officers were elected: president, Dr. Fred B. Lund, Boston; vice presidents, Drs. Jasper Halpenny, Winnipeg, Man., and Samuel M. D. Clark, New Orleans; general secretary, Dr. Franklin H. Martin, Chicago (reelected); and treasurer, Dr. Allen B. Kanavel, Chicago (reelected). Philadelphia was selected as the next place of meeting.

Vaccination Regulation Rescinded.—It is reported that Secretary of Commerce William C. Redfield has ruled that the provisions of the new seaman's act relative to vaccination within a period of five years before a certificate of competency will be issued to a seaman, need not be enforced. The seaman's law went into effect November 4, and the designated stations for physical examination of applicants have been crowded with seamen applying for certificates. The physical examination required by the law is a rigid one. The reason for Secretary Redfield's ruling has not been disclosed, so far as known.

Cancer Cultures.—To provide against contingencies that might be brought about by the Zeppelin raids on London, Dr. James A. Murray, director of the Imperial Cancer Research Fund, several weeks ago sent to the Columbia University laboratory in New York duplicates of all the cultures and specimens that have been developed in London through thirteen years of patient work by the fund. A recent Zeppelin raid narrowly missed causing the destruction of the laboratories in London. The specimens sent to New York were placed in charge of Dr. Francis Carter Wood, director of the Crocker Cancer Research Fund of Columbia University, and will remain there indefinitely unless those in London should be destroyed. The Crocker Fund and the Imperial Research Fund are in close communication and have exchanged scientists on occasion.

Seize Substitute Specifics.—Several shipments of worthless imitation drug products have been seized by the officials in charge of the enforcement of the Food and Drugs Act. A preparation put up in imitation of neosalvarsan is being distributed to drug stores in this manner. A sample labeled "Neosalvarsan," which was recently examined by the department, was found to be nothing more than salt colored with a coal tar dye, none of the genuine neosalvarsan whatever being present. The label on this product was an exact reproduction of the genuine imported neosalvarsan, or it was an original container refilled with the imitation articles. Other preparations peddled to druggists and purporting to be acetylsalicylic acid, or aspirin, have been seized by officials in charge of the enforcement of the Food and Drugs Act, because an analysis showed that the products were worthless imitations.

Metabolism Investigation Assistant Wanted.—The United States Civil Service Commission announces an open competitive examination for assistant in metabolism investigations, for men only, on December 8, at the usual places in the United States at which such examinations are held. From the eligible list certification will be made to fill the vacancies in this position at the United States Public Health Service for field duty at a salary of $1,500 a year. The prerequisites are, graduation after a four years' course at a university, college or medical school of recognized standing; at least six months' practical experience in work with the respiratory apparatus and the calorimeter; verification of statements as to education and experience, and age, below 45 on the day of examination. Application for those who take this examination is to be made to the United States Civil Service Commission, Washington, D. C., or the secretary of the local board.

Bequests and Donations.—The following bequests and donations have recently been announced:

Johns Hopkins University, $37,500, to be invested under the name of the Beal Memorial Fund, the income to be used at the discretion of the Board of Trustees; Eudowood Sanatorium, Towson, Md., $10,000, by the will of James M. Beal.

Kansas University School of Medicine, Lawrence, $30,000, by the will of Dr. Joseph L. Porter, Paola, Kan.

Columbia University for the Sloane Hospital for Women, New York, $50,000, by the will of William D. Sloane.

Columbia University, the residuary estate estimated at several million dollars, by the will of Emil F. Eno.

Germantown, Philadelphia, Hospital, $5,000, to endow a free bed in memory of George Wilson Harmer and Harry G. Hale Harmer; Children's Hospital, Pittsburgh, $2,500, to endow a free bed in memory of Elizabeth Hale Phillips and Hale Phillips; Allegany Hospital, Pittsburgh, $5,000, to endow a free bed in memory of Henry G. and Elizabeth Hale, these bequests to become operative upon the death of her two brothers, by the will of Mrs. Jane H. Harmer.

Presbyterian Hospital, Philadelphia, 10 per cent. of the residue of his estate by the will of Dr. DeBenneville J. Ludwig.

FOREIGN

Leprosy in Manila.—Twenty-three former inmates of the Culion Leper Colony were brought to Manila sometime ago to undergo a period of observation and thorough examination to determine whether the chaulmoogra oil treatment as administered at the colony had been effective in curing the leprosy with which they were affected. The three physicians under whose inspection they were placed, Drs. Johnston, Mercado and Ordonez, all agreed that there were no longer any indications of the disease present. The patients were allowed to go to their homes, but will be required to report every two or three weeks to their district health officers for the next two or three years. If there are any indications of a return of the disease, the patients will be returned to the leper colony.

Peking Hospital Opened.—Dr. Wallace Butterick, director of the China Medical Board, Dr. Simon Flexner of the Rockefeller Institute for Medical Research, New York, and Dr. William H. Welch, professor of pathology at Johns Hopkins University, Baltimore, were the guests of honor at the dedication of the new Sleeper-Davis Memorial Hospital, Peking, China. The new building is a five-story structure erected by the Methodist-Episcopal Church at a cost of $180,000 and has accommodation for 150 patients. The building is heated by steam, lighted by electricity, equipped with modern plumbing and provided with a diet kitchen. The patients are treated by American physicians who have Chinese assistants and are cared for by Chinese nurses, the head nurse being an American.

The Death of Sir Charles Tupper.—The Right Honorable Sir Charles Tupper, M.D., K.C.M.G., G.C.M.G., aged 94; Canadian physician and statesman; died in Bexley Hall, Kent, England, October 30. He was born at Aylesford, Nova Scotia, July 2, 1821, and obtained his doctorate degree in medicine from the University of Edinburgh in 1843. For twelve years Dr. Tupper practiced in Nova Scotia. He was then appointed as member from Cumberland County to the Nova Scotia Assembly, and in 1867 became prime minister of that province. In 1864 he did memorable work at the Quebec Conference for Confederation and also at the final Colonial Conference in London two years later. He declined a seat in the Canadian Cabinet in 1867 and also the chairmanship of the Intercolonial Railway Board in 1868. Two years later he was made a member of the Privy Council of the Dominion of Canada, and served as its president from 1870 to 1872, when he was appointed minister of inland revenue. In 1873 he became minister of customs, from 1878 to 1879 served as minister of public works and from 1879 to 1884 was minister of railways and canals. In 1884 he was made high commissioner for Canada in Great Britain and served for three years, and then after a lapse of a year in which he was minister of finance of the Dominion, he again returned to England as high commissioner and served until 1896. During this term of office he was one of her majesty's plenipotentiaries on the Fishery Commission at Washington in 1887-1888, and was also a plenipotentiary to negotiate the treaty between Canada and France in 1893. On Jan. 15, 1896, Sir Charles entered the Bowell Ministry as secretary of state and leader of the House of Commons, and from May 1 to July 8 of that year was prime minister of Canada, but with the overthrow of the ministry became leader of opposition in the House of Commons for four years. Honors were deservedly showered on Sir Charles Tupper. For fourteen consecutive terms he was a member of parliament for Cumberland County, N. S., and represented the county for thirty-one years. At one time he was president of the Canadian Medical Association. As minister of public works he created the department of railways and canals, and carried out the policy of the government in the enlargement of the Welland Canal, deepening of the St. Lawrence River, improvement of the Intercolonial Railway and the construction by a private company of the Canadian Pacific Railway. He was made a Commander of the Bath in 1867; K.C.M.G. in 1879, G.C.M.G. in 1886, a baronet in 1888 and an imperial privy councilor in 1908. Sir Charles Tupper was one of the notable figures in Canadian history and played a prominent part in the development of the Dominion from its establishment until his retirement from active life. He shared with the late Lord Strathcona the title of "Canada's Grand Old Man." While he will always be remembered as a political leader and a pioneer in the building of railroads and development of the Dominion, the medical profession of Canada esteemed him as one of the most prominent and able physicians the Dominion has produced.

LONDON LETTER

London, Oct. 22, 1915.

The War

THE CARE OF THE WOUNDED

As pointed out before, the arrangements for the care of the wounded have been very well organized and probably have never been equaled in any previous war, unless by the Japanese. But there is the great difficulty that the wounded have often to lie for hours unaided because any attempt to help them at once draws the enemy's fire and they can be succored only when night gives protection from this danger. They are picked up as rapidly as the operations permit, carried to regimental aid posts by stretcher bearers, then through the field ambulance advance dressing stations, and then by motor ambulances to the casualty clearing stations. Here they remain until fit to proceed further or until operations of urgency are performed. They are then transferred by the hospital trains to the hospital bases. The work is performed with such celerity that as many as 450 patients have been transferred from ambulances to beds in the train in fifty-eight minutes. Whenever possible, patients are classified at the field ambulance headquarters, the most serious cases sent to the nearest casualty clearing station, and the less serious to the more distant. Use is also made of barge ambulances, which the canal system of France and Belgium has made available. Experiments with this novel method of transporting the wounded have proved so satisfactory that the tendency is to increase the number of barges. They offer the great advantage over motor cars or trains that there is absolutely no jolting. A new feature in the present war is the extent to which specialists of all kinds are employed in their own work. Like all classes in the profession, they have joined the army in large numbers. Thus at several of the casualty clearing stations there are specialists in abdominal work, and as many as possible of soldiers with abdominal gunshot wounds are sent to these stations. Moreover, they do not reach the station in the usual indirect manner, but are sent straight in by a field ambulance when picked up. It has been proposed that men wounded in the abdomen should undergo operation practically where they fall, in mobile operating theaters. But this is rendered impossible by the fact that enemy aeroplane observers direct fire on every place where they see men collected.

THE AMERICAN RED CROSS IN ENGLAND

At Paignton in Devonshire a large Red Cross hospital was established by the American women in England and staffed by an American unit which came over in September, 1914, with a staff of six surgeons and twenty-four nurses to which were added an equal number of British and Australian nurses. Later Dr. Crumley of the Mayo Clinic joined as pathologist and bacteriologist. The hospital has been in charge of Dr. Howard Beal of the Medical Service of the United States Army. He has just returned to America, and before leaving was entertained at a farewell luncheon by Sir William Osler, who is consulting physician to the hospital. In proposing a toast, Sir William said that the American women in England had achieved a fine piece of organizing work. Sir Alfred Keogh, director general of the Army Medical Corps, bore testimony to the excellent work done by the American Red Cross at Paignton, and by the Harvard and other units in France. In the name of our Army Medical Corps he thanked Dr. Beal and the American women in England. Dr. Beal said that the hospital now possessed 250 beds, with twenty others in an isolation block. During the year they had treated 1,900 patients with only five deaths. Americans who, like himself, were of English ancestry, felt the call of the blood, and he was confident that if the British War Office wanted to widen the scope of its medical service, he could get a corps of Americans with British blood who would be delighted to come.

EXHIBITION OF FRACTURE APPARATUS AT THE ROYAL SOCIETY OF MEDICINE

Experience is considerably modifying our views of the treatment of wounds and other injuries. A large number of splints and other apparatus for the treatment of fractures have already been devised under the exigencies of active service. Under the auspices of the army medical authorities, an exhibition of apparatus was held at the Royal Society of Medicine, and was largely attended by physicians, most of whom were in khaki. In opening the exhibition, Sir Alfred Keogh, director general of the Army Medical Department, said that it was a step toward making scientific information common property. The surgeons on active service had made great progress. Nevertheless much difference of opinion as to the best methods of treatment of injuries and of the complications of wounds still existed; for instance, there was as yet no agreement as to how best to treat tetanus, as to whether antitoxin, if it were used, should be injected intravenously, subcutaneously or intrathecally, and as to the value of phenol (carbolic acid) and other methods of treatment. Whether the apparatus in the exhibition would be applicable to civil conditions was not the immediate question, but he felt confident that for military surgery a system of splinting fractures had been worked out which marked a permanent advance. The objects had been to allow the patients to make those spontaneous movements which would not be detrimental to the fracture, to insure freedom from pain during transport, and to provide ready access to the wounds, especially for irrigation, which was the rule of the day in France. Many most ingenious apparatus were exhibited.

PARIS LETTER

Paris, Oct. 14, 1915.

The War

TREATMENT OF ABDOMINAL WOUNDS

Last June Dr. Quénu, professor at the surgical clinic of the Faculté de médecine de Paris, read before the Société de chirurgie de Paris a paper which I mentioned in a previous letter (The Journal, July 24, 1915, p. 348). At a recent session of the same society Quénu reported 153 observations by Drs. Petit, Charrier, Bichat, Pascalis, Pellot, Bouvier and Caudrelier of abdominal wounds, of which 110 were operated on, 6 by the Murphy operation and 104 by laparotomy.

Summing up these observations, one obtains a total of 96 penetrating wounds (60 of which were intestinal) with a mortality of 55 per cent. This percentage indicates the advantage of operation over nonoperative treatment, which gives a mortality of at least 67 per cent. It may be said, moreover, that laparotomy has won the day with respect to abdominal wounds of war. Every penetrating wound should be operated on. The diagnosis of penetration is sometimes difficult; it is based largely on a calculation of the course followed by the projectile, figures from the position of the orifices of entry and exit, or, in the case of a single orifice, of the position of the projectile as indicated by roentgenograms. Practically, however, this last resource is not always available, and every wound of the abdominal wall (or even of the adjacent regions) with but a single orifice may be held under suspicion. In cases of doubt, if circumstances permit, it is well to make an exploratory laparotomy.

What are the conditions which call for operation? One should not waver and hesitate on the pretext of shock. Shock is by no means a constant phenomenon; it is often absent in the first hours and it seems to result principally from hemorrhage. Delay can only favor loss of blood and peritoneal infection. It is therefore necessary to decide definitely at the outset on operation or abstention. Promptness of operation is one of the principal elements of success. To attain this promptness greater rapidity in the removal and transportation of the wounded is needed, or indeed the operative equipment might be brought to the patient, that is, an operating station might be installed as near as possible to the firing line.

As for postoperative treatment, it appears from the observations of Pascalis, Bouvier and Caudrelier that it is preferable to remove the patients a short distance within two or three days after operation rather than to await the critical period.

ORTHOPEDIC APPLIANCES FOR CRIPPLES

M. Gratien Candace, a deputy, has found that some manufacturers of orthopedic apparatus sell at from 125 to 150 francs (about $25 to $30) the same types of apparatus which others sell at 200 francs (about $40). He has therefore demanded that the government exercise control over orthopedic manufacturing establishments. The question is under discussion in the Chamber of Deputies. It appears that the chaotic conditions in the manufacture of apparatus are due to the lack of agreement as to types of apparatus. This lack necessitates a multiplicity of models and produces a variability in price. The undersecretary for the medical service called the head physicians of the orthopedic centers of Paris, Lyons, Montpellier and Bordeaux into conference Aug. 10, 1915, to consider means of improving the situation by hastening the production and controlling the manufacture of apparatus. It was agreed that it would be wise to seek a standard type of prothetic appliance for each kind of mutilation of the limbs; this would make it possible to establish a scale of prices that would apply uniformly to the products of all manufacturers. As a long period of inactivity is harmful from all points of view, the undersecretary decided that, without waiting for the final choice, each cripple would receive a temporary appliance, which would later be replaced by the standard type. Every cripple should in any case have two sets, in order that his activity and work may not be imperiled by the breaking of some part of a crutch or artificial limb.

It has also been asked if the government ought not to organize factories for orthopedic appliances in which the cripples themselves should be utilized. The undersecretary consulted surgeons and manufacturers on this point. These were unanimous in saying that the most ingenious prothetic appliances were invented, not by surgeons and manufacturers, with all their knowledge and experience, but by the cripples themselves. He therefore has sought for workmen crippled in the lower limbs, who before their incapacity, were woodworkers, mechanics and shoemakers, for employment in the manufacture of prothetic apparatus. At the Saint-Maurice asylum, near Paris, a workshop is being constructed, and also at Lyons, in connection with the Ecole des mutilés.

TREATMENT OF THE SEQUELAE OF WOUNDS BY PNEUMATIC MASSAGE

Dr. J. Bergonié, professor of biologic physics and of the clinic of medical electricity at the Faculté de médecine de Bordeaux, has reported to the Académie des sciences a method of treatment of the sequelae of wounds, which consists in applying to the affected members or regions a mechanical and pneumatic massage, by rhythmic variations of pressure transmitted to the parts through capsules or drums, one of the walls of which is alternately inflated and deflated. These various receptors or massage instruments may be adapted, in size and in form, to the most varied cases. They transmit pressures of a kilogram per square centimeter and more, and likewise the slightest degree of pressure, scarcely brushing the skin. The pressure may be regulated by a stopcock. The variations of pressure or pulsations are furnished by a piston pump without valves, giving 120 alternations of pressure and aspiration per minute. The apparatus already installed, with 25 mechanical masseurs, can give 300 pneumatic massage treatments in a six-hour day. Excellent results have been obtained in cases of paralysis due to fractures of the hand, stiffness of the fingers, vicious adherent or deep cicatrices, myositis due to retraction of cicatrices, edemas and trophic troubles, tendinous and muscular adhesions, etc.

This new method cannot take the place of manual massage administered by a trained and experienced physician, but it does permit a great number of wounded to benefit by massage.

TREATMENT OF WOUNDS BY MAGNESIUM CHLORID

Dr. Rosenblith of Paris has reported to the Académie de médecine the results which he has obtained by dressing wounds with a 1.2 per cent. solution of magnesium chlorid. Cicatrization is much more rapid in wounds so dressed than in the case of wounds dressed with the usual antiseptics. Prolonged suppuration and cytolysis are avoided.

BERLIN LETTER

Berlin, Oct. 13, 1915.

Personal

Professor Oberländer, the urologist, died in Dresden, October 2, at the age of 66 years. He was the associate of Nitze, the inventor of the cystoscope, and as such contributed much to the development of the instrument and its use in urethroscopy. He was also associated with Professor Zülzer in the publication of the "Clinical Handbook of Genito-Urinary and Sexual Organs." He has published many monographs and textbooks bearing on the pathology and treatment of gonorrhea. He was the editor of the *Zeitschrift* and *Zentralblatt für Urologie.*

Health of Prussia and Germany

Two comprehensive publications which appeared recently contribute information as to health matters in Prussia and Germany. One book entitled "Health Matters in Prussia during 1913" was published by the medical division of the ministry of the interior; the other book was the eighteenth volume of medical statistics of the imperial health department. It was entitled "Vital Statistics of the German Empire during 1912." The one essential point brought out by these publications is the fact that health conditions have improved very much. The total mortality for 1913 in Prussia was 14.9 per thousand population, as against 15.49 in 1912 and 17.21 in 1911. The natural increase in population was 3,021 greater than in the preceding year, but because of the continued decrease in the birth rate, this increase did not equal that of previous years. The birth rate per thousand population was 28.17, as against 28.88. The decrease in the birth rate was 0.71 greater than the decrease in mortality, which was 0.59 lower than the next lowest rate. In 1912 the number of births was greater by 12,783 than in 1913; in 1906 it was 99,527 greater. In the cities 513,135 children were born, and in the country 696,520. Of the former, 16,354 were born dead; of the latter, 19,615. The provinces of West Prussia and Westphalia led in the number of children born living, whereas Brandenburg and the suburbs of Berlin had the lowest number of children born living. Exclusive of those infants born dead, 175,989 infants died during the first year of life; 71,880 of these died in the cities. The remaining 104,109 died in the rural districts. A lowering in mortality was particularly noticeable in cases in which the cause of death is given as congenital malnutrition and developmental defects, nervous diseases, cerebral apoplexy, old age, and diseases of the respiratory and circulatory organs. The mortality was higher where the cause of death was diseases of the digestive organs, suicide, murder or accidents.

There is no appreciable decrease in the mortality from diphtheria, tuberculosis and scarlet fever. On the other hand, the mortality from whooping cough has been lowered, whereas that of measles, smallpox and venereal diseases is higher. During this time there were 76,631 cases of diphtheria, as against 77,420 in 1912; 171 cases of cerebrospinal meningitis as against 178 cases; 5,220 cases of puerperal fever as against 4,888; 38,318 cases of pulmonary and laryngeal tuberculosis as against 39,820; 70,396 cases of scarlet fever as against 66,070; 9,443 cases of typhoid as against 11,353 cases, and 58 cases of smallpox as against 165 cases during the preceding year. Twenty of the smallpox patients were foreigners. Most of the native or domestic cases occurred among persons who were infected by the foreigners. Forty-one of these patients had been given a timely vaccination, as against thirty-two similar cases in 1912. In each case this was the first vaccination, but vaccination could not be held responsible for the subsequent fatal illness.

In 1913 there were 2,344 general hospitals, exclusive of private hospitals with ten beds or less. The number of available beds was 1,177,184. These hospitals took care of 1,534,209 patients, with a total of 42,715,475 bed days.

These statistics also show that, based on the census of 1910 and 1900, the number of living persons between the ages of 30 and 60 has increased by 9.6 during this decade over all other age classes. Between the ages of 1 and 60, this increase was 3.3 per cent., although the deaths among the nurslings diminished by 3.4 per cent. The death rate as well as the birth rate of 1912 was the lowest recorded, although the figures of Prussia for 1913 are still lower. A consideration of the mortality by ages shows a considerable diminution in infant mortality as against 1911, noted for the extreme heat. The death rate between 1 and 15 years is also lower, but has not decreased among those dying after 15 years. The mortality from gastro-intestinal diseases is considerably lower, whereas the mortality is higher for diseases of the circulatory organs, the appendix, malignant disease and puerperal fever than it was during the half decade of 1905-1910. During the same period, the death rate from pulmonary tuberculosis was 15.2, as against 13.1 in 1913. The total death rate per 10,000 of the middle class fell from 175.2 to 155.4 per cent.

Transportation of the Wounded by Aerial Tramway

One of the Bavarian divisions in the south Vosges mountains has built several electric aerial tramways (*Drahtseilbahn*) for the purpose of transporting ammunition, food and building material for the army. Several hundred soldiers under the direction of engineering officers constitute the personnel of this railway. After a battle, or at any other time that the wounded need to be transported, special baskets are attached to this tramway in which the wounded can be transported comfortably through the mountain territory to the nearest railway station in the valleys.

Deaths

Brigadier-General George Miller Sternberg, Surgeon-General, U. S. Army, from 1893 to 1902; died at his home in Washington, D. C., November 3, aged 77. Dr. Sternberg was born at Hartwick Seminary, Otsego County, N. Y., June 8, 1838; received his preliminary education in that institution and commenced the study of medicine at Cooperstown, N. Y., under the preceptorship of Dr. Horace Lathrop and then attended lectures in the College of Physicians and Surgeons in the City of New York from which he was graduated in 1860. He entered the Army as assistant surgeon in 1861, was promoted to captain in 1866, to major in 1875, to lieutenant-colonel in 1891 and two years later was appointed Surgeon-General of the Army; he was retired June 8, 1902. During his more than forty years of active service in the Army, General Sternberg was repeatedly on duty against Indians, in epidemics of yellow fever and cholera in addition to the ordinary duties which pertain to medical officers; he was a member and secretary of the Havana Yellow Fever Commission of the National Board of Health in 1879; a delegate from the United States to the International Sanitary Conference at Rome, in 1885; was detailed to make investigations in Brazil, Mexico and Cuba relating to the etiology and prevention of yellow fever, from 1887 to 1889, and was consulting bacteriologist to the health officer of the port of New York in 1892 when the cholera ships came to that port. He was president of the American Medical Association in 1896; president of the Association of Military Surgeons of the United States in 1894; once president of the American Public Health Association; president of the section on Military Medicine and Surgery of the Pan-American Congress; vice president of the American Microscopical Society and a member of many other learned societies at home and abroad. General Sternberg was best known as a bacteriologist; his work on "Bacteria" published in 1884 and his "Manual of Bacteriology" which appeared in 1892 are standard works. He was a pioneer in this line of research work and was a prolific writer on the etiology of diseases, comparative value of methods of disinfection, and the like. Since his retirement from the Army, General Sternberg has resided in Washington, D. C. On his seventieth birthday, June 8, 1908, he was given a complimentary banquet by residents of Washington, both military and civilian, who paid tribute to the service to humanity rendered by General Sternberg, and after a number of laudatory addresses, presented him with a silver loving cup. While General Sternberg made an enviable record as a military sanitarian, having been repeatedly commended in orders, he was a scientist of world-wide fame, and a genial gentleman beloved by all with whom he came in contact.

Brigadier-General George Miller Sternberg, 1838-1915.

Nathaniel D. Cox, M.D. Medical College of Indiana, Indianapolis, 1884; aged 73; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association and a charter member of the Owen County Medical Society; a veteran of the Civil War; died at his home in Spencer, Ind., October 27, from heart disease.

Edward Porter Colby, M.D. Long Island College Hospital, Brooklyn, 1861; aged 76; acting assistant surgeon, United States Navy, for three years during the Civil War; professor of nervous diseases in the Boston University School of Medicine; consulting neurologist to the Massachusetts Homeopathic Hospital and the Westborough Insane Hospital; died at his home in Boston, November 1.

Edward S. Crill, M.D. Eclectic Medical Institute, Cincinnati, 1865; aged 72; state senator in the Florida Legislature from 1880 to 1885 and from 1897 to 1901; state treasurer from 1885 to 1889; and from 1889 until the time of his death president of the East Florida State and Trust Company, Palatka; once mayor of that city; died at his home October 23, from uremia.

Isaac L. Firebaugh, M.D. Miami Medical College, Cincinnati, 1875; aged 68; of Robinson, Ill.; a Fellow of the American Medical Association; for many years a member and once president of the Aesculapian Society of the Wabash Valley; for forty years a practitioner of Robinson; died in the Presbyterian Hospital, Chicago, October 25, from cirrhosis of the liver.

Julius Augustus Post, M.D. Bellevue Hospital Medical College, 1866; aged 68; a member of the Michigan State Medical Society; a medical cadet during the Civil War; for more than forty years a practitioner of Lansing, Mich.; once assistant superintendent of the Lansing City Hospital; died suddenly on the street in Lansing, October 28, from heart disease.

Horace Greeley Norton, M.D. University of Pennsylvania, Philadelphia, 1880; aged 57; a member of the Medical Society of New Jersey and secretary of the State Board of Medical Examiners; for two terms president of the Mercer and Monmouth County medical societies; died in St. Francis' Hospital, Trenton, October 27, from cerebral hemorrhage.

John White Stevenson, M.D. Medical College of Ohio, Cincinnati, 1883; aged 56; a Fellow of the American Medical Association; acting assistant surgeon, U. S. P. H. S., since 1893 and in charge of the office in Cincinnati; for thirty years a practitioner in that city; died at his home in Walnut Hill, Cincinnati, October 24, from heart disease.

Ira Morton Martin, M.D. Kentucky School of Medicine, Louisville, 1891; aged 49; formerly a member of the State Medical Society of Wisconsin; a specialist on diseases of the eye, ear, nose and throat; for the last nine years a practitioner of Green Bay, Wis.; died suddenly on the Oneida Reservation, from heart disease.

Hugh Clayton Blair, M.D. Vanderbilt University, Nashville, Tenn., 1908; aged 29; a Fellow of the American Medical Association and local surgeon of the Sante Fe System at Rincon, N. M., while on his way to Albuquerque, N. M., to seek hospital care for appendicitis; died on the train, October 27.

William M. Johnson, M.D. American Eclectic Medical College, Cincinnati, 1857; aged 86; a member of the Illinois State Medical Society and president of the Wayne County Medical Society in 1910; for sixty years a resident of Johnsonville, Ill.; died at his home, August 13, from carcinoma.

Josias Louis Duval, M.D. McGill University, Montreal, 1898; aged 39; of St. John West, N. B.; major in the Canadian Army Medical Corps and on duty with the First Canadian Field Ambulance in Flanders; is reported on the casualty list of September 1, as having died in Flanders.

John Ditmars VanNuys, M.D. Jefferson Medical College, 1870; aged 69; formerly a Fellow of the American Medical

Association; for twenty years physician at the Osawatamie State Hospital, Osawatamie, Kan.; died at the home of his son in New Castle, Ind., November 1, from myocarditis.

Ira D. Knotts, M.D. University of Pennsylvania, Philadelphia, 1887; aged 58; formerly a Fellow of the American Medical Association; and president of the Greene County (Pa.) Medical Society; of Davistown, Pa.; died in a hospital in Pittsburgh, October 22, from cerebral hemorrhage.

Timothy Jerome Regan, M.D. College of Physicians and Surgeons in the City of New York, 1884; aged 54; for many years a member of the staff of the New York Polyclinic Hospital and of the Brooklyn Board of Health; died at his home in Brooklyn, October 27, from nervous breakdown.

Herbert Eugene Knowlton, M.D. Harvard Medical School, 1891; aged 49; formerly a member of the Massachusetts Medical Society and a practitioner of Cambridge, Mass., and Belfast, Me.; died at his winter home in National City, Calif., October 24, from septicemia.

George D. Johnston, M.D. Washington University, St. Louis, 1858; aged 79; for many years president of the St. Louis Car Shops, but for the last thirty-five years a ranchman and real estate dealer of San Antonio, Texas; died at his home in that city, October 28.

Joseph Robert Rosson, M.D. University of Alabama, Mobile, 1888; aged 46; formerly a druggist, auditor of the Southern Express Company and a postoffice inspector; editor of the *Cullman Democrat;* died at his home in Cullman, Ala., July 29, from nephritis.

John J. Kennedy, M.D. Starling Medical College, Columbus, Ohio, 1897; aged 47; of Mill Creek, W. Va.; was murdered October 31. The motive is supposed to have been robbery. Dr. Kennedy's body was found on a lonely road near Mill Creek.

Victor Gus Becska, M.D. Detroit College of Medicine and Surgery, 1907; aged 34; a member of the Medical Society of New Jersey; and a member of the Passaic (N. J.) Board of Health for two years; died at his home in that city, October 25.

Edwin D. Schaeffer, M.D. Baltimore Medical College, 1893; aged 48; a Fellow of the American Medical Association; for many years a member of the school board of Reading, Pa.; died at his home in that city, October 23, from septicemia.

Alan Butler Murray, M.D. College of Physicians and Surgeons in the City of New York, 1890; aged 50; for many years a practitioner of Montana, but recently a resident of Clinton, Ind.; died in a hotel in Terre Haute, Ind., October 27.

George Frank Harris (license, Illinois), aged 96; a practitioner for seventy-five years; an honorary member of the Morgan County (Ill.) Medical Society; died at his summer home near Jacksonville, Ill., August 9, from lobar pneumonia.

James McGeoch, M.D. Saginaw Valley Medical College, Saginaw, Mich., 1900; aged 56; a Fellow of the American Medical Association and a well-known practitioner of Bay City, Mich.; died at his home October 28, from pneumonia.

James Gerald Cullen, M.D. University of Pennsylvania, Philadelphia, 1905; aged 38; a member of the Ohio State Medical Association and city physician of Toledo for three years; died at his home in Toledo, October 26.

E. R. Young, M.D. Medical College of Georgia, Augusta, 1859; aged 83; one of the oldest practitioners of Thomas County, Ga.; and for thirty years postmaster of Metcalfe; died at his home, August 6, from heart disease.

Joseph Leslie (license, years of practice, Illinois, 1877), aged 77; a practitioner of Macon County, Ill., for forty-eight years; and until five years ago a practitioner of Elwin, Ill.; died at his home in Decatur, Ill., October 26.

Horace K. Braisted, M.D. University of Michigan, Homeopathic College, Ann Arbor, 1880; aged 59; a physician and druggist of Delta, Colo.; died at his home, July 23, from cerebral concussion due to accidental injury.

Nicholas F. Schwartz, M.D. University of Wooster, Cleveland, 1872; aged 67; for many years a practitioner of Cuyahoga County, Ohio, and recently a resident of Chagrin Falls; died in Auburn, Ohio, October 27.

Lockhart Brooks Farrar, M.D. Berkshire Medical College, Pittsfield, Mass., 1848; aged 93; for more than half a century a resident of Ford County, Ill.; died at his home in Paxton, October 30, from senile debility.

John N. Sigler (license, Indiana, 1897), aged 66; died at his farm near Sedalia, Ind., October 15.

Marriages

P. A. Surg. Julian Mason Gillespie, U. S. P. H. S., Ellis Island, N. Y., to Miss Verna Duplantis of New Orleans, in New York City, October 20.

Benjamin Franklin Montgomery, M.D., Stevens City, Va., to Miss Lucy Deahl of Barryville, Va., at Washington, D. C., October 27.

Daniel James Ellison, M.D., Lowell, Mass., to Miss Anna Gale Newhall of Lynn, Mass., at Swam Scott, Mass., November 3.

John Samuel Hick Leard, M.D., Forest Hills, Boston, to Miss Isabelle H. Earnshaw of West Roxbury, Boston, October 26.

James Louis Quesenberry, M.D., Worthington, Ky., to Mrs. Ada Freeman Bauer of St. Matthews, Ky., October 28.

Hubert Benbury Haywood, M.D., Raleigh, N. C., to Miss Margaret E. Manor of Harrisonburg, Va., October 19.

Milton Augustus Broemser, M.D., Holly, Colo., to Miss Berenice Edwords of Kansas City, Mo., October 26.

Abraham Hyman, M.D., New York City, to Miss Belle Davis of Erie, Pa., in New York City, October 28.

Edgar Paul McNamee, M.D., Cleveland, Ohio, to Miss Ethel Marian Petrie of Oneida, N. Y., October 30.

Lawrence E. Kelley, M.D., Des Moines, Iowa, to Miss Sue Gunn of Kellogg, Iowa, at Des Moines, October 2.

Leon Wolf, M.D., Portland, Ore., to Miss Rose L. Hochberg of New York City, in Portland, October 21.

Thomas Francis Hennessey, M.D., Lynn, Mass., to Miss Gertrude Miller of Allston, Boston, October 27.

Albert David Kaiser, M.D., Rochester, N. Y., to Miss Margaret Dickinson of Brooklyn, November 4.

Matt Blakely Weir, M.D., to Miss Pearl Parker, both of Grant, Iowa, at Red Oak, Iowa, September 14.

Russell Comber Doolittle, M.D., Des Moines, Iowa, to Miss Myrtle Cordner of Chicago, October 2.

Henry W. Greist, M.D., Casper, Wyo., to Mrs. Mollie Ward Butler of Monticello, Ind., October 18.

Roscoe E. Cook, M.D., to Miss Floy D. Sloan, both of Des Moines, Iowa, at Boone, Ia., September 16.

Warren E. Bradbury, M.D., Clinton, Ill., to Miss Ida Brulle of Neillsville, Wis., October 26.

Lawrence Leslie Irwin, M.D., to Miss Zona M. McDowell, both of Bloomington, Ill., October 10.

Frank Kaiser Bartlett, M.D., Ogden, Utah, to Miss Mary Paxton of Aurora, Ill., recently.

Samuel D. Rosenthal, M.D., to Miss Tubie Greenspohn, both of Chicago, November 7.

Association News

THE DETROIT SESSION

Officers of Local Committee on Arrangements and Chairmen of Subcommittees

The following constitute the officers of the local committee for the Detroit session of the American Medical Association:

Chairman: Louis J. Hirschman.
Secretary: Ernest K. Cullen.
Treasurer: Thaddeus H. Walker.

The following physicians are chairmen of the various subcommittees of the Committee on Arrangements:

Finance: E. W. Haass.
Entertainment: A. D. Holmes.
Hotel: Roland Parmeter.
Halls and Meeting Places: F. B. Tibbals.
Registration: F. B. Walker.
Scientific Exhibit: J. W. Vaughan.
Commercial Exhibit: John N. Bell.
Printing and Publication: J. H. Dempster.
Automobiles: Angus McLean.

The local committee on arrangements has established an office at the Wayne County Medical Society Building, 33 High Street E., Detroit, Mich. All communications should be mailed to this address.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

DR. CHARLES FLESH FOOD

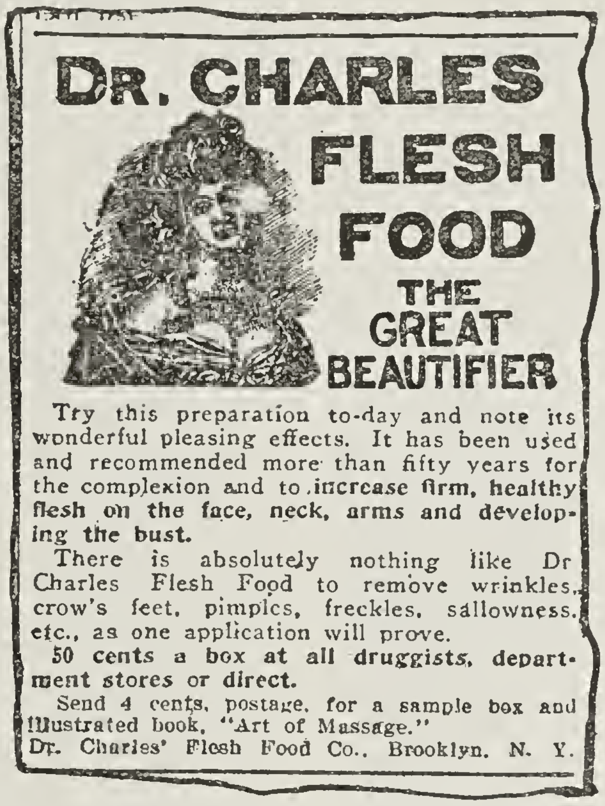
In Brooklyn there is a concern styled Dr. Charles Flesh Food Company that sells "toilet specialties." In addition to rouge and face powders of various tints as well as soaps and toilet creams, the concern puts out such preparations as "Foot Relief" for "sore, tired, aching feet" and "Revivo" claimed to be a "Remedy for Dandruff and All Scalp Diseases." The "Dr. Charles Co. Tonic Tablets" are put forward by the company as "the very best preparation for restoring health to the debilitated; rich blood to the anemic; relief to women from their specific ills, strength to those tottering along life's pathway with a burden of liver and kidney troubles, nervous prostration, dyspepsia and many wasting diseases that lead to consumption." The product on which, apparently, they lay more emphasis than any other is "Dr. Charles Flesh Food" an ointment sold under such claims as:

> "Applied to the skin nourishes by absorption."
>
> "It builds firm, healthy flesh."
>
> "Acts quickly and surely on a skin that is seamed and wrinkled either by exposure or age, smoothing away furrows of the forehead and lines about the eyes and mouth."
>
> "Undeveloped busts and those shrunken through sickness or nursing may be materially increased in size; made full, firm, plump and rounded out into a beautiful contour by the use of this wonderful flesh developer. IT ACTS ALIKE ON THE GROWING GIRL AND MATURED WOMAN."

In an advertising booklet the company declares that Dr. Charles Flesh Food has the endorsement of physicians and to prove it declares:

> "The *Therapeutic Record,* a leading Medical Journal tells in its August, 1908, number of two lady patients who used it [Dr. Charles Flesh Food] under the advice of their physician, Dr. M. P. Creel."

The *Therapeutic Record* is one of those medical journals (Heaven save the mark!) that are supported by the nostrum interests. From editorial endorsements of a fraudulent "rupture cure" (Stuart's Plas-Tr-Pads) to advertisements of such frauds as fake ear drums, Duffy's Malt Whiskey and Antikamnia, it is not a far call to the equally fraudulent "Flesh Food." Neither is one surprised to find in the advertising pages of the *Therapeutic Record* advertisements of Stuart's Plas-Tr-Pads and Dr. Charles Flesh Food. The *quid pro quo* is thus established.



DR. CHARLES FLESH FOOD THE GREAT BEAUTIFIER

Try this preparation to-day and note its wonderful pleasing effects. It has been used and recommended more than fifty years for the complexion and to increase firm, healthy flesh on the face, neck, arms and developing the bust.

There is absolutely nothing like Dr Charles Flesh Food to remove wrinkles, crow's feet, pimples, freckles, sallowness, etc., as one application will prove.

50 cents a box at all druggists, department stores or direct.

Send 4 cents, postage, for a sample box and illustrated book, "Art of Massage."
Dr. Charles' Flesh Food Co., Brooklyn, N. Y.

An appeal from the Chicago Daily News.

Whatever Dr. Charles Flesh Food may lack in therapeutic efficiency it makes up in color and odor. The preparation is an appealing pink, highly perfumed ointment. A box of the stuff was submitted to the Chemical Laboratory of the American Medical Association and in due time one of the chemists gave the results of his investigation. The findings may be summed up as follows:

Starch	38.5 per cent.
Petrolatum (vaseline)	51.0 per cent.
Zinc oxid	2.0 per cent.
Impure stearic acid	1.5 per cent.
Perfume, coloring matter.	

From the report it is apparent that the alleged "flesh food" is no better than, if as good as, an ointment made by mixing five parts of vaseline with four parts of starch and adding a dab of zinc oxid. Dr. Charles Flesh Food is a fraud and if articles of this nature come under the purview of the federal Food and Drugs Act the concern should be prosecuted for misbranding. The stuff is not, in any sense of the word, a "flesh food"; it does not "build firm healthy flesh," it will not develop the bust and it does not "nourish by absorption."

"WHAT IS THE CHARACTER OF THE MEDICAL JOURNALS YOU READ?"

"At the session of the House of Delegates held in San Francisco, the Board of Trustees presented a special report on the work of the Council on Pharmacy and Chemistry in which it condemned in unqualified terms the advertising in medical journals of proprietary nostrums.

"We do not believe that the sincerity of the philanthropic desires of the American Medical Association in its efforts to destroy the manufacture and sale of nostrums, proprietary or otherwise, is questioned by any one except the financially interested purveyors of these fraudulent remedial concoctions. We do not believe that any one, not excepting the foregoing mentioned purveyors, questions the honesty of the reports of the Council on Pharmacy and Chemistry. It must furthermore appear patent to every one that financial gain is the one and only aim of these conscienceless individuals who dupe the public, that there is no more philanthropy in their reptilious souls than there is sympathy for any living thing in the brain of the venomous adder. No one with a modicum of reason believes that the ordinary business man invests his capital in exploiting any form of merchandise for your, rather than his material benefit. His is a crusade for profit. The American Medical Association is in need of money to carry on its beneficent projects, but is its crusade against nostrums tinged with the hue of expected profit or is it a truly altruistic crusade? The query requires no answer. It is self evident.

"Referring to the subject of the man with purely business instincts: in placing an article on the market he estimates the cost of production, its greatest obtainable profits, and the ways and means to create a demand for his ware. If its intrinsic value is approximately recognizable he must attune his profits to that general knowledge. The purchaser of his wares cannot be fooled or swindled to any great extent. If they be, their loss is a material one and can be recovered from. But when an exploiter places on the market a nostrum of no intrinsic value (excepting the bottle and cork) for which he claims virtues which it does not possess and which the wise and the unwise cannot dispute until victimized; when he envelops it in an air of mystery, appealing to superstition, ever present in the human mind, he robs the purchaser of his money and health, thereby becoming a thief of the most despicable order. Any medical journal printing the fraudulent claims contained in the advertisements of the nostrums condemned by the Council on Pharmacy and Chemistry is an accessory to this act of thievery and the subscriber to such journals voluntarily assumes the position of an accomplice."—*New York State Jour. Med.,* October, 1915.

Laboratory Research and Type of Individual.—The laboratory worker who conducts his investigations without regard to type leaves them open to criticism. Thus metabolism experiments must be conducted on individuals of the same type or the subjects will react differently to a given diet. Doubtless in this fact lies a possible suggestion for the solution of certain discrepancies reported by various laboratories working on a given problem.—John Bryant, M.D., *Boston Medical and Surgical Journal,* Sept. 9, 1915.

Correspondence

An Accurate Microchemical Method of Estimating Sugar in the Blood

To the Editor:—The microchemical method of estimating blood sugar, I described in The Journal, Nov. 7, 1914, p. 1667, is very reliable. Numerous examinations of blood, with and without the addition of known quantities of sugar, yield remarkably concordant and exact results. The maximum error encountered does not exceed ± 3 per cent.

I wish, however, to call attention to the fact that the apparatus (styled the Epstein microsaccharimeter) sold on the market has until lately included standard tubes containing solutions of improper color intensity. Estimations of blood sugar made with such standard tubes are necessarily faulty.

I have attempted to reach all those using this apparatus by personal communication, to apprise them of the error. Standard tubes are now on sale by Eimer and Amend, and also by E. Leitz of New York. These have been prepared under my supervision and contain the proper solutions.

Albert A. Epstein, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MAASE-ZONDEK TEST FOR URIC ACID IN BLOOD

To the Editor:—Please describe in your columns the method of Maase and Zondek for testing uric acid in the blood.

H. C. Rucker, M.D., Richmond, Va.

Answer.—This colorimetric method was described by Maase and Zondek in the *Münchener medizinische Wochenschrift,* 1915, lxii, 1110. The following is their description of the method: From the fasting patient 6 or 7 c.c. of blood are drawn into an Erlenmeyer flask containing a little sodium fluorid. Then exactly 5 c.c. of the blood is taken into a pipet and transferred to 25 c.c. hundredth-normal acetic acid and stirred vigorously while it is being heated until coagulation is complete. It is then filtered while hot into a porcelain dish. The filtrate is limpid, but a slight yellowish tint does no harm. The residue and dish are then rinsed at once with about 60 or 70 c.c. of boiling water, to which—to avoid colloid solutions—about 0.5 gm. sodium acetate has been added. This brings the total filtrate to about 100 c.c. Then 2.5 c.c. of 50 per cent. acetic acid are added and the whole is evaporated on the water bath down to exactly 5 c.c., which usually takes about an hour. There is no precipitation as a rule with this technic, but even if there is, this is immaterial. After neutralizing with a saturated solution of sodium carbonate, added a drop at a time, the contents of the dish are transferred to a 25-c.c. measuring flask and the dish is rinsed with cold water. Then 2.5 c.c. of saturated solution of sodium carbonate and 1 c.c. of the phosphotungstic acid reagent are added, and the total amount of fluid brought up to 25 c.c. by addition of distilled water. Then the mixture is allowed to stand for ten minutes to allow the blue tint to reach its greatest intensity.

Generally the fluid is limpid. It is then compared in the Autenrieth-Königsberger colorimeter with the scale for uric acid. If the tint does not correspond exactly, the fluid should be filtered once or twice. The tint is examined by good daylight, and by diffuse light. In very hot weather the fluids had better be kept cool.

They give a table of values for minute gradations, ranging from 7.7 mg. uric acid at the 20 mark to 0.8 mg. at the 85 mark. The phosphotungstic acid reagent is made exactly according to Autenrieth's directions (*München. med. Wchnschr.,* 1914, lxi, 457). They have tested all the other substances in the blood that might interfere with the reaction, but found that none reduce phosphotungstic acid except in a concentration such as could scarcely ever occur in the blood, even under extreme conditions. At the same time, to avoid possible error from this source, they deduct always 0.5 mg. as the standard figure, determined by various tests described.

The blood to be tested must have been drawn within twenty-four hours at longest, as otherwise products of albumin disintegration might interfere with the reaction. Another point they emphasize is that the evaporation must be carried to the exact point mentioned, namely, down to 5 c.c. Certain volatile substances in the mixture are driven off by this, which otherwise might disturb the reaction. The dish they use has two blue rings under the glaze, marking off the 10-c.c. and the 5-c.c. capacity. They always take whole blood for the test, as Zondek has demonstrated that the blood clot may contain more or less uric acid.

Maase and Zondek are assistants at the first University Medical Clinic at Berlin, of which His is director. Their technic requires only 5 c.c. of blood and not more than an hour and a half of time. It scarcely ever fails, they say, and is simple enough to be applied by even those unskilled in chemical research. The amounts of uric acid added to the blood are recovered with the loss of, at most, a few tenths of a milligram. The findings, especially the averages, harmonize with the figures obtained by other authors with far more complicated methods. Precipitation of the uric acid is avoided, and with it the losses inseparable from this. The average in thirty healthy persons, mostly soldiers, after three days of a purin-free diet, was 2.5 mg. uric acid in 100 c.c. of whole blood. (Steinitz' average, with the Folin-Denis method, was 2.7 mg.) In five cases of gout, the figures were 5, 4.8, 4.9, 4.5 and 5.5 mg. uric acid after three days of purin-free diet. On prolonged abstention from purins, the findings in true gout indicated a decline, the figure dropping from 5 to 4 mg. and even to 1.8 mg. in one case.

Autenrieth prepares the phosphotungstic acid reagent by boiling 100 gm. of sodium tungstate with 80 c.c. of 85 per cent. phosphoric acid and 750 c.c. of water for three or four hours, under a reflux condenser, and then diluting, after cooling, with water to 1 liter. The 85 per cent. phosphoric acid is made by gradually stirring 65 gm. of commercial phosphoric acid anhydrid into 30 c.c. water. The red sediment is separated out over an asbestos filter.

ARTICLES ON DETECTION OF TYPHOID CARRIERS

To the Editor:—I should appreciate references to recent publications bearing on the methods and reliability of the methods of examination of supposed typhoid carriers.

W. S. Rankin, M.D., Raleigh, N. C.

Answer.—The following may be referred to:

Bigelow, E. B.: Value of Widal Reaction in Detection of Typhoid Carrier, The Journal, May 4, 1912, p. 1339.

Gay, F. P., and Claypole, E. J.: Typhoid-Carrier State in Rabbits as Method of Determining Comparative Immunizing Value of Preparations of Typhoid Bacillus, *Arch. Int. Med.,* December, 1913, p. 613.

Krumwiede, C., and Pratt, J. S.: Further Observations on the Growth of Bacteria on Media Containing Various Anilin Dyes, with Special Reference to an Enrichment Method for Typhoid and Paratyphoid Bacilli, *Jour. Exper. Med.,* 1914, xix, 501.

Ebeling, E.: Typhoid Bacilli in Blood in Healthy Carrier, *Berl. klin. Wchnschr.,* April 13, 1914; abstr., The Journal, May 16, 1914, p. 1588.

Mayer, A.: Examination of Gall Bladder after Cholecystectomy to Discover Chronic Typhoid Bacilli Carriers, *München. med. Wchnschr.,* May 19, 1914; abst., The Journal, June 27, 1914, p. 2054.

Schmitz, H.: Determination of Typhoid Bacilli in Stools, *München. med. Wchnschr.,* Oct. 20, 1914.

Wile, V. A.: Typhoid Bacilli in Blood Revealed by Microscope, *Ugesk. f. Læger,* Sept. 24, 1914; abstr., The Journal, Nov. 14, 1914, p. 1798.

Carnot, P., and Weill-Halle, B.: Method of Determining the Presence of Bacillus Typhosus, abstr., The Journal, Jan. 16, 1915, p. 260; Simplified Technic for Cultivating Typhoid Bacilli from Blood, Bile and Stools, *Presse méd.,* March 25, 1915.

Schmidt, P.: Modified Bile Technic for Cultivation of Typhoid Bacilli from Blood, *Deutsch. med. Wchnschr.,* Jan. 7, 1915.

Koenigsfeld, H.: Improved Technic for Cultivation of Typhoid Bacilli, *München. med. Wchnschr.,* Jan. 26, 1915; abstr., The Journal, March 13, 1915, p. 950.

Gautier, P.: Motility Test for Typhoid Bacilli in Stools, *Rev. méd. de la Suisse romande,* July, 1915; abstr., The Journal, Sept. 4, 1915, p. 908.

NO ANTINARCOTIC LAW IN CANADA

To the Editor:—Will you be good enough to inform me whether there is in Canada anything corresponding to the Harrison Narcotic Law? The question has come up concerning an individual who has recently been treated for the opium habit and is thinking of going to Canada.

W. G. Richards, M.D., Billings, Mont.

Answer.—Canada has no such law as the Harrison Narcotic Law, nor is there any law serving the same purpose.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Illinois May Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, May 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 165, of whom 135 passed and 30 failed. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Georgetown University	(1913)	1
George Washington University	(1907)	1
Bennett Medical College	(1914) (1915, 13)	14
Chicago College of Med. and Surg.	(1914, 2) (1915, 16)	18
Hahnemann Med. Coll. and Hosp., Chicago	(1914) (1915, 4)	5
Jenner Medical College	(1915)	1
Northwestern University	(1914, 2) (1915, 14)	16
Rush Medical College	(1914, 4) (1915, 29)	33
University of Illinois	(1913) (1914, 2) (1915, 30)	33
State Univ. of Iowa, Coll. of Med	(1912)	1
Johns Hopkins University	(1913)	1
University of Maryland	(1912)	1
Harvard University	(1913)	1
Detroit College of Med. and Surg	(1910)	1
St. Louis College of Phys. and Surgs	(1903)	1
University of Pennsylvania	(1900)	1
University of Pittsburgh	(1914)	1
Meharry Medical College	(1914)	1
University of Texas	(1912)	1
Queens University	(1901)	1
Trinity Medical College	(1896)	1
University of Naples	(1909)	1
FAILED		
Howard University	(1914)	1
Bennett Medical College	(1913) (1914) (1915, 2)	4
Chicago Coll. of Med. and Surg.	(1913) (1914, 4) (1915, 2)	7
College of Med. and Surg., Ph.Med., Chicago	(1910)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1914) (1915)	2
Illinois Medical College	(1910)	1
Jenner Medical College	(1914)	1
National Medical University	(1909)	1
Northwestern University	(1914)	1
University of Illinois	(1912)	1
Kentucky School of Medicine	(1903)	1
University of Louisville	(1913)	1
Minnesota Hospital College	(1884)	1
National Univ. of Arts and Science	(1914)	1
St. Louis College of Phys. and Surgs	(1908)	1
St. Louis University	(1914)	1
Eclectic Medical College, Cincinnati	(1894)	1
Meharry Medical College	(1911) (1912)	2
National University, Athens	(1912)	1

Kentucky June Report

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, June 8-10, 1915. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 70. The total number of candidates examined was 84, of whom 74 passed and 8 failed, including 2 osteopaths. One candidate was licensed through reciprocity and 2 by special order of the board. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Indiana University	(1915)	81
Louisville National Medical College	(1911)	70
University of Louisville	(1915)	76, 76, 76, 77, 77, 79, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 83, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88, 89, 89, 89, 89, 93, *.
Baltimore Medical College	(1911)	82
St. Louis University	(1915)	82
Lincoln Memorial University	(1914) 79; (1915)	88
Meharry Medical College	(1915)	76, 77, 78, 83, 86
Vanderbilt University	(1914) 80, 87; (1915)	83, 85, 86, 86, 86, 88, 89, 90
Medical College of Virginia	(1915)	88
FAILED		
Louisville National Medical College	(1912)	73
University of Louisville	(1912) 63, 67; (1915)	68
St. Louis College of Physicians and Surgeons	(1915)	68
University of Nashville	(1908)†	53

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Johns Hopkins University	(1913)	Maryland

College	Year Grad.	Total No. Licensed
LICENSED BY SPECIAL ORDER OF THE BOARD		
University of Louisville	(1882) (1897)	2

* No grade given.

† Information obtained indicates that this candidate is not a graduate.

Book Notices

Habits That Handicap. The Menace of Opium, Alcohol and Tobacco and the Remedy. By Charles B. Towns. Cloth. Price, $1.20 net. Pp. 289. New York: The Century Company, 1915.

After perusing this little volume, one is at a loss to know the real object of the author in writing it. Did he intend it to be read by physicians or by the laity, or both? He surely could not imagine that physicians would readily subscribe to his wholesale arraignment of the medical profession by the purchase of his cleverly gotten up journalistic production. The book contains much that is true, much that is valuable; but the man without a medical training who attempts to preach on medical subjects to medical men must necessarily make blunders. The author makes the statement that 15 per cent. of physicians are addicted to the use of opium. Who is there in the profession who will not stigmatize this statement as extravagant? It must be admitted that the author, who is at the same time the proprietor of a sanatorium for the treatment of drug addictions, cannot be entirely disinterested when he makes the dogmatic statement, "The average sanatorium is merely a small colony of drug-users." A mere glance at the book's cover reveals, as the first line, "A revelation, a warning, a way out." This, of course, prepares the reader for some sensational reading. And the author has not disappointed us. After having censured the medical profession for their extreme ignorance and having called the sanatoriums mere money-making institutions and drug-colonies, the author has a slight premonition that some one might suspect, and he hastens to say: "Of course the general reader may think this book merely a clever advertisement. In it I state that it is wrong to stop the use of morphin and alcohol unless the victims can be treated for the habit, and next I condemn doctors and sanatoriums for their useless methods of treatment, while lauding my own. Naturally, my reader may assume that my only motive is the selfish one of money." Certainly, the assumption might be justified. Those of us who have had the opportunity to try it are convinced that the Lambert method of treating opium addiction is one of the best of the so-called rapid cures, but Mr. Charles B. Towns has not yet informed us who communicated to *him* the formula which he claims as his own.

T. B. Playing the Lone Game Consumption. By Thomas Crawford Galbreath. Paper. Price, 25 cents. Pp. 80, with 4 illustrations. New York: Journal of the Outdoor Life Publishing Company, 1915.

One of the difficult problems connected with the treatment of tuberculosis is to so inculcate in the mind of the patient the importance of strict adherence to the rules of the modern open air hygienic, dietetic treatment, etc., that the patient will single-mindedly, without deviation, carry out the essentials of the prescribed regimen and thus place himself on the road to recovery. An absolute conviction of the soundness of the regimen and the necessary self control on the part of the patient are important prerequisites of successful direction of each individual case. The tuberculous patient is particularly responsive to the lessons learned by others afflicted with the same disease. Mr. Galbreath tells of his twelve years' experience as a tuberculous patient, "chasing the cure" in Colorado. It is a heart-to-heart talk with the tuberculous patient, placing great emphasis on the importance of early diagnosis and strict observance of the necessary regimen if an arrest of the disease is to be accomplished. The author protests against the too common practice of shipping West patients without sufficient means to carry out a regimen in which the factors of time and financial means are very important. The details of the open air regimen are given in very simple language, and the factors of rest and self control are thoroughly emphasized. Climate is given a subordinate place to hygiene, diet and close medical supervision, and treatment in a sanatorium is recommended to all who cannot "discipline themselves." The practice of sending West patients without adequate means is condemned in the following pointed sentences: "The community may consider it cheaper to pay one way fares to Colorado than to run a sanatorium for its own unfortunate consumptives. . . . It is inordinate selfishness, a kind of civic thievery, and downright cruelty to the ignorant and unsuspecting invalid." The author pleads for the elimination of the too prevalent phthisiophobia, which should have no place in the relationship with a careful tuberculous patient. This volume is an important addition to popular antituberculosis literature. Placed in the hands of every tuberculous patient, it will prove itself a great aid to physicians in the efficient control of individual cases. The cost of the book is very moderate and its circulation should be widespread.

Twelve Lectures on the Modern Treatment of Gonorrhea in the Male. By P. Asch, M.D. Translated and Annotated by Faxton E. Gardner, M.D., Assisting Visiting Genito-Urinary Surgeon, New York Polyclinic. Cloth. Price, $1. Pp. 104, with illustrations. New York: Rebman Company, 1915.

The German edition of this book was reviewed in this department, Dec. 5, 1914. At that time attention was called to the fact that Asch's treatment is that of the French and German schools, and that American opinion differs on several phases, for instance, especially as to the injection method—more favored in America—as against irrigations, which are the choice abroad. This translation has been annotated by the translator with a thoroughness which makes the book more valuable. Practically every page contains footnotes calling attention to the different points in which the foreign method differs from the American procedures in treating this disease. This makes the book more valuable than the original.

Medicolegal

Implied Promise to Pay for Medical Services

(Bigelow vs. Hill (Minn.), 152 N. W. R. 763)

The Supreme Court of Minnesota affirms a judgment in favor of the plaintiff, a physician, for services rendered in the treatment of the defendant's niece, aged 14. It appeared that the girl's parents had been divorced, and that she had come to live with the defendant and his wife, on their farm. Not long afterward, the girl being very ill, the defendant's wife, with his consent, drove with her to the plaintiff's office, in a village 3 miles away. Mrs. Hill stated to the plaintiff that "her girl" was sick, and that she wanted him to see her. He diagnosed the case as one of blood poisoning, gave her a treatment then, and was given directions by Mrs. Hill how to reach the defendant's farm. She told the plaintiff to do everything necessary to the girl's recovery. She did not tell him that the girl was not her daughter, and he assumed that she was until his second visit to the farm, when he was told that she was the daughter of the defendant's brother. The plaintiff continued to attend and treat the case, and after the girl's recovery rendered to the defendant a bill for his services, which the defendant refused to pay, claiming that the debt was that of the girl's father. The defendant testified that the girl was employed as a servant in his family, but the trial court found that she was a member of his household. The defendant paid a bill for drugs and one for the services of a nurse.

It is true, the supreme court says, that the rule that, when one requests the performance of services by another there is an implied promise to pay for the services rendered, does not apply where a person requests a physician to perform services for a patient, unless the relation of that person to the patient is such as raises a legal obligation on his part to call a physician and pay for the services, or the circumstances are such as to show an intention on his part to pay for the services, it being so understood by him and the physician. It is also the law that a master is not ordinarily, in the absence of a contract obligation, liable for medical services furnished his servant, though furnished at the request of the master. And it is doubtless correct that the father would be liable for necessary medical attendance furnished his daughter, though the services are requested in his absence by another. But these rules do not necessarily control the decision of this case.

The defendant knew that his wife was taking the girl to see the plaintiff, and consented. There appeared to have been no thought then, or until the bill was presented, that the defendant would not pay the physician, just as he had paid the druggist and the nurse. It would have been easy to have informed the plaintiff that he would have to look to his patient's father for his pay, but he was allowed to render his services under the assumption that the girl was the defendant's daughter, or at least a member of his household whom he was supporting. Under these circumstances the trial court was justified in finding an implied promise by the defendant to pay for the services rendered.

Choice of Persons for Taking Roentgenograms

(International & G. N. Ry. Co. vs. Bartek (Tex.), 177 S. W. R. 137)

The Court of Civil Appeals of Texas, in affirming a judgment for $2,000 damages in favor of plaintiff Bartek for personal injuries sustained in a wreck, says that one of the assignments of error was based on a refusal of the trial court to compel the plaintiff to submit to having roentgenograms taken of his back, to be exhibited to the jury. But this court does not think that the trial court abused its discretion in this matter. The facts of the case did not bring it within the rule that, while a party has the right, in the first instance, to refuse to submit his person to an examination, yet by doing so, and being so examined by his own physician in the presence of the jury, he waives his privilege in this regard, and the opposite party is entitled to have a like examination made by his physician. In this case the plaintiff exhibited his back to the jury, and his physician pointed out thereon the evidence of the injury as he claimed it to be. A like examination was made, without objection, by the physician of the defendant, who denied that profert of the plaintiff's back furnished conclusive proof that one of his vertebrae had been fractured as was claimed by the plaintiff's physician. The evidence further showed that the defendant had been afforded an opportunity to have roentgenograms of the plaintiff's back taken by an alleged expert of Houston, who presumably was impartial in the matter, inasmuch as he was not personally known to the plaintiff or either of his counsel. The plaintiff's counsel at this time objected to having such pictures taken by a party in Waco, on the ground that they doubted his competency. This was some time before the trial. The Waco party referred to was the same party whom the defendant requested should be permitted to take such pictures during the trial. The plaintiff's counsel agreed that if the roentgenogram was taken by the Houston physician he would make no objection to its introduction in evidence. The introduction of a roentgenogram taken by an incompetent person might have proved prejudicial to the plaintiff. The Waco party may have been competent, but the plaintiff's counsel did not think so, and the court was justified in not compelling the plaintiff to have a roentgenogram taken by a party who was objectionable to him, when he offered to have such picture taken by a party whose competency and disinterestedness were not called in question.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Dec. 17-18.

MINNESOTA STATE MEDICAL ASSOCIATION

Forty-Seventh Annual Meeting, held at Rochester, September 30 and October 1, 1915

(*Concluded from page 1675*)

Clinical Observations on Syphilitic Disease of the Heart and Aorta

Dr. R. D. Mussey, Rochester: In 1,379 cases of syphilis, clear-cut syphilitic disease of the heart or aorta occurred in fifty-nine. Syphilis of the heart does not present a typical syndrome other than that of myocardial change, dyspnea being the chief complaint, and the signs of myocardial insufficiency with dilatation and hypertrophy the chief findings. Syphilis affects the aorta more frequently than the heart. In the aortitis group pain and dyspnea are the chief complaints with the signs of insufficiency of the valves. In the aneurysmal group, pain is predominant with the usual aneurysmal signs. Blood pressure is of value in the prognosis and an aid to diagnosis, especially in the aortitis group in patients with aortic insufficiency. Syphilis of the heart and mediastinum responds more readily to treatment than syphilis of the aorta. The use of potassium iodid and mercury seems to be of value, even when the patient is showing evidence of broken compensation; these may be followed by salvarsan and more especially by neosalvarsan with marked benefit in symptoms. Vigorous and persistent treatment will apparently arrest progress in certain aneurysmal cases.

DISCUSSION

Dr. S. Marx White, Minneapolis: The importance of the aortitis and aneurysmal group is very great, and we commonly learn to look on every case of aortic lesion with considerable suspicion, a suspicion justified in the majority of instances by the discovery of the evidences of syphilis. We have lesions in the aortic valves from rheumatic infections, but they are almost without exception accompanied by lesions in the other valves. We are learning to use the Wassermann reaction early, and the Roentgen ray to recognize early cases of aortitis. In connection with aneurysm, the medical profession ought to pay very much closer attention to the question of a thorough and painstaking and complete systematic examination of the patient.

Dr. E. L. Tuohy, Duluth: There were twelve cases classed as cardiovascular. In three there was a diagnosis made of mesaortitis luetica. There were three cases of myocarditis, six of aortic aneurysm, and three cases that had syphilis had also valvular lesions due to that disease.

Open Air Treatment in Surgery

Dr. J. W. Markoe, New York: I selected 110 cases of sepsis and considered them under two main groups, namely, those that are treated in the open air and those treated indoors. In one group, the main therapeutic measure was the open air. In all but five of these cases, blood cultures taken by the usual technic under proper precautions and with appropriate mediums, demonstrated the presence of bacteria. The following organisms were recovered from the blood: hemolytic streptococcus in 94 cases; *Streptococcus viridans* in 1 case; pneumococcus in 2 cases; *Staphylococcus aureus* in 7 cases, and *Bacillus aerogenes capsulatus* in 1 case. In no case was more than one organism recovered from the blood. There were 16 cases of postabortive sepsis; 89 cases of postpartum sepsis, 67 of which were admitted from three to ten days or more after delivery, and 22 were admitted with labor in progress; also 5 cases of antepartum sepsis.

This last group of five cases is of interest, for in them even before the onset of labor, the sepsis was fully developed. Of these five cases, in one a sinus thrombosis was present; in two the sepsis followed operative interference; one incision of an abscess of the throat, and the other the removal of an appendix. In a fourth case the patient, on admission, had already a streptococcus meningitis, while a fifth case showed the presence of a general peritonitis for which no cause was found. Of these 110 cases, 42 were in the hospital less than five days with a mortality of 100 per cent.; 68 were in the hospital more than five days with a mortality of 66 per cent. Of the 110 patients, 53 were treated in the open air in addition to the other measures and 57 were indoor patients, of whom 55 died and 2 left against advice. Of the 53 cases treated on the roof, 17 were there less than five days and all died; 13 died that were there more than five days; 1 left against advice, and 22, or 42 per cent., recovered.

In these 22 cases, the following bacteria were present in the circulation: hemolytic streptococcus in 17 cases; pneumococcus in 1 case, and in 4 cases no organism was recovered. Of the cases on the roof more than five days there were 16 of the 21 without complications that recovered, whereas but 6 of the 14 showing the various manifestations of pyemia survived. Thus it seems that when no complications were present, the percentage of recovery was greater. Of the indoor patients, there was 100 per cent. mortality in the 21 cases that were in the hospital more than five days, while, on the other hand, there were 22 recoveries of the 35 treated on the roof more than five days.

In addition to these 110 cases we have treated innumerable cases in the open air where the infection was localized in the pelvis. Among these may be mentioned such cases as pyometritis, parametritis and the large inflammatory exudates commonly observed in the broad ligaments following labor. These patients seem to withstand high temperatures more readily, and they enjoy and assimilate their food better. Their facial expression changes after being on the roof for a few days, from one of despair to that of hope and assurance. The blood picture soon shows an increase in hemoglobin and red cells, which, however, coincides to a certain extent with the reduction of the temperature.

Local Anesthesia

Dr. L. E. Daugherty, St. Paul: By carefully questioning patients who have been operated on during the past year, to whom ether anesthesia has been administered, we have elicited the fact that what they most dreaded was not the operation itself, but rather the loss of consciousness and the resulting nausea and distress caused by the ether. Some on whom secondary operations were necessary have consented to return to the operating room only on the condition that local anesthesia be used.

DISCUSSION

Dr. C. R. Ball, St. Paul: There is benefit in having the consciousness and aid of the patient. Having injected a great many cases of tic douloureux with alcohol, I am conscious of the great aid the patient is able to give in these operations.

Dr. Harry P. Ritchie, St. Paul: I recall one case in which a suprapubic cystotomy was done on a diabetic under local anesthesia. This man was admitted with acidosis and acetonuria, and was practically comatose, yet I drained him suprapubically, after which he received medical treatment, and today he is a well man.

Dr. R. E. Farr, Minneapolis: In foreign countries laminectomy has been done many times under local anesthesia. There they have found that the dura is extremely sensitive in contradistinction to the condition found in the skull. In one case which I had a few months ago, the patient, an intelligent man, talked with me all the way through the operation. In this case I turned up a wagnerian flap as large as my hand. It was impossible to put a needle through that flap of dura without the most intense pain referred to the eyes. I followed Lenander's work for a number of years, and I do not always agree with him. In a case of resection of the intestine, for instance, the patient had a sharp pain every time I put the needle through his intestinal wall, although no traction was made on the mesentery. Again, in some cases patients coming in with a fair-sized ovarian cyst speak of pain on the right side, and give a history of chronic appendicitis. In these cases, by taking hold of the cyst, compressing its pedicle, and compressing the nesentery in various places, we have been able to deliver each of these organs without causing the pain for which the patients sought relief.

Varicose Veins

Dr. D. C. Balfour, Rochester: The veins which are most commonly the site of varicosities are the hemorrhoidal, the spermatic and the long saphenous. It is usually a disease of middle life, although in our series several patients were under 25 years of age, and the ratio of male and female was 3:2. The etiologic factors most apparent were: (1) the occupation which necessitated the prolonged erect posture, and (2) the anatomic and physiologic factors present in veins in the lower extremities, which are important in that they afford opportunity for exciting causes to produce the condition. In 40 per cent. of this series there were chronic ulcers on one or both legs. The chronic congestion of the skin and subcutaneous tissue is a strong predisposing factor to the formation of the ulcer, and a very slight injury may be sufficient to produce a lesion resistant to healthy healing. If these ulcers are not treated, or the causative condition relieved, they increase steadily until they reach an enormous size; they are also subject to malignant degeneration. Preoperative treatment is occasionally advisable, particularly if there is ulceration, or in cases of recent phlebitis in which redness and pain, marking local thrombosis, still exist along the course of the vein. The most satisfactory method, in my experience, for the subcutaneous extirpation of a long saphenous, is that of C. H. Mayo. Of 256 patients, 161 were heard from. Of these, 68 were complicated with ulcer, 93 were without ulcer, and 39 (57.3 per cent.) of the 68 were cured, that is, the ulcer healed, the veins disappeared, and there was no swelling of the feet. Sixteen (23.4 per cent.) were greatly improved, the ulcer healed in the majority, with some of the patients complaining of swollen feet or aching of the legs after a long day's work. Eighty per cent. were either cured or improved, 13 (19 per cent.) were definitely unsatisfactory as regards results. Of the 93 cases without ulcer, 67 (73 per cent.) were cured, 16 (17 per cent.) improved, and 10 (10.5 per cent.) were unsatisfactory. In practically 90 per cent. of this group, good results were obtained. In no case had less than one and one-half years elapsed since operation.

The Prone Position and Its Uses

Dr. M. M. Ghent, St. Paul: Pneumonia patients who are beginning to show signs of exhaustion, such as shortness of breath and cyanosis, are benefited by being placed on the stomach. This is especially true of children with bronchopneumonia. In this position the cyanosis is much less marked during the paroxysms of coughing, and the patient sleeps much better, because the breathing is easier. All of this convinces me that patients under conditions such as I have named above breathe poorly when they lie on their backs. This is especially true in babies because of their helplessness. It is also true of some patients who are unconscious from any cause. This has led me to believe that we keep our patients lying on their back too much; especially is this true after operations. My plan now is to let patients lie in any position in which they are most comfortable. Patients coming out from under an anesthetic are given pillows enough to make them comfortable.

Perforating Gastric Ulcer Following Gastro-Enterostomy

Dr. Arthur N. Collins, Duluth: Gastro-enterostomy is not a curative procedure for all ulcers of the stomach. Simple gastro-enterostomy will not suffice where excision should be done. It does not revolutionize the patient's healing power per se. Postoperative medical care should be established in all cases until cumulative experience tells us where to leave it off. From the standpoint of the patient, simple gastro-enterostomy does not accomplish all that should be really expected of a fairly major surgical operation.

DISCUSSION

Dr. William J. Mayo, Rochester: It is true, gastro-enterostomy does not furnish the complete and satisfactory results in ulcer of the stomach that it does in ulcer of the duodenum. It is extremely fortunate that ulcer of the duodenum is so much more frequent than ulcer of the stomach. About 75 per cent. of all peptic ulcers are in the duodenum, and as long as the stomach itself is normal and the gastro-enterostomy is done on the functionating organ, a cure or at least very great improvement may be expected in as high as 90 per cent. of the cases. I know of no operation in surgery that gives more satisfactory results than gastro-enterostomy or an equivalent operation in ulcer of the duodenum. The failures of gastro-enterostomy that are due in the main to the operation are because the condition in the stomach may not be suitable for the operation; that is, the ulcer may be proximal to the gastro-enterostomy, and in such cases we cannot expect the gastro-enterostomy to cure the patient. In the second place, a gastro-enterostomy is done in many cases in which ulcer does not exist, based on the symptoms of the patient. No surgeon should do gastro-enterostomy for ulcer which cannot be demonstrated accurately at the time of the operation.

Dr. A. C. Strachauer, Minneapolis: Gastro-enterostomy is no longer performed except when ulcer can actually be demonstrated. The ulcer is eradicated either by excision or by the actual cautery. The majority of men with experience in gastric surgery feel very much concerned as to the possibility of malignancy developing on an ulcer, and feel much easier in mind when the ulcer is eradicated either by excision or by the cautery.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

(Concluded from page 1670)

New Roentgen Evidence in Early Diagnosis of Gastric Carcinoma

Dr. A. W. George, Boston: Chronic ulcer alone near the pylorus will not show a deformity or defect other than the classical Roentgen sign of ulcer. When the ulcer begins to undergo degeneration, the changes due to beginning malignancy can be demonstrated. It is what we have termed the annular deformity. This is ringlike in character, increasing the long diameter of the pyloric sphincter toward the antrum, and it is constant in all positions. This is a positive early sign of gastric cancer.

Roentgenologic Diagnosis of Duodenal Ulcer

Dr. Russell D. Carman, Rochester, Minn.: Though I would not place exclusive reliance on cap distortion for diagnosis, I consider this sign one of the best and well worth searching for in those cases in which more simple methods of examination fail to establish or exclude the presence of duodenal ulcer. Irregularities of the duodenal outline are not pathognomonic of ulcer. Some ulcers do not produce an organic distortion which may be demonstrated roentgenographically, while irregularities of the duodenal contour may sometimes be produced by pericholecystitis and other adhesion-producing lesions, or by spasm reflected from distant sources. Deformity due to such causes is much less common than deformity resulting from duodenal ulcer. Deformity of the bulb and spasm arising from distant sources is more often lacking in persistence and permanency of situation. Deformity, when present as a result of ulcer, is more likely to be constant. While some duodenal ulcers produce a scar, distortion of the duodenal lumen, which can readily be seen on the roentgenogram in other organic deformity, is so slight that it cannot appreciably distort the barium shadow. This is especially true of small mucous or slit ulcers. If bulbar distortion is the result of the intrinsic spasm, the administration of an antispasmodic, such as belladonna, may relax the spasm and cause the deformity to disappear. This is still under investigation. Since using the serial method, our diagnosis of duodenal ulcer has been confirmed at operation with fewer exceptions than before, and fewer ulcers have escaped diagnosis. We have not limited ourselves to this method, but have added it in certain cases of suspected ulcer to our routine screen and plate examinations, because it is not always necessary to make multiple plates. Hypertonus, hypermotility and hyperperistalsis are most valuable indications of duodenal ulcer. These phenomena are seen in various combinations, and often all together. Hypertonus is seen in the majority of duodenal ulcers, perhaps more frequently in this than in any other condition. Gastric hyperperistalsis is notable in a large proportion of the cases, perhaps 60,000 or more. Hypermotility is the logical result of hypertonus and hyperperistalsis. More than one quarter of these ulcers are certainly obstructive and produce a six-hour retention. In testing motility, our modification of Haudek's double meal method is an indispensable part of our routine. A six-hour retention in the stomach, with an unbroken contour, ought, first of all, to suggest duodenal obstruction, and the most common cause of this is duodenal ulcer. If there is typical gastric hyperperistalsis, the presence of duodenal ulcer is well-nigh certain.

DISCUSSION OF PAPERS BY DRS. GEORGE AND CARMAN

Dr. Lewis G. Cole, New York: Dr. Carman referred to duodenal ulcer, gallbladder adhesions and spasm as being causes of the wave defect in the cap. That is true, but the first two cause permanent organic filling defects and the latter does not. In the case of duodenal ulcer and gallbladder adhesions, the indications for surgical treatment are the same. Some cases of spasm cannot be diagnosticated. I have made a diagnosis of ulcer when it was a case of spasm. In the past year I have seen two cases of adhesive membrane involving the cap that caused a filling defect, which might lead one to diagnose duodenal ulcer. There may be a great deal of deformity with very few symptoms. We should not make the diagnosis too positively. When we find an induration, we should say so, and advise surgical intervention.

Dr. George E. Pfahler, Philadelphia: We should make as nearly a definite diagnosis as possible. If we believe it is carcinoma, we should say so, because otherwise the patient will not be operated on. We leave the surgeon in doubt. On the other hand, we must not state anything definitely that is not there. Dr. Carman presented as nearly the truth on the question of duodenal ulcer as we are able to state it today.

Dr. Frederick H. Baetjer, Baltimore: Spasm is more or less transitory. Two cases came under my observation that are worth mentioning. A girl of 18, with indefinite stomach symptoms, had a filling defect of the greater curvature. The same defect was present on the following day. At the end of a week and at the end of two weeks it was still present, and, finally, it was decided to operate on her. The stomach was normal. Absolutely nothing was found to account for the deformity. Even an examination of the inside of the stomach was negative. A second patient came in with a definite roentgenologic diagnosis of carcinoma, made by a competent roentgenologist. The patient was operated on, but nothing was found. The roentgenograms were reviewed and still the diagnosis of carcinoma of the stomach was made. Six months later another examination was made, with the identical results. We gave the patient atropin for two or three days, and the next examination showed a normal stomach outline. We now employ atropin as a routine, giving from 1/100 to 1/120 grain two or three times a day until the patient begins to feel dry. In one or two obscure cases it has helped me out very much.

Dr. W. F. Manges, Philadelphia: As we now have apparatus that can be used safely for fluoroscopic work, we should extend the examination in these cases beyond the stomach and duodenum, including the entire gastro-intestinal tract, in order to discover other lesions that may be present. That is particularly true of the lower small bowel and the appendix region, where lesions may be overlooked by the surgeon when he is operating for gastric or duodenal ulcer.

Dr. George C. Johnston, Pittsburgh: I have never had any trouble in getting surgeons to accept help in diagnosis. I remember a case of a woman, aged 60, in which the report was early carcinoma of the stomach. The surgeon operated and found the pylorus normal in appearance. He palpated the pyloric region carefully, and did a resection and a posterior gastro-enterostomy. After very careful palpation of the pylorus he had felt an annular ring. There was no erosion of the mucosa—just a little constriction or tightness. The pathologist reported adenocarcinoma. In this case the Roentgen evidence of the disease was responsible for finding the carcinoma. Therefore, I am going to continue to say to the surgeon that, to the best of my knowledge and belief, a careful exploratory operation is justified.

Dr. Wm. H. Stewart, New York: In a case of carcinoma with annular deformity the surgeon hesitated to admit that it was a cancer, and claimed that it was an ulcer. I insisted on a pylorectomy, and on microscopic examination the tumor proved to be a carcinoma of the pylorus. That was the third case of the kind I have had.

CHICAGO MEDICAL SOCIETY

Regular meeting, held Oct. 27, 1915

The President, Dr. Charles F. Whalen, in the Chair

SYMPOSIUM ON LEPROSY

The Fear of Leprosy

Dr. E. L. McEwen: The fear of leprosy arises from erroneous conceptions of the disease; but this fear exists as a definite social factor which is operative to the detriment of occasional victims of the disease in this country. Every physician should take a firm and true stand with regard to leprosy, in order that the lay mind may view the disease more rationally, so that the persecution of lepers when they are discovered shall not occur. This means a campaign of education by every physician with his patients and with his friends in the direction of enlightening the people as to what true leprosy is and the great difficulty of contagion.

Clinical Description of Leprosy

Dr. Oliver S. Ormsby: The clinical picture presented in leprosy depends on whether the integumentary or the nervous system is wholly or chiefly invaded by *Bacillus leprae*. No definite time limit exists between the time of infection and the development of symptoms. It is variously estimated from a period of many weeks to several years. From the time of infection until the eruptive manifestations occur, various prodromes are frequently noted. These differ in no way from those occurring in any other infectious process. The lesions in the eruptive type of the disease may occur on any part of the body. In the anesthetic variety the symptoms exhibited in the part supplied by the affected nerves are those which would naturally follow their irritation, compression or degeneration. The prodromes and macular stage of this variety may be severe or be altogether absent.

Pathology and Bacteriology

Dr. Fred G. Harris: Over seventy attempts have been made to transmit the disease in man by inoculating leprous material from one individual to another, only one, that of Arning, being successful. The bacilli are much more frequently found in the nasal secretion of cases of long standing than in early ones. The bacilli are not often found in the nasal secretions of healthy persons who are in intimate contact with lepers. The most common atrium would seem to be through the skin, for a large majority of the cases give a history of the disease commencing on the extremities. In a series of 275 cases the disease began on the feet in 58 per cent., and on the hands in 11.2 per cent. The infection is disseminated by the blood stream.

Sanitary Aspects of Leprosy in the United States

Dr. William Allen Pusey: Leprosy in North America is limited to a few foci. There has been a focus of leprosy at Tracadie, N. B., for nearly a hundred years. According to Dr. A. C. Smith, leprosy in that district can be definitely traced to one case introduced from Normandy in 1815.

Numerous cases have developed subsequently in that district. The living conditions are hard and the people poor, and there is a lazaretto there containing twenty-six beds. As a result, however, of partial segregation and better living conditions of the people, few of the beds are now occupied, and leprosy is rapidly diminishing in that district. Many cases have been introduced into Minnesota and the other Middle Northwestern States by Scandinavian immigrants. In 1900, according to Bracken, eleven cases of leprosy were known in Minnesota, and in 1903 no new cases had been reported. A few cases of leprosy exist along our Mexican frontier among Mexicans. These have practically been uncontrolled without spread of the disease beyond these people. There has always been a considerable number of lepers in New York, and there are always probably one or more in the Chicago district. These have always been foreigners, and no case has been known to originate in either place. In New York the number is estimated as high as 100, but there has never been any effort to segregate them. They have been admitted freely to the public hospitals. The chief foci of leprosy in the United States are in Louisiana and in Key West. The experience of civilized people in other parts of the world in respect to leprosy corresponds to that of the United States in regard to its slight infectivity. Where leprosy is endemic the situation is different, and public protection requires that practical —not absolute—segregation should be carried out. In districts like Louisiana, where leprosy is active, every effort should be made to segregate lepers as completely as possible.

To that end public asylums of refuge should be provided for them, as has been done in Louisiana. The establishment of a national sanatorium for lepers is advocated by the surgeon-general of the U. S. P. H. S. Federal care and control is undoubtedly the solution of the comparatively simple sanitary problem of leprosy in the United States, and should be insistently advocated by medical organizations, and other organizations within whose purview come matters of public health.

Discussion on Leprosy

Dr. David Lieberthal: According to the historical review of pre-Bible times, there were records of leprosy in the papyri of the Egyptians thousands of years before the Bible, leprosy having prevailed around the region of the Nile from which it spread over Europe. In the middle ages, leprosaria or asylums for lepers increased in great numbers. One could imagine conditions in these asylums under which victims of the disease were huddled together and the manner in which they were taken care of, being subject to reinfection, and yet, with the advent of syphilis, it was noted that leprosy was on the wane. The number of cases was materially decreasing. I believe this decrease was due to the acquirement of a certain immunity. Leprosy is not altogether incurable. The hygienic and dietetic methods of treatment are the same as for any other disease. Lepers suffer from what is known as heat hunger; consequently they ought to be kept warm. They should be given baths. In some countries, as in Japan, lepers are sent to mineral springs and kept there for a long time. If patients cannot be sent to hot springs, plain baths can be given. If there are nodes, Unna suggests they be ablated, cut off flat with a sharp knife or razor until blood begins to flow, and their bases cauterized, and medicinal applications made which consist of remedies of the phenol group, especially pyrogallic acid and resorcin. This is rubbed in and the places covered over with plaster. As a remedy for use internally, I would mention chaulmoogra oil. The leper should be kept under constant observation. It would be a step in advance if the federal government established a colony or home for the lepers of the United States, to which they could go voluntarily and be assured they would be cared for properly.

Dr. O. S. Ormsby: I heartily endorse the recommendation concerning the establishment of a leper home and of placing the victims of this disease under federal control.

Dr. W. A. Pusey: I recommend that the society express its approval of the establishment of a leper home under the control of the federal government as recommended by Surgeon-General Blue of the U. S. Public Health Service.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

November, X, No. 5, pp. 313-396

1 *Etiology of Tetany — Metabolic and Clinical Studies. A. Brown and A. Fletcher, Toronto.
2 *Ductless Gland Therapy. R. S. Haynes, New York.
3 Spinal Fluid in Poliomyelitis and Its Differentiation from Fluids of Other Infections. H. L. Abramson, New York.
4 *Clinical Study of Children in Relation to Tuberculous Exposure Controlled by Von Pirquet Reaction. J. B. Manning and H. J. Knott, Seattle.
5 Congenital Malformation of Intestine. L. M. Drennan and H. C. Clark, Ancon, Canal Zone.
6 Intestinal Parasites in Children. G. J. Greil, Montgomery, Ala.
7 Polycystic Disease of Kidney in Infant Three Months Old. J. S. Leopold and M. B. Künstler, New York.

1. **Tetany.**—It was Brown and Fletcher's object to see that if by changing the various food elements, tetany could be produced with a fair degree of certainty, and to note any change in the inorganic salts during the onset, height and curing of the condition and what substances were responsible for the ultimate healing. Their observations were made in thirty cases of definite tetany; and 100 infants thought to be free from tetany were carefully tested, electrically and mechanically, for any evidence of spasmophilia. They found that tetany may be produced by high carbohydrate foods which have been subjected to heat up to or over the boiling point. The monthly incidence of tetany is probably due to a disturbance of the gastro-intestinal tract (constipation), decreased internal combustion and the comparative safety from diarrhea in feeding high carbohydrate foods during the cold months. A diagnosis of tetany is suggestive when there is manifest kidney inactivity in constipated infants fed heated foods of high carbohydrate content. As a result of this improper feeding there is produced a disturbance of the body salts. At the height of the disease there is an almost complete retention of sodium and potassium (the irritating salts) and a great loss of magnesium. As improvement ensues there is an increased flow of urine accompanied by a relief of the constipation, during which the stored up sodium and potassium are rapidly lost. This salt disturbance may be remedied first by purgation, second by diuresis, third by the administration of cod liver oil and phosphorus to build up the calcium content, and fourth by a change of diet. The severe spasms or convulsion may be temporarily relieved by subcutaneous injections of a solution of magnesium sulphate.

2. **Ductless Gland Therapy.**—This contribution has to do with the action of the pars intermedia of the pituitary gland. These particular activities of the gland, from a therapeutic standpoint, have become apparent through a study of an abnormal child carried on for the past two and a half years by Haynes, and previously by several physicians connected with the dispensary of the Babies' Hospital, including Drs. Kerley and Van Ingen. It seems evident in this case, that, assuming a deficiency of thyroid as evidenced by the condition when first coming for treatment, there was also an affection of the pituitary; that this affection of the pituitary partook of the nature of a deficiency of the pars intermedia, and that the exhibition of pars intermedia improved the condition in unexpected ways. It was interesting in following the unfolding of this case to see 1. Symptoms which might rationally have been considered to be due to hypothyroidism clear up with the exhibition of pars intermedia. 2. The remarkable effect which the exhibition of this lobe had on the smoothness, texture, and color of the skin and its warmth. 3. The striking changes in contour of hands, ankles, hips, shoulders, thighs, etc., changes which could be made to come or recede with giving or taking away of the gland.

4. **Tuberculosis.**—There are 166 children out of the 288 examined by Manning and Knott who have been or still are living in intimate contact with active adult cases. In the remaining sixty-two there is no known exposure. These adult contacts, in most instances, one or the other parent, in a few instances both parents, or older brothers or sisters,

are in the stage of lung invasion in varying degrees of activity. There are eighty-four of the 166 children with a definite history of exposure who give a positive von Pirquet test, or about 50.6 per cent. Of this number the largest part, sixty-nine, or 81.2 per cent., show no clinical evidence of tuberculosis. There are fifteen children, representing 17.8 per cent. of those children exposed to tuberculosis, who give a positive reaction and clinical evidence of tuberculosis. They show varying degrees of activity and types of infection, including seven cases of bronchial gland tuberculosis, one active keratitis, two with cervical adenitis, four with distinct lung invasion, and one with tuberculous peritonitis. One inactive, clinically nontuberculous child developed an active tuberculous peritonitis under observation.

Most of those diagnosed as bronchial gland tuberculosis are children with a distinct history of not doing well, with subnormal or slightly elevated temperature, frequently complaining of pain in chest or back, poor appetite, weakness or listlessness, with dilated chest veins, but no physical evidence of tuberculosis except sometimes paravertebral dulness. Roentgenograms showed corresponding shadows about the right hilus. There were eighty-two children with a definite history of exposure who gave a negative von Pirquet. This represents about 49.3 per cent. who give negative reactions out of the total 166 exposed to tuberculosis. One of these children gives distinct clinical evidence of tuberculosis, in which instance, as would be expected, the process has advanced to the third stage. There are eight in whom one of the authors recorded questions of finer shades of harsh breathing. In view of the fact that cutaneous reaction is negative in the presence of measles, it is stated that none of these children had measles at this time or within recent date. Sixty-two children were brought to the clinic because of poor nutrition, or by fear that something of the nature of tuberculosis might be present, rather than because of any known exposure. Fourteen of these sixty-two children, or about 22.5 per cent., give a positive von Pirquet, the remaining forty-eight, or 77.4 per cent., give a negative test.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

October, LXXII, No. 4, pp. 577-768

8 *Reappearance of Menstruation after Childbirth. H. Ehrenfest, St. Louis.
9 Serum Skin Test for Pregnancy and Different Pathologic Conditions. J. Bronfenbrenner, J. R. Freeland and M. J. Schlesinger, Pittsburgh.
10 Two Cases of So-Called "Missed Labor." S. P. Warren, Portland, Me.
11 Drainage and Dressing. H. S. Lott, Winston, N. C.
12 Relation of Pelvic to Abdominal Surgery. H. G. Wetherill, Denver.
13 *Tuffier's Ovarian Graft. W. A. Norton, Savannah.
14 Unilateral Impairment of Kidney in Toxemia of Pregnancy; Report of Cases. T. W. Buschmann, Philadelphia.
15 After-Results of Curetment of Uterus. J. H. Girvin, Philadelphia.
16 Intranasal Treatment of Dysmenorrhea; Report of Cases. C. A. O'Reilly, Philadelphia.
17 Case of Mercurial Poisoning from Vaginal Douche. E. Foskett, New York.
18 Case of Tuberculosis of Urachus. J. R. Eastman, Indianapolis.
19 Case of Chorio-Epithelioma Uteri with Large Bilateral Lutein Cystomata of Ovary. E. Schwarz, New York.
20 Outlet Pelvimetry; New Pelvimeter for Measuring Transverse and Posterior Sagittal Diameters. G. H. Pierce, New York.
21 Primary (Celoic) Prolapse of Vagina with (Traction) Elongation of Cervix Versus Prolapse of Uterus. A. B. Keyes, Chicago.
22 Sterility; Causes and Treatment with Original Stem Pessary. C. H. Judd, Detroit.
23 Developmentally Deficient Children Twice Born to Same Couple. W. C. Gayler, St. Louis.

8. **Reappearance of Menstruation After Childbirth.**—From the results of Ehrenfest's statistical study of the problem of lactation amenorrhea it seems that clinical experience evidently sustains the following views: A debilitating influence exerted immediately by labor and later by the loss of body fluids during lactation with rare exceptions temporarily arrests ovulation. As soon as the disturbed equilibrium is restored the ovary resumes its function of ovulation, and the first corpus luteum sends its specific hormone to the endometrium. The response of the latter probably to a certain extent is dependent on the anatomic condition of the uterus. If normal, a typical menstrual flow ensues; if subinvoluted or for other reasons hyperemic (retroflexed), the reaction may be unusually strong; on the other hand, if the uterus is in an atrophic condition, it may require the stimulations from more than one ovulation until it becomes anatomically restored to the degree of resuming its function. As a rule, menstruation continues practically regularly during lactation when once reestablished. The debilitating effect of lactation is obviously dependent on the general condition of the woman. Therefore, usually the disturbance in the equilibrium of body fluids ends sooner and menstruation reappears earlier in the strong and healthy woman. For the same reason the amenorrheic state in general will last longer in the sick or weak woman, in the primigravida, whose labor as a rule is longer and more exhausting, and in the woman suckling a large child. But in the majority of women the equilibrium is regained before they have actually ceased to nurse their children, and, therefore, in the majority of instances menstruation reappears before the function of lactation is ended.

13. **Tuffier's Ovarian Graft.**—Norton recommends this method for diseases of the ovary. He says it should always be done in idiots, defectives and criminals instead of double oophorectomy. It may also be done in those cases which one wishes to sterilize on account of contracted pelves and other conditions which render child-bearing impossible. Except for the fact that it does not allow pregnancy it fulfils all the requirements of an ideal operation. It can be easily and quickly done. The functions of the ovary, both in internal secretion and menstruation are maintained, and at the same time the ovary is placed in a clean healthy bed completely protected from subsequent attacks of gonorrheal infection. With a new and diminished blood supply sclerosis and cystic degeneration are prevented or retarded.

American Journal of Orthopedic Surgery, Philadelphia

October, XIII, No. 2, pp. 179-344

24 Arthritis Urica. G. R. Elliott, New York.
25 *Quiet Hip Disease. H. L. Taylor and W. Frieder, New York.
26 *Osteochondritis Deformans Juvenalis (Perthes' Disease). N. Allison and E. F. Moody, St. Louis.
27 Limitations of Roentgen Ray in Diagnosis of Certain Bone and Joint Diseases. A. Cotton, Baltimore.
28 Association of Static Disturbances in Children. D. P. Willard, Philadelphia.
29 *Resection of Transverse Process of Fifth Lumbar Vertebra for Relief of Painful Back. W. Blanchard and C. A. Parker, Chicago.
30 *Study of Juxta-Articular Sarcoma. P. W. Roberts, New York.
31 Mechanically Unfit; Study of Type Forms in Chronic Invalids. L. T. Swaim.
32 *Case of Typhoid Spine with Necropsy Findings. J. T. Rugh, Philadelphia.

25. **Quiet Hip Disease.**—Taylor and Frieder have noticed that certain cases of hip disease, beginning usually in the second quinquennium, run a mild course and progress to an excellent recovery with little or no treatment. These occur in children of good constitution, and in good physical condition, which is not impaired by the hip affection. The invasion is usually mild and insidious, beginning with a slight lameness and often without pain, though moderate pain in the hip, knee or groin is common at some stage of the trouble, and night cries occasionally occur. The child is seldom laid up and usually continues fairly active and goes to school. The authors have observed and studied nineteen cases of this disease, thirteen males and six females; the age at invasion ranged from 4 to 16. In twelve the right, in six the left and in one both hips were affected. In two other cases the roentgenogram showed some thickening of the neck of the second hip, but there were no symptoms. In none of the eight cases tested was there a positive Wassermann. Two patients were tested with tuberculin and both were negative. About half the patients were questioned as to indigestion and constipation, which was always denied. Several of the patients were treated at first for rheumatism; later, most of them were treated by the short spica for varying periods of time; a few had braces, or traction in bed; a number had no treatment. Treatment seemed to exert no effect on the symptoms or course of the disease, except that after immobilization of the hip, pain disappeared in several instances. The only cases of marked stiffness encountered were two boys who

had worn spicas for a considerable time; in both of them motion returned. Several of the cases were obviously overtreated and it seems that mechanical treatment is often unnecessary and only moderate restriction of activity advisable. Occasionally, if pain and spasm on motion are present, the short spica for a month or two seems beneficial. Operations are to be avoided. The name "quiet hip disease" is proposed for this clinical entity, the origin of which is as yet uncertain but the recognition of which is easy and important.

26. **Osteochondritis Deformans Juvenalis.**—Allison and Moody are inclined to believe that osteochondritis deformans juvenalis is a disturbance of the line of epiphyseal growth, and that it depends for its typical development on changes in circulation which destroy the balance which exists between the metaphysis and epiphysis in growing bones.

29. **Transverse Process of Vertebra.**—Blanchard and Parker cite a case of impingement of the transverse process of the fifth lumbar vertebra on the posterior wing of the ilium, producing pain, numbness and paralysis of the side and leg, so severe as to cause the patient to become bedridden.

30. **Study of Juxta-Articular Sarcoma.**—Roberts urges that a routine examination be made of cases presenting the symptoms of tuberculosis of the vertebrae or of the bones forming the hip and knee joints and that it should include a search for localized tenderness, pain at the site of the lesion, and careful scrutiny of roentgenograms for peculiarities in the picture. Localized pain in the diseased area which in an early case is unrelieved by immobilization is significant of some pathologic process other than tuberculosis. The appearance of unusual shadows in roentgenograms of a clinically tuberculous osteitis is sufficient reason for withholding a positive diagnosis of tuberculosis. Rapid bone changes shown by roentgenogram taken at frequent intervals are suggestive of sarcoma. The disappearance of pain when a part is immobilized, especially when the hip is concerned, does not exclude sarcoma, even though persistent pain in spite of immobilization argues strongly in favor of it. Localized tenderness about the area of disease, especially in spine and hip cases, may be regarded as confirmatory evidence of sarcoma if other factors point in this direction. Age of the patient, a history of local injury and the presence of tuberculosis in the family or in the patient, are features of little significance in arriving at a differential diagnosis between bone sarcoma and tuberculosis. A previous history of malignant disease relieved by operation should immediately suggest malignancy in the case under consideration. The possibility of sarcoma should always be borne in mind in clinically tuberculous joint conditions exhibiting unusual features. A diagnosis of sarcoma should not be made on any one symptom, but on the coexistence of several factors not usually present in tuberculosis.

32. **Case of Typhoid Spine.**—A portion of the bodies of the second, third and fourth lumbar vertebrae on the ventral surface was excised in Rugh's case. The intervertebral disk between the third and fourth lumbar vertebrae was missing and apparently replaced by a bony overgrowth that closely resembled, grossly, the bony tissues of the vertebral bodies. Sections cut from this point for microscopic study show a complete absence of cartilaginous tissue and a marked overgrowth of, or rather a replacement with, dense connective tissue, which has a rather rich blood supply. This connective tissue bridges the space normally occupied by the intervertebral disk and merges into the body tissue of the body of the third lumbar above and the fourth lumbar vertebra below, sufficient to cause a complete ankylosis.

Annals of Surgery, Philadelphia

October, LXII, No. 4, pp. 385-512

33 Typhoid Perforation. (To be continued.) J. H. Gibbon, Philadelphia.
34 *Treatment of Joint Infections by Lavage and Direct Medication. J. W. Churchman, New Haven, Conn.
35 Acute Gangrene of Gallbladder Following Injury. J. L. Ransohoff, Cincinnati.
36 Situs Viscerum Inversus with Gallstones. H. W. Horn, Wichita, Kan.
37 Carcinoma of Small Intestine. F. H. Lahey, Boston.
38 Dilatation of Duodenum. W. H. Barber, New York.
39 Surgical Physiology of Colon. J. M. Lynch, J. W. Draper, New York, and T. W. Lyon, New Haven, Conn.
40 *Triangle of Petit in Kidney Surgery. H. Crouse, El Paso, Tex.
41 Operative Treatment of Tumors of Bladder. J. A. Gardner, Buffalo.
42 Suprapubic Prostatectomy in Two Stages. J. Wiener, New York.
43 Case of Primary Tuberculosis of Prostate Gland. I. S. Koll, Chicago.
44 Pathologic Lesions Observed in Posterior Male Urethra by Means of Urethroscope. A. L. Wolbarst, New York.
45 *Mode for Ventrofixation of Uterus for Relief of Prolapsus. J. O'Conor, Buenos Ayres.
46 Tendon Fixation in Infantile Paralysis. W. E. Gallie, Toronto, Canada.
47 Corrective Otoplasty; Report of Two Cases. J. W. Downey, Jr., Baltimore.

34. **Treatment of Joint Infections.**—Churchman has treated by the method of repeated joint irrigation with salt solution followed by staining of the synovial membranes with gentian violet, a small number of streptococcus and gonorrheal joints. The irrigations are carried out under local anesthesia. The first distention of the joint, before anesthesia can be regarded as established, causes no pain or discomfort whatsoever. The strength of gentian violet used for this purpose has been 1:1,000. Gentian violet in this strength caused no pain or signs of subsequent irritation. In some cases the dye was used in a strength of 1:500. The number of cases treated is small, but, Churchman says, some of them have put the method of lavage and staining to a rather severe test. The results have been sufficiently encouraging to justify a continuance of a study, which is now being carried on in the laboratory of surgery at Yale University and in the wards of the New Haven Hospital. A detailed report is promised later.

40. **Triangle of Petit in Kidney Surgery.**—Crouse's paper deals with a new route for kidney surgery, which, in his experience, has been successful in most pathologic conditions met while dealing with the kidney in a surgical way, and is denominated the triangle of Petit route. By this route the author has removed even a 14-inch kidney, which has been practically destroyed by suppurative degeneration secondary to calculi, and was compelled to cut only slightly the internal and external oblique to gain additional space. On the right side this route can be used for doing appendectomies, and for inspection of the gallbladder and duodenum. The left-sided incision gives access to the tail of the pancreas, the spleen and the splenic flexure of the colon. Crouse has used the triangle of Petit route in over thirty kidney operations in various forms of renal pathology; in several cases the duodenum has been inspected, the upper fourth of which is readily brought to view, when the retroperitoneum is opened and retracted with Payr's broad-bladed retractor or the silver malleable retractor so commonly used for exposing deep cavities. The gallbladder can be drained and even removed, as was done by the author in the case of an old person suffering with a gangrenous condition of the gallbladder. When the lateral position is maintained in bed after operation, this incision gives an ideal line for drainage.

45. **Ventrofixation of Uterus for Relief of Prolapsus.**—The operation described by O'Conor endeavors to restore the cervix to its position by fixing it to the recti muscles in the following manner: The abdomen is opened by the usual low central incision and the uterus exposed, any coexisting adnexal disease or adhesions are dealt with, the uterus is then drawn well up into the wound, and a transverse incision is made through the uterine peritoneum just above and parallel to the uterovesical peritoneal reflection (corresponding to the preliminary uteroperitoneal incision in hysterectomy). The peritoneum, with bladder, is reflected downward and forward until a space about 1 inch square is left denuded on the anterior surface of the cervix. The uterine peritoneum on each side of exposed area is retracted and three strong (eleven day) catgut sutures are passed, about ⅓ inch apart, through the exposed portion of the cervix, and sufficiently deep to obtain a firm grip of the cervical muscular coat. The ends of the sutures are drawn out on each side, respectively, through the recti muscles by a Childe's ligature forceps. Thus the peritoneum is excluded

and the denuded surface of cervix is brought into direct apposition with the recti. In order to avoid subsequent intestinal adhesions at the site of fixation, the parietal wound is closed by tier sutures, the first suture purposely including the uterine peritoneum well above the denuded area.

Arizona Medical Journal, Phoenix

October, III, No. 10, pp. 1-11

48 Nervous Disorders Associated with Pelvic Diseases. G. H. Moody, San Antonio, Tex.
49 Tuberculous Meningitis; Prevalence in Children of Communities Frequented by Tuberculous Health Seekers. R. E. Thomas, Phoenix.
50 Syphilis of Nervous System. H. P. Mills, Phoenix.

Arkansas Medical Society Journal, Little Rock

October, XII, No. 5, pp. 115-137

51 Determinants of Medical Progress. A. C. Shipp, Little Rock.
52 State Hospital for Nervous Diseases. F. B. Young, Little Rock.
53 Diagnosis and Treatment of Incipient Tuberculosis. S. J. Wolferman, Fort Smith.
54 Abscess of Umbilical Vein. E. E. Barlow, Dermott.
55 Posterior Deviations of Uterus. W. B. Center, Garland.

Boston Medical and Surgical Journal

October 28, CLXXIII, No. 18, pp. 647-684

56 Nontuberculous Cases in State Sanatoria. E. Washburn, Rutland.
57 Errors in Diagnosis of Chronic Pulmonary Disease. J. B. Hawes, 2d, Boston.
58 What Constitutes Tuberculosis in Childhood? J. L. Morse, Boston.
59 Shrapnel Bullet in Bladder; Report of Case. D. P. Penhallow, Boston.

Colorado Medicine, Denver

October, XII, No. 10, pp. 281-314

60 Anatomic Consideration of Tumors of Brain with Special Reference to Gliomata. W. T. Councilman, Boston.
61 Record Sheets for Narcotic Drug Book. F. R. Spencer, Boulder.
62 Malingerer. W. M. Ogle, Trinidad.

Iowa State Medical Society Journal, Des Moines

October, V, No. 10, pp. 391-466

63 Influenzal Meningitis; Report of Case. F. A. Ely, Des Moines.
64 Peritonitis. O. J. Fay, Des Moines.
65 Tender Pylorus with Ptosis. E. Grimes, Des Moines.
66 Vaginal Cesarean Section; Report of Four Cases. L. E. Kelley, Des Moines.
67 Fibroma of Stomach. W. McCarthy and D. J. Glomset, Des Moines.
68 Abdominal Pregnancy; Report of Case. H. A. Minassian, Des Moines.
69 Mercury in Brain Syphilis. E. R. Posner, Des Moines.
70 Pregnancy and Tuberculosis. A. C. Page, Des Moines.
71 Sympathetic Ophthalmia. W. W. Pearson, Des Moines.
72 Childhood Susceptibility to Tuberculous Infection. J. H. Peck, Des Moines.
73 Chorio-Epithelioma; Report of Unusual Case. J. C. Rockafellow, Des Moines.
74 Mesenteric Cysts. F. Rosenbladt, Des Moines.
75 Direct Implantation of Motor Nerve on Muscle Tissue (Neurotization). A. Steindler, Des Moines.
76 Congenital Hypertrophic Stenosis of Pylorus; Report of Three Cases. J. T. Strawn, Des Moines.
77 Cerebral Abscess, Probably Primarily Due to Suppurative Tonsillitis. T. B. Throckmorton, Des Moines.

Journal of Biological Chemistry, Baltimore

October, XXII, No. 3, pp. 433-568

78 Spectographic Study of Amino-Acids and Polypeptids. P. A. Kober, New York.
79 Physiologic Action of Some Protein Derivatives. Are Proteoses Prepared from Zein and Gliadin Physiologically Active? F. P. Underhill and B. M. Hendrix, New Haven, Conn.
80 Id. Relation of Racemization to Physiologic Action of Proteins and Proteoses. F. P. Underhill and B. M. Hendrix, New Haven, Conn.
81 Id. Physiologic Action of Vaughan's "Crude Soluble Poison." F. P. Underhill and B. M. Hendrix, New Haven, Conn.
82 *Does Fat Formation Occur in Perfused Kidney? F. P. Underhill and B. M. Hendrix, New Haven, Conn.
83 *Character of Water-Soluble Nitrogen of Some Common Feeding Stuffs. E. B. Hart and W. H. Bentley, Madison, Wis.
84 *Effect of Pituitary Substance on Egg Production of Domestic Fowl. L. N. Clark, Ontario, Canada.
85 Ash of Clam Muscle in Relation to Its Osmotic Properties. E. B. Meigs, Woods Hole, Mass.
86 *Studies in Carbohydrate Metabolism. Influence of Hydrazin on Respiratory Quotient and on Heat Production. F. P. Underhill and J. R. Murlin, New York.
87 Determination of Bile Salts in Urine by Means of Surface Tension Method. G. D. Allen, Minneapolis.
88 *Criticism of Bang and Lewis-Benedict Methods for Estimation of Blood Sugar. R. G. Pearce, Cleveland.
89 Influence of Alkaloidal and Other Narcotic Poisons on Reductase. D. F. Harris and H. J. Creighton, Swarthmore, Canada.
90 *Quantitative Studies on in Vivo Absorption of Iodin by Dog's Thyroid Glands. D. Marine, Cleveland.
91 Nitrogen Excretion of Cat During Purin-Free and Purin-Rich Diet. F. S. Hammett, Boston.

82. **Fat Formation.**—Underhill and Hendrix found that if warm Ringer's solution is perfused through the kidney of the rabbit for a period of twenty-four hours there may be a percentile or an absolute increase in the amount of fat contained in the cortex of the kidney or of the entire organ. These results confirm those of Gross and Vorpahl. Unlike Gross and Vorpahl, who cite these findings as evidence for the formation of fat from protein, the authors believe that the data may be interpreted merely as an expression of the mechanical difficulty of preventing contamination with fat of that portion of material to be analyzed. Doubt is also expressed concerning the influence of the perfusion with Ringer's solution, for a kidney simply suspended in this medium may yield results entirely comparable with those obtained after perfusion.

83. **Nitrogen in Feedingstuffs.**—The data secured by Hart and Bentley show that the "amid" nitrogen of feedingstuffs is largely composed of free amino-acids and peptid linkings. In most cases the nitrogen in these structures constitutes 50 to 70 per cent. of the water-soluble nitrogen. The acid-amid nitrogen is relatively small, seldom exceeding 20 per cent. of the water-soluble nitrogen, and more often being below 10 per cent. Corn stover is an interesting exception, showing approximately 40 per cent. of the water-soluble nitrogen in acid-amid form. The ammonia nitrogen rarely exceeded 5 per cent. of the total water-soluble nitrogen, and in some instances was wholly absent.

84. **Pituitary Feeding and Egg Production.**—Clark's experiments show that feeding of pituitary gland substance (anterior lobe) increased the egg production of hens whose production curve was on the decline. The dosage was effective on the fourth day after the first dose and lasted for several days after the last dose. The hatchability of eggs from dosed parents was increased.

86. **Carbohydrate Metabolism.**—Underhill and Murlin show that the subcutaneous injection of hydrazin into fasting dogs induced an increased rate of carbohydrate combustion as measured by the respiratory quotient. This increased combustion of carbohydrate probably explains the diminished blood sugar content and the disappearance of glycogen from the liver and muscles observed in previous communications. Subcutaneously introduced dextrose is oxidized more rapidly in dogs that have received hydrazin than in the normal fasting animal. Such injections of sugar to hydrazinized dogs also appear to exert a specific dynamic action. Hydrazin exerts no specific influence of heat production.

88. **Blood Sugar Estimation.**—The method worked out by Pearce is as follows: Two c.c. of blood are added to 19 c.c. of water; 10 c.c. of dialyzed iron and 1 c.c. of saturated sodium sulphate solution are now added and the solution is filtered. Two c.c. of the clear filtrate are taken for estimation by the modified Bang method. This is treated with 10 c.c. of saturated solution of potassium chlorid and 1 c.c. of Bang copper solution, in a 25 c.c. Jena flask, on the neck of which a rubber tube is drawn. The flask is placed in an oil bath heated to 140 C. and left there for exactly five minutes. At the end of this period the rubber tube is clamped off with a hemostat. When cool, CO_2 is introduced to fill the vacuum which has been made by the condensation of the steam, and the solution is titrated in an atmosphere of CO_2 with N/100 iodin solution, starch being used as an indicator. A solution made up with pure water in place of sugar solution will give a reduction equal to 0.2 c.c. of iodin. For this reason, 0.2 c.c. is subtracted from all titration results. The value of the iodin in terms of sugar is obtained before each series of titrations by the method above outlined.

90. **Iodin in Thyroid Gland.**—Marine's experiments emphasize the extraordinary affinity of the thyroid tissue for iodin. When one considers that as high as 18.5 per cent. of a given intake of iodin by mouth may be recovered from a thyroid

whose ratio to the body weight is as 1:687, it stands alone at present among the specific affinities of tissues for inorganic substances. The results further emphasize the fact that maximum thyroid effects are induced by minimum amounts of iodin. The amount of a given intake absorbed depends, for the most part, on the size of gland and the existing degree of hyperplasia or the degree of saturation with iodin at the time of its administration.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XLII, No. 10, pp. 657-720

92 Exact and Inexact Methods in Neurology and Psychiatry. G. W. Jacoby, New York.
93 *Studies on Localization of Cerebellar Tumors. E. G. Grey, Boston.

93. **Localization of Cerebellar Tumors.**—The purpose of Grey's paper is to discuss the importance of staggering gait, limb ataxia, the Romberg phenomenon, and adiadochokinesis in localizing new growths in the posterior cranial fossa. It is based on an analysis of the records of forty-eight cases of tumor which involved the cerebellum either directly, or indirectly by pressure. The diagnosis and localization of the lesion were confirmed in all of the cases either at operation or on postmortem examination. All records have been excluded which showed that the disease had extended into other parts or which included additional factors likely to confuse the symptom complex. There were nineteen cases in which new growths, gliomata, endotheliomata and tuberculomata occupied one or the other cerebellar hemisphere. On examination all showed some degree of the characteristic tottering or drunken gait. There were nine cases in which the tumors gliomata and tuberculomata occupied a central position in the cerebellum, namely, they involved the vermis and to some extent the neighboring portions of the lateral lobes. In one the gait remained unaffected. Of twelve patients with lesions in one or the other lateral recess, endotheliomata and cysts, one had an apparently normal gait. In the remaining eleven the usual uncertainty was evident. Of three cases of median tumors posterior to the cerebellum, two ependymal gliomata and one angioma, the gait remained unaffected in one.

The Romberg test was used in sixteen patients with unilateral, intracerebellar tumors. Of these, four fell or tended to fall toward the affected side. The swaying or falling was chiefly away from the lesion in five cases. In patients with new growths involving the vermis, three fell, or tended to fall, backward. One was equally unsteady in all directions. The remaining cases, seven in number, swayed more toward one side. Of thirteen patients with cerebellopontine new growths the swaying was directed toward the affected angle in six, and toward the unaffected in two. An unsteadiness equally marked in all directions appeared in three cases. In only one instance was a negative Romberg found. The lesion, an ependymal glioma in one of three cases of median tumors posterior to the cerebellum, rested on the medulla and cord, causing flattening of the latter. The Romberg was negative. The other two cases, an angioma and a second glioma, fell principally in one direction. From the data presented it is evident that in considerably over 50 per cent. of the cases the direction of swaying or falling bore no direct relation to the location of the tumor. Accordingly the author believes that it is fair to conclude that while this test is useful in establishing a diagnosis of subtentorial new growths, a swaying toward one or the other side has no real significance in localizing the tumor.

Limb ataxia was studied in eight patients with tumors involving the vermis. In all, with two exceptions, the amounts of ataxia on the two sides were quite dissimilar. No ataxia was discernible in one case of tumors within one hemisphere. While it was equally marked on either side in five (one had little), in ten it appeared coarser on the homolateral, and in two coarser on the contralateral, side. No ataxia was visible in two cases of tumors in the cerebellopontine angle; in a third it appeared equally marked on the two sides. Of the thirteen members of this group, ten exhibited more incoordination in the limbs of one side. Very little ataxia was evident in median tumors posterior to the cerebellum. In one it was entirely absent; in the remaining two it appeared only in the arms and then to a slight degree. Tumors within one hemisphere: there was normal diadochokinesis in two patients. Adiadochokinesis was present in twelve cases. In three it appeared equally bad on the two sides and in nine more marked on the side containing the new growth. Tumors involving the vermis: two patients exhibited no adiadochokinesis in either limb. In a third it was present, but to an equal extent on the two sides. A unilateral adiadochokinesis was noted in the remaining four cases of the group. In two of these the tumors encroached more on one of the hemispheres than on the other. Tumors in the cerebellopontine angle: of twelve cases with lateral recess tumors four exhibited normal synergic movements. Adiadochokinesis was noted homolateral to the lesion in six.

Journal of Sociologic Medicine, Easton, Pa.

October, XVI, No. 5, pp. 253-348

94 Hospital Organization of Railway Systems. C. W. Hopkins, Chicago.
95 Refrigeration, Transportation and Conservation of Poultry and Fish Products. M. E. Pennington, Philadelphia, and E. D. Clark, Washington, D. C.
96 Infant Mortality and Urban, Housing and Living Conditions. H. H. Hibbs, Jr., New York.

Kansas Medical Society Journal, Topeka

October, XV, No. 10, pp. 299-328

97 Factor of Age in Incidence and Death of Typhoid. W. J. V. Deacon, Topeka.
98 Correlation of Clinical and Serologic Findings in Paresis and Cerebrospinal Syphilis. I. A. Darling, Warren, Pa., and P. B. Newcomb, Osawatomie.
99 Medical Ethics. H. Plumb, Pleasanton.
100 University Health Fee. J. Sundwall, Lawrence.

Lancet-Clinic, Cincinnati

October 16, CXIV, No. 16, pp. 339-365

101 Fractures in Vicinity of Joints. C. E. Caldwell, Cincinnati.
102 Organs of Special Senses in Life Insurance. W. A. Peterson, Chicago.
103 Clinical Study of Stammering. R. Reed, Cincinnati.

October 23, No. 17, pp. 367-386

104 Urinary Calculi. E. O. Smith, Cincinnati.
105 Drug Addictions and Their Treatment. T. D. Crothers, Hartford, Conn.
106 Social Service Handicraft Shop. N. Ryan, Cincinnati.
107 Blindness After Salvarsan Therapy, Optic Atrophy, Atypical Psychosis. C. E. Kiely, Cincinnati.

Medical Record, New York

October 30, LXXXVIII, No. 18, pp. 727-768

108 Habit and Malocclusion. G. V. N. Dearborn, Cambridge, Mass.
109 Comparative Mortality Experience Among Abstainers and Nonabstainers from Alcohol. W. E. Porter, New York.
110 Dementia and Multiple Tuberculous Brain Abscesses. G. B. Hassin, Chicago.
111 Infectious Diseases of Intramural Insane; Their Prevention and Treatment. J. A. Jackson, Philadelphia.
112 Lime Therapy of Diabetes. M. Kahn and M. H. Kahn, New York.
113 Treatment of Opium or Morphin Addiction. S. T. Rucker, Memphis, Tenn.

Military Surgeon, Chicago

October, XXXVII, No. 4, pp. 311-410

114 Lessons of Great War. J. R. Kean, U. S. Army.
115 Auto-Truck Couplings for Escort Wagons. F. W. Hendley, Ohio N. G.

New York Medical Journal

October 30, CII, No. 18, pp. 881-928

116 An Eighteenth Century Quack in French Canada. W. R. Riddell, Toronto, Canada.
117 Pituitary Extract. S. W. Bandler, New York.
118 Case of Filariasis Associated with Schistosomiasis. R. C. Rosenberger, Philadelphia.
119 Hypopituitarism; Report of Two Cases. L. N. Boston, Philadelphia.
120 Status Thymicus Associated Probably with Inferior Thyroid Lobe. H. A. Houghton, Bayside.
121 Effect of Smoking on Circulation. J. Aikman, Rochester.
122 Eye in Diagnosis. W. F. C. Steinbugler, New York.
123 Treatment of Horse Asthma by Repeated Injections of Normal Horse Serum. L. A. Levison, Toledo.
124 Anesthetic Risk in Surgery. T. L. Dagg, Chicago.
125 Infant Drug Addicts. P. M. Lichtenstein, New York.
126 *An Unusual Complication of Acute Appendicitis. M. B. E. Sutton, New York.

126. **Complication of Acute Appendicitis.**—When first called, Sutton found the patient suffering from intermittent colicky abdominal pain; abdomen tympanitic; temperature and pulse

normal. No abdominal tenderness. Gave soapsuds, enema, liquid diet, castor oil, 1 ounce. Diagnosis: Acute intestinal indigestion. At 4 p. m., temperature, 100; pulse, 90, and of good quality; pain, as before; slight localization of pain over McBurney's point. Abdomen slightly tympanitic. Return of enema good, constipated mass. Treatment: Ice bag to right iliac fossa, liquid diet. Diagnosis: Acute appendicitis. Five a. m. next day: patient suffering with sharp shooting pains in vulva, in addition to abdominal pains, still same character as before. Catheterized and obtained 4 ounces clear straw colored urine. Temperature, 102; pulse, 110, weak and compressible; marked tenderness over McBurney's point; slight rigidity of right rectus. On consultation immediate operation advised. On operation, Sutton found at the distal end of the appendix a ruptured abscess, firmly adherent to the posterior wall of the bladder, and a beginning peritonitis. As the vulva and bladder are supplied in part by the sacral plexus, it is easy to understand why such a complicating symptom should arise. The diagnosis was also complicated by the ovarian pain. A bimanual examination was not advisable as the patient was a virgin. Sutton believes the symptom of a sharp shooting pain in the vulva to be diagnostic of an adhesion of the posterior wall of the bladder.

Pennsylvania Medical Journal, Athens

October, XIX, No. 1, pp. 1-64

127 *Civic Responsibility of Physician and Medical Society. J. B. McAlister, Harrisburg.
128 Significance of Bladder Symptoms in Presence of Diseases of Female Pelvic Organs. F. E. Keene, Philadelphia.
129 Pennsylvania's Relation to Industrial Safety and Health. J. P. Jackson, Harrisburg.
130 Programs. H. W. Albertson, Scranton.
131 Live Wire Secretary. S. C. Smith, Hollidaysburg.
132 Secretary-Editor; Two in One. J. B. Carrell, Hatboro.
133 Results of Examination of Cultures from Suspected Cases of Diphtheria and Other Pharyngeal and Nasal Conditions. G. R. Moffitt, Harrisburg.
134 Uveitis. G. B. Jobson, Jr., Franklin.
135 Intrarectal Use of Sodium Salicylate in Uveitis. J. F. Klinedinst, York.
136 Internal Medication in Treatment of Catarrh of Upper Respiratory Tract. G. R. S. Corson, Pottsville.
137 Management of Breast Feeding; Case Reports. C. K. Johnson, Burlington, Vt.
138 Some Common Mistakes in Interpretation of Laboratory Reports. F. H. Harms, Chicago.

127. Abstracted in The Journal, Oct. 9, 1915, p. 1303.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

September, XXIII, No. 9, pp. 257-284

139 Tuberculosis. T. Y. Hull, San Antonio, Texas.

West Virginia Medical Journal, Wheeling

October, X, No. 4, pp. 109-144

140 Limitations of Local Anesthetics in Anorectal Surgery. S. G. Gant, New York.
141 Diagnosis and Treatment of Chronic Laryngitis. G. A. Aschman, Wheeling.
142 Extraperitoneal Cesarean Section. R. J. Reed, Wheeling.
143 Dislocations of Hip Joint. C. S. Hoffman, Keyser.
144 Inunction Therapy in Infancy and Childhood. E. B. Gerlach, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 9, II, No..2858, pp. 525-556

1 Value of Hypochlorous Acid in Treatment of Cases of Gas Gangrene. J. Fraser.
2 Hospital Ship in Mediterranean. H. Chitty.
3 Acute Renal Disease Among Troops in France. R. G. Abercrombie.
4 Importation of Bacillary Dysentery. A. E. Carver.
5 Case of Molluscum Fibrosum. A. W. Gill.
6 Two Cases of Acute Actinomycosis of Parotid Gland. E. D. Telford.

China Medical Journal, Shanghai

September, XXIX, No. 5, pp. 287-366

7 *Splenomegaly; Report of One Hundred and Four Cases Met with in South China. G. D. Whyte.
8 *Splenectomy in Kala-Azar. S. Cochran.
9 Continued Fever of Korea. H. H. Weir.
10 Roentgen-Ray Experiences in Mission Hospital. A. F. Cole.

7. **Splenomegaly.**—Half the cases seen by Whyte occurred between the ages of 16 and 25 years, when the patient became aware of a lump in the position of the spleen. Forty per cent. told of relatives who were suffering from enlarged spleen, etc., but it was noted that this percentage varied with the district from which the patient came, namely, eighteen patients were distributed over three districts and only three of these (17 per cent.) had relatives affected, whereas of thirty-eight patients who came from one single district, in as many as twenty-four cases (63 per cent.) at least one relative was affected. The duration of illness up to the time the patient came to the hospital varied between a few months and (in one case only) thirty years. In 28 per cent. of the cases the illness had lasted for ten or more years. Eighty-eight per cent. of the patients remembered having had attacks of fever, and in two thirds of these cases the form of infection was either simple or double tertian, the remainder being cases of quartan fever. Edema or ascites had been present, or was found when the patients came to the hospital, in 62 per cent. of the cases. Hemorrhage usually from the bowel or the nose was recorded in 61 per cent. of the cases. Diarrhea was recorded in 50 per cent. of the cases. The erythrocytes varied in number from two and a half to four millions per cubic millimeter in more than half the cases. The majority of the remaining cases showed between four and five millions, though a few (11 per cent.) had less than two and a half millions. The color index varied in different cases from 0.6 to 1.3, but in two thirds of the cases it did not exceed 0.9. Nucleated red cells were found in one half the cases whose total red count was less than two and a half million, and in only 6 per cent. of the cases with more than four million cells. In the intermediate group normoblasts were found in 30 per cent. of the cases. Poikilocytes were noted in 27 per cent. of the cases examined. Two thirds of the cases had less than 3,000 white cells. The percentage of polynuclears varied from 40 to 80 per cent.; 89 cases having between 55 and 75 per cent.

8. **Splenectomy in Kala-Azar.**—Following removal of the spleen in three cases Cochran says the patients showed an immediate and marked increase in hemoglobin and the leukopenia was abolished, there being a tendency to a moderate leukocytosis. One patient survived only seventeen days. The other two are now in considerably better health than before the operation. In one of them the liver was shrunk to normal size from a previous marked hypertrophy. Both have added weight. The temperature curve in both is more nearly normal than before the operation. Parasites are still easily found, though in one of the cases the number seems smaller.

Dublin Journal of Medical Science

October, III, No. 526, pp. 241-320

11 Pituitary Extract with Special Reference to Its Action During Pregnancy and Labor on European Women. R. Johnson.
12 Minor Ailments; Their Importance in Warfare. W. F. Evans.

Edinburgh Medical Journal

October, XV, No. 4, pp. 241-304

13 Miliary Aneurysms in Relation to Cerebral Hemorrhage. T. Shennan.
14 Case of Myxedema. J. Miller.
15 Case of Bronchopneumonia, Purulent Otitis Media and Interna and Leptomeningitis; Postmortem; Microscopic Examination of Ear. J. Thomson and J. S. Fraser.
16 Case of Subacute Purulent Otitis Media, Labyrinthitis and Purulent Leptomeningitis Due to Capsulated Streptococcus; Spontaneous Recovery. J. S. Fraser and J. L. Owen.
17 Case of Myxedema, with Tetany and Suprarenal Insufficiency. J. Eason.

Journal of Tropical Medicine and Hygiene, London

October 1, XVIII, No. 19, pp. 217-228

18 Babesia or Piroplasma. A. J. Chalmers and R. G. Archibald.
19 *"Boomerang Leg"; Bone Disease Occurring Among Australian Aboriginals. A. Breinl and H. Priestley.
20 Flagellate Forms of Leishmania Donovani in Tissues of Experimentally Infected Dog. C. M. Wenyon.

19. **"Boomerang Leg."**—This disease has for sometime been known as "boomerang leg," on account of the similarity of the shape of the legs to that of a boomerang. It affects young

natives of both sexes and the resulting deformity persists throughout their life, and in every case seen both legs were affected. The onset seems to be gradual; the children complain at first of pains in the shins, sufficiently severe to prevent them from walking. The skin over the tibia is tender to pressure, but there is no swelling noticeable. These pains become less severe in the course of time, the children begin to use their legs again, and the tibiae and fibulae bend forward gradually and assume the characteristic shape. In consequence of this the center of gravity of the body is displaced forward, the patient becomes flatfooted, and the gait shuffling. The deformed bones gradually increase in thickness, but retain their altered shape. The history of the disease in conjunction with the appearance of the bone suggests that "boomerang leg" is the result of a chronic osteomyelitis of both tibiae. It takes, at first, the form of a rarefying osteitis, corresponding clinically to the early and painful stages of the disease and giving rise to the softening of the bone and the characteristic deformity. This phase is followed later by a condensing osteitis, in cases in which the increased activity of the osteoblasts leads to a progressive thickening of the lamellae, to bony metaplasia of the fibrosed marrow, and to the reduction of the marrow spaces. A simultaneous progressive periosteal new development causes the increase in the thickness of the shaft. The etiology of "boomerang leg" is unknown, but syphilis and tuberculosis can be excluded.

Lancet, London

October 9, II, No. 4806, pp. 795-846

21 Science and War. W. Osler.
22 War and Medical Education of Women. F. E. Willey.
23 *Spasmodic Symptoms in Rheumatism. F. J. Poynton.
24 Amputation by Plane Circular Section. G. A. Wright.
25 *Radical Treatment of Septic Compound Fractures. V. Pennell.
26 *Intestinal Drainage in Septic Peritonitis. A. J. Nyulasy.
27 Significance of Pulsus Alternans and Some Other Forms of Uneven Pulse. A. E. Carver.
28 Case of Complete Branchial Fistula in Adult. C. H. Whiteford.

October 16, No. 4807, pp. 847-900

29 Ethics and Law of Drug and Alcohol Addiction. W. J. Collins.
30 *Clinical Characteristics of Cases Treated as Paratyphoid. H. Robinson.
31 Explanation of Recto-Urethral Anomaly and Some Points in Normal Anatomy. F. W. Jones.
32 Etiology and Prevention of Cerebrospinal Fever. H. Sutherland.
33 Cases of Transient Aphasia, Hemiplegia and Hemiparesis Due to Arterial Spasm. J. G. Sharp.
34 Labor Complicated by Eclampsia and Glucosuria; Cesarean Section; Recovery. C. P. White.
35 Roentgen-Ray Treatment of Fungating Epithelioma with Introduction of Progressive Filtration. C. Kempster.
36 Case of Empyema Following Poisoned Arrow Wound; Natural Cure by Absorption. J. F. Corson.
37 Case of Twin Ectopic Pregnancy. G. W. Johnson.
38 Employment of Bandages for Irrigation of Wound Surfaces with Therapeutic Solutions and Draining of Wounds. A. E. Wright.

23. **Spasmodic Symptoms in Rheumatism.**—Among the symptoms discussed by Poynton under this head are migraine, muscular spasm, paroxysmal sensory symptoms and anginal attacks. He points out that a damaged heart is made worse by an acute rheumatic attack; then the development of attacks of cardiac pain, becoming at times frequent; steady increase in the predominance of symptoms of a functional or hysterical character; remarkable intervals of freedom; and a final abrupt termination of the illness, as was well illustrated in a case cited by Poynton. The necropsy showed a large heart (27 ounces); the pericardium was generally adherent. There was myocardial fibrosis with endocardial thickening of the membrana septi, and old-standing thickening of the aortic and mitral valves. The aorta, the openings of the coronary vessels, and the coronary vessels themselves were not apparently diseased. An electrocardiogram taken at a time when the attacks were frequent only demonstrated that there was hypertrophy of the left ventricle. Irregularities of rhythm were conspicuous by their absence throughout.

25. **Treatment of Septic Compound Fractures.**—The method of treatment adopted by Pennell is to make a large incision over the site of the fracture, define the ends of bone, remove any small detached portions of bone and shrapnel, and after placing the two or more main fragments in position, either fix them with a Lane's plate, suture them with silkworm gut, or, in cases in which there is much loss of bone, transpose a graft from the tibia or fibula. If the condition is fairly clean Pennell sews up the muscle and fasciae, leaving only a small rubber drain down to the plate. If it is septic he makes no attempt to "bury" the plate or fixing apparatus. Active antiseptic treatment is instituted.

26. **Intestinal Drainage in Septic Peritonitis.**—The rational treatment of this toxemia in Nyulasy's opinion is the removal of unabsorbed intestinal toxin and the prevention of its further production. Both these ends may be secured by intestinal drainage, provided the peritoneal cavity is not charged with excessive poison and that the focal factor is eliminated. The following is a summary of Nyulasy's treatment: If the focal factor has been eliminated, free toxic fluid mopped away, septic necrotic areas drained, the Fowler position employed, saline freely administered, and early purgation given a trial, but the patient nevertheless continues to deteriorate from toxemia due to paralytic ileus, then intestinal drainage should be instituted. If, at the primary operation, drainage of the septic focus in the abdomen has not been employed and the patient deteriorates, a drainage tube may now be introduced; if the patient does not then rapidly improve, but continues to go down hill, intestinal drainage may now be instituted under local anesthesia. If, when the patient is first seen, the evidence of toxemia from paralytic ileus is positive, and especially if lividity is obvious, then intestinal drainage should form part of the primary operation.

30. **Cases Treated as Paratyphoid.**—Paratyphoid (A and B) in the British expeditionary force, according to Robinson's observation, is a disease much shorter and milder than typhoid, as met with in civilian practice and in the South African campaign. Its onset may be gradual or moderately sudden. Headache and abdominal pain are the most constant symptoms. Shiverings at the onset; cough, pains in the limbs and back, diarrhea, constipation, nosebleeding are the next commonest symptoms; all these are met with in about 30 to 60 per cent. of cases. Vomiting at onset and sore throat later are by no means rare. Definite rose spots in successive crops are found in about 60 per cent. of cases. The abdominal reflex is absent in rather under 50 per cent. The pulse rate is extraordinarily slow, even more so than in typhoid. Relapses of brief duration are not uncommon. Several complications occur more rarely and are the counterparts of those associated with typhoid. The paratyphoid bacillus (A or B) is frequently isolable from the feces, but in many cases not until after the symptoms have subsided; one negative finding should not be accepted as conclusive. It is also occasionally isolable from the blood, urine and from metastatic abscesses. Distinct help in diagnosis is obtainable from repeated quantitative Widal reactions, but much experience is required for their interpretation, and they must be read in conjunction with the clinical evidence and with the history of previous inoculation. On the assumption that this disease is of the enteric group, the same precautions as in the case of true typhoid are indicated against its spread. In particular, carriers must be watched, for bacilli may be present in their urine and feces after all symptoms of illness have subsided.

Bulletin de l'Académie de Médecine, Paris

September 28, LXXIV, No. 39, pp. 325-339

39 Suture of the Bone after Gunshot and Shell Wounds. (La suture osseuse dans les suites de plaies de guerre.) C. Dujarier.
40 *Efficacy of Magnesium Chlorid in Dressing Wound. (Etude des effets thérapeutiques du chlorure de magnésium.) Rosenblith.
41 Vaccination against Typhoid Reduces Mortality by Two-Thirds at Least. L. Bernard.

40. **Magnesium Chlorid in Therapeutics.**—Rosenblith relates clinical experiences which have led him to the same conclusions as to the efficacy of magnesium chlorid that Delbet has reached by experimental research. Rosenblith gave it by subcutaneous injection in April, 1913, to relieve a very painful case of deforming rheumatism, and the results were extremely encouraging. In the last few months he has been using it

in dressing wounds, and with most excellent results. It seems to increase the opsonic index and generate substances antagonistic to proliferation of bacteria.

Lyon Médical, Lyons

CXXIV, No. 1, pp. 1-36

42 *Giant Magnet for Localizing and Extracting Metal Foreign Bodies in the Tissues. (Emploi de l'électro-aimant géant dans la recherche et l'extraction des corps étrangers magnétiques.) L. Léorat.

No. 2, pp. 37-72

43 Conditions Favoring Restoration of Function in Severed Nerve. J. P. Morat.

No. 3, pp. 73-108

44 Roentgen Localization of Foreign Bodies. Lagoutte.
45 *The Mineral Mud and Brine Baths at the Health Resorts on the Black Sea. (Les limans de la mer noire.) E. Barral. Commenced in preceding volume.
46 *Blister Cupping. (Ventouses vésicantes.) P. Aubert.

No. 4, pp. 109-144

47 Early Diagnosis of Cerebrospinal Meningitis. E. Weill.
48 Glossolaryngeal Scapulopharyngeal Hemiplegia from Shrapnel Bullet. (Nouveau syndrome paralytique pharyngo-laryngé par blessure de guerre.) Collet.

42. **Magnet for Extraction of Foreign Bodies.**—Léorat relates that the first known use of the magnet for extraction of a scrap of metal in the tissues dates from two thousand years before Christ, as recorded in one of the Vedas, the book of the Brahmins. The eye infirmary at Lyons has been fitted up as a base hospital, and the giant magnet, designed to extract scraps of metal from the eyes, has been found very useful in locating and extracting scraps of shells and bullets in the seat, thigh, neck and back, as well as in the eyes. One man had been showered with small scraps from an exploding shell, and many of them buried deep in the tissues were drawn out by the magnet alone. At one point five scraps were thus extracted through the single hole through which they had entered. In two other cases a piece of a needle or pin was thus drawn out. He gives some illustrations which show how the size, shape and depth of the foreign body can be approximately estimated from the shape of the protuberance that forms above it when the magnet is applied to the region. The more of a peak, naturally, the nearer to the surface. The base of the protuberance should be outlined; it is circular if the needle, for example, stands perpendicular; it is an ellipse if the needle lies parallel to the skin, and it is egg-shaped if the needle lies slanting. Bird shot is often made of iron, and hence is magnetic, and nickel-coated bullets also respond to the magnet. He suggests the possibility of making a magnet long and thin that might be introduced into the esophagus, stomach or air passages, and thus draw out metal foreign bodies.

45. **Mud and Brine Baths.**—This long study of the "limans" of the Black Sea concludes with Borisoff's warning that acute diseases should never be given treatment with mineral mud or brine baths as they are exclusively for chronic affections. In his experience with over 10,000 patients taking the baths, he found that the chronic affection always showed a phase of aggravation under the influence of the baths. That is to say, the chronic affection developed an acute phase, and the defensive forces then rallied better and often conquered the trouble without further ado. The technic, therefore, of the mud and brine baths health resorts in question aims to transform a chronic into an acute affection. The strength of the patient must be sustained, all depressing factors avoided, and constant medical supervision is imperative, especially when the nervous or cardiovascular system is impaired. Two diabetics taking the mud baths without medical advice developed fatal coma.

46. **Blister Cupping.**—Aubert expatiates on the benefit from revulsion in pulmonary edema, and relates that he has thus tided an elderly physician of 75 through repeated attacks of pulmonary edema during the last three years. The drawbacks of cantharidin blisters are avoided by using an ordinary tumbler, with a lighted, crushed up piece of newspaper inside, applied to the skin in the dorsolumbar region. The tumbler is pressed firmly into the skin and left there for an hour and a half or two hours. Multiple blisters form under it, and they continue to secrete for about a week. He has had no opportunity to apply the measure in affections other than pulmonary edema, but it works so well in this that he would not hesitate to use it for congestion of the lungs or viscera, and attacks of pain in the kidney, along the sciatic nerve or elsewhere. The cupping glass does not get so good a hold on the abdomen as on the back; the secret of success is a good hold and an hour and a half to two hours' application. He has his patients with pulmonary edema sit up in a comfortable arm chair, with several shawls thrown over the legs and trunk, or a wide dressing gown that can be readily drawn out of the way, to permit this cupping blister revulsion.

Paris Médical

V, No. 1, pp. 1-16

49 *Partial Tetanus. V. Courtellemont.
50 Technic for Massage after Wounds in War. H. Somen. Concluded in No. 5.
51 *Exercise and Massage in Treatment of Dermatitis Persisting after Wounds in War. F. Debat.

Nos. 2-3, pp. 17-76. Ambulance and Field Hospital Number

52 *Collection and Care of the Wounded on the Firing Line. C. Dopter and Others.

No. 4, pp. 77-92

53 Organic Paraplegia from Shell Explosion without External Wound; Five Cases. J. Heitz.
54 Localization of Projectiles in the Tissues. A. Weil.

No. 5, pp. 93-108

55 Epidemic Tetragenemia; Thirty-Five Cases. F. Trémolières and P. Loew.

49. **Partial Tetanus.**—Courtellemont's patient was a man of 65 who developed attenuated partial and chronic tetanic contracture of the leg after he had stepped on the tooth of a rake and inflicted a slight wound. The first symptoms were observed about fifteen days after the accident, and except for a slight and transient tendency to trismus the disturbances were apparently merely a spastic monoplegia. A painful cramp sometimes developed in the leg and foot affected when he tried to move them. Under epidural injections of antitetanus serum and chloral the symptoms gradually subsided to a complete cure by the end of the sixth week. In connection with this case Courtellemont discusses the literature on partial and atypical tetanus, emphasizing that however unusual the combination or sequence of symptoms, the underlying tetanus is the same disease in all and requires the same treatment.

51. **Massage and Exercise in Treatment of Skin Affections Persisting After Wounds.**—Debat relates that in many cases the dermatitis was the result of corrosion from the antiseptics used in dressing the wounds or of maceration from a moist dressing with boiled water. The tissues become so torpid that they show no inclination to heal. The injury of nerves and vessels in the region may cooperate in the delay in the healing of the dermatitis as also the immobilization of the part. Both of these factors are combated by intermittently stimulating the skin with a 9 per thousand salt solution and exposing the region to the air, as soon as possible having the muscles massaged and exercised. He reports some typical cases showing the rapid healing under such measures of dermatitis long resisting ordinary treatment.

52. **Ambulance and Hospital Number.**—This large number is profusely illustrated and describes and shows the ambulances at work, the hospitals and dressing stations, base hospitals, etc., the sanitary trains, the stretchers in use and the dogs trained to seek for the wounded. The last two of the twelve articles by various writers are descriptions by Camus of the physiotherapeutic institutes at Paris and by Claude of the regional neurologic centers which have been established at various points. Claude states that specialist care and hospital treatment for the neurologic cases has been organized at several points in Paris, and at Lyons, Bourges, Bordeaux, Toulouse, Nancy, Rennes, Marseilles, Nantes and Tours. Other regional neurologic hospitals are to be installed as needed, the results having abundantly proved their usefulness.

Archiv für Kinderheilkunde, Stuttgart

LXIV, Nos. 5-6, pp. 321-472. Last indexed June 5, p. 1948

56 The Bacillus of Whooping-Cough. (Keuchhustenbacillus—Bordet-Gengouschen Bacillus.) I. Jacobsen and A. H. Meyer (Copenhagen).
57 Influence of Summer Vacation on Mortality from Diphtheria and Scarlet Fever. L. Bernhard.
58 Paralysis with Whooping-Cough; Four Cases. (Lähmung bei Keuchhusten.) S. T. Sörensen (Copenhagen).

Deutsches Archiv für klinische Medizin, Leipzig

June 22, CXVII, Nos. 4-5, pp. 361-496. Last indexed Sept. 18, p. 1062

59 Localization by Electrocardiography of Source of Impulse for Heart Action. (Ortsbestimmung der Erregung im menschlichen Herzen mit Hilfe der Elektrokardiographie.) G. Fahr and A. Weber.
60 Variations in Functioning of Respiration Center, especially during Sleep. (Alveolargasanalysen. I.) H. Straub.
61 *Changes in Regulation of Respiration under Psychic and Pharmacologic Influences. (Alveolargasanalysen. II.) K. Beckmann.
62 *Eosinophil Myocarditis. (Untersuchungen über die Herzmuskulatur bei Infectionskrankheiten. I.) E. Liebmann.
63 Sparing of Nitrogen in Man under Intake of Ammonia Salts and Urea. (Stickstoffersparnis durch Darreichung von Ammoniaksalze und Harnstoff.) E. Grafe.
64 The Leukocytes after Vaccination against Typhoid. H. Stieve.
65 Galvanic Excitability of Dying Muscles. (Beitrag zu den Theorien der elektrischen Entartungreaktion.) E. Reiss.

July 20, No. 6, pp. 497-618

66 Daily Fluctuations in the Carbon Dioxid Tension of the Alveolar Air and Their Causes. (Alveolargasanalysen. III.) H. Erdt.
67 Caseous Interchanges in Human Muscle in Action. (Alveolargasanalysen. IV.) M. Mettenleiter.
68 Determination of Pepsin and Trypsin in Fasting Stomach. G. Dorner.
69 *Dangers of Iodin Medication. A. Oswald (Zurich).
70 Study of the Reaction of Degeneration. (Ueber die Nutzzeit degenerierender Muskeln: Zur Erklärung der Entartungsreaktion.) W. Achelis and M. Gildemeister.
71 *Chilling Causes Coagulation of Fibrin in the Blood Stream. (Das Wesen der Erkältung.) Aufrecht.

61. **Influence of Emotions and Drugs on the Carbon Dioxid Tension of the Alveolar Air.**—Beckmann found that emotional factors had a depressing influence. This must entail a drop in the concentration of hydrogen ions throughout the entire body. This in turn must affect the functioning of numerous organs. Certain drugs are able to influence the tension, morphin increasing and cola reducing it.

62. **Eosinophil Myocarditis.**—Liebmann found accumulations of eosinophil elements in the myocardium at necropsy of a girl of 12 who had succumbed to diphtheria. The findings in the heart muscle were like those Stäubli and Hübner have reported from cases of trichinosis.. Tanaka in 1912 reported eosinophils as a constant finding in four out of fifteen diphtheria hearts, but never in such profusion as in the case here described, with a colored plate. In this case the eosinophils were grouped also in such a way as to suggest that the affection represents a new and rare type of diphtheritic myocarditis. Destruction of muscle tissue cannot be the only factor involved. Liebmann is making a special study of the heart in infectious diseases, and this first communication is to be followed by others.

69. Practically the same article was summarized in these columns, November 6, p. 1682.

71. **Mechanism of Injury from Getting Chilled.**—Aufrecht presents an imposing array of testimony culled from old and modern writers to reaffirm the important part played by getting chilled in the genesis of various diseases and morbid processes. He then reports various experiments on rabbits, all of which confirms his assumption that the chilling causes coagulation of fibrin in the blood stream in the part chilled. The cause of the coagulation is the injury done to the white corpuscles by the cold. The coagulation obstructs the flow through the peripheral vessels involved and the blood is liable to back up into the liver, kidneys and gastric mucosa. The most striking changes were found in the lungs, the coagulation of fibrin entailing microscopic hemorrhage into the interstitial tissue. This occurred in a pronounced form when the hind part of the rabbit was thrice dipped into ice water for ten minutes. The blood chilled in this way passes in the directest way to the arterial circulation in the lungs. The obstruction of vessels by the coagulated fibrin after chilling may be transitory and harmless, but, on the other hand, it may provide a culture medium for germs and explain pneumonia developing after exposure to cold. The hyperemia in the internal organs may also cooperate in the disturbances following chilling.

Deutsche medizinische Wochenschrift, Berlin

September 30, XLI, No. 40, pp. 1177-1204

72 The Spleen in Diagnosis of Typhoid. (Impf-Milzschwellung und Typhusdiagnose.) Goldscheider.
73 *Dysentery. (Ueber Ruhr und ihre Behandlung im Felde.) C. Hirsch.
74 Pseudodysentery. (Y-Ruhr.) E. Fränkel.
75 Bacteriologic Diagnosis of Cholera. W. Schürmann and T. Fellmer.
76 *Abortive Forms of Cerebrospinal Meningitis. H. Hochhaus.
77 Further Favorable Reports on Radiotherapy of Cancer. (Zur Verhütung von Nebenschädigungen bei der Behandlung tiefliegender und tiefgreifender Karzinome mit Radium und Mesothorium.) B. Krönig.
78 Gas Phlegmons of Varied Bacteriologic Origin. H. Selter.
79 Wounds of the Eyes. (Bemerkenswerte Fälle von Verwundung des Sehorgans.) Oloff. Commenced in No. 38.
80 Rapid Healing of Wounds Left Exposed to the Air. (Ueber offene Wundbehandlung.) H. Weissenberg.
81 The Blood Count and Differential Staining in Counting Chamber. (Zur Blutkörperchenzählung und zur Differentialkammerfärbung.) G. C. van Walsem.

73. **Treatment of Dysentery.**—Hirsch reviews the general principles for prevention and treatment of dysentery, and emphasizes that there are not only severe infection and intoxication but serious lesions in the lining of the bowel, and the patient is suffering likewise from lack of water, lack of nourishment, and from the constant draining away of salts. All of these should be regarded in treatment. He advocates one or two tablespoonfuls of castor oil daily at first, supplemented after a few days with repeated small doses of calomel. He has found rectal injections of kaolin or of animal charcoal (one heaping tablespoonful to a liter of warm salt solution) effectual in reducing tenesmus. He generally makes the injection at night and then gives a little opium to ensure a few hours' rest. He does not approve of either kaolin or charcoal by the mouth; they adsorb the digestive ferments and ruin the appetite. Saline infusion combats the loss both of water and of salt.

76. **Abortive Forms of Meningitis.**—Hochhaus remarks that the abortive forms seldom come to the notice of physicians, and yet they are of great epidemiologic importance as sources of infection of others. During the first six months of this year there were thirty-two cases of meningitis at Cologne and twenty-four of these passed under his observation. In all there were pains at the back of the neck, headache, vomiting, stiff neck and a chill; in a few cases the nose and throat secretions gave positive bacteriologic findings. There were also sore throat and bronchitis in most cases. These symptoms all rapidly retrogressed in the sixteen abortive cases and the men felt quite well. The diagnosis was based mainly on the fact that the men had been living with those who had developed severe epidemic meningitis. It is wise when the latter is prevalent to have the nasopharyngeal secretions examined from all those who present any symptoms on the part of the air passages and pains in the limbs.

Deutsche Zeitschrift für Chirurgie, Leipzig

July, CXXXIII, Nos. 5-6, pp. 425-632

82 Wounds of the Lungs. J. Volkmann.
83 Pathology of Surgical Disease of the Vessels. (Zur Pathologie chirurgisch wichtiger Gefässerkrankungen und der Aneurysmen peripherer Arterien.) H. Schum.
84 Experiences at Base Hospital in Balkan War, 1913. (Etappenspitalerfahrungen in Dimotika.) A. Alder.
85 *Nerve Blocking by Kulenkampff's Technic for the Brachial Plexus. E. Schepelmann.
86 Injury of the Crucial Ligaments. (Zur Kreuzbänderverletzung.) R. Morian.
87 Dressing and Immobilizing Wounds. H. Brun.
88 Open Treatment of Wounds. (Offene Wundbehandlung.) Schede.

85. **Blocking the Brachial Plexus.**—Schepelmann states that in his application of Kulenkampff's technic in 300 cases he observed unpleasant by-effects in seven cases, that is, in 2.3 per cent. This included four cases of interference with the breathing on account of injury of the pleura, one case of pneumothorax, and two of brain symptoms, alarming at

first but rapidly subsiding completely. He never witnessed any harm from repeating the plexus anesthesia at weekly intervals, as he had occasion to do in mobilizing some stiff joints. With improved technic and patient waiting, the anesthesia is satisfactory with extremely rare exceptions. He warns, however, that the plexus should never be blocked on both sides. The above statistics do not include nineteen cases presenting what he calls "Horner's syndrome," which he remarks is entirely harmless. They do not include either a case of paresis of the fingers from the constricting band.

Jahrbuch für Kinderheilkunde, Berlin

October, LXXXII, No. 4, pp. 261-346

89 Albumin Milk and Its Substitutes. (Eiweissmilch und ihre Ersatzpräparate.) E. Glanzmann.
90 *Transmissibility of Exfoliating Dermatitis of the Newly Born. M. K. Wolf.
91 *Bacterial Affections of the Urinary Organs in Infants. (Sog. Pyelocystitis im Säuglingsalter.) H. L. Kowitz.
92 *Invagination of the Intestines in Infants and Small Children. (Darminvaginationen im Kindesalter.) H. Wollin (Prague).

90. **Transmissibility of Exfoliating Dermatitis of the Newly Born.**—Wolf encountered within two weeks recently three cases of exfoliative dermatitis in newly born infants, fatal by the ninth to the seventeenth day. The clinical picture was the same in all, and each had been breast fed. Rittershain had 297 cases of the kind at Prague in ten years' experience. He and others regard it as an affection developing only in early infancy, noncontagious, and to be sharply distinguished from pemphigus of the new-born. Others regard pemphigus of the newly born and exfoliating dermatitis of the newly born as the same process, differing merely in its intensity. Wolf has been unable to find in the literature any history of direct transmission from skin to skin but has met with a case of this kind in practice. The mother of one of the three infants mentioned above developed an apparently identical process in the right breast at the point where the child had lain to nurse. The clinical picture was unmistakably the same, after an incubation period of ten days. The general health was not impaired, and under eight days' hospital treatment the condition improved to a practical cure and the woman has not been seen since. A peculiarity of the case was the presence of two hard tumors in the depths of the affected region. One was as large as a hen's egg, the other not so large. They retrogressed without softening, but the local painfulness prevented investigation. They suggest, however, that certain special factors are involved in the production of the exfoliating dermatitis.

91. **Bacterial Affections of the Urinary Organs in Infants.**—Kowitz has examined forty infants under 2 with some affection of this kind. There were about as many boy as girl babies in the series, and the connection with gastro-intestinal disturbances and the bacteriologic findings indicated that bacilli of the colon group, brought by the blood, were responsible for the processes in the various cases. He says that the terms cystitis or pyelitis are not applicable. A more accurate descriptive term would be bacterial nephritis or colinephritis in small children. In 37 of his 40 cases bacteria were found in pure cultures; mixed infection in only 3. Among the pure cultures, colon bacilli were found alone in 24 cases, paracolon bacilli in 10, and staphylococci alone in 3. In these latter cases the infants had furunculosis or eczema. In the 3 cases of mixed infection colon bacilli were present. In the entire 40 cases members of the colon family were found in 92.5 per cent.; this proved conclusively, he thinks, that the germs came originally from the bowel. It is astonishing, he remarks, that so little attention has been paid to the blood in studying disease of the urinary apparatus in small children, especially in "pyelitis in infants." Bahr found bacilli in the blood in 117 of 120 cases of digestive disturbances in infants, in 65 during life, and the colon bacillus predominated far above all others. The blood count in the few cases in which he could make it suggests the importance of research in this line.

In 5 cases Kowitz could trace the development of the urinary affection. First there was albumin in the urine and bacteria soon appeared also in the urine. Then after an interval of five or six days, pus and epithelial cells, and sometimes tube-casts and red blood corpuscles were also found in the urine. With ascending infection the sequence would have been reversed. The cases are grouped and tabulated under various headings, the tables filling six pages. The blood count in twelve cases showed leukocytosis from 10,000 to 20,000 in all but 4; the small lymphocytes ranged from 20 to 72.7, the large from 0.7 to 8; the polynuclears from 15 to 53.7; the eosinophils from 0 to 6, and the mononuclears from 0.3 to 11. The corresponding standard figures for infants are (Japha) 12,000; 25 to 35; 50 to 55; eosinophils 2 to 7 and mononuclears 8 to 15. Pfaundler's figures for infants are: lymphocytes, 22; polynuclears, 51; eosinophils, 4; and mononuclears, 12.

92. **Invagination of the Intestines in Children.**—Wollin analyzes twenty cases from the Prague children's clinic, saying that the outcome confirms the gravity of the prognosis the younger the child. Only three of the thirteen infants less than 1 year old survived, while the seven older than this all recovered. The younger the child, the more difficult the diagnosis, as a rule, and the longer the delay before the operation.

Medizinische Klinik, Berlin

September 26, XI, No. 39, pp. 1065-1092

93 Psoriasis and Allied Diseases. J. Jadassohn. Concluded in No. 40.
94 *Abnormal Mammary Secretion. (Zur Pathologie der Brustdrüsensekretion.) E. Ebeler.
95 Serotherapy of Typhoid. B. Fellner.
96 *Relapsing Fever. (Rückfallfieber.) L. R. v. Korczynski. Commenced in No. 38.
97 Influence of the War on Domestic Animals and Game in the War Zone. (Einfluss des Krieges auf die Tierwelt.) A. Sokolowsky.
98 Prognosis in Typhoid from Bacteriologic Findings. O. Landsberger.
99 Sterilization of Clothing. (Bekämpfung der Kleiderläuse durch trockne Hitze.) A. Hartmann.

94. **Pathology of Mammary Secretion.**—Ebeler had his attention called to this subject in 1912 by the case of a woman of 50 from whose breasts there oozed a watery fluid after a laparotomy for myomatous uterus and ovarian cysts. Since then he has examined for mammary secretion in various gynecologic affections, and reports here positive findings in 87 cases. The secretion ranged from a watery fluid to actual milk in the different cases and sometimes in the same case at different times. Genital tumors seem to have a particularly stimulating action on the secreting glands in the breast. He lists 12 positive cases with uterine myoma, 5 with ovarian cysts, 6 with pyosalpinx, 10 with cancer of the uterus, and 11 with retroflexion, 9 with prolapse of genital organs or bladder, 12 with inflammatory processes in the uterus, and 22 with other affections, such as hernia, mammary cancer, tuberculous peritonitis, etc. These different series included women who had never been pregnant, but all were over 20, except one girl of 16 with appendicitis, one of 17 with probable renal tuberculosis, and one of 19 with movable retroflexion of the uterus. In 24.13 per cent. of his 87 cases the women had never been pregnant; a number were virgins and 11 were past the menopause. One was a woman of 82 with prolapse of the vagina. The proportion of cases of colostrum secretion outside of a pregnancy is largest with genital tumors. Klein reported this year the case of a woman of 51, in the menopause for a year, with profuse secretion of milk in both breasts accompanying a sarcoma of the uterus. When the breasts are examined more systematically in the nonpregnant, such cases will be found more common than is recognized at present. A mammary secretion of colostrum therefore cannot be regarded as of so much import in the diagnosis of pregnancy as has hitherto been accepted.

96. **Relapsing Fever.**—Korczynski has had considerable experience with relapsing fever recently in the eastern seat of war, and states that there was but one attack in 76 per cent. of seventy-five cases, while the other patients had one relapse. He says that salvarsan must be regarded as the sovereign remedy, but it must be given in large doses, 0.9 gm. for adults and from 0.45 to 0.6 gm. for youths. Heart tonics generally are needed. If such large doses of salvarsan seem contraindicated, smaller, repeated doses might be tried.

Monatsschrift für Kinderheilkunde, Berlin

XIII, No. 9, pp. 393-430

100 Local Diphtheria Bacillus-Broth-Culture Reaction in Man. G. Bessau and J. Schwenke.

101 Experimental Research on the Causes of Softening and Destruction of the Cornea: Keratomalacia. E. Freise, M. Goldschmidt and A. Frank.

Münchener medizinische Wochenschrift, Munich

September 28, LXII, No. 39, pp. 1309-1344

102 Degenerated Forms of Gonococci. P. Asch and Adler.

103 *The Blood Count and Agglutination after Inoculation against Typhoid. (Beobachtungen bei Typhusschutzgeimpften.) P. Ziersch.

104 Treatment of Typhoid with Vaccines. (Zur Frage der sogen. Vakzine oder Bakteriotherapie: Ergotrope Therapie des Typhus abdominalis.) F. v. Gröer.

105 *Detection of Syphilis in the Public. (Bedeutung der Vorgeschichte, des Befundes und der Wassermannschen Reaktion für die Erkennung der syphilitischen Ansteckung in den breiteren Volksschichten.) G. Hubert.

106 *Relations of Life to Light. (Beziehungen des Lebens zum Licht.) F. Schanz.

107 *Serodiagnosis in Psychiatry. (Zur Frage der Bedeutung des Dialysierverfahrens nach Abderhalden für die Psychiatrie.) V. Kafka.

108 Wounds of Joints. (Gelenkverletzungen, Gelenkeiterungen und ihre Behandlung.) E. Payr. Commenced in No. 37.

109 Abdominal Wounds. (Bauchschussverletzungen.) P. Kraske.

110 Pneumococci and Staphylococci Not Conveyed by Lice. (Zur Frage der Uebertragung von Bakterien durch Läuse.) E. Widmann.

111 *Dangers from Oxygen in Treatment of Gas Phlegmons. (Vorsicht bei der Sauerstoffbehandlung der Gasphlegmonen!) E. Borchers.

112 *Reliability of Preventive Serotherapy of Tetanus. (Zur Frage der prophylaktischen Impfung gegen Tetanus.) W. Wolf.

113 Abdominal Wounds. (Zur Pathologie und operativen Behandlung der Bauchschussverletzungen.) A. Läwen.

114 Abdominal Wounds. M. Matyas.

103. **Blood Findings After Inoculation Against Typhoid.**—Ziersch examined daily the blood of forty-five soldiers who had been inoculated three times. No regularity in the response to the agglutination test could be detected during the following months. A positive response was obtained in eighteen, and a negative in twenty-seven. The leukocyte count ranged about 4,900 to 5,700. The differential blood count kept like that of typhoid except that the eosinophils did not disappear as with typhoid.

105. **Differential Diagnosis of Syphilis.**—Hubert relates that during the last three years every patient at the first medical clinic at Munich has been examined for possible syphilis. The previous history in each case, the physical findings, and the response to the Wassermann test were correlated, the results demonstrating that 8.8 per cent. of the 8,652 patients applying to the clinic were infected, although fully 52 per cent. of the 405 men and 75 per cent. of the 354 women infected were unaware of it. This lack of any previous history or suspicion of syphilis may prove misleading in treatment of cardiovascular affections, apoplexy or headache. Hubert was also impressed with the prevalence of latent syphilis, and the importance of serodiagnosis for revealing unsuspected syphilis in such a large proportion of the general public. He found also that quite a large proportion of the patients denied syphilis, in deliberate falsehood. In the cases of tabes, the Wassermann reaction alone cleared up the diagnosis in 56 per cent. of the men and in 65 per cent. of the women. The anamnesis supplemented the Wassermann only in 75 per cent. in the male tabetics and in 68 per cent. of the women. The experiences related confirm the value of the routine Wassermann test in general hospital practice.

106. **Relation of Life to Light.**—Schanz cites recent authorities to sustain the results of his own research which has demonstrated that insects and the dwellers in the sea are all color blind. They see everything gray in gray. As Hess has established, only vertebrates living in air are able to distinguish colors. This demolishes the old conception that the colors of the flowers serve to attract and guide insects. The brilliant coloring of the sea dwellers is obscured to the eye of man at a depth of a few feet, and the light penetrating the water changes its color as it descends lower and lower; the red and yellow rays being absorbed more than the blue or green. The sea dwellers look red and yellow to us because their integument is so constituted that they are able to absorb the rays which are able to penetrate to them, and thus they can utilize the light which reaches them. The coloring matters in their integument thus serve as photocatalyzers, the same as the hematoporphyrin in the back of the earthworm. He explains further that light modifies albumin, changing it from a readily soluble into a much less soluble form. There are many substances which retard or hasten this change. The most common substance of the kind is chlorophyl, with whose photocatalyzing properties we are all familiar. In certain animals the entire integument is sensitive to the action of light, thus forming an apparatus for the perception of light as it is provided with some photocatalyzing element. This seems to be the case with the sea dwellers: In others, like the earthworm, this element is restricted to some part of the creature. In the higher animals this localization is still more specialized, and the eye develops. There is much to sustain the assumption, he adds, that the act of seeing in the higher animals is at bottom the same photocatalytic process which we observe going on everywhere throughout all living beings.

107. **Serodiagnosis and Psychiatry.**—Kafka concludes his discussion of this subject with the remark that the ninhydrin reaction must be studied further, tranquilly and objectively, as the results already obtained show promise of great usefulness. To date, however, the method has no actually practical value in psychiatry. He urges simultaneous study of other methods working toward the same aims, to control and supplement the findings with the dialysis method, mentioning P. Hirsch's "interferometry" in particular for this purpose. Even with all these restrictions, however, the Abderhalden technic may already yield important information to fill gaps in our knowledge of the case, especially in differentiating between dementia praecox and uncomplicated cases of manic depressive insanity or psychoneuroses; also between epilepsy and hysteria, between paralysis and cerebral syphilis, between organic affections of the central nervous system and neuroses. The cases of glandular imbecility and idiocy will be recognized better. Chief in interest, however, is the light thrown on the pathogenesis of nervous and mental affections.

111. **Dangers of Oxygen in Treatment of Gas Phlegmons, Etc.**—Borchers injected a 3 per cent. hydrogen dioxid solution subcutaneously and intramuscularly in a case of extensive gas phlegmon after exarticulation of the shoulder. The prompt recovery he ascribed to the nascent oxygen, and was confirmed in this view by the prompt recovery in two other similar cases. In the fourth case, however, breathing stopped at once on injection of the dioxid solution into the stump of the arm after amputation. This makes the fifth case on record of sudden death from this cause, and it warns of the dangers of injecting oxygen into the tissues. He presents evidence further that the prognosis of gas phlegmons is not so grave as has been hitherto assumed. Under simple multiple small incisions the infected lymph stream is diverted outward, and the infection is conquered. Of course these remarks as to the danger of oxygen do not apply to rinsing the wound with nascent oxygen. This is the best mechanical cleansing method at our disposal to date, and does no harm where the oxygen can escape freely.

112. **Preventive Injection of Antitetanus Serum.**—Wolf relates that after the German authorities decreed that every wounded soldier is to be given a preventive injection of antitetanus serum, the number of cases of tetanus dropped off to almost zero. In one case tetanus developed thirty hours after the injury, notwithstanding the preventive injection. Although the incubation was so brief the tetanus ran a very mild course. There is every reason to assume that without the preventive injection this case would have terminated fatally. The experiences related indicate that the preventive injections are an almost certain protection against lockjaw; also that the injection need not be made at once; even delay till the next day does not detract from its efficacy. It is not necessary, he adds, to give the preventive injection to every wounded man; it is enough to give it after shrapnel

and grenade wounds. When there are a number of scattered wounds, soiled with horse manure, the foci of infection being numerous the patient requires a double dose of the antitetanus serum.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 25, pp. 665-696

115 General Principles for Treatment of the Wounded. (Wundbehandlung in den Kriegsspitälern.) L. R. von Ruediger.
116 Ergot and Tetany. (Weiteres Material zur Sekaleätiologie der Tetanie.) A. Fuchs and R. Wasicky.
117 Vaccination against Bacillary Dysentery. (Zur Schutzimpfung gegen Bazillenruhr.) F. Lucksch.
118 Exposure to Direct Sunlight as Favorable Therapeutic Measure in Typhus. (Verhalten des Flecktyphus bei direkter Sonnenbestrahlung.) H. Wertheimer.
119 Typhus a Form of Typhoid. S. Rossberger.
120 Suggestions for Prophylactic Measures against Venereal Disease as Men are Dismissed from Military Service. O. Sachs and B. Lipschütz.

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121 Experimental Studies on Variola. J. Kyrle and G. Morawetz.
122 Infected Wounds of Bones and Joints. W. Denk.
123 Favorable Effect of Normal Horse Serum in Treatment of Typhus. R. Roubitschek.
124 Stock Vaccine Treatment of Typhoid. (Heterovakzinebehandlung des Typhus abdominalis.) F. Lucksch.
125 The Louse Question. E. v. K. Lenz.
126 The War and Social Insurance in Hungary. (Der Krieg und die ungarische Arbeiterversicherung.) H. Pach.
127 Heat-Stroke and Sun-Stroke. (Hitzschlag und Sonnenstich.) E. Wiener.
128 Suggestion to Add Stain to Vaccine, Blue for Typhoid, Red for Cholera. (Markierung der Typhus- und Cholera-Schutzimpfungen.) H. Hültl.
129 Wounds of the Brain. (Zur Chirurgie der Schussverletzungen des Gehirns.) Frey and H. Selye.

Zeitschrift für Kinderheilkunde, Berlin

July 26, XIII, Nos. 1-2, pp. 1-128

130 *Tuberculin Treatment of Children. H. Koch.
131 *The Initial Fever of Tuberculosis. H. Koch.
132 Anomalies in the Blood of the Prematurely Born and Weakly Children. (Zur Kenntnis der Blutveränderungen bei Frühgeburten und debilen Kindern.) D. Kunckel.
133 Interlobar Pleurisy in Children and the Roentgen Findings. F. Weihe.

130. **Tuberculin Treatment of Children.**—Koch is assistant at the children's clinic at Vienna in charge of von Pirquet, and he here gives a detailed description of forty-five children given systematic courses of tuberculin treatment. He reports excellent and encouraging results, but emphasizes the changes he has introduced into the method of tuberculin treatment for children. He gives the tuberculin in a larger amount of fluid than others use, up to 10 or 20 c.c., believing that the tuberculin diffuses better in this way. He also changes the site of the injections, and increases the doses by geometrical progression. Only two strengths are required, 1 : 100,000 and 1 : 10,000. He begins with 1/1,000 mg. and increases to the final dose at 1,000 mg. This is reached usually in seven, thirteen or twenty-five doses, giving two injections a week. He adds that the terminal dose can be repeated as long as it seems necessary to continue the course. In seven cases the treatment had to be discontinued as periods of high fever set in. All the other little patients bore the treatment well and improved under it. The children were of all ages, but most were between 3 and 9. The most unfavorable age for the treatment is the first three years, and the eleventh, thirteenth and fourteenth years. The duration of treatment averaged only eleven weeks.

131. **Initial Fever of Tuberculosis.**—Koch relates that he had three children under observation who developed tuberculosis under his eyes, the exact date of their exposure to contagion being known. The children were tested regularly for the skin tuberculin reaction afterward. The response became positive at the same time that fever developed and kept up, and this was in each case during the seventh week after infection. The initial fever was the only clinical sign that anything was wrong, but from the first it displayed the characteristics of the fever of tuberculosis.

Zeitschrift für Urologie, Leipzig

IX, No. 7, pp. 241-280

134 The Urine in Diagnosis. (Zur Entwicklung der klinischen Harndiagnostik in chemischer und mikroskopischer Beziehung.) E. Ebstein. Concluded in No. 8.
135 Urology and the War. II. H. Lohnstein.
136 Fistulas, Abscesses, Pyuria and Bacilluria as Complications Following Nephrectomy for Tuberculosis. T. Verriotis.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 29, XXXVI, No. 66, pp. 1025-1040

137 *Cholera Traced to the Market Place. (Se e come un mercato possa essere o divenire centro o veicolo d'infezione colerica.) M. Cioseffi.
138 *Case of Simple Traumatic Polyuria. A. Cardarelli.

137. **Epidemic of Cholera.**—Cioseffi relates that at Trieste nineteen cases of cholera developed at scattered points throughout the city, all in the course of ten days, and with no apparent connection between the cases. There were thus several remote foci. The water, milk, and similar sources of infection could be excluded, the only tenable explanation being that some carrier had been in the central fruit and vegetable market, and had infected some of the fruits and vegetables by handling them. The populace has been educated by the authorities to cook fruits and vegetables and eat none raw, so that infection could not have occurred from uncooked fruits or vegetables. The dealers, however, handling the goods, thus became infected secondarily, and carried the infection home. Some person connected with the market or working nearby was discovered in the environment in all the cholera cases.

138. **Traumatic Polyuria.**—In the case reported by Cardarelli a boy of 15 fell from a height of nearly 50 feet and suffered several fractures, and concussion of the brain. For twenty days he was unconscious or delirious, and not until after the fortieth day was the brain working apparently normally once more. He had much headache and thirst and voided from 17 to 18 liters of urine in the twenty-four hours. The traumatism seems ample to explain the polyuria, and under treatment with hypophysis extract the youth seems to be improving. The urine voided does not total over 8 or 9 liters now. Cardarelli thinks that it is not necessary to incriminate hysteria in this case although hysteria is often responsible for transient polyuria. He saw a case not long ago in which a young woman with pronounced stigmata of hysteria voided 22 liters of urine. In another case a boy of 11, after a severe fright, passed no urine for four weeks although apparently entirely healthy, and the anuria then stopped as suddenly as it had begun.

Policlinico, Rome

October 3, XXII, No. 40, pp. 1333-1364

139 Precipitation by Heat a Diagnostic Reaction in Bacillary Dysentery. A. Missiroli.
140 *Reciprocal Action on Each Other of Microbian Toxins. Mahokian.

October, Medical Section, No. 10, pp. 433-480

141 *Acute Raynaud's Disease Accompanying Paralysis. R. Alessandri and G. Mingazzini.
142 *Multiple Myelomas with Bence-Jones Albumosuria. (La malattia di Kahler-Bozzolo con illustrazione di un nuovo caso.) A. Martiri. To be continued.

140. **Interaction of Microbian Toxins.**—Mahokian reports experiences showing that tetanus and diphtheria toxins influence each other, the former attenuating the action of the latter when injected into guinea-pigs. On the other hand, diphtheria toxin enhances the toxic action of tetanus toxin. When tetanus toxin was injected along with diphtheria antitoxin, the curative influence of the latter was enhanced, but the exact opposite was observed with antitetanus serum. Microbes seemed to acquire greater virulence when some of their own toxin, and sometimes an alien toxin, was added to the culture medium. Experiments with the toxin from leprosy bacilli and from tubercle bacilli gave results suggesting that the secretions of the former were less diffusible than of the latter, which might be one reason why the former is harder to cultivate.

141. **Acute Raynaud's Disease Associated with Paralysis.**—Alessandri and Mingazzini encountered a number of cases of this kind among persons injured in the last great earthquake in Italy. Six of the patients died; in three the disturbances progressed to gangrene compelling amputation. The other patients recovered more or less completely

although the paralysis persisted in most. Trophic vasomotor disturbances were evidently the main factor in some cases and acute inflammation of peripheral nerves in others. The latter group is much less serious. All the patients had been buried under the ruins for from one to three days, exposed to cold, wet and fright.

142. **Multiple Myelomas.**—Martiri reviews the literature on the syndrome described by Kahler and first diagnosed in the living subject by Bozzolo. He has compiled 204 cases and adds another to the list. His patient was a man of 55, a great smoker and drinker, who developed occipital headache in 1913, subcontinuous, a little worse at night, with occasional dizziness, all improving under treatment for neuralgia. A few months later pains and tenderness in the right ribs became so intense that the man could not get up for a few days, but they gradually improved although the pains could be elicited anew by bending the trunk. Later, pains in the knee prevented walking. A tumor could be felt on the sternum, painful on pressure, but there was never any fever. The urine contained from 0.15 to 1 per thousand Bence-Jones bodies, and the diagnosis of Kahler-Bozzolo's disease was confirmed by the practically spontaneous rupture of the femur. The course was progressive, the man dying in coma about a year after the first symptoms. The variability of the seat of the pains from day to day is a striking feature of this disease, but the pains always cling to the bones, and nocturnal exacerbations are common. In some cases the complaints seemed to be so out of proportion to the slight objective findings that simulation was suspected. The discussion of the disease, of the Bence-Jones albumose and its determination, etc., fill thirty pages in this installment of Martiri's article.

Riforma Medica, Naples

October 2, XXXI, No. 40, pp. 1093-1120

143 *Pathologic Obesity in Two Infants. (L'obesita mostruosa nei bambini lattanti.) L. Ferrannini. Commenced in No. 39.
144 Catalase in Organs with an Internal Secretion. F. Galdi.

143. **Extreme Obesity in Infants.**—In this concluding half of his article Ferrannini summarizes his conclusions in the statement that disturbances in the glands with an internal secretion are undoubtedly responsible for pathologic obesity in infants, as at any age. The influence of the nervous system and of infections and intoxications is felt through structural or functional changes or both in the glands with an internal secretion. In the two cases of which an illustrated description is given, probably more than one of these glands was involved as the syndrome was extremely pronounced and complex. The pancreas and the thyroid can probably be excluded as also the genital glands, on account of the age of the little patients. The pituitary body, the pineal gland and the suprarenals are probably the ones involved, the last two only secondarily.

Russkiy Vrach, Petrograd

XIV, No. 34, pp. 793-816

145 Treatment of Poisoning with Asphyxiating Gases. V. I. Skvorzoff.
146 War Psychoses. S. A. Soukhanoff.
147 *Cultivation of Cholera Germs from the Feces. N. I. Krich.
148 *Heterogenous Hemolytic Serums. I. L. Krichevsky.

No. 35, pp. 817-840

149 Operative Treatment of Habitual Luxation of the Humerus. L. G. Stukkey.
150 *Wounds Caused by Earth. S. L. Timoffieff.
151 Draining of Wounds. V. N. Novikoff.
152 Splint with Extension in Fractures of Humerus. A. T. Berdiaeff.
153 *Acute Necrosis of Pancreas. V. P. Nedokhleboff.

147. **Cultivation of Cholera Vibriones.**—Krich found Ottolenghi's medium for cultivation of cholera vibriones more suitable than pepton-water. Fresh ox gall is filtered through paper and then 3 c.c. of the filtrate is mixed with 100 c.c. of 1:1,000 solution of soda crystals and 1:1,000 of potassium nitrate. The mixture is placed in test tubes and sterilized at 115 C. for fifteen or twenty minutes. Krich had the opportunity of studying this method on cholera patients simultaneously with the pepton-water medium. The parallel experiments showed the advantages of the gall medium. The latter would produce a luxuriant growth of cholera vibriones when the pepton-water medium would show no growth whatever. The technic was as follows: 1 c.c. of feces was placed in a glass with 30 c.c. of alkaline gall prepared according to Ottolenghi. Six or twelve hours later a reinoculation was made on slanting agar, rendered solid by addition of 1.5 per cent. of agar to 10 c.c. of gall. The specimens were stained with acid fuchsin, after fixation in an alcoholic solution of mercuric chlorid, or a 1:1,000 solution.

148. **Hemolytic Serums.**—Krichevsky showed that the connective tissue of animals, as for instance, the fat of a guinea-pig, contains an antigen which produces a hemolysin against sheep red blood corpuscles. The cause being in the nuclei, he concluded that nucleated erythrocytes, which are found in a hen, for instance, should also possess this ability of producing hemolysins against sheep erythrocytes. As the organs of a hen contain such an antigen, he chose the erythrocytes of this animal for his experiments. They were injected into rabbits and the latter's serum proved afterward hemolytic for sheep red cells. Therefore he comes to the conclusion that the hen's erythrocytes contain the same heterogenous antigen—which produces hemolysis of sheep cells—as the organs. The obtained heterogenous serum possesses high hemolytic properties; 1,000 hemolytic units in 1 c.c. for sheep cells, but it is inactive against the cells of the hen that gave the antigen. Therefore, Krichevsky thinks that specificity of antibodies does not exist, because rabbits injected with hen's red cells produce a hemolysin not against the latter, but against sheep cells. However, the serum of a hen contains agglutinogens as shown by the fact that immunization of rabbits generates in their serum a large amount of agglutinins against the erythrocytes of hens. Thus, the erythrocytes of the latter contain not only heterogenous hemolysins, but also heterogenous agglutinins. The experiments also showed that rabbit's serum immunized by hen cells does not contain hemolysins against beef erythrocytes either, and that the connective tissue of animals (guinea-pig, for instance) contains a heterogenous sheep antigen—rabbits injected with fat from a guinea-pig give a serum that dissolves the sheep erythrocytes.

150. **Wounds Caused by Earth.**—Wounds caused by earth are the by-effects of the action of projectiles. Exploding bullets and shells drive small particles of dirt into the skin. The neck, face and other exposed portions of the body are usually affected. The mildest form is "tattooed skin" which appears as if covered with dirt which cannot be removed either with soap or benzin, as the smallest particles of the dirt have been driven into the skin. It becomes swollen, parchment-like, and either peels or small necrotic foci form. Venous thrombi sometimes develop. With the second form, abrasions with cyanosis and swelling, deep necrosis may occur or thrombophlebitis. The third variety is the formation of real wounds with irregular edges and subcutaneous hemorrhages; the wound is full of pieces of earth, stones or dirt. In one case one and a half pounds of dirt were found in the wound. Such wounds may be the cause of general sepsis. Earth wounds may be complicated with brain concussion, fractures of bones and contusion of viscera. In milder cases there may be dizziness, headache, general pallor or redness of the face, neck and chest. In other cases the explosion caused psychic disturbances. In all he had forty-five cases of "dirt wounds" among 2,000 patients (2.25 per cent.). The wounds are superficial, but badly infected. The treatment, therefore, consists in prevention of sepsis. By the sixth or ninth day as a rule the soldiers wounded in this way could be sent back to the interior without danger.

153. **Acute Necrosis of Pancreas.**—Nedokhleboff advocates early operative treatment of acute necrosis of the pancreas. It can be diagnosed by the following symptoms: adipositas, sudden onset with a severe shock, stormy course, localization of pain in the epigastrium, meteorism in the region of the stomach, absence of muscular defence, prolonged vomiting of bile, the contrast between the collapsed state and the good pulse, cyanosis and dyspnea without corresponding changes in the heart and lungs. All these symptoms were present in a case reported in detail. This patient was a 19 year old girl who recovered after a successful operation.

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THE RELATION OF RODENT PLAGUE TO HUMAN INFECTION *

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The most essential factor in the control of plague during recent years has been the realization that it is essentially a rodent epizootic. It is true that the literature of plague contains reports of the disease in monkeys, dogs, cats, horses, asses, cattle, sheep, goats, swine, calves, chickens, pigeons, geese, camels, kangaroos, bats, frogs, geckoes, goldfish and carp, but many of these reports are not confirmed by convincing experimental evidence.

Hankin[1] noted an epizootic in monkeys in October, 1897, at Kankhal, and a second simian epizootic was observed at a little later date at Jawallapur. A third series of cases was observed at Gadar in the residency of Bombay in December, 1899. In the second and third simian epizootics the diagnosis was confirmed bacteriologically. Calmette and Salimbeni[2] and the German and Russian plague commissions demonstrated the susceptibility of the brown monkey and the gray monkey to plague. From the collected evidence it may be deduced that while monkeys have a great susceptibility to plague infection, they do not seem to play an important rôle in its propagation under natural conditions.

While there are a number of reports on the susceptibility of the dog to plague infection, a study of them does not warrant the belief that the dog is liable to the disease.

There are a large number of reports on epizootic plague among cats, yet these animals probably play a very unimportant part in the continuance and spread of the disease. Hunter[3] concludes that cats are susceptible to plague and that they suffer from an acute or chronic plague septicemia. He was of the opinion that they infected themselves by eating infected rats.

Horses are moderately susceptible to plague infection when pure cultures are injected into their blood streams in relatively large doses. A careful review of the literature does not disclose an instance in which they suffered from the disease in nature.

Schreyer,[4] K. Matsuo,[5] and Wu Lieu Teh[6] have reported that coolies working in a coal mine and attacked by pneumonic plague infected donkeys with the disease. These are very extraordinary conditions and may be accounted as practically negligible in the course of an ordinary epidemic.

Under natural conditions plague has never been found in bovines. It is true that Simson[7] reported ingestion plague among calves, chickens, pigeons, dogs, geese, sheep and swine, but Bannerman and Kapadia,[8] the German commission,[9] and Hafkin and Lowson[10] have reversed his reports. It is, therefore, logical to conclude that these animals do not play a rôle in plague perpetuation or dissemination.

Since 1899, when Dchurkowski[11] described an infectious disease of camels closely resembling plague, there have been several reports of alleged outbreaks of plague in which the camel was the vehicle. The Astrakan commission decided that the camel was susceptible to plague and suggested that these animals might have been the means by which plague has been introduced into countries along the caravan routes. It is doubtful, however, if camels play any great part in the large problem of plague.

The report of the Board of Health of Sydney, 1902, contains a note by Thompson in which he states that in the epidemic of that year seven kangaroos died from plague in the zoological garden at Sydney. This is an isolated instance and without bearing on the general problem.

With regard to bats, the reports are at variance. Gosio,[12] experimenting with the *Vesperugo noctula*, believed that he was able to infect them. On the contrary, Toyama[13] reported these animals as insusceptible.

It seems to be fairly clearly demonstrated that birds in general, and particularly birds which run on the ground, are not susceptible to plague.

The cold-blooded vertebrates, that is, reptiles and batrachians, have been experimented with by Nuttal,[14] Dweill,[15] Furth,[16] and Fukahara,[17] and do not seem susceptible to plague, either by injection or ingestion.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Hankin: 30 Ann. Rep. Sanitary Delegate of the United Provinces, 1897.

[2] Calmette and Salimbeni: Plague at Oporto, Ann. d. l'Inst. Pasteur, 1899, xiii, 865.

[3] Hunter, W.: Plague in Cats, Lancet, London, April 22, 1905, p. 1064.

[4] Schreyer, O.: Oester-Sanitatswesen, 1911, No. 19.

[5] K. Matsuo: The Simultaneous Appearance of Plague in Man and the Ass on the Same Farm, Centralbl. f. Bakteriol., Orig., 1912, lxv, 417.

[6] Wu Lieu Teh: International Plague Conference of Mukden, Lancet, London, May 20, 1911.

[7] Simson, W. J.: Plague at Hongkong, Brit. Med. Jour., March 28, 1903.

[8] Bannerman and Kapadia: The Receptivity of Domestic Animals to Plague, Jour. Hyg., 1908, No. 2.

[9] Report of the German Commission on Plague in India, 1899. Arb. a. d. k. Gsndhtsamte, xvi.

[10] Lowson: Trans. Soc. Epidem., N. S., 1897, xvii, 57.

[11] Dchurkowski: Arch. d. Veterinarwissensch., April, 1899.

[12] Gosio, B.: The Transmissibility of Plague to Bats, Arch. Ital. Biol., 1903, xxxix, No. 1; Bull. d. l'Inst. Pasteur, 1903, p. 784.

[13] Toyama: Experimental Studies on Plague, Ztschr. f. med. Mikros., 1909.

[14] Nuttal: Centralbl. f. Bakteriol., 1897, xxii, 87.

[15] Dweill: Centralbl. f. Bakteriol., 1897, xxii, 382.

[16] Furth: Ztschr. f. Hyg. u. Infektionskr., 1907, No. 2, p. 315.

[17] Fukahara: Arch. f. Hyg., 1907, lxiii, Part 2.

Mention need not be made of the rôle of insects and *Ixodidae* in relation to plague, their part being the transmission of the infection from host to host rather than the function of keeping the disease alive within their own bodies.

The rôle of the rat in the pathogenesis of plague is classical and there is a preponderance of evidence which proves that bubonic plague in man depends entirely on the presence of the disease in rodents. It is true that in the pneumonic form of the disease infection occurs directly from man to man without the intermediation of any ectoparasite, but the great bulk of plague is not pneumonic, but bubonic, and it is the rodent species which keeps the disease alive and which carries it from country to country and into the home of man. Plague has been found in nature in the *Mus norvegicus,* the *Mus rattus,* the *Mus alexandrinus,* and the *Mus musculus.* The *Nesocia bandicota,* or bandicot rat; the *Arctomys bobac,* or tarbagan; the *Putorius furo,* or ferret; the *Herpestes griseus,* or mongoose, and the *Neotoma fuscipes,* or brush rat, have all been found susceptible to the disease. All of the spermophiles have proved infectible, as have also the *Cynomys ludoviciana,* or prairie dog, and the *Putorius foetidus,* or skunk. The *Citellus grammurus,* or rock squirrel, and the *Citellus beecheyi,* or ground squirrel, have also proved infectible. The disease has been found in nature in brush rats, skunks and ground squirrels. The overwhelming fact in plague perpetuation and spread is that it is a rodent disease.

It is interesting to study the distribution of human plague cases in their relation to rodent plague cases. It is, of course, impossible to discover every case of rodent plague and on account of the migratory habits of rats it does not necessarily follow that the infection exists in large amounts at every place in which plague rats are taken. On the other hand, the impossibility of determining accurately the movements of human beings renders it difficult at times to discover the exact place at which infection was received. Not infrequently, however, plague rats are found in or near the building in which the human plague victim worked or lived, and the reverse is even more true, that human plague does not occur among people who work and live in rodent-free surroundings. Of the thirty cases of human plague which occurred in New Orleans in 1914, only five were unconnected with rodent plague foci, and in many of them the place at which the infection was received was accurately determined.

The foregoing is the basis of the measures for plague prevention and eradication. Since plague is a rodent disease, if man is isolated from rodents he will not under ordinary circumstances contract the disease, the key to prevention being the separation of man from rats.

It is manifestly impossible to kill all of the rats in a given community, much less in a whole country, or the entire world. If their migrations can be controlled, if they can be excluded from the places in which man lives and works, the maximum result has been accomplished. Wide migration of rats occurs largely by ships, a relatively very small number traveling overland by trains. The frequent periodic fumigation of ships, the breasting-off and rat-guarding of nonfumigated vessels, and the inspection of outgoing and incoming cargoes will, to a considerable degree, control wide rodent migration. The ratproofing of buildings used by man for any purpose whatsoever will keep rodents out of intimate association with man. For this purpose impervious material, such as concrete, brick, stone, and tile, have their architectural application. During the presence of a plague epizootic the extermination of rats by traps, poisons, and separation from food supply so diminishes the density of the rodent population as to limit the spread of the disease from the sick to the well, and thus the disease automatically dies out for want of infectible material. This in effect is the dilution of the infectible material. At the same time the laboratory examination of captured rodents affords an accurate guide as to the centers of rodent infection and permits the application of intensive preventive methods so that the disease may be stamped out among rats before opportunity has occurred for it to be transmitted to man.

In the presence of an epidemic, every measure which will protect man should be taken. Among these is immunization against the disease after the method of Haffkine. This is of doubtful applicability in American cities. It could never be made mandatory, and those persons who volunteer for such inoculations do not form the class which is most liable to receive the infection. This method has not proved useful in large eradicative measures, it having been found more practicable to limit the operations to rodent extermination and the exclusion of this species from the home of man.

ABSTRACT OF DISCUSSION

Dr. William C. Hassler, San Francisco: The paper gives us a very clear insight into the animals which are carriers of this disease. The point that I was particularly interested in was the matter of prophylaxis. I was the first one to receive a dose of Haffkine serum here in 1900. I was then acting chief sanitary inspector of the health department. We tried to impress its harmlessness on the Chinese population here whom we then had in quarantine. It was all right as long as they saw us getting the dose, but a few days later when we came to demonstrate the harmlessness of it, and our arms were swollen about the bigness of a goose egg, we had great difficulty in inducing them to submit to the measure. It would not work and we had to adopt other measures. Nevertheless, it is a safeguard, and one which can be used and has its value under certain conditions.

Dr. W. C. Rucker, Washington, D. C.: It may be of interest to this section to learn a little bit about the results of the campaign against plague in New Orleans. New Orleans is today 75 per cent. rat-proof. The probabilities are that there will be 15 per cent. of the city which cannot be rat-proof for several years. There therefore remains only 10 per cent. to be done. This is being accomplished. Up to the present we have captured in the traps alone over 375,000 rodents. They are being taken at the rate of about 1,100 per day. Of these, 247 have been found infected, the last one having occurred on June 11. We are now getting plague rats at the rate of one out of over 21,000. They uniformly come from buildings and premises which are not rat-proof. There were thirty human cases, of which nine patients died. The probabilities are that had it been possible to give all of those patients the serum treatment very early and in large doses, the mortality would have been very much lower. The epidemic began in the early part of June, and the last human case occurred Oct. 4, 1914. An extensive out-going quarantine was established in order that the port might be kept open. Vessels were fumigated with either sulphur or carbon monoxid or hydrocyanic gas in order that they might leave freely. Every package of freight was inspected before it was put on the ship. Every freight car that left the city was inspected to determine its rat-proof and free condition; all freight was inspected before being loaded, and was then loaded under the eye of an inspector.

The car was then sealed with a lead seal bearing some device, and there was a large sign posted on the side of the car, "This car certified as to its rat-proof and free condition providing the seal remains unbroken." As a result, freight, both by maritime and overland routes, moved freely and continuously to and from the city of New Orleans. In this work we rat-proofed some 30,000 cars alone; and in the fumigation of ships we consumed for the carbon monoxid fumigation about a million and a half pounds of coke. There was established early an inspection of the dead in order that all cases might be found, and this inspection continued until it was very clearly demonstrated that no more human plague existed. All of the rats were identified as to sex and species; and in this connection I desire to point out a very interesting gage on the value of your work. If you are carrying on a rodent extermination campaign, it is interesting to have a check by means of which you may know whether you are really killing rats. The trapping of mice in a campaign is entirely incidental. You do not aim to catch mice; and in the beginning of the campaign it will be found that the number of the true rats will be very high, something like 91 per cent. of the entire catch. If you will plot those on a chart you will, find, if your work is successful, that there is a steady fall in the number of true rats, and that there is a steady rise in the number of mice, until you come to a point, as we did away along last December, where the mouse line has passed and far exceeds the rat line. In other words, you have been killing off, if your work is successful, the natural enemies of the mouse, and the mouse is therefore able to come out and get into your traps. We have in our exhibit at the exposition a very good chart showing this very simple point.

My paper, I feel, has been trite, but I think that it is a wise thing to tell the story over and over again, that so long as you have rats you are liable to have rodent infection, and that so long as you have rodent infection you are liable to have human infection and plague.

URINARY ANTISEPSIS

A CLINICAL AND BACTERIOLOGIC STUDY *

FRANK HINMAN, M.D.

SAN FRANCISCO

Urinary infection is the most frequent of genito-urinary disturbances. Sometimes it is the primary and principal disease, but more often it occurs as an added and secondary burden, and whatever the abnormality it is always an imminent possibility. The significance of the condition is given unusual emphasis by a recent analysis of the postmortem records of the Johns Hopkins Hospital (1912-1914). These records show that the cause of death, in more than half of the fatalities in the urologic service, was an infection which, as indicated clinically in the histories and pathologically by finding cystitis, pyelonephritis or pyelitis, probably spread in every instance from the urinary tract. These and other facts emphasize the great danger of urinary infection, and the necessity for the development of a more efficient therapeusis. The object of this paper is to present a study of the limitations of the known urinary antiseptics, to correlate these facts with clinical conditions and to advocate a selective method of treatment. No specific treatment or method of treatment is known. An intelligent correlation, in each individual case, of antiseptic, bacteriologic and clinical facts offers a scientific and rational method of attack.

CLINICAL CONSIDERATIONS

From a clinical standpoint each case of urinary infection should be studied with regard to three causative factors: (1) the infecting agent; (2) the source and portal of entry of this infection and its character and degree of extension, and (3) the abnormal conditions of the genito-urinary tract which may be accessory to the prolongation or spread of the infection.

Bacteriology: A long list of organisms has been reported for urinary infections, but it is full of duplications under different names. Relatively few organisms are common invaders, and the relative frequency of their occurrence in different parts of the tract is fairly uniform (urethritis excluded). The colon bacillus is found in from 70 to 80 per cent. of renal infections. *Staphylococcus pyogenes albus* (rarely the *aureus* and *citreus*) is the next most common invader, being present in about 10 per cent. of the cases. Then come the *Streptococcus pyogenes* and the *Proteus vulgaris* in about equal frequency, followed by scattered reports of the gonococcus and typhoid bacillus. Other organisms appear in reports for a few cases only, and some of these are questionable. The findings for the bladder are not so uniform and a much greater variety of organisms has been reported. The colon bacillus occurs more often than all other organisms together, being isolated in from 50 to 60 per cent. of vesical infections. Excluding it and tubercle bacilli, the staphylococcus more than equals in frequency the occurrence of all other forms, of which the streptococcus and *Proteus vulgaris* occur most and about equally often. Then follow in relatively few cases the gonococcus, pneumococcus, *Micrococcus catarrhalis* and bacilli of the *faecalis alcaligines, enteritidis, pyocyaneus, typhosus* and still rarer aerobic and anaerobic forms. The relative frequency of occurrence of the tubercle bacillus is a matter of dispute but, probably, it is present in about 5 per cent. of all cases. These facts indicate that five organisms cover over 90 per cent. of urinary infections. These five are *Bacillus coli communis,* the staphylococcus, the streptococcus, *Proteus vulgaris* and the tubercle bacillus.

The Source and Extent of the Infection: The determination of the portal of entry of many infections is more a matter of conjecture than certainty; nevertheless, knowing the infecting agent and the extent of its activity, a very close deduction as to its source can be made. The great preponderance of colon infections emphasizes the importance of intestinal conditions. A colon cystitis of urethral origin is common in women, but in men who have retention or other local conditions which reduce the bladder resistance, a lymphatic borne cystitis is more common. In the absence of pronounced accessory factors or instrumental causes the urethral route is rarely followed by either colon bacilli or streptococci. *Proteus vulgaris* infections, however, are ascending in practically every instance and are prone to attack the bladder in old prostatics. Hematogenous infections of the kidney due to streptococci often follow scarlet fever, tonsillitis, furunculosis, etc. Staphylococci, being saprophytic inhabitants of the healthy urethra in 50 per cent. of men, have a common urethral entry. In view of the work of Rosenow and Warden relative, respectively, to streptococci and staphylococci, postgonorrheal prostatitis and seminal vesiculitis stand out as fertile sources of urinary infection from these organisms.

Accessory Factors to an Infection: The abnormal conditions of the urinary tract which may incite or extend infection are well known. The difficulty comes in their recognition. Their correction causes the majority of infections to quickly subside. Obstruction in any part of the tract to a free urinary outflow is one of the most important of these accessory conditions. Other common abnormalties are the presence of foreign bodies, such as stone or tumor, and of diverticula. Injury to any part of the tract is frequently an inciting cause — injury from exposure, from the use of irritating drugs or following instrumentation, and possibly, in some cases, a reduction of resistance occurring with the continued presence of an alkaline reaction of the urine, either metabolic or from urea decomposition.

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* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

It often happens that an elimination of the source of infection and a correction of certain of the above abnormal conditions of the tract which are accessory to it will effect a cure of urinary infection without the use of antiseptics. Nevertheless, everyone has experienced clinical inability in these cases and it is needless to enumerate the many conditions in which antiseptics would be of value in addition to their great field of usefulness in prophylaxis. The above brief outline of clinical facts, however, emphasizes the great importance of never relying on antiseptics alone in the treatment of urinary infection.

TABLE 1.—GERMICIDAL POWER OF DISINFECTANTS

	Per Cent.	1 : 20 30 40 50 60 70 80 90 100	200 300 400 500 600 700 800 900 1,000	2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 11,000 12,000 13,000 14,000 15,000
	100 90 80 70 60 50 40 30 20 10			
Mercuric chlorid	....	....	....	..........3 2 1
Mercury oxycyanid	....	....	....	.........32 1
Potassium mercuric iodid	....	....	....	1 2 3
Iodin water	....	....	....	.... ae
Bromin water	....	....	....	be ac
Iodin and potassium iodid	....	....	....	2 3 1 a bce
Potassium permanganate	....	....	....	bc2 3 1
Quinone	....	....	....	1 b
Silver nitrate	....	....	.... 1 2 3	.. a b
Pyxol	....	....	.... 1 2 3	
Lysol	....	....	...... b c	
Formaldehyd	....	....	1 2 3	
Hydroquinone	....	....	a b c	
Sulphuric acid	....	....	c b c	
Hydrochloric acid	....	.... be		
Creolin	....	....	abc	
Iodin tetrachlorid	....	.... bc		
Carbolic acid	....	.... 123 ab		
Calcium chlorid	....	.... b e		
Turpentine	....	.... a b c		
Oxalic acid	....	.... b c e		
Menthol	....	 c		
Thymol	....	.... c e		
Albargin	....	...... c b d		
Protargol	 32	.... d 1		
Green soap	....	... a b c		
Hydrogen peroxid	.... 1 2 3			
Argyrol	.... 3 2 1			
Chinosol	....	1 2 3		
Salicylic acid	.... c c			
Benzoic acid	.... a b			
Oil of sandalwood	.... 1 ..... 2 3			
Lugol's solution	.... 1 2			
Sozoiodol	.... 12 abc			
Ethyl alcohol	..... a b c e			
Glycerin	b e			
Boric acid	....	?		

FACTS REGARDING DISINFECTION

The disinfectant action of drugs, without entering into a discussion of theoretic details, is comprised under four general properties: (1) germicidal action, (2) bacteriostatic or antiseptic action, (3) biochemical reaction and penetrating power, and (4) toxicity. By germicidal action is meant the power of causing complete death of the organism. By bacteriostatic or antiseptic action is meant the power of inhibiting the growth of bacteria for the limit of time of exposure. Biochemical reaction refers to the stability or instability of some substances under different chemical influences, and their power of osmosis indicates penetrating action. By toxicity is understood both the general poisonous property and the local irritant action of disinfectants. The ideal drug, obviously, would have high germicidal and penetrating power with stable and nontoxic action. Unfortunately, no substance exhibits these properties effectually, and clinicians have come to use the better bacteriostatic substances almost to the exclusion of the pure germicides, except on the unbroken skin. The difference of opinion regarding the action of many disinfectants arises from the great difference in the methods of study, no standard of which has been satisfactorily established. Most investigators have been interested from a sanitarian standpoint; many for hand disinfection. The majority attempt comparison with phenol by establishing an "antiseptic phenol coefficient" which indicates germicidal power only, and for practical purposes has a very limited value. Few will advocate the use of even well-recognized disinfectants in such concentration as to give germicidal action in the limited time of exposure for purposes of urinary disinfection. Tables 1, 2, 3 and 4 will indicate the findings of personal laboratory tests, as well as those of others whose methods correspond:

Table 1, the germicidal power of disinfectants, indicates the highest dilution of the disinfectant in broth which will completely kill the organism in from fifteen to twenty minutes at 20 C. (68 F.), by the hygienic laboratory phenol-coefficient method.

The personal findings were: 1, *Bacillus coli communis;* 2, *Streptococcus pyogenes aureus;* 3, *Staphylococcus pyogenes albus;* 4, *Bacillus typhosus* (Hopkins).

The findings as reported by others are: *a, Bacillus coli communis; b, Streptococcus pyogenes aureus; c, Staphylococcus pyogenes albus; d, Gonococcus; e, Bacillus typhosus.*

Table 2, the bacteriostatic power of disinfectants, indicates the highest dilution of the substance in broth which causes absence of growth in it forty-eight hours after inoculation, at 37 C. (98.6 F.), the inoculation of the broth dilutions being done with 5 drops of fresh twenty-four hour bouillon cultures of the organisms.

The personal findings were: 1, *Bacillus coli communis;* 2, *Streptococcus pyogenes albus;* 3, *Staphylococcus pyogenes albus;* 4, *Bacillus typhosus* (Hopkins).

Table 3, the stability of disinfectants, indicates the highest dilution of the disinfectant (in water, broth and serum) which inhibits the growth of the organism (*B. typhosus*) for forty-eight hours after inoculation at 37 C.

The pentrating power, after Harris' collodion sac method, and the toxicity of disinfectants were studied. The results regarding the previously mentioned four general properties of disinfectant action may be briefly summarized.

Table 4, the penetrating power of disinfectants, indicates the power of osmosis through thin collodion sacs (Harris' method). These sacs, containing fresh twenty-four hour bouillon cultures of *B. typhosus,* were immersed in broth dilution of the disinfectant and subcultures were made from these sacs to broth tubes every ten, twenty and thirty minutes and at the end of twenty-four hours.

TABLE 2.—THE BACTERIOSTATIC POWER OF DISINFECTANTS

	Percentage Dilution of Substance in Broth																														
	1 : 10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1,000	2,000	4,000	6,000	8,000	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000
Mercuric chlorid																															1 2 3
Potassium mercuric iodid																														1 2 3	
Chinosol																												1 2 3			
Formaldehyd																											1 2 3				
Potassium permanganate																								1		3					
Silver nitrate																									1 2						
Iodin and potassium iodid																							1								
Aluminum acetate																				a b											
Copper sulphate																	b e														
Carbolic acid																1 2 3 5															
Boric acid						1 2																									

Toxicity of Disinfectants: Worth Hale has proposed a method for the determination of a "toxicity coefficient," on very much the same principle as the "antiseptic phenol coefficient." Two series of white mice are injected, with varying amounts of phenol in one and of the disinfectant in the other, to determine the least fatal dose of each drug, and the results are compared. For some coal tar products he found the following values: phenol, 100 per cent.; tricresol, 90 per cent.; lysol, 45 per cent.; pyxol, 28 per cent.; creolin, 19 per cent. Clinically, however, the irritant character of a disinfectant more nearly determines its practical value, for the majority are used in such dilution as never to give general toxicity. The relative nonirritating character of potassium permanganate and formaldehyd in good antiseptic strengths explains their popularity.

SUMMARY OF FACTS REGARDING EXTERNAL DISINFECTANTS

The powerful germicides are few in number, of those studied only eleven (mercuric chlorid and oxycyanid, potassium mercuric iodid, iodin and bromin water, potassium permanganate, quinone, lysol, pyxol, silver nitrate and formaldehyd) being stronger than carbolic acid. The majority of these are toxic, irritating, or so weakened by chemical change when in contact with body fluids as to nullify their great germicidal power or to preclude their use in germicidal strength. The majority of them also have weak penetrating power. Iodin, potassium permanganate, silver nitrate and formaldehyd fulfil more nearly the four requirements, but it is more than likely that the great practical value of these substances is due to the fact that they all possess relatively high bacteriostatic action, for they are seldom if ever used in the strength of dilution necessary to give germicidal action in the length of time of exposure. Many of the weaker germicides (alcohol, protargol, etc.), because of such qualities as relative nontoxicity, good osmosis and stability, are often quite as valuable in practice. Substances with great inhibitory power but little germicidal action, such as oxyquinolin sulphate and some of the dye stuffs, have very little value for external treatments, the time of exposure being necessarily too short to give much benefit.

FACTS REGARDING INTERNAL URINARY ANTISEPSIS

The method of giving substances by mouth which will be largely excreted by the kidneys and then act as urinary disinfectants has wonderful possibilities in theory but is very imperfectly developed in practice. Substances so used must meet many limitations. They must be relatively nontoxic and nonirritating, of stable chemical composition, largely excreted by the kidneys, and of such powerful inhibitory effect as to act in weak dilution. Germicidal action is not necessary, as the ideal drug will keep the urine constantly antiseptic. None of the substances in use for this purpose meet these requirements. The approach of certain of the anilin dyes in many ways to the ideal insures persistent search with promise of ultimate success in the discovery of efficient internal urinary antiseptics. The value of the substances in common use for this purpose may be briefly summarized.

Limitations of Hexamethylenamin: Of all substances hexamethylenamin is the most efficient in the largest number of cases, but its limitations are so numerous and pronounced as to make its value felt only in selected cases, and it should not be given in the routine way that is at present almost universally practiced. It depends for its action on conversion in an acid urine into formaldehyd. Liquor formaldehydi, as shown in Tables 1 and 2, is a fairly good bacteriostatic and, therefore, well adapted for this purpose; but the splitting up of the drug into formaldehyd is dependent on certain factors which are not always present, so that good bacteriostasis is not always secured. Urinary acidity and the reaction time of the conversion are the two most important factors. The acidity of the urine is influenced by both metabolic and bacterial changes. In the absence of bacteria the reaction is usually acid, and even when neutral or alkaline from either disease or diet, regulation of the latter and feeding acid-producing drugs, such as acid sodium phosphate or sodium benzoate, will quickly render it acid. When bacteria which break down urea into ammonia and thus produce an alkaline urine are present, regulation of the diet and the feeding of acid-producing drugs usually fail to make the urine acid. Under such conditions hexamethylenamin is useless. The *Bacillus proteus vulgaris* readily decomposes urea so that in most urinary infections from it the urine is strongly alkaline. Both staphylococci and streptococci are prone to decompose urea and the typhoid bacillus may sometimes break it up. *Micrococci ureae* are very active alkalinizers. But colon and paratyphoid bacilli probably never cause decomposition. In the presence of certain infections it is, therefore, not always possible to secure an acid urine.

TABLE 3.—THE STABILITY OF DISINFECTANTS *

		Percentage Dilution of Substance		
		1:1,000 5,000 10,000 15,000 20,000 25,000 30,000 35,000 40,000 45,000 50,000	60,000 70,000 80,000 90,000 100,000	150,000 200,000 250,000 300,000
Mercuric chlorid	Water	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 G G G G G
	Broth	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 G G G G G G G G G	G G G G G G G G G G
	Serum	0 0 0 0 0 0 G G G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
Silver nitrate	Water	0 0 0 0 0 0 0 0 0 0 0 G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
	Broth	G G G G G G G G G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 0 0 G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
Ammonia sol.		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 G G G	G G G G G G G G G G	G G G G G G G G G G
Iodin water	Water	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 G G G G G G	G G G G G G G G G G
	Broth	0 0 0 0 G G G G G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 0 0 G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
Formaldehyd	Water	0 0 0 0 0 0 0 0 G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
	Broth	0 0 0 0 0 0 0 G G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G
	Serum	0 0 0 0 0 0 G G G G G G G G G G G G	G G G G G G G G G G	G G G G G G G G G G

* In this table 0 indicates no growth after forty-eight hours; G, growth after forty-eight hours.

TABLE 4.—THE PENETRATING POWER OF DISINFECTANTS

Time of Exposure Before Transplant From Collodion Sac	Percentage Dilution																													
	90%	80	70	60	50	40	30	20	10	1:20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1,000	2,000	3,000	4,000	5,000
24 hours					1 - 0			3 - 0			3 - G									4 - 0						5 - 0					
30 minutes					1 - G						3 - G						4 - 0			4 - G			5 - 0			5 - G					
20 minutes					2 - 0						3 - G						4 - 0			4 - G			5 - G			5 - G					
10 minutes		1 - G 2 - 0			1 - G 2 - 0						3 - G						4 - G			4 - G			5 - G			5 - G					

In this table 0 = a negative transplant; G = a positive transplant; 1, alcohol; 2, alcohol with 3 per cent. iodin; 3, phenol; 4, formaldehyd; 5, mercuric chlorid.

The simple chemical change from hexamethylenamin into formaldehyd is slow and gradual and it is seen that, even with a uniform excretion, the longer the drug is allowed to accumulate in the bladder the greater becomes its concentration and the more complete its conversion. This necessary time factor completely nullifies the value of the drug as an internal urinary antiseptic in many urinary conditions. Polyuria and frequent urination prevent this accumulation, and the constant outflow from the kidney, except in hydronephrotic cases, accounts for the fact that the drug is of little, if any, value as an antiseptic at the level of the kidney. The same reason explains the poor results in cases with retention catheter and in all cases with urinary fistulas. In postoperative prostatics, who particularly need an efficient urinary antiseptic hexamethylenamin is practically valueless until continence returns.

The value of hexamethylenamin is greatest as a bladder prophylactic before and following instrumentation, when the above mentioned urinary conditions are not present, and, inasmuch as formaldehyd is about equally bacteriostatic toward all organisms, the usefulness of the drug in this group of cases will probably never be supplanted.

Limitations of Other Internal Antiseptics: With the exception of some of the dyestuffs all other substances that have been used for internal urinary antisepsis may be very briefly disposed of. A glance at Table 1 will quickly indicate what might be expected from boric, salicylic and benzoic acids. Salol, because of its conversion into carbolic acid in the urine, has been advocated, but carbolic acid is a very weak bacteriostatic and, clinically, the results of the use of the drug support its bacteriologic worthlessness. The alkalies are equally inefficient. It has been repeatedly shown that colon bacilli will grow readily in alkaline mediums, and the use of alkalies in the treatment of colon infections is justified for symptomatic and palliative reasons and not for their antiseptic value. The iodids, because of their ready excretion by the kidneys and the high disinfectant power of iodin, have been proposed, but the occurrence of iodism and the lack of antiseptic power of the salts of iodin (potassium iodid, etc.), make of these substances a failure. Oil of sandalwood is a very weak antiseptic and has other objections. It may be said, therefore, that the only efficient internal urinary antiseptics are hexamethylenamin and certain of the anilin dyes.

The Value and Possibilities of Certain Dyestuffs: The development of knowledge concerning the selective action of certain anilin dyes (first pointed out by Rozsahegyi in 1887) has followed three general lines: that relating to vital staining, that relating to bacterial differentiation by means of special stains or medium impregnation (Drijalski, Conradi, etc.), and that relating to antisepsis. The antiseptic action of certain dyes is remarkably pronounced, and this selective and specific property portends their great future importance as urinary antiseptics. Kriegler, in 1911, made note of the proportion between the basic nature and the germicidal power of dyes, and Browning and Gilman, in studying the selective action of dyes for different bacteria and the relationship of chemical structure to this action, found that the substitution of alkyl groups in the amido side-chains of the unsubstituted triphenylmethane compound, pararosanilin, which has weak bacteriostatic action, lead to the most powerful bacteriostatic substance known for staphylococci, completely inhibiting their growth in a dilution of 1 : 5,000,000. This same dye, hexa-ethyl violet, must be in a strength of 1 : 20,000, however, to inhibit the growth of the *Bacillus coli communis.* The substitution of the ethyl group (C_2H_5) for the amino radicals in the unsubstituted diaminotriphenylmethane compound produces likewise an increase in bacteriostatic power. One such product, "brilliant green," is almost as strongly inhibitory for staphylococci and at the same time much more actively antiseptic toward the colon bacillus than hexa-ethyl violet. These same investigators made the interesting observation that serum modifies the antiseptic action of some dyes, as for instance, diminishing the action of hexa-ethyl violet slightly, of brilliant green considerably, but increasing that of diaminoacridin toward *B. coli,* and typhoid, staphylococci and anthrax. Recently Simon and Wood have shown that the antiseptic action of dyes is dependent, not at all on color, but on the presence of certain chemical groups which have basic properties, as, for example, the amino group (NH_2). It so happens that most basic dyes have right spectral colors, and most acid dyes, left spectral colors. By taking basic left spectral dyes (fuchsin, phenosafranin, tolusafranin, azin red, etc.) and acid right spectral dyes (indulin R., acid violet, urania blue, etc.) it may be shown that an acid dye, irrespective of color, is not bacteriostatic while basic dyes, likewise irrespective of color, may be bacteriostatic. It does not follow that all basic dyes have this effect. The replacement of the amino group by an acid radical—hydroxyl (OH) or carboxyl (COOH)—in an active basic dye leads to an almost complete loss of inhibitory effect. Of interest in this connection is the conclusion of Evans and Shulemann that the reaction of acid dyes in the body, when used as vital stains, is dependent on certain conditions of solution. They were able, for instance, to render a negative vital stain beautifully positive by changing its condition of solution (*Lösungszustandes*) thus disproving for acid dyes Ehrlich's side-chain theory. This may also explain the nonspecific nature of acid dyes toward bacteria.

The selective action of some of the common dyes has been more carefully studied. Churchman has shown that gentian violet will inhibit the growth of almost all gram-positive organisms in a dilution of 1 : 100,000, and that methylene blue, in the same dilution, is bacteriostatic for staphylococci. Lewis has emphasized the selective action of trypan red and of isamin blue for lesions of tuberculosis, and, following this lead, Krauss has since succeeded in preparing combinations of these dyes with iodin. Methylene blue has been shown also to have a selective action for tubercle bacilli. May studied the germicidal action of basic fuchsin which he found effective in a dilution of 1 : 1,000 within five minutes, toward bacilli of typhoid, colon, enterides (Gärtner) and dysentery and staphylococci. He also found that basic fuchsin is relatively nontoxic and very diffusible, and may be used in the bladder without irritation in a 1 : 100 dilution. May further made the important observation, which we have confirmed, of a marked difference in the action of fuchsin in warm and cold solutions, the dye being for the most part almost inactive in the cold. Dahlia has recently been advocated for infections, Simon using it in erysipelas and Ruhräh applying it in 4 per cent. strength to the throat. Many of the anilin dyes are quite toxic. Churchman found that the injection of 10 c.c. of a 0.5 per cent. solution of gentian violet in rabbits, was without effect in some but in others caused death within a few minutes, no explanation for which could be found at necropsy. Gentian violet is irritant in the bladder, in which it produces a considerable inflammatory reaction.

These facts, together with the known selective activity of the kidneys in the excretion of many dyes (phthalein group, indigocarmin, etc.), definitely link this subject to the future of internal urinary antisepsis. The application is necessarily limited, and each dye and all possible combinations, synthetic and otherwise, after the above biochemical indications, will have to be studied as to their power of antisepsis, their toxicity, irritant properties and stability in the body and their ready excretion in the urine. Undoubtedly substances exist, or will be formed, which will prove ideal for selected infections. Personal studies, limited by inability to secure dyestuffs and of which this report is preliminary, are briefly the following:

METHYLENE BLUE

The particular and limited value of methylene blue as a urinary antiseptic has never been emphasized. During the thirty years in which it has been used as a test of renal function, many facts regarding its excretion have been determined. Only about 50 per cent. of the dye is excreted by the kidneys, the remaining half being eliminated mostly in the stools, which often become as highly colored as the urine. The pigment is not an individual chemical substance (Underhill and Claussen) and often undergoes decomposition in its passage from the blood, appearing in the urine in the form of leukoderivatives which are, for the most part, nonbacteriostatic. (Mueller has found six of these chromogens.) These end split-products may often be restored to the basic methylene blue by agitation, or by boiling after the addition of acetic acid. Decomposition of the dye into chromogens may also occur as the result of bacterial activity. I have always observed a loss of color in solutions of the dye in which bacteria grow. The *Bacillus coli communis* will decolorize a 1 : 1,000 dilution but staphylococci will not cause loss of color until a dilution of 1 : 100,000 or greater is reached. This partial or complete bacterial decolorization is a frequent observation in patients with pyuria, the urine in such cases often acquiring only a dirty green hue even when large doses of the dye are ingested. Reactivation, or return to blue color, has often been beautifully observed when hexamethylenamin is given simultaneously. This result is probably due to the urine content in formaldehyd which has been found by test-tube experiment to usually reactivate the dye. The frequent presence, however, of an alkaline urine from urea decomposition in these cases largely destroys the associated value of hexamethylenamin.

Subcutaneous injections of methylene blue are always painful. The dye may be taken by the mouth, however, in relatively large doses. Ten grains four times a day have been given, and have shown no toxic or irritating action. From 3 to 6 grains is a good average dose, but 1 grain is too small. The dye is contraindicated in large doses in cases in which there is severe nephritis, as it has been shown that the excretion of a small fraction of a grain in these cases may be prolonged for fifteen or more days.

Personal studies show that methylene blue is a very weak and slow germicide. It will not kill the staphylococcus, streptococcus or *Bacillus coli communis* under twenty-five minutes even in a 1:10 dilution, and even after forty-eight hours' exposure it shows little selective power as a germicide. As a bacteriostatic, however, it is very selective and powerful in its action. It completely inhibits the staphylococcus in a 1:150,000 dilution, the streptococcus in a 1:80,000, and the colon bacillus, however, in only a 1:1,000 dilution.

Clinical results support the bacteriologic findings. Inactivation of the dye from bacterial or metabolic decomposition greatly weakens its practical value. The clinical results in several cases of urinary tuberculosis, such as relief from urinary frequency and irritation, may possibly be accounted for by the observed selective action of the dye toward tuberculous lesions.

Other Anilin Dyes: In view of the unfinished investigation of the toxic and biochemical properties of other dye stuffs when applied as urinary antiseptics, reference will only be made at this time to their bacteriostatic power. Rosanilin acetate has a definite selective action toward staphylococci and streptococci, but its inhibitory power over the growth of colon bacilli is not much greater than its germicidal action for the same period of time. (Kills *B. coli* in forty-eight hours in a 1:800 dilution, but will not inhibit its growth in a weaker dilution than 1:1,000.) The action of this dye, as well as that of the others studied, was seen to be markedly influenced by temperature. There was a marked difference between the tubes kept at room temperature and those placed in the thermostat at 37 C.

CONCLUSIONS

The foregoing considerations and findings may be summarized as follows:

The treatment of urinary infection should be selective, according to the clinical findings in each individual case. The clinical study should determine the type of infection, its possible source and the conditions accessory to its spread or chronicity. The use of urinary antisepsis should always correlate these findings and supplement the necessary surgical or other measures.

Treatment by disinfectants may be external or internal. The properties required of a substance in order to give satisfactory external disinfection are a germicidal power which will kill the organism in the limit of time of exposure and with this, stability of chemical structure, penetrating action, but neither toxic nor irritating action. No such ideal substance is known. Because of this lack, clinicians have come to rely on strong inhibitory substances for external use. An internal antiseptic, which will give constant inhibitory effect, will be more efficient than an indifferent external germicide used periodically. The properties required of a substance for internal urinary disinfection are that it should be bacteriostatic in weak dilution, diffusible, stable, neither toxic nor irritating and largely eliminated by the kidneys. No such ideal internal antiseptic is known.

Hexamethylenamin is the most efficient in the largest number of cases, but has very definite limitations. It is of value only by virtue of its conversion into formaldehyd which takes place gradually in an acid urine. The alkalinity of the urine in infections which produce decomposition of the urea cannot in the majority of cases be changed by feeding acid-producing drugs. The necessity of concentration and time for the accumulation of formaldehyd in antiseptic amount largely destroy the value of the drug for kidney antisepsis, except in some cases of hydronephrosis; for bladder antisepsis in cases with polyuria or frequent urination, except when retention in some form is present; in cases of urinary fistula, notably postoperative prostatics during the period of incontinence, and in cases with continual bladder drainage as in true incontinence or with retention catheter; and for urethral antisepsis no matter what the infection. The greatest usefulness of hexamethylenamin is in bladder prophylaxis in cases in which the above urinary conditions are not present.

A study of the selective antiseptic action of some basic dye stuffs, their stability and pentrating action, the innocuous nature of many and the known proclivity of the kidneys for their excretion emphasize the future importance of such substances as internal urinary antiseptics. The bacteriologic findings with some of the substituted compounds of the rosanilin group indicate their possible application in the treatment of colon bacillus infections of the urinary tract. The selective action toward tuberculous lesions of trypan red and allied dyes opens up an interesting line of therapeutic application.

Methylene blue, in a dilution of 1:150,000 will inhibit the growth of staphylococci. It is diffusible and relatively nontoxic, but only about half of the amount ingested is eliminated by the kidneys and, often, some of this in the form of inactive end split-products. The absence of a deep blue urine indicates imperfect antisepsis, which may be due to this metabolic decomposition or to a delayed or deficient excretion as the result of renal disease, in which case continued use of the dye may cause severe renal injury. In the presence of urinary infection bacteria themselves may decompose the dye into these inactive chromogens. Formaldehyd tends to reconvert these less basic leukoderivatives into the original right-spectral dye, therefore, hexamethylenamin may often be advantageously given with methylene blue in these cases of bacterial decomposition of the dye; but the urine must be acid and in most of these cases there is an associated bacterial decomposition of urea which makes the urine alkaline. Doses of from 3 to 6 grains may be given four times a day for several days, when it is advisable to discontinue its use for a few days. The ability of staphylococci to adapt themselves to the presence of the dye shows the need of finding a substitute so that the two may be used alternately. The dye is of particular value in renal or bladder infections due to the staphylococcus, but is valueless in pure urethritis from whatever cause. The great objection to its use is its disagreeable staining properties.

The value as internal urinary antiseptics of other substances such as salol, oil of sandalwood, salicylic, boric and benzoic acids, is very limited. Their use for antiseptic purposes in urethritis is not justified. Relief of urinary irritation is more often better secured by the use of sodium bicarbonate.

521-522 Physicians Building.

ABSTRACT OF DISCUSSION

DR. J. A. FULTON, Astoria, Ore.: Dr. Hinman omitted the mention of one germicide which I believe has not been sufficiently studied—that is, heat. It is true that you cannot apply heat, perhaps, to the entire urinary tract. In antisepsis of the bladder where you use an antiseptic such as methylene blue, potassium or permanganate, they do not penetrate, but heat will penetrate. I cannot understand why the question of heat as a germicide has not been referred to, because it does penetrate.

DR. MARTIN KROTOSZYNER, San Francisco: An excellent urinary antiseptic which Dr. Hinman did not mention is quinin, which in doses of 10 to 15 grains, if administered precystoscopically or preinstrumentally, exhibits excellent antiseptic properties, and, in this respect, according to my experience, exceeds the efficacy of equally strong doses of hexamethylenamin. With regard to the relative value of various external urinary antiseptic remedies, I have found it to be the wisest plan to limit oneself to the use of one or two drugs and to become sufficiently experienced in their efficacy in order to obtain uniformly good results. In my hands nitrate of silver has always exhibited better and more lasting results for lavage of the genito-urinary tract than any other silver component. Nitrate of silver has all the properties that Dr. Hinman considers to be essential for the efficacy of an external urinary antiseptic. It is penetrating, it is antiseptic and it is, besides that, flexible in its dosage, so that a patient who at first reacts very severely to a very weak solution gradually will tolerate injections of much higher concentrations. Thus, I have been able to obtain excellent results from renal lavage with solutions up to 2 and 3 per cent.

DR. W. F. BRAASCH, Rochester, Minn.: Silver nitrate is unquestionably a very valuable aid in the treatment of renal infection. Recently Geraghty called our attention to the use of a denser solution of silver nitrate, advising as high as 5 per cent. It has been my experience, however, that it is not necessary to use such dense solutions. It is best to commence with a solution, say 1:500 or 1:1,000 and gradually work up to 1 per cent. I think 1 per cent. is just as efficacious as 2 or 3 or 5 per cent. Five per cent. can cause considerable reaction; I have seen a number of cases that have given evidence of renal insufficiency as the result of a 5 per cent. injection of silver nitrate. It is difficult to understand why silver nitrate should be of so much more value in some cases of renal infection than in others. It has been my experience that silver nitrate is of value in the great majority of cases. We have recently reviewed several hundreds of cases and there were very few that were not benefited by its use, and many of them were evidently cured.

Whole-Time Health Officers.—You may ask if the small cities can afford whole-time men, why are the larger cities not employing whole-time men? I believe the answer is this —"politics." Apparently the only way a whole-time man should consider a position in one of the larger cities is to go as a loan from the State Board of Health, or from the United States Public Health Service. Under this system when it would seem advantageous he could return and a new man take his place.—Report of the Public Health Commissioner of the Minnesota Public Health Association.

LATE RESULTS OF EXCISION OF THE TRANSVERSE PROCESS OF THE FIFTH LUMBAR VERTEBRA *

FRED J. FASSETT, M.D.
SEATTLE

Notwithstanding the study given to the region of the lumbosacral junction in the past decade, so few reports of the results of excision of the transverse process have appeared that these three cases may be worth putting on record.

CASE 1.—A man, aged 34, formerly a sailor, now a book salesman, was first seen, April 4, 1910. His complaint was of a "binding" feeling and increasing pain of gradual onset from the hip to the heel on the back of the left lower extremity. He recalled no strain or other injury. The examination was negative except as follows: There was a marked tenderness at about the top of the left sacro-iliac joint, a moderate list to the right and muscle spasm limiting all motions of the lower spine; when the knee was fully extended the left hip could not be flexed more than 45 degrees.

The roentgenogram was negative except as to the transverse processes of the fifth lumbar vertebra; that on the left (the side on which there was pain) was of moderate size and its shadow did not, in this plate, overlap the ilium or sacrum. The process on the right was much larger, distinctly bifid and appeared to articulate with both the ilium and the sacrum (Fig. 1).

During the two months following this examination, adhesive strapping, a canvas belt, plaster jackets in the erect posture and in hyperextension, and plaster spicas were applied. Meanwhile the symptoms all increased. The pain became so severe and constant that the patient eagerly accepted the suggestion of operation even though he knew that it was decidedly experimental in character. At that time I knew that such an operation had been done by Dr. Z. B. Adams of Boston, but was unable to learn either his technic or his results.

Operation was performed in June, 1910. An incision about 4 inches long was made midway between the spinous processes and posterior-superior spine of the right ilium through skin, fascia, and muscle to the bone. It will be noted that this operation was on the side opposite to the side on which there was pain. We removed as much of the bony process which we encountered as we dared, considering that the work had to be done almost exclusively by the sense of touch. The fascia was closed with catgut and the skin with silkworm-gut. The patient was in the hospital ten days. The pain at night, which during the month before the operation had been the most distressing symptom, was temporarily relieved. The pain about the left sacro-iliac joint persisted. A roentgenogram taken two weeks after the operation showed that the transverse process had been possibly thinned but not removed by the operation.

In October, four months after the first operation, the old symptoms had all returned. October 18, a second operation was performed (Fig. 2). The incision was made nearer to the crest of the ilium than before. This made the approach to the transverse process more easy, but it was still very difficult. To serve as a landmark, the transverse process of the fourth lumbar vertebra was first identified and, because it might give more room, removed with a wire saw. The transverse process of the fifth was then exposed and an attempt made to pass a wire saw around it in the same manner but without success. The process was then freed from the ilium and sacrum by blunt dissection and from the vertebra by the chisel. At this point the fragment tipped forward on a hinge of fibrous tissue and was recovered and removed with great difficulty. During this procedure there were several sharp twitches in the muscles of the right leg. The wound was then closed as before. During the next ten days the patient became gradually more comfortable, except for slight muscular stiffness in the back and paresthesia in the right foot. The pain and stiffness decreased very rapidly so that the man was soon able to work. He has worked steadily during the past four years. I have seen him occasionally during that time. His only complaint is of a weakness in the right foot. This appears to be a slight but actual paralysis of the muscles of the anterior tibial group, for which no other cause can be found than trauma to the nerve roots at the time of operation. In spite of this symptom the patient regards the operation as a distinct success.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Case 2.—A man, aged 20, a shingle weaver, was first seen July 6, 1911. He gave a history of trouble with the back for the preceding two or three years. The disability had increased much more rapidly in the previous four months and had completely incapacitated him for work. The roentgenogram showed a transverse process of the sacral type on the left side of the fifth lumbar vertebra which formed a distinct articulation with the ilium. There was a marked scoliosis, left dorsal, right lumbar. It was impossible for the man even to approximate an upright position on account of the pain. There was distinct tenderness over the left sacro-iliac joint.

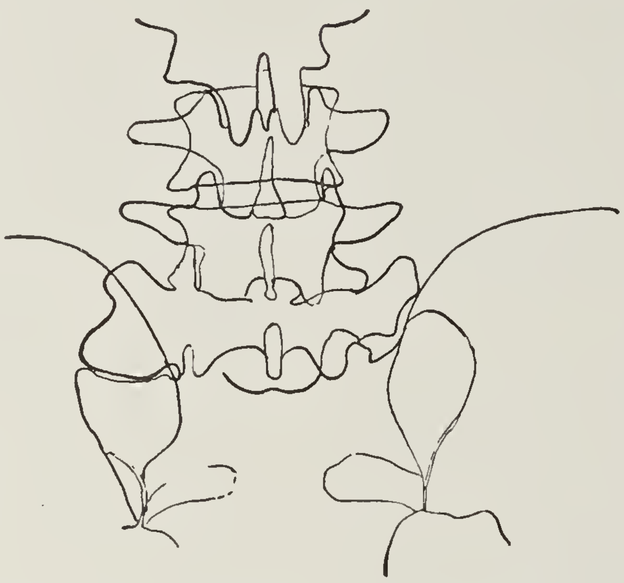
Fig. 1.—Appearance of right transverse process of fifth lumbar vertebra in Case 1 before operation.

On July 15, 1911, operation was performed essentially as in the second operation on the patient in Case 1, except that the operation was on the same side as the pain and the transverse process of the fourth was not disturbed. The roentgenogram taken soon after the operation showed that the transverse process of the fifth had been removed save for a narrow spur along the lower margin.

Clinically the pain was considerably relieved and the posture much improved. The man returned to work, but was unable to work all day because of the return of pain in his back. A year and a half from the first operation the symptoms were still present and a second operation was performed. During this operation there was distinct jerking of the leg muscles. Following the operation there was severe pain in the leg on the operated side. This gradually disappeared but there remained a partial paralysis and atrophy in the anterior tibial group of muscles of the left leg.

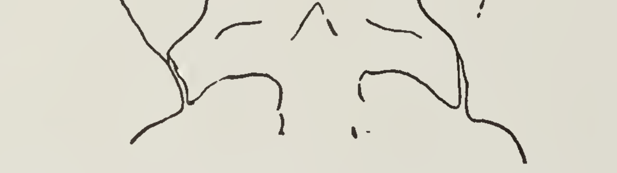
Fig. 2.—Appearance of right transverse process of fifth lumbar vertebra after second operation.

The man was last seen May 1, 1915, two and one-half years after the last operation. The pain has been wholly absent for more than two years; the posture shows no trace of the former scoliosis. The weakness in the anterior tibial group of muscles is still present, and the patient says that this occasionally troubles him in running. He regards this, however, as of very slight importance compared with the disability from which he was relieved by the operation. A roentgenogram taken six months after the operation and another taken this year are suggestive of partial regeneration of the process and raise the question whether this regeneration might be expected to occur.[1]

Case 3.—A man, aged 35, an electrician, was first seen Jan. 6, 1914. For several years, on making certain motions, he had "catches" in his lower back. These have several times been so severe that the patient was taken home in the ambulance. The examination was negative except as to the posture and as to the roentgenogram. The patient stood with an exaggerated lordosis, but no lateral deviation. When the lordosis was most marked, that is, when the patient wholly relaxed, there was slight pain in the middle line where the spinous process of the fifth lumbar appeared to overlap the spinous process of the first sacral. There was little muscle spasm, but previous experience had made the patient very loath to attempt certain movements, especially forward bending followed by rotation to the left.

The roentgenogram showed a fifth lumbar vertebra with transverse processes of an intermediate type, the shadows of which overlapped the shadows of the ilium in varying degrees in different plates (Fig. 3). There appeared to be no such complete articulation as was found in the preceding cases. All the customary methods of fixation were faithfully tried, but nothing short of a full-length plaster jacket was adequate to protect against the painful attacks. As this interfered seriously with the man's occupation, he sought relief from practitioners who promised more than I could conscientiously promise. One week later he was found in a hospital in genuine agony as a result of an osteopathic or chiropractic "adjustment" received the previous day. The patient had spent the night on the floor of the practitioner's office quite unable either to move or to be moved.

Two weeks later (April 1, 1914) operation was performed on the right side in a manner much like that of the second operation in Case 1. This operation was followed by almost complete sensory paralysis in the right leg. There was no loss of motor power. On the twenty-fifth day the pain was largely relieved and the anesthesia had given place to a paresthesia. The patient left the hospital, but used crutches for about ten days. During the summer, fall and winter of 1914, the patient was able to do hard work as an electrician, crawling into low and narrow spaces with no return of his old pain. The side of the back which was operated on has remained free from pain from that time until the patient was last seen, May 20, 1915 (Fig. 4).

In January, 1915, however, the patient worked for a long time leaning over a low railing. This was followed by a series of "catches" somewhat similar to the old ones, but less severe and strictly confined to the left (the unoperated) side. The patient had been so impressed by the relief obtained on the other side that he argued that the two sides looked so much alike in the roentgenogram that operation should be done on the other side as well. In preparation for this operation, some dissections were made with this problem in mind: Could an approach to the transverse process be found so that, guided by the sense of sight as well as touch, the operator might excise the bone? As a result of these studies a method was devised which was employed in the next operation, which was performed Feb. 2, 1915. A curved incision with its convexity outward was made from the second lumbar to the third sacral spine. The skin flap was reflected inward to the middle line. A muscle flap, consisting of the lower end of the erector spinae group and its aponeurosis, was detached from the crest of the ilium, the posterior surface of the sacrum and from the lumbar spinous processes and reflected upward. This left a fossa having for its walls the crest of the ilium on one side and the spinous processes and laminae on the other; and for its floor the articular processes, and, at a much deeper level, the transverse processes of the fourth and fifth lumbar vertebrae. The transverse process of the fifth was separated from the vertebra with a chisel. It was found attached to the ilium by a strong fibrous band. As to whether or not anything representing a bursa was present, I am unable to say. The process was separated from the ilium and from the ligaments and from the layer of fat on its ventral surface by blunt dissection. The muscle flap was replaced and its aponeurosis was sutured in place with kangaroo tendon and heavy chromic catgut. The skin flap was replaced and sutured with silkworm gut. No fixation was applied.

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[1] This man was a patient of Dr. Park Weed Willis of Seattle, who showed me the patient while under his treatment, and permits me to include the case in this report. This case and the preceding one were reported by Dr. H. B. Thompson in Northwest Medicine in 1913.

The symptoms following this operation were less severe than those following the first. There was paresthesia but no anesthesia in the lower extremity, and the hospital stay was one week less than before. The convalescence appeared to be quite promising when on February 22 the patient slipped and fell backward, striking the exact center of the field of the second operation against the sharp corner of a heavy chair.

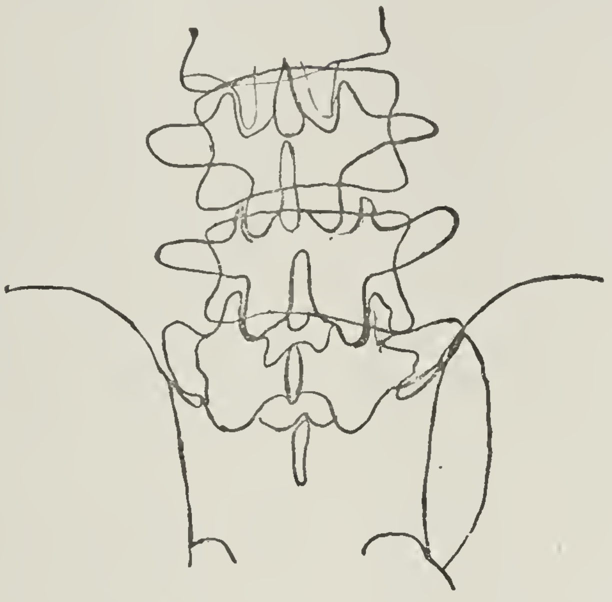

Fig. 3.—Appearance of transverse process of fifth lumbar vertebra in Case 3 before operation.

This was followed by severe pain and stiffness in the muscles of the back and an increase of the paresthesia and tenderness in the leg and foot. After a few weeks' rest, massage of the back was employed, which distinctly hastened the disappearance of symptoms both in the back and the leg. This man was last examined May 20, 1915 (almost four months after the last operation); he was just beginning to go without his crutches, and to do gymnastics, which he had found helpful in restoring his strength after his first operation. His greatest complaint at that time was of an intense tenderness and burning in the foot, but especially in the upper surface of the foot and the anterior surface of the leg.

It is to be regretted for many reasons that the question of the relative merits of the two methods of approach has been beclouded by the unfortunate fall which marred what appeared to be an otherwise satisfactory convalescence.

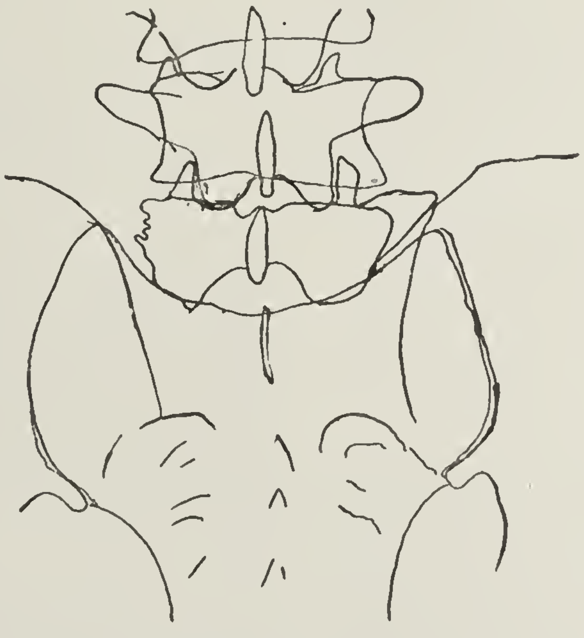

Fig. 4.—Appearance of transverse process of fifth lumbar vertebra in Case 3 after first operation.

COMMENTS

These three men appear to have obtained, through this operation, permanent relief from lumbar or sciatic pain which had not been relieved by a faithful trial of many other methods.

The difficulties and dangers of this operation are sufficiently great to cause it to be regarded only as a method of last resort.

The chief danger appears to lie in injury to the great nerve trunks, and of these, the trunk containing the fibers which go to the anterior tibial nerve appears to be particularly exposed. Since these fibers are usually traced to the first and second sacral nerve roots the reason for this vulnerability is not obvious.

The question of the mechanism by which the pain associated with these transverse processes is brought about has been the subject of considerable study. The fact that in one of the cases relief followed the removal of the process on the same side as the pain, and in another the removal of the process on the side opposite the pain, makes the theory of simple pressure of the process against the nerve trunk seem hardly adequate. The theory that the process furnishes a point about which, as a fulcrum, an extreme leverage is brought into play when the upper parts of the body start to rock on the lumbosacral joint, seems to me quite plausible. Such a leverage, in an unguarded movement, would strain every joint in its neighborhood including, of course, the sacro-iliac joints. It has been suggested that certain anatomic types are prone to lumbosacral trouble. Is it not possible that the unfortunate leverage above described is one very efficient means of straining the sacro-iliac joint? If it be this function of a fulcrum in which inheres the possibility of trouble, it would seem advisable not only to remove the part of the process in actual contact with the ilium, but to amputate the process as near the body of the vertebra as possible. In other words, it is desirable that even in the position of maximum lateral bending the process should be unable to touch the ilium or the top of the sacrum.

At least four methods of approach to this joint have been suggested: the simple incision through the erector spinae muscles, the osteoplastic reflection of a portion of the crest of the ilium, the ventral route, and the muscle-flap method herein described. These three cases simply show that the process can be removed without serious damage by the first method or by the last. It would appear that a certain number of cases will present themselves in which the excision of the transverse process is the proper method of treatment. In view of this fact the question as to the best method of approach is one which is worthy of further study.

1163 Empire Building.

ABSTRACT OF DISCUSSION

Dr. M. S. Henderson, Rochester, Minn.: While these spinal abnormalities are not common, they do occur in the cervical and in the dorsolumbar regions. In the fifth lumbar we frequently see a transverse process which is really an exaggeration of the costal process of the transverse lumbar vertebra. I think in the majority of cases they give no symptoms, but when definite and severe symptoms are present they should be operated on. I have seen probably thirty of these cases and operated on only three. My technic has been a little different from Dr. Fassett's, in that I have not considered it necessary to chip off the entire process, but simply knock off the exaggerated costal element of the transverse process so it would not impinge on the ilium. Whether this is sufficient or not, I cannot say, because my cases have not been numerous enough. One patient did not do very well. One, so far as I know, is cured, and the other is too recent to report as to the definite end-results; I operated on her only two months ago, but her pain has ceased. It is difficult to chip off the process, and I think Dr. Fassett's method of performing the operation is good. None of my patients has had disturbances of the nerve afterward, perhaps because I did not go far enough to remove the entire process. There certainly is a group of cases which should be operated on, but I believe the majority of cases, as in cervical ribs, give no symptoms, and probably should be let alone.

Dr. E. W. Ryerson, Chicago: I have operated on only one of these patients, a woman from South Carolina, who had a very large bifid process. She had undergone two laparotomies on the left side and nothing was found, so that it was pretty evident she had a great deal of pain from this condition. I found the operation unusually difficult, but it was easy to get down to the process by making an incision well to the outer side of the erector spinae muscles. If one goes through the muscles not sufficient room can be gained, and it is not perhaps well to cut through such a large body of muscle; but going just to the outer side of the muscle the access is very easy to the outer part of this transverse process, although it is extremely difficult to get it out. In this operation I only got out the upper half of this bifid process. Nevertheless this patient was much relieved. She had paresthesia for three or four days afterward, but this entirely disappeared. Apparently she is at present free from symptoms. The difficult thing to understand is why removing the top of a bifid process which was not articulating with the ilium should do any good, but the fact is that it has relieved this patient. We do not know all about the nerve disturbances and nerve supplies, because, as Dr. Fassett said, the supply for the anterior tibial nerve comes from higher up; but the paresthesia my patient complained of was distinctly over the anterior tibial region. I cannot see how these patients can get more relief than by submitting to an operation, because they will not consent to wear through life a long plaster jacket or other apparatus.

Dr. Wallace Blanchard, Chicago: I reported at the last meeting of the American Orthopedic Association removal of the transverse process of the fifth lumbar vertebra that impinged on the wing of the ilium. It showed an elongation about twice the normal, as compared with the transverse process of the other side. A perpendicular incision of about 5 inches through the erector spinae muscles and direct down to the transverse process, removing by chisel and forceps, was not an overdifficult operation. The transverse process could be easily reached and removed. After resection the Roentgen ray showed a stump and a space between the stump and the wing of the ilium. There were no bad symptoms following the operation — of anesthesia, hyperthesia, etc., that have been told of by Dr. Fassett, and the patient made a good recovery. The patient had been paralyzed from the shoulder down through the left side to the left leg, and had had two abdominal operations, and the appendix had been removed, all in the hope of relieving painful conditions that were undoubtedly caused by the impingement of the transverse process and the ilium. The cure was immediate and there were no bad symptoms following the operation.

Dr. Roland Meisenbach, Buffalo: In connection with the operation for the removal of the transverse process of the fifth lumbar vertebra, a point that should be emphasized is that great care must be taken so as not unduly to divide nerve structures in the region of the lumbar plexus. I think that operation of these cases should only be undertaken in the severe type, and all other means should first be attempted to relieve the symptoms. There is one case that is of interest, which is rather unique, and which was sent to me for relief. It was a man of good musculature who had been employed at heavy work. At the time of the accident he was holding a rope taut. The rope suddenly parted and he was thrown backward to the ground. He complained of severe pain in the lower part of his back and was taken to the hospital. At the time I saw him, a few months after the accident, he complained of severe pain whenever he turned around in bed or attempted to walk, or on any lateral motion of the body. The radiograph showed that the transverse process of the fifth lumbar vertebra had been obliquely fractured and the fragments separated and displaced, so that the outer portion was drawn downward. A large callus had formed. This callus expanded and amalgamated with the ilium and the sacrum. To give the man relief it was necessary for me to remove the process, which was done. I think in general that a small incision should be made. By a small incision I mean after the first layer of muscles has been divided, and I also think it is much better to divide the muscle fibers with blunt dissectors until one reaches the transverse process. This minimizes the hemorrhage and facilitates the removal of the process. If the periosteal dissector or a chisel is used to peel the periosteum of the process, the chain saw may be brought around and the process removed. I think the use of a chain saw is much better than the use of a chisel, because with the chisel the process is brought out in a piecemeal fashion and there is more danger of injuring the structures. I wish also to emphasize the fact that just anterior to the process one is apt to meet nerve structures and ganglia that should not be touched with the instrument. In one instance I remember that the patient suddenly stopped breathing when these were touched, and I only mention it as a point of interest which should be kept in mind in removing the transverse process of the fifth lumbar vertebra.

Dr. J. P. Lord, Omaha: I wish to report the development of pain on the second day of a recent case. The pain became progressively worse after twenty-four hours. Coming on so late, it occurred to me that it was induced by hemorrhages and infiltration. This might readily be imagined to take place because of the loose tissues in this region, the exudate enveloping these nerve trunks. There was muscle paralysis also, and this lasted for four or five days, when rapid improvement ensued. I would suggest this as a possible explanation of the pain.

Dr. Fred. J. Fassett, Seattle: There is only one thing to add, and that is on the matter of a choice between a chisel and the wire saw. With me it was not a matter of choice at all. I started in equipped with very little except my knife and wire saw, it looked so easy in the roentgenogram. But in none of these cases did I use the wire saw, except when I removed the fourth process. When it comes to the fifth, the passing of the wire saw around the neck of the process required more nerve than even I have developed.

ANALYSIS OF FOUR HUNDRED CASES OF LOBAR PNEUMONIA *

J. G. CROSS, M.S., M.D.
MINNEAPOLIS

There were 83,778 deaths from pneumonia in the United States registration area in the year 1913, or 132.4 deaths from this disease per hundred thousand population. In Minneapolis there were 348 deaths from the same cause, or 104 per hundred thousand population. For comparison, in the same year 80,812 persons died from pulmonary tuberculosis in the United States registration area, or 127.7 per hundred thousand population. In Minneapolis there were 383 deaths from pulmonary tuberculosis, or 118 per hundred thousand population. In 1914 there was an increase in the death rate from pneumonia and a decrease in the death rate from pulmonary tuberculosis.

These figures are presented to fix our attention again on the importance of pneumonia. With cancer and pulmonary tuberculosis it forms a dread trio. The death rate from pneumonia has not decreased. In some localities statistical observation shows that not only is pneumonia on the increase but in certain out-

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* Read before the Minnesota State Medical Association, Rochester, Oct. 1, 1915.

breaks it is actually more fatal than it was in former periods of time. From the figures given above it would seem that less advance has been made in the prevention and treatment of pneumonia than in prevention and treatment of tuberculosis.

In an attempt to study certain features of pneumonia, data in a large number of cases of lobar and bronchopneumonia at the Minneapolis City Hospital for the years 1911, 1912, 1913 and 1914 have been collected and analyzed under the headings of age, sex, occupation, date of onset, character of onset and initial symptoms, later symptoms, the maximum temperature, laboratory findings, physical findings, the white blood count, the complications, the termination, whether by death, lysis or crisis, and necropsy findings, if a postmortem examination was made. This analysis has borne out many conclusions which are not new, and has verified some impressions which needed the corroboration of actual statistics. In the present paper I intend to present an abstract of the results of this analysis as regards lobar pneumonia alone.

As will appear in a later statement as to the time in the disease at which patients are admitted, it is evident that the mortality of lobar pneumonia at the City Hospital is much higher than it would be under average conditions in private practice. Several factors contribute to this. First of all, the City Hospital admits that large class of homeless or destitute patients who are careless of the onset of an acute disease. It is the rule that these people neglect the first few days of an acute illness until compelled to seek help through inability to care for themselves. Many patients are weakened by bad hygiene or vicious habits, together with irregular, too little or improper food. Many are chronic alcoholics. Acute alcoholism also plays a larger rôle than would be the case in the same number of private patients. Another factor in the free hospital treatment of pneumonia, as in other diseases, is the frequent lack of intelligent cooperation on the part of the patient. Ignorance of disease and fear undoubtedly have a great deal to do with the outcome.

TABLE 1.—MORTALITY STATISTICS

Causes of Death	U. S. Registration Area, 1913		City of Minneapolis			
			1913		1914	
	Number	Per 100,000	Number	Per 100,000	Number	Per 100,000
All causes	890,848	.....	3,862	.....	4,115	......
Pulmonary tuberculosis	80,812	127.7	383	118	385	112.09
Pneumonia	83,778	132.4	348	104.3	433	126.06
Cancer	49,928	78.9	276	81.9	311	90.5

Another striking fact brought out is that not only do the number of cases vary in different seasons and the same season of different years, but the mortality is much greater sometimes than at others. This difference in mortality has not been satisfactorily explained and is probably due to the combination of a number of causes rather than to any one variable factor. There is undoubtedly a difference in the virulence of the pneumococcus infection, but this alone does not explain the variations in mortality or the incidence of the disease. The undoubted fact that many people harbor the pneumococcus in their respiratory tracts, without becoming ill, shows that individual resistance plays a very great part in the number of cases in the presence of infection. The influence of season is, of course, apparent.

There were 369 cases of lobar pneumonia at the City Hospital in the four years 1911, 1912, 1913 and 1914. Of these, 117 patients died—a mortality of 31 per cent. Chart 1 illustrates the death rate at the ages from 1 to 5, 5 to 10 and then by decades. It was found necessary in analyzing the cases of children to separate those under 5 and over 5, the mortality was so strikingly different in the two five-year periods. As will be seen, the mortality in the succeeding decades rises steadily and consistently.

In Chart 2 is shown the termination of the cases in which the patients recovered by lysis or crisis, according to the same age periods.

As to the day on which crisis took place, we find a surprising condition of things in this series of cases. There were 125 cases in which the exact date of onset of the disease and the time of crisis could be determined. It is found that there is no regularity in the time at which the crisis occurred. Table 2 illustrates this fact. It will be seen that while in 80 per cent. of the cases the crisis occurred before the tenth day, in seven cases it fell on the tenth; in nine, on the twelfth; in six, from the seventeenth to the twenty-first day, and in two was delayed until one month after the onset.

In 264 cases the initial symptom was definitely known (Table 3). In 121, or 46 per cent., a chill ushered in the disease; next most common was pain in the side, back or chest; thirty-eight cases, or 14 per cent., had this first; in thirty-three, or 12 per cent., a cough was the first thing evident; in twenty-one, or

TABLE 2.—DAY OF CRISIS AFTER ONSET IN 125 CASES OF LOBAR PNEUMONIA

Days After Onset	No. of Cases
3	12
5	23
6	4
7	24
8	22
9	16
10	7
12	9
17 to 21	6
1 month	2

TABLE 3.—INITIAL SYMPTOM IN 264 CASES OF LOBAR PNEUMONIA

Symptom	No.	Per Cent.
Chill	121	46
Pain	38	14
Cough	33	12
Headache	21	7
Vomiting	12	4
Fever	12	4
Other symptoms	27	10

7 per cent., it was headache; in twelve, or 4 per cent., vomiting was first noticed; in twelve, or 4 per cent., fever only, and other symptoms of various nature in twenty-seven cases, or 10 per cent. These symptoms naturally occurred in combination or one rapidly following the other, but it is intended to note in this connection only that which first called the attention of the patient to his abnormal condition.

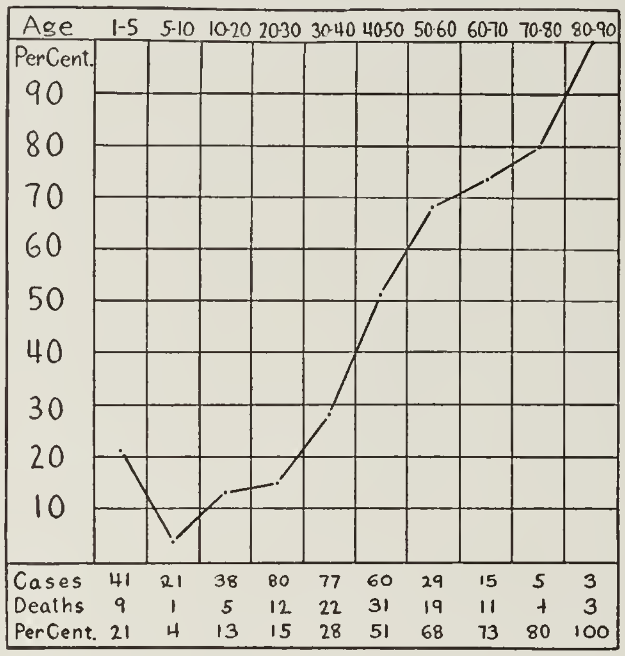

Chart 1.—Deaths from lobar pneumonia by age decades.

Examination of the urine (Table 4) shows the presence of abnormality in 237 of the 369 cases. This does not mean, however, that the remaining patients did not have abnormal urine findings. Many of our patients came in moribund, and for that or some other reason the urine could not be obtained in every case. In the 237 cases, however, sixty-one, or 25 per cent., showed the presence of albumin; twenty-seven, or 11 per cent., showed casts in the urine, and in 149 cases, or 63 per cent., both albumin and casts were present.

TABLE 4.—EXAMINATION OF URINE IN 237 CASES OF LOBAR PNEUMONIA

Findings	No.	Per Cent.
Albumin present only	61	25
Casts only	27	11
Both albumin and casts	149	63

It is interesting to note the location of the consolidated area in the lungs (Table 5). In 333 cases this has been recorded. In thirty-one, or 9 per cent., the consolidation was in the right upper lobe; in ninety-nine, or 29 per cent., in the right lower lobe; in ten, or 2 per cent., in the right middle lobe; in twenty-one, or 6 per cent., in the left upper lobe; in eighty-nine, or 26 per cent., in the left lower lobe. The entire right lung was involved in seventeen cases, or 5 per cent., the entire left side in eleven, or 3 per cent. The notation of "double lobar pneumonia" is made in twenty-nine cases, or 8 per cent. In twenty-six cases, or 7 per cent., no area of dulness could be made out.

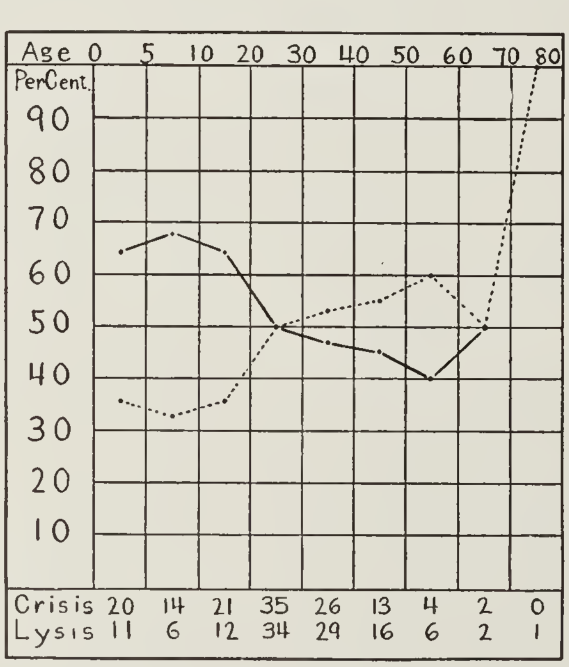

Chart 2.—Termination in 369 cases of lobar pneumonia by lysis and crisis; solid line, crisis cases; broken line, lysis cases.

TABLE 5.—LOCATION OF CONSOLIDATION IN 340 CASES OF LOBAR PNEUMONIA

Location	No.	Per Cent.
Right upper lobe	31	9.2
Right lower lobe	99	29.2
Right middle lobe	10	2.9
Left upper lobe	21	6.2
Left lower lobe	89	26.2
Entire right side	17	5
Entire left side	11	3.2
Double lobar	29	8.5
No area of dulness	26	7.5

These figures agree in the main with those of Preble's 9,333 cases collected in 1904.

It is found in the foregoing that in 67 per cent. of the cases the leukocyte count ranged between ten and twenty-five thousand, as given in Table 6.

Leukocytosis in lobar pneumonia deserves consideration. In this collection of cases an attempt was made to discover the relation, if any exists, between the number of white blood cells and the course of the disease. For this purpose, cases with complications, especially suppurative conditions, were excluded. Children under 14 years of age were also excluded. Those remaining were classified according to the number of leukocytes found, without regard to age, amount of consolidation, or other conditions. As will be seen from Table 7, the six groups have been made according to the number of leukocytes and the percentage taken of cases in each group, which ended in lysis, crisis or death.

A study of Table 7 presents some interesting features. The selection of uncomplicated cases does not, of course, give the same percentage of deaths or termination of lysis or crisis, as does the whole series of cases, including complications and all ages. It is seen at once that a leukocytosis under 10,000 gives 33⅓ per cent. of deaths, which is in accordance with our general knowledge that a low resistance with low leukocyte reaction gives an unfavorable prognosis. We find again that a white count between ten and fifteen thousand or between twenty and twenty-five thousand gives us nearly the normal rate of mortality, namely, 22 and 24 per cent. Between fifteen and twenty thousand leukocytes strangely seems to give a lower mortality, for which no explanation is offered and which may mean nothing. With the higher white counts above 25,000, the mortality is lower by one half, being only 11.3 per cent.

TABLE 6.—LEUKOCYTE COUNT IN LOBAR PNEUMONIA

Count	Per Cent.
Under 10,000	9
Between 10,000 and 15,000	30
Between 15,000 and 20.000	22
Between 20,000 and 25,000	21
Between 25,000 and 30,000	10
Between 30,000 and 35,000	3
Between 35,000 and 50,000	1
Above 50,000	2.5

It may be concluded then, as far as mortality from lobar pneumonia is concerned, that the higher the white blood count the better the prognosis, and that a count of 25,000 or over is decidedly more favorable than under 25,000.

We next notice that the proportion of the cases terminating in lysis and crisis is rather uniform until the white count reaches 20,000 or over. Between twenty and twenty-five thousand an equal number of cases ended in each way. Between twenty-five and thirty thousand there is a decided preponderance of cases ending in lysis in the proportion of 1 : 2. When the white count is over 30,000, however, this proportion is almost exactly reversed, there being 33⅓ per cent. ending in lysis and 55.4 per cent. in crisis.

As has been stated, many of the patients in this series were admitted at a relatively late date in the course of the illness. These might roughly be divided into two classes. In the first division are those patients who were admitted in the first acute stages and in another class those in whose cases recovery was delayed beyond the first two weeks and who were brought in later either for delayed resolution or some complication. Without, however, thus classifying them, we find that it is very rare for a patient with lobar pneumonia to be admitted before the third day after the onset, and that 70 per cent. of them are admitted on the third, fourth, fifth, sixth and seventh day in about equal numbers. The bearing of this fact in our mortality records is obvious.

An analysis of cases of bronchopneumonia was made at the same time as the lobar cases. As bronchopneumonia, however, presents such a different aspect and much more varied etiology and course, this abstract does not cover that class of cases.

TABLE 7.—RELATION OF LEUKOCYTOSIS TO THE COURSE OF LOBAR PNEUMONIA IN 184 CASES

No.	Leukocytes Per Cent.	Lysis Per Cent.	Crisis Per Cent.	Deaths Per Cent.
From 5,000 to 10,000...	9.8	38.8	27.7	33.3
From 10,000 to 15,000...	27	44	32	24
From 15,000 to 20,000...	26	41.6	39.1	18.9
From 20,000 to 25,000...	19.6	38.8	38.8	22.4
From 25,000 to 30,000...	7.6	57.1	28.5	11.3
30,000 and over.........	9	33.3	55.4	11.3
Totals	....	41.6	36.9	21.2

The average length of stay in the hospital of those patients with lobar pneumonia who recovered is between two weeks and one month, the larger number remaining about three weeks. It is impossible to go into the question of the complications in the present abstract. In many instances the connection between pneumococcus infection and the complications is not traceable, or at least was not followed out, and a discussion of the ordinary complications would take more time and space than can be expended in this connection. It may be mentioned, however, that the complications noted in the foregoing series included otitis media both with and without mastoiditis, phlebitis, empyema, myocarditis, acute corneal ulcer, decubitis, acute arthritis, all of the different forms of pleurisy, nephritis, meningitis, pulmonary abscess, bronchial asthma, gastro-enteritis, endocarditis and gangrene of the lung.

Donaldson Building.

Duration of Incubation of Syphilis.—One of the editors of the *Annales de Dermatologie,* G. Thibierge, publishes in the July issue a study of this subject. His data establish that in the vast majority of cases the incubation period ranges from fourteen to forty-two days, but that cases are on record in which the interval before symptoms developed was fifty, sixty and ninety days. He cites various authorities to show that the minimum seems to be ten days. In monkeys the range was ten to forty-nine. The average in man is between twenty-five and thirty days.

INFECTIOUS DISEASES

THEIR ADMINISTRATIVE CONTROL IN DIFFERENT CITIES OF THE UNITED STATES

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The Department of Health of New York City, having made some changes in the rules and regulations regarding certain infectious diseases in order to be consistent with the teachings and opinions of members of the medical profession and the scientific knowledge of today, desired to ascertain the opinions of eminent sanitarians throughout the country regarding these matters.

A questionnaire was therefore sent to the health authorities of sixteen of the largest cities in the United States.

QUESTIONNAIRE

Question 1.—What procedure have you regarding persons exposed to scarlet fever and measles and who are immune by reason of having had this disease?

A. Exclusion from place of business when connected with the sale or handling of dairy or food products.

B. Exclusion of children from schools, it being assumed of course that the patient ill with either scarlet fever or measles is practically and efficiently quarantined.

Atlanta: A. Persons exposed to scarlet fever and measles must not handle food products offered for sale.

B. Children are excluded from school, but are allowed on the streets.

Baltimore: A. They must not remain on the premises in which there is a case of disease. If there is any doubt that this order will be carried out, the individual is prevented from attending to the food and dairy business.

B. If the children are removed to another house, then they can attend school.

Boston: A. Persons who have been exposed to scarlet fever and measles and who are protected by a previous attack of these diseases are not held under observation by this department unless engaged in the sale or handling of food or dairy products. If a case of scarlet fever occurs in the family of such a person, unless the patient is immediately removed to the hospital, persons in the family are forbidden to engage in the business of handling of food or dairy products. As regards measles, no action is taken. I am of the opinion that this disease cannot be carried.

B. Such children are not excluded from school.

Chicago: A. In scarlet fever we exclude the person unless residence is changed during quarantine. In measles, no.

B. In scarlet fever, yes, unless change of address and furnish certificate of attack from physician. In measles, no, provided a certificate of immunity from physician is furnished.

Cincinnati: Quarantine for scarlet fever and diphtheria applies to all members of the family. We have an unwritten law that the breadwinner may continue his occupation, provided the patient is isolated and there is no contact.

A. If the parents are engaged in handling food or dairy products, patient must be removed to the hospital or the industry is closed.

B. In case of scarlet fever, diphtheria and measles, all children in the same family are excluded from school until the quarantine is raised by the health department. The history of a previous attack is not accepted as a sufficient reason that persons who have been exposed to scarlet fever, diphtheria or measles should return to school.

Cleveland: A. Persons exposed to measles and who are immune by reason of having had the disease are not excluded from business of any character. Persons exposed to scarlet fever are excluded from business.

B. Children who have had measles may attend school from a house in which the disease exists. They may attend school after eight days after being exposed to scarlet fever, provided they leave the house harboring the disease.

Detroit: Persons exposed to scarlet fever or measles, and who are immune by reason of having had the disease, are allowed to go following the disinfection of clothing and an antiseptic bath.

A. Such persons are excluded from handling of food or dairy products during period of incubation.

B. Exposed immune children are not excluded from school provided they have been properly released, as above stated, and taken to another house.

New Orleans: A. If residing at infected premises, complete exclusion is required of such persons. If place of abode is changed to a noninfected one, no exclusion after certain sanitary precautions have been observed.

B. Same requirements are as given in preceding answer.

New York City: A. In measles, no. In scarlet fever, all food handlers stop work or change address.

B. If case is satisfactorily isolated, immunes may return to school at once.

New York State: A. When a case of scarlet fever or measles exists on any farm or dairy producing milk, cream, butter or other dairy products for sale, it shall be the duty of the physician in attendance to report immediately to the local health officer the existence on such farm or dairy of such cases. It shall be the duty of the health officer to report immediately to the state commissioner of health, by telephone or telegram, the existence on such farm or dairy of such cases, together with all facts as to the isolation of such cases, giving the names of the localities to which such dairy products are delivered.

When a case of scarlet fever exists on any farm or dairy producing milk, cream, butter, cheese or other foods likely to be consumed raw, no such foods shall be sold or delivered from such farm or dairy, except under the following conditions:

(a) That such foods are not brought into the house where such case exists.

(b) That all persons coming in contact with such foods eat, sleep and work wholly outside such house.

(c) That such persons do not come in contact in any way with such house or its inmates or contents.

(d) That said inmates be properly isolated and separated from all other parts of said farm or dairy, and efficiently cared for, and

(e) That a permit be issued by the health officer.

B. In cases of measles, schoolchildren are excluded until recovery and disinfection of person, at least ten days from onset. In cases of scarlet fever, at least thirty days and until discharges have ceased and disinfection of person.

Omaha: In scarlet fever, thorough fumigation of clothes, and a bath are required, and patients are obliged to leave the house in which the disease is quarantined or be quarantined there. In measles there is no restriction if the persons have had the disease.

Philadelphia: A. No person is permitted to go from the quarantined premises to engage in the sale or handling of food or dairy products. We do not permit immunes to remove to another residence after disinfection, etc., and to engage in the said business.

B. All those associated with schools, teachers, children or janitors, who have had scarlet fever, and are therefore immune, may, after an antiseptic bath and disinfection of clothing, remove to premises in which there are no children and may return to school in ten days after such removal on notice received from the bureau of health. If continuing to reside at home, they must not be readmitted until examination by an inspector and notice received from the bureau of health. In measles, such children after removal to premises at which there are no children may return to school fourteen days after such removal on notice received from the bureau of health.

Pittsburgh: In scarlet fever and measles, after removing from the house under quarantine to a house in which there are none but adults, they may continue their occupations.

A. Must remove from the place of quarantine, and, if a grocer, may after the expiration of eight days return to his work. If a dairyman, he must remain away from the dairy during the entire period of quarantine.

B. Thirty days for scarlet fever contacts and sixty days for patient. Measles, twenty-one days.

Providence: No person infected with or living in a family where there is typhoid fever, scarlet fever or diphtheria shall in any way handle or deliver milk or cream or shall serve as cook or waiter in any hotel, boarding house or restaurant. No person living in a family in which there is a case of scarlet fever shall attend school until the warning sign has been removed, or if the patient has died or been removed from the house, until one week after such death or removal. The health officer may enforce this rule against all persons living in the house. No persons living in the house, but not in the family in which there is a case of scarlet fever, shall attend school until one week after the case has been recorded and until such person has been found to show no symptoms of the disease, but any person who has previously had the disease may, at any time, be permitted by the health officer to attend school. No person living in a family where there is a case of measles shall attend school for fourteen days, except that this rule shall not apply to persons who have previously had measles.

St. Louis: Persons who are known to have had scarlet fever and measles, and who have been exposed to the contagion are not restricted in their school attendance or work, provided that the fact that they are immune by reason of a previous attack is certified to by a physician and provided that the person exposed to scarlet fever, and who is living in the same house with the patient, must have the clothing fumigated and change residence during the existence of the disease.

B. Children attending school and exposed to scarlet fever or measles, in a case of scarlet fever change their residence and fumigate their clothing, and are placed under daily inspection for a period of ten days. In measles they may attend school from the house in which the patient is, but must be under daily inspection.

St. Paul: Persons exposed to scarlet fever and measles and who are immune by reason of having had this disease are removed from the quarantined house after proper precautions. They are excluded from place of business when connected with the sale or handling of food or dairy products.

Washington: A. Persons residing in premises in which scarlet fever exists are prohibited, without a permit from the health officer so to do, from handling or selling of foodstuffs or dairy products so long as they continue to reside in the infected premises. This regulation practically excludes every person from engaging in the business referred, because of the very rare instances in which the health officer has issued permits in cases of this kind. This position of the health department is taken regardless of whether the person has or has not had scarlet fever. Persons who have been exposed to scarlet fever, and who do not reside in the infected premises are prohibited from engaging in the sale or handling of foodstuffs and dairy products for a period of seven days from date of last exposure, unless authorized by the health officer to do so. If they have previously had scarlet fever a permit is given them. Persons exposed to measles are not prevented from continuing their work.

B. In the case of scarlet fever, all children who reside in infected premises are excluded from school during the continuance of the case. If they have had scarlet fever they can return to school as soon as the disinfection has been completed; otherwise they are required to remain away seven days after completion of disinfection. Children who have been exposed but who do not reside in the infected premises are given certificates to continue at school on presenting satisfactory evidence to the health department of previously having had scarlet fever. If they have not had scarlet fever they are excluded for seven days from date of last exposure. In the case of measles, all schoolchildren residing in the infected premises are excluded from school for twenty-one days from the onset of the illness, unless they can present evidence satisfactory to the health department of having previously had measles, in which event they are permitted to continue in attendance at school.

Question 2.—What is your procedure regarding the termination of quarantine of diphtheria and the seeking of "carriers"?

Atlanta: Quarantine for diphtheria is terminated either on a negative culture or by the physician in charge certifying that all clinical symptoms have been absent for a period of ten days. Carriers are not especially sought by the health department.

Baltimore: We determine quarantine after diphtheria when two negative cultures have been obtained from the patient and one negative culture from the other members of the household, taken by our own officers. "Carriers" in school are not sought for except when there is a sudden increase in the number of cases of diphtheria.

Boston: All cases of diphtheria are released after this department obtains two successive negative cultures from nose and throat. The last culture is to be taken by a physician from this department. If there is a history of previous sickness in the family or any history of sickness among schoolchildren, said suspects are cultured. If positive and no clinical symptoms of diphtheria, said cultures are tested for virulence.

Chicago: Terminate diphtheria on two negative terminal cultures from patient and one from each contact. Contacts' cultures are made at time diagnostic culture is taken; if positive, and there is no clinical evidence, are required to remain in quarantine premises as "carriers." At schools carriers are frequently sought for, and if positive the carrier is quarantined at home until negative culture is obtained.

Cincinnati: Quarantine for diphtheria continues for fourteen days after disinfection of the premises by the formaldehyd method. The doctor announces the recovery of his patient and sends a culture; if the culture is negative, the district physician visits the patient and takes another culture; if this is negative, the premises are disinfected as stated above. If other members in the family have suspicious throats, cultures are made.

Cleveland: Quarantine diphtheria is terminated on the finding by the city laboratory of a double negative culture.

Detroit: Children recovered from, or exposed to, diphtheria are allowed to return to school following two consecutive negative cultures. Quarantine of diphtheria is terminated either by two consecutive negative cultures or on the certificate of the physician after eight days that the patient has clinically recovered, and that he and all members of the family have been given an immunizing dose of antitoxin. Two negative cultures are required, as aforesaid, before allowing the children to return to school. Carriers are sought by cultures when two cases appear in a schoolroom or other public place.

New Orleans: Quarantine terminates when two consecutive negative control cultures have been obtained after clinical recovery. First control only may be taken by physician in charge. Controls to be taken forty-eight hours apart. First control not to be taken until seven days elapse from notification of case by physician in charge; all subsequent controls to be taken by physician from health office. Contacts are cultured in our search for carriers.

New York City: Quarantine terminated by receipt of two successive negative cultures, taken not less than twenty-four hours apart. Other children in family are cultured.

New York State: We require the quarantine of diphtheria until two cultures taken twenty-four hours apart are reported negative for the presence of diphtheria bacilli. If these persist in the throat that is normal in appearance for five weeks, the carrier is released on condition that he be very careful about coughing and sneezing in the presence of little children; that cultures be taken at intervals of two weeks until the throat is clear and that the health officer will advise us if secondary cases ever occur. This rule has been in force since the middle of last August, and up to the present time we have not heard of secondary cases occurring. In a few special cases, we have permitted the carriers, who were schoolchildren, to return to school, and the health officer in each case reports that no secondary cases have appeared.

Omaha: All cases kept under quarantine until two negative cultures are obtained on consecutive days.

Philadelphia: At the expiration of two weeks the patient must be pronounced free of disease by the medical inspector. Two negative cultures must be obtained from throat and nose on consecutive days. In every schoolroom in which a case of diphtheria is detected, and in every case in which diphtheria develops in a home, all direct contacts are cultured. Positive cultures, without clinical evidence, are excluded from school and placed in modified quarantine until the case is cleared up. Early last fall we started with a mild epidemic of diphtheria, and we believe that these methods greatly assisted us in overcoming the threatening spread of the disease.

Pittsburgh: Quarantine terminated by field medical inspector when two negative cultures from the nose and throat have been secured at intervals of forty-eight hours. Carriers are determined by school medical inspectors. When daily bulletin shows that there has been a clinical case of diphtheria in any particular room, the entire room is cultured. Children absent from school with sore throats are cultured before they are permitted to return.

Providence: The minimum period of isolation in diphtheria is until two negative cultures have been obtained from the site of the disease secured at least twenty-four hours apart.

St. Louis: All cases of diphtheria are terminated by the attending physician, which termination is verified by this department by the securing of two negative cultures made on succeeding days. No systematic search for carriers is made outside of institutions, hospitals and homes.

St. Paul: Children are excluded from school for two weeks after having been exposed.

Washington: The quarantine in cases of diphtheria is terminated on one negative culture. While one negative culture is accepted from patients treated in their own home, which culture is usually only a throat culture, the department believes that two negative cultures are better, and in the cases treated in the isolation ward of Providence Hospital and coming under the supervision of the health department, two negative cultures are required before discharging patients.

While there is nothing in the laws or regulations authorizing the health department to take cultures from persons exposed to diphtheria, an effort is made to obtain such cultures whenever the consent of the individual can be obtained. In quite a few instances "carriers" have been found and isolated in the same way as those having clinical symptoms of the disease. This department makes no distinction, for purposes of isolation, between the "carrier" and the clinical case.

Question 3.—Do you require a report from the municipal laboratory or do you accept the report of any laboratory regarding the presence of diphtheria germs?

Atlanta: State or municipal laboratory analyses are accepted. We also put up placard on clinical diagnoses but ask for culture to confirm same.

Baltimore: From the municipal laboratory, except when the report comes in from the physician that it is positive.

Practically speaking, physicians leave everything in our own hands.

Boston: All cases must be released by our own laboratory.

Chicago: Yes, for terminal cultures; unless the *official report* of a high-grade laboratory is submitted. Our rule is to insist on a representative of this department taking the second terminal culture.

Cincinnati: Examination for the presence of Klebs-Loeffler bacilli are made in a municipal laboratory and in the laboratory at the hospital for infectious diseases. We are governed by the reports of these two laboratories.

Cleveland: Reports from municipal laboratory only are accepted regarding the presence of diphtheria germs.

Detroit: Report from municipal laboratory on release cultures is required. Also all release cultures are taken by board of health nurses.

New Orleans: We require a report to be obtained from municipal bacteriologists in any case of diphtheria before a sanitary release of infected person or premises is effected.

New York City: Report from municipal laboratory required.

New York State: The director of our laboratory inspects and qualifies certain laboratories throughout the state whose reports on cultures can be accepted without question.

Omaha: Require report from municipal laboratory.

Philadelphia: All official acts of this bureau requiring laboratory examinations are based on the findings of the bureau laboratory. In establishing a quarantine, however, we will place a case in isolation on the findings of any laboratory, but do not begin or end a quarantine except on the bureau laboratory diagnosis.

Pittsburgh: We require a report from the municipal laboratory.

Providence: We accept the result of bacteriologic examination from municipal, state and hospital laboratories. I have accepted the result of private work which only very rarely is offered here, but can readily conceive that it might be necessary to make a different ruling.

St. Louis: All bacteriologic reports must be from the municipal laboratory.

St. Paul: Regarding the termination of quarantine of diphtheria and the seeking of "carriers"; culture of exposed taken; absence of Klebs-Loeffler bacilli.

Washington: The health department prefers to examine cultures in its own laboratory and by its own bacteriologist. It will, however, accept the report from a bacteriologist of recognized standing as such.

Question 4.—Do you terminate the case on one or two cultures and do you require cultures from nose or throat, or both?

Atlanta: We terminate the case on one culture from throat.

Baltimore: The physician in attendance sends in one negative culture, then notifies us that a house is ready for fumigation, and then our throat inspector visits the premises and takes the culture of all persons, including the patient; thus making two negative cultures of the patient and one of each of the household. The cultures from both the nose and throat are not done in routine practice. Ordinarily we are content with the cultures taken from the throat. One of our difficulties in taking the cultures from the nose in all cases is the very large percentage of contaminated cultures, which obstruct the possible presence of the diphtheria organism.

Boston: See answer to Question 2.

Chicago: Two cultures for patient and one for all intimate contacts. Require cultures from both nose and throat.

Cincinnati: Cases of diphtheria are dismissed from the hospital after three negative cultures, taken from both the nose and throat. Cases treated in the home are considered well after two negative cultures have been taken, as described above.

Cleveland: Quarantine is raised only on the finding of two cultures on successive days taken from the nose and throat of patient.

Detroit: When the case is terminated on cultures, two consecutive negatives are required from both nose and throat.

New Orleans: Case is terminated after two negative cultures have been obtained. Where clinical indications are present, both throat and nasal cultures are taken.

New York City: Two cultures, nose or throat, but should require from both.

New York State: The code requires that the patient should not be released until two negative cultures taken at least twenty-four hours apart have been obtained. We have always ruled that it was necessary that a culture be taken from the nose and throat each time, and that the patient should not be released until on two successive days no cultures are reported positive.

Omaha: Cultures from both nose and throat, two cultures only.

Philadelphia: The patient is excluded from school at least three weeks, twenty-one days, if the symptoms have entirely disappeared and examination of the nose and throat on two successive days show no diphtheria germs; that is, negative cultures.

Pittsburgh: In terminating diphtheria our method is as follows: The attending physician sends cultures to the municipal laboratory until such time as he may get a negative, after which our field medical inspector calls to see the patient, taking a culture of nose and throat; also, taking cultures of other members of the family until cultures prove negative. If a schoolchild, he must again be cultured, before admission to school, by the school medical inspector.

Providence: For the release of diphtheria we require two negative cultures from throat and nose, although the state board of health rule does not call for this. I consider nose cultures of great importance.

St. Louis: Two cultures from the throat in ordinary cases. The same number from both the nose and throat when there is clinically a nose involvement.

St. Paul: The report from our own laboratory is required.

Washington: Cases of diphtheria are ordinarly terminated on one negative culture from the throat. In cases treated in the isolation ward of Providence Hospital and over which the health department has certain jurisdiction, two negative cultures are required before a patient is discharged. Cultures are not required from nose and throat.

Question 5.—What period of quarantine, if any, do you have for diphtheria cases?

Atlanta: No period of quarantine.

Baltimore: No fixed period. We frequently raise quarantine in less than ten days after the report of the case.

Boston: Until two negative cultures have been obtained. See answer to Question 2.

Chicago: Until two negative cultures from nose and throat on successive days have been obtained from patient and a negative culture from the close contacts.

Cincinnati: As stated above, quarantine for diphtheria continues for a period of fourteen days after the completion of disinfection.

Cleveland: First cultures for release are taken immediately on the establishment of convalescence, that is, on the disappearance of constitutional symptoms.

Detroit: Minimum periods of quarantine for diphtheria is eight days.

New Orleans: No period. See reply to Question 2.

New York City: No fixed period.

New York State: No period of quarantine for diphtheria.

Omaha: Until we get two negative cultures.

Philadelphia: At least three weeks—twenty-one days.

Pittsburgh: Minimum period of quarantine fourteen days, or until released by a field medical inspector after one negative culture.

Providence: See reply to Question 2.

St. Louis: On the report of a case of diphtheria, an estimated quarantine of fourteen days is set. If the patient recovers and shows two negative cultures before fourteen days have elapsed, the case is terminated, provided no other children are in the house. If there are other children, the quarantine is held for the fourteen days.

St. Paul: The case is terminated on two cultures, from nose and throat.

Washington: Quarantine for diphtheria is not terminated until one or more negative cultures are taken from a patient. So long as the bacilli are found present, quarantine continues.

Question 6.—What is your personal opinion regarding the exclusion from school of persons who are immune by reason of recently having had either scarlet fever or measles, and who have either of these diseases in their home, the patient being practically and efficiently quarantined?

Atlanta: Personally, I am opposed to excluding such children from school.

Baltimore: While admitting that there is a possibility for a person to have scarlet fever or measles the second time, yet I consider that it is so infrequent that it does not increase the likelihood of the disease being spread, and if one is absolutely sure that the child has had measles or scarlet fever (and very seldom that a health officer can be so assured) and if the health officer can be well assured that the patient is practically and efficiently quarantined, then I consider that there is no danger in allowing the well children to attend school. However, we have to deal with the public, which unfortunately is made up of such a variety of characters, and all are not trustworthy; so we find it necessary to make a rule applicable to all alike, viz., the exclusion of the children from school so long as they remain in the house where the sickness is; otherwise, discontent is produced by A being allowed to do that which we will not allow B to do.

Boston: Children who are protected by a previous attack of scarlet fever and measles, if other members of the family are sick with these diseases, are readmitted to school if they can satisfy this department and comply with the regulations governing the admission of children to school.

Chicago: Measles immunes may go to school with safety to others from premises quarantined for this disease. Scarlet fever immunes should make a change of address, if permitted to attend school.

Cincinnati: I believe that our quarantine with reference to measles is a relic of the dark ages. We should be governed by the researches of Anderson and Goldberg. In scarlet fever, I believe we are doing the right thing in applying the quarantine to all children in the same family. If those who have had an attack or others in the same family take shelter with friends or relatives and do not develop the disease, I think that they should be permitted to return to school. They must, however, maintain their residence at the new address until quarantine in the home is discontinued.

Cleveland: It is my opinion that there is no occasion for excluding from school persons who are immune by reason of recently having scarlet fever or measles, and who have either of these diseases in their homes, the patient being practically and efficiently quarantined.

Detroit: There seems very little danger of transmission of scarlet fever or measles by persons known to be immune, if such persons are promptly removed from the quarantined premises.

SYNOPSIS OF 1915 QUESTIONNAIRE *

	Can Return to Work or Can Attend School																				Personal Views of Health Officials		Quarantine Period for Diphtheria	Terminal Cultures Required in Diphtheria					Carriers Sought For	Examination of Cultures Compulsory in Municipal Laboratory
	At Once				At Once; After Change of Address				After Incubation Period of Disease and Removal to New Address				When Original Case Is Discharged from Quarantine				When Original Case Is Discharged from Quarantine and After Elapse of Incubation Period				Should Immune Schoolchildren Be Excluded If Quarantine Is Efficient?									
	Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles											
	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Scarlet Fever	Measles		Two Negative	One Negative	None	From Nose and Throat	Intervening Period		
Atlanta	...	...	...	...	...	...	...	...	...	...	...	...	X	X	X	X	...	...	...	...	No	No	None	...	X	...	...	0	No	Yes
Baltimore	...	...	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	Yes	Yes	None	X	...	...	...	0	No	Yes†
Boston	...	...	X	X	...	...	...	...	...	...	...	...	X‡	X‡	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	Yes	Yes†
Chicago	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Change address	No	None	X	...	...	...	24 hrs.	Yes	No
Cincinnati	...	...	...	...	...	...	...	...	...	...	...	...	X	X	X	X	...	...	...	...	Change address	No	14 days after disinf.	X	...	...	...	0	No	Yes
Cleveland	...	...	X	X	...	...	...	...	X	X	...	...	...	...	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	No	Yes
Detroit	...	...	...	...	...	X	...	X	X	...	X	...	...	...	...	...	...	...	...	...	Change address	No	8 days	X	...	...	X	24 hrs.	Yes	Yes
New Orleans	...	...	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	No	No	7 days	X	...	...	...	48 hrs.	Yes	Yes
New York	...	X	...	X	X	...	X	...	...	...	...	...	...	...	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	No	Yes
Omaha	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Change address	No	None	X	...	...	X	24 hrs.	No	Yes
Philadelphia	...	...	...	...	...	...	...	...	...	X	...	X	X	...	X	...	...	...	...	...	Change address	Change address	21 days	X	...	...	X	24 hrs.	Yes	Yes
Pittsburgh	...	...	...	...	...	...	...	...	X§	30 days	X§	21 days	...	...	...	...	...	...	...	...	Yes; provisionally	Yes; provisionally	14 days	X	...	...	X	48 hrs.	Yes	Yes
Providence	...	...	...	...	...	...	...	...	X	X	X	X	...	...	...	...	...	...	...	...	No opinion	No opinion	None	X	...	...	X	24 hrs.	N A‖	No
St. Louis	...	...	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	No	Yes	14 days	X	...	...	...	24 hrs.	No	Yes
St. Paul	...	...	...	...	...	X	...	X	...	...	...	...	X	...	X	...	...	...	...	...	Change address	Change address	None	X	...	...	X	0	Yes	Yes
Washington	...	...	X	X	X	X	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Change address	No	None	...	X	...	...	0	Yes	No

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* Procedure in different cities regarding persons exposed to scarlet fever and measles and who are immune by reason of having had either disease and who (*a*) are engaged in handling dairy or food products, or (*b*) attend school.

§ Grocer, work after eight days. ‡ Dairymen. † In part only. ‖ No answer.

Remarks.—You will doubtless notice that our method of terminating diphtheria quarantine is different from that usually practiced except in the case of schoolchildren. The alternative procedure, that of releasing all but schoolchildren after eight days on the certificate of clinical recovery and immunizing doses to all members of the family, was instituted Nov. 21, 1913, and is based on the theory that the number of carriers is so large as to make their sanitary control difficult or impossible. During the year 1913 about 280 deaths from diphtheria occurred in Detroit. During 1914, following the installation of this system, 157 deaths occurred. It must not be thought, however, that the reduction is entirely, or even in large part, due to the change in this system. Other factors were largely responsible.

New Orleans: Were I assured that effective quarantine was observed, I would unhesitatingly advocate the nonexclusion of such persons.

New York City: They should not be excluded.

New York State: We feel that well schoolchildren immune to scarlet fever should be excluded from school for one week if the disease exists in the home. During the patient's illness, the well schoolchildren should live with adult friends. After one week if still well, they may return to school but must continue to live with the adult friends until the patient has recovered. In regard to measles, we feel that immune schoolchildren in the household where a case exists need not be excluded from school at all.

Omaha: Those with scarlet fever should be excluded from school but not measles. Do not think it safe for a child to attend school from a house where scarlet fever is quarantined, no matter how carefully the case is isolated.

Philadelphia: We believe that many of the administrative difficulties that are encountered by health officers arise from the severe requirements imposed by existing laws on immunes. We are meeting increased resistance in this matter, due to exclusions from school, and believe that our procedure should always be in accord with the best medical information extant. That information certainly does not approve of the exclusion of immunes who come from houses efficiently quarantined. There are always practical considerations, however, which arise in each case, and we believe the best procedure for the present is for the immune to remove to premises free from disease.

Pittsburgh: That child should be permitted in scarlet fever and measles to return to school after all discharges have ceased.

Providence: I have no settled opinion as regards the admission to school of children from scarlet fever and measles families who themselves have previously had the disease. I think the danger of their carrying the disease is extremely small and we do not let children who have had measles go to school. I am experimenting with this disease because I doubt whether anything we can do really has very much effect on the prevalence of the disease. In regard to scarlet fever, I do not think there is any theoretical reason why children who have had the disease might not attend school, but I can see some administrative difficulties in determining whether they really have had it. I had such an instance yesterday in a family where the initial case had been removed to the hospital.

St. Louis: I consider it necessary to exclude any child from school who is attending school from a house in which scarlet fever exists. I consider that it is safe to allow a child to attend school from a house in which measles exists. In event the scarlet fever exposed person changes residence, a ten days' daily inspection is necessary. Fourteen days' daily inspection is necessary in the child exposed to measles.

St. Paul: The period of quarantine for diphtheria cases is limited by bacteriologic findings. Schoolchildren may be removed from quarantined houses after proper precautions and sent to school. We, however, exclude for ten days according to state law.

Washington: I am of the opinion, from past experience, that little if any good has been accomplished by this department in attempting to prevent the spread of measles among schoolchildren, it being believed that the infection has already been communicated to other persons before the patient is known to be sick. A great loss of time from school studies was experienced by children exposed to measles, and on this account and the fact that such exclusion has in the past accomplished practically nothing, this department, about two years ago, permitted children who have had measles to continue in attendance at school, notwithstanding the fact that a case of measles was in the same house at the time. I doubt the wisdom of permitting schoolchildren from homes where scarlet fever exists to continue in attendance at school, even though they have previously had the disease, and this department does not permit this to be done. If it were possible to know with a reasonable degree of certainty that a patient suffering from scarlet fever was thoroughly isolated in every respect and those persons residing in the same premises exercised all precautions, it might be safe to allow children residing in such a home, and who have previously had scarlet fever, to continue at school; but as this department has no means of acquainting itself with what takes place in the private home of patients, and in order to safeguard to the fullest extent possible pupils in schools, no child living in a house where scarlet fever exists is permitted to attend school so long as they reside in the premises.

FORMER AND PRESENT PROCEDURES

The following parallel of former and present procedures is given in order to contrast and demonstrate concisely the method now in vogue in New York City. This method is felt to be both safe and consistent with accepted scientific knowledge and at the same time to avoid any unnecessary loss of school or working time.

MEASLES

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, immunes may return at once to school. Nonimmunes, on change of residence, may return to school fourteen days after last exposure. If isolation is not satisfactory, immune pupils, on change of residence, may return at once to school. Nonimmunes, on change of residence, may return to school fourteen days after last exposure.
Minimum isolation period, fourteen days.	Quarantine terminated five days after appearance of rash, provided all catarrhal symptoms have ceased and fever and rash have disappeared (not pigmentation).
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning.
All cases kept under observation by irregular visits.	Cases divided into two classes: "observation," visited but once and terminated by family physician, and "supervision," closely supervised by field nurse.
All cases have homes placarded.	Placards posted in "supervision" cases only.

SCARLET FEVER

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, immunes may return at once to school. Nonimmunes, on change of residence, may return to school. five days after last exposure. If isolation is not satisfactory, immune pupils, on change of residence, may return at once to school. Nonimmunes on change of residence may return to school five days after last exposure.

SCARLET FEVER—CONTINUED

Former Procedure	Present Procedure
Minimum isolation period, thirty-five days.	Thirty days.
Desquamation must be complete.	Not insisted on.
Use of elevator permitted only on entering apartment.	No elevator restrictions.
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning or, when necessary, by repapering and repainting at expense of owner. Disinfection of all discharges and soiled materials and articles throughout progress of case.
No renovation placard.	Renovation placard posted until cleaning is performed.
Persons selling milk discontinue work or change residence.	All food handlers stop work or change residence.

DIPHTHERIA

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, pupils (and teachers) who have been immunized, and on whom "trial" cultures with negative result have been made, may return at once to school. If isolation is not satisfactory, pupils (and teachers) who have been immunized, and in whose cases "trial" cultures with negative result have been made, on change of residence may return at once to school. If not immunized, they can return to school only after lapse of seven days' interval and a change of residence and a "trial" culture with negative result.
Terminated on one negative culture.	Two negative cultures, taken at an interval of not less than twenty-four hours, preferably from both nose and throat.
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning or when necessary by repapering and repainting at expense of owner. Disinfection of all discharges and soiled materials and articles throughout progress of case.
Persons selling milk discontinue work or change residence.	All food handlers stop work or change residence. If case is isolated satisfactorily, trial cultures negative and immunization performed, they may return at once to work.
Renovation placard not used.	Renovation placard posted until cleaning is performed.

It is, indeed, a pleasure to state that this questionnaire was promptly and most satisfactorily answered by all.

The opinions expressed by the different sanitarians endorsed the new procedures. While the experience in New York City has not covered a sufficient length of time to be conclusive, it has, however, been very extensive and so far has given general satisfaction. Attention, however, might be called to the ultraconservatism of some of the municipalities; the minimum isolation period for diphtheria in Detroit is established at eight days; in St. Louis at 14 days; in Philadelphia "at least three weeks"; and in Cincinnati the quarantine period continues for 14 days after termination of case and completion of disinfection.

Some cities accept reports of diphtheria without laboratory confirmation; definite periods of quarantine are set in several of the cities, whereas the presence or absence of diphtheria bacilli should be the determining factor, it is thought.

The methods of handling "contacts" and "persons exposed," as well as the seeking and handling of "carriers" varies widely.

In Pittsburgh, schoolchildren exposed to scarlet fever are excluded for thirty days, and a minimum period of quarantine of sixty days is established for the patient.

A synopsis of the variations is very interesting from this comparative point of view.

In the establishment of quarantine, the object is to keep the patient "in" and the public "out," without the imposition of unnecessary restraint. At no time must it be considered in the nature of a blockade.

In public health work no one plan will apply everywhere, and in no single method does success lie. Fear and superstition for ages held masterful sway in the control of the infectious diseases, but today we are ruled and guided by the light of knowledge, and the laboratory should be the determining arbiter of both custom and practice.

Sickness, by its mere presence, greatly disturbs and is an added expense to the home; when this sickness, in addition, brings to the home municipal control, it is not welcomed, as a rule, because the family feel that the numerous restrictions are not only burdensome but also unnecessary, and in this opinion they are not infrequently upheld by their family physician.

While no one knows the best, safest and most economical method of prevention and control of infectious diseases, it is appreciated that the most desirable system will be that which is most free from unnecessary restrictions and at the same time is consistent with demonstrated methods and scientific knowledge.

Mattress Sale Control.—Labor Commissioner John Price Jackson of Pennsylvania during October, 1915, issued instructions to inspectors to enforce rigidly in factories, cleaning establishments, wholesale and retail stores, the provisions of the acts of legislature that place under the jurisdiction of the department of labor and industry the manufacture and renovation, sale or resale of all mattresses. The sweeping character of the mattress act of 1913 and the enlargement of its scope by an amendment passed by the last legislature virtually prohibits the sale of any mattress that is not manufactured of approved material, thoroughly sterilized and disinfected and properly labeled. A resale of a mattress that has been used by a person having any infectious or contagious disease is forbidden and a resale of any mattress that has not been sterilized or disinfected is unlawful. The law declares a mattress to be any quilted pad, mattress, mattress pad, bunk quilt or cushion stuffed or filled with wool, hair or other soft material, except feathers, to be used on a couch or other bed for sleeping or reclining purposes, and further declares that no material may be used in the manufacture of a mattress if it has been obtained from any other mattress used by a person suffering from a transmissible disease. Scraps of old or worn clothing, carpets or other fabric of material known as "shoddy" are prohibited.

BLOOD CRYOSCOPY AND BLOOD UREA

A COMPARATIVE STUDY OF RENAL FUNCTION *

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Determination of renal function, as a routine preoperative measure, is undoubtedly responsible for the marvelous advance of renal surgery during the last two decades. By this means (in order to mention only two salient points) the recognition and operative treatment of incipient renal lesions, and nephrectomy in the presence of a diseased second kidney became well established and comparatively safe procedures. Owing, furthermore, to the important rôle played by the kidneys in systemic metabolism, the value of functional methods of examination as widening and intensifying the diagnostic and prognostic aspect of kidney affections became generally recognized. The diagnosis, finally, of degenerative lesions of the kidneys due to chronic urinary stasis, particularly in connection with prostatic hypertrophy, is only feasible on the basis of a careful study of renal function, which justly is considered the most important factor in the rapid reduction of the mortality rate of prostatectomy.

While thus determination of renal function now occupies an important place among clinical methods of investigation, there exists, nevertheless, a marked divergence of opinion with regard to the accuracy and diagnostic value of the various tests which, of late, have been devised in rapid succession.

CRITERIA FOR PRACTICAL VALUE OF TESTS

The main object in determining total renal function, so far as the surgeon is concerned, lies in the satisfactory answer to the cardinal questions: Does renal insufficiency exist preoperatively? If so, is it reparable? Is renal insufficiency likely to occur postoperatively? Information on these most important issues is sought by means of the various functional tests at our command, by measuring the quantity of substances which are either eliminated by the kidneys with the urine (tests of renal excretion), or which are retained in the blood as end-products of metabolism (tests of renal retention). Total renal secretory activity is measured either by determining the quantity of substances normally contained in urine (urea, diastase, etc.), or by introducing extraneous substances into the circulation (dyes, phloridzin), while renal retention of end-products of metabolism is determined by physiochemical tests (blood cryoscopy, blood urea, etc.).

No single test so far has been devised which fulfils all requirements, and only a few of the many tests recommended for clinical use are practically at the disposal of the surgeon.

A functional test, in order to become available for clinical purposes, must give quick and uniformly reliable results by a technic not so cumbersome, difficult or time consuming as to be prohibitive to the busy clinician.

SIGNIFICANCE OF TESTS

Viewed from this standpoint, almost all of the tests, based on excretion of substances normally contained in urine, have to be rejected, since the quantity of renal secretory activity is not determinable by the elimination of a single salt or enzyme, but by the excretion of substances which, being of intrinsic importance for metabolism, express the total sum of renal capacity. Thus, quantitative estimations of the twenty-four-hour urea output, carried out for a series of days under hospital regimen, may give an approximate idea of total renal function, and are, for a certain class of cases, like prostatics with retention catheter, of practical value. The amylase tests, on the other hand, dealing with a single ferment, must for the same reason be considered as of little practical value, a view which is substantiated by Rowntree and his collaborators,[1] who, on the basis of their comparative study with other tests, conclude that determination of diastatic activity often yields contradictory and unreliable results.

The use, for functional purposes, of extraneous substances which physiologically are not present in the circulation is subject to the same criticism. By this means, renal functional capacity is estimated by the ability of the kidneys to excrete a single dye or glucosid. Renal excretory capacity, though, is variable according to the substance by which it is tested, or, in other words, the kidneys work selectively and eliminate one substance better than the other. Thus it appears obvious that satisfactory permeability toward one dye cannot be considered as a uniformly correct index of the total sum of renal capacity. This fact alone should, in spite of the obvious practical advantages of the phthalein two-hour bladder test (ease of application, rapidity of elimination, quantitative colorimetric estimation of excreted dye), militate against the widespread acceptance of that test as the only means for determining total renal function.

More rational, therefore, because representing a general expression of total renal activity, are tests of retention, based on the quantitative determination of components of urine retained in the blood. Of this class of tests determination of the freezing point of blood (cryoscopy) appears to be the most comprehensive and, therefore, the most important method, since total secretory renal capacity is measured by determining the degree of retention due to renal insufficiency. This test has given us uniformly safe and reliable results substantiating the conclusions of our former publication on this subject.[2]

BLOOD CRYOSCOPY

Our technic for blood cryoscopy has remained practically unchanged. Through long practice we are enabled to keep the mixture of ice and salt at such concentration, as to insure a constant temperature of about — 4 C. (24.8 F.) during the entire course of the test. Aspiration of the patient's blood with needle and pipet was lately adopted, as facilitating and shortening the time of blood taking. The average length of time of actual determination for water or blood is, at present, reduced to about fifteen minutes for either test. Bartley's[3] modification of cryoscopic technic, which we fully tested, was abandoned as neither

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Rowntree, L. G.; Marshall, E. K., Jr., and Baetjer, W. A.: Further Studies of Renal Function in Renal, Cardiorenal and Cardiac Diseases, Arch. Int. Med., April, 1915, p. 543.

[2] Krotoszyner, Martin, and Hartman, G. W.: Practical Value of Blood-Cryoscopy for the Determination of Renal Function, The Journal A. M. A., Jan. 18, 1913, p. 188.

[3] Bartley: Arch. Diagnosis, July, 1913.

simpler nor more time-saving than determination with the ordinary Beckmann apparatus.

Since our last report 106 cryoscopic tests were made on 81 patients.

Of 66 patients with normal blood points, ascertained through 77 cryoscopies, 23 were operated on without death. The average point of these 23 patients was 0.557.

In 12 cases of incipient unilateral or bilateral kidney lesions of indefinite character (chronic nephritis, hydronephrosis, hematuria, etc.), an average point of 0.553 was ascertained.

The average point of 12 cryoscopies, done on 8 patients, with recovery following prostatectomy, was 0.561.

Of 15 fatal cases, 10 nonoperative deaths showed an average blood point of 0.62, while the average blood point of 7 cryoscopies, done on 5 operative cases, was 0.581. The average freezing point of the 31 cryoscopies, made on this class of cases, was 0.604; in 18 instances the point was above 0.58 and in 21 above 0.57.

Particularly important is the prognostic value of repeated cryoscopic examinations in functionally doubtful cases, which is best illustrated by two observations from our case records:

A man of 53 with the clinical diagnosis of prostatic cancer showed, on admission to the hospital, a blood point of 0.585, which, under bladder drainage, gradually went down[4] to 0.553. Suprapubic prostatectomy was followed by satisfactory recovery without recurrence within one year and two months.

In a man of 65 with the same clinical diagnosis the blood point increased from 0.574 to 0.580. Death occurred five days after prostatectomy with symptoms of renal insufficiency.

In 13 determinations of 9 cases of chronic nephritis during the stage of cardiorenal compensation, normal freezing points with an average point of 0.564 were obtained. Characteristic, too, for this class of cases is the prognostic value of the method, which is best evidenced by the recital of the following observation:

A nephritic of 60 entered the hospital with severe cardiac asthma, general anasarca, etc. His blood point of 0.573 fell under appropriate hospital regimen and with symptomatic improvement to 0.567; at the onset of uremic symptoms a point of 0.592 was ascertained, which rapidly rose to 0.620 prior to death in uremic coma.

All cases of nephritis, in which uremic symptoms were manifest, showed points gradually approaching 0.60 and above. The 5 patients in whom the blood point went above 0.60 died. In uremic coma followed by death very high points up to 0.70 were obtained. In two cases of deep uremic coma, tested shortly before death, the unusually high points of 0.790 and 0.826, respectively, were ascertained.

With our added experience we can simply reiterate the statement made three years ago that blood cryoscopy, if performed with faultless technic and interpreted by a critical observer, is a valuable test for estimation of total renal function.

BLOOD UREA

While quantitative determination of urea in blood was done systematically and with scientific accuracy by Strauss and others, methods used for that purpose were by far too complicated and technically difficult as to become available for clinical purposes. A few years ago Denis and Folin[5] introduced a simplified method; the test, though, assumed practical importance only through a new procedure as devised by E. K. Marshall, Jr.,[6] who utilizes the diastatic properties of urease, the enzyme of the soy bean, for the conversion of urea into ammonium carbonate, and finally into ammonia, which then is titrated against fiftieth normal hydrochloric acid.

In our determinations of blood urea we followed substantially Marshall's method. The technic of the test is comparatively simple, its greatest difficulty being the determination of the end-point of titration, in which accuracy is readily acquired with practice and experience. The normal content of blood urea, according to several authorities (Widal, Folin, Geraghty and others), varies between 100 and 500 mg. per liter, its upper limit being 500 mg.; values above that are considered to be indicative of urea retention, due to renal insufficiency.

We have made 43 blood urea determinations on 33 patients. In order to establish a standard of normal values we started our work by examining a number of normal patients, without any anatomic or functional renal involvement. Twelve such cases were tested and determinations were repeated in a number of these for purposes of control.

The values of all determinations for this class of cases ranged between 120 and 468, with an average of 236, thus demonstrating uniformly normal points.

In 5 cases of chronic nephritis without uremic symptoms, normal values, or an average point of 242, were obtained, while in 5 cases of uremic coma with death, abnormal points (542, 757, 936, 950 and 1,116), with an average of 860, were found.

In 6 cases of prostatic hypertrophy with residual urine, five of which were successfully prostatectomized, normal points with an average of 311 were ascertained. A prostatic with severe retention and marked urosepsis, who, on account of poor cryoscopic and phthalein values, was assigned to the interval operation, and who died shortly after preliminary suprapubic cystostomy, done under local anesthesia, showed, on two determinations, points of 486 and 301, respectively. A patient with prostatic cancer, who died from renal insufficiency, a few days after partial prostatectomy, demonstrated points of 168 and 420.

Five patients with unilateral or bilateral surgical kidney, one of whom died, showed normal values with an average of 231. In one of these cases, in which the necropsy revealed a bilateral pyelonephritis, values of 144 and 312 were obtained. In another patient with bilateral hematogenous kidney infection (colon), who entered the hospital with marked uremic symptoms (nausea, vomiting, drowsiness, etc.), and who rapidly improved under eliminative treatment, points of 396 and 226 were ascertained.

A patient with mercuric chlorid poisoning, with final recovery, showed a point of 214.

Our results with the blood-urea test practically coincide with those of other observers (Geraghty, Hinman) demonstrating values of about 500 mg. and below, in cases with normal renal function, and higher points, up to 1,000 mg. and above, in cases of renal insufficiency.

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[4] For simplicity the lowering of freezing points below normal is designated as "rise" and vice versa.

[5] Denis and Folin: Jour. Biol. Chem., 1912, xi.

[6] Marshall, E. K., Jr.: Jour. Biol. Chem., 1913, xv.

CRITICAL COMPARISON OF BOTH TESTS

A comparative study of the clinical importance of blood urea and blood cryoscopy must necessarily be based on the consideration of the significance of the two tests. Blood urea estimates renal function by quantitative determination of retention in the blood of a single, though admittedly, the most important constituent of urine; in renal insufficiency the test indicates pathologic accumulation of end-products of nitrogen metabolism, and, therefore, does not so much register the degree, course and variability, as merely the final stage of disturbed function. Blood cryoscopy, on the other hand, does not depend on retention of a single urinary constituent, but on the total sum of retained molecules; or, in other words, it measures renal secretory activity in its totality. On account of the narrow margin of freezing points between normal and pathologic values, the rise or fall of renal functional capacity can be followed by repeated cryoscopy, and the test assumes, by this means, a prognostic significance which is of the utmost importance for surgical purposes, since on its findings indications for rational therapeutic measures may be based. Blood urea, on the other hand, because simply demonstrating abnormalities of renal metabolism, to which the organism has been subjected in the past, and on account of its very broad range for normal values, is a less delicate index of variations in renal activity, and, therefore, lacks in prognostic finesse.

Thus, in a patient with prostatic cancer, who died a few days after prostatectomy, freezing points gradually rising to 0.580 were found, while the corresponding blood urea points ranged between the normal figures of 165 and 420. In a comparative study of a fatal case, of similar type, in which gradual deterioration of renal function was ascertained by freezing points rising from 0.540 to 0.611, the corresponding blood urea points varied between 288 and 542, values which are considered to lie still within normal limits.

In contrast to these findings, five patients with chronic nephritis, with death in uremic coma, showed for both tests high or pathologic points, thus giving parallel results.

The greatest objection which has been made to blood cryoscopy is the limited range of normal freezing points, which lie within 0.02 of 1 degree C., and on account of which the slightest inaccuracy in technic may vitiate the result. While this objection does not obtain with blood urea, because of its very broad range up to 550 mg., the drawbacks of the test, as pointed out above, are not offset by the technical difficulty of cryoscopy. After a long practical experience with blood cryoscopy we must admit that its technic is exceedingly delicate, and that correct determination of the end-point is only feasible after long and continuous practice; since differences exceeding 0.005 of 1 degree C. may considerably change interpretation of end-results. During the course of the test a great many precautions must be continuously observed in the handling of the apparatus, thorough skill in which can only be acquired by constant application of an intelligent operator with laboratory training. Everything in the performance of the test, therefore, depends on attention to detail, which, if neglected in the slightest, may entirely upset the end-result. As soon, though, as these technical difficulties have been mastered, the results assume a surprisingly uniform aspect and the test becomes, in experienced hands, a finer and more exact index of renal function than any other method of determination of total renal function. In determination of blood urea, on the other hand, the technic is rather gross and is easily learned and mastered, so that the average intern, after some experience, may obtain reliable results. We can, nevertheless, only partly agree with Hinman's[7] statement, which designates blood urea as the simplest, most defienite and most practical of tests of retention. It is certainly simpler, and therefore possibly more practical, but not more definite than cryoscopy, the technic of which is not so difficult as not to be within reach of every surgical assistant.

The tests supplement each other, and a parallelism in the results of both intensifies the significance of findings. We would, therefore, recommend, for doubtful cases, the performance of both tests as a routine measure.

CONCLUSIONS

1. Blood cryoscopy and blood urea run parallel in cases with normal renal function.
2. In renal insufficiency pathologic or high points are obtained with both tests.
3. The limited range between normal and pathologic points, while rendering technic of cryoscopy more difficult, increases its delicacy and prognostic significance.
4. Blood urea, while technically simpler, is, on account of the broad range of its normal and pathologic values, prognostically less precise.
5. Simultaneous application of both tests intensifies, in doubtful cases, the significance of findings.

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ABSTRACT OF DISCUSSION

Dr. Arthur B. Cecil, Los Angeles: I do not feel that a comparison can be drawn between the relative values of cryoscopy and blood-urea and methods of determining kidney efficiency by various dyestuffs. These methods are not opposed to each other. It is well understood that the kidneys have a great reserve power, and as long as that reserve power is not being exceeded, the patient will not clinically give signs of retention of products in the blood. A comparison might be made with a patient suffering with a valvular lesion of the heart. As long as he is at rest he seems perfectly well and does not show signs of broken compensation, but added strain exceeds the heart capacity for work. Now in the cases of the kidney, so long as they are not being overworked, cryoscopy and blood-urea will be normal, but if their efficiency is exceeded by a sudden strain there will be retention of the products in the blood. I think the only logical thing is, in the first place, to determine by cryoscopy or blood urea, as to whether the patient has exceeded his kidney efficiency, but in the absence of retention it does not mean that a patient is a good surgical risk, for he may not have the ability to take on extra work forced on him by operation. We must, therefore, determine how much the kidneys are worth from the reserve standpoint, and this is admirably determined by phenolsulphonephthalein. The kidney efficiency may be greatly reduced and the patient may appear quite well, but with the added strain of operation his kidneys are unable to take on their added work. In other words, he has broken compensation of the kidneys.

Dr. William E. Stevens, San Francisco: I think one of the most important lessons that the paper of Dr. Krotoszyner and Dr. Hartman teaches us is the necessity of combining the tests of retention with those of excretion. There seems to be a tendency among many at present to be careless in this respect. They place their dependence on the phthalein test, which, as we all know, is most popular in this country at the present time, and they think that by this test we can learn everything there is to know about kidney function; whereas, it fails many times to teach us anything. I have recently seen several cases in which the total phthalein output was 15 to 20 per cent., in one case even as low as 10 per cent. in two hours, and many patients in cases of that kind are denied the benefit of a prostatectomy when it is badly needed. The foregoing patient was operated on and recovered without complications of any kind in the usual length of time. If tests of retention had been made in these cases, without any doubt we would have found them normal. I agree with Dr. Krotoszyner and Dr. Hartman that we should combine the tests in every case.

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[7] Hinman: Surg., Gynec. and Obst., 1914, xix, 482.

Dr. Edgar G. Ballenger, Atlanta, Ga.: There are several factors apart from the technic of making these tests that are important for us to bear in mind. The quantity of water that a patient has been drinking before we make the test is one, and the amount of protein he has been consuming for the past few days is another. He may have dammed back much material that could have been disposed of by diuretics and purgation. We should consider whether or not he has been on a restricted diet, or whether he has had a fever that has burned up the material very rapidly.

Dr. Frank Hinman, San Francisco: I think this contribution of Dr. Krotoszyner and Dr. Hartman is a most valuable one. It is the first detailed comparative study, so far as I know, of cryoscopy and blood-urea.

Dr. Krotoszyner took an exception to a statement that I have made that blood-urea was the simplest and most valuable test of retention. I think from his study I will have to modify that statement and not say it is the most valuable. I think, however, that there is a distinction between the two tests in this way: cryoscopy undoubtedly will give a more definite prognosis, but cryoscopy will not give the information that blood-urea will give in regard to the form of retention.

The forms of retention are of three kinds, namely, nitrogen retention, retention of acids and retention of chlorids. In the examination of the blood the estimation of retention of nitrogen is most important but, at the time of the blood-urea determination the acids can also be estimated. A cryoscopy examination alone will not tell which form of retention is present, whether it is a retention of nitrogen, a retention of chlorids, or of acids; and knowledge as to what form of retention is present is most important in the treatment of cases. Prognosis is better established by clinical studies than by functional studies anyway, although the two should be used in conjunction. I think, however, that Dr. Krotoszyner's conclusion is probably just that cryoscopy is a much better test than blood urea from a prognostic standpoint.

Dr. George W. Hartman, San Francisco: Of course there is no one test that will anticipate what is going to happen in case of possible shock. It would seem after following this work closely that if there is any possibility of prognosticating ordinary cases, cryoscopy does that to the best advantage.

There have been cases suggested in the paper, and also mentioned by Dr. Stevens, in which the phthalein output was very low; others in which, on a standardized diet, urea was forbiddingly low. Had we relied on either of these tests alone we certainly should not have operated. In the presence of normal cryoscopies we proceeded and the patients did very well. The application of cryoscopy seems to be best in those old cases in which one might expect to have bad renal function—I mean old prostatics. In almost all of those patients the results have been unerring. In only one operative case in the last five years in which the cryoscopy was minus 0.58, or below, did the patient die. There is an unerring accuracy in cryoscopy. The normal values usually fall within certain limits, and we have made determinations on cases known to be normal time and again, the results always agreeing. It is surprising how one can do cryoscopies on the same patient at intervals of a week and find that the result will come within three one-thousandths of one degree.

In regard to the technic, if one does not get satisfactory results after one or two attempts one should not abandon it. It is a delicate test, because it deals with a thermometer that registers thousandths of a degree. In the course of time one acquires requisite ability. It requires nothing but practice.

I resent gently any suggestion that an attempt was being made to shove the diagnosis of these cases on to the laboratory. I am not a laboratory man primarily, by any means. I think our cases are studied as carefully clinically as they are ever studied from a laboratory standpoint. We make our diagnosis before we attempt this work. I think if you want to draw an age line, you might say that it is not necessary to do blood cryoscopy in patients under 50 years. When you get an individual past 50 it is extremely valuable, especially as regards prognosis. Some patients come in, especially old prostatics, who deserve to be operated on, and I am quite sure that if they were operated merely on a clinical diagnosis, they would not do well. We have put them to bed, put them in good shape, and then they have been operated on and recovered.

Dr. W. F. Braasch, Rochester, Minn.: It is with some hesitation that I speak on this subject, because I have not had much experience with cryoscopy. I have had some experience with blood-urea in the estimation of renal function, and also with phthalein. Our experience on the whole has not been in keeping with the trend of recent literature concerning the value of functional tests. So far as an aid to prognosis is concerned, after all is said and done, clinical judgment and experience, based on surgically fundamental principles, is the best guide as to whether or not to operate. There is no laboratory functional test of the kidney which will tell whether or not to operate in the face of clinical symptoms. That we have been correct in our principles has been proved by the comparative operative results in a large series of cases. That does not mean that we pay no attention to the renal functional capacity. We do so, however, by clinical means. It is generally recognized that in the presence of residual urine prostatectomy should not be done without preliminary drainage of the bladder. Immediately following drainage the patient loses in weight and strength and there will be an abundance of clinical evidence to show that the patient is undergoing a period of renal insufficiency. The percentage of phthalein output will decrease and that of the retention tests will increase. This evidence, however, will seldom be present without the more apparent clinical evidence, and is unnecessary. When the patient overcomes the stage of functional depression, his weight and strength return, his appetite improves and it is usually quite apparent that his general condition will warrant operation. Whether or not the phthalein test remains low, or whether the urea test remains high, would not contraindicate an operation. While we should not disregard these various tests entirely, clinical experience has shown that they are only of secondary value in molding our clinical and surgical judgment.

Dr. Fred R. Charlton, Indianapolis: I am moved by Dr. Braasch's remarks. Some years ago one of our best authorities on urinalysis laid great stress on epithelium coming from the ascending loop of Henle or the descending loop of Henle and endless discussion grew out of such studies. As a matter of present day fact it did not make one bit of difference which loop of Henle the debris came from. It was in a way a scientific study, but it had no value prognostically and little otherwise even if the claims of differentiation had been true, which they probably were not. About that time Dr. Richard Cabot, of Boston, came out with the statement that he would rather depend on the total amount of urine passed in twenty-four hours, plus its gross appearance, and its chemical reaction, than on all the fine spun urinalyses that were being made. That publication came to many as quite a shock, but none the less I know that it did me a great deal of good, and I believe that it brought us back to a normal appreciation of what our business has to do with. I could not go into a physical laboratory and carry on the many studies that are now being carried on with great credit, and it is not my idea to take away one word of credit from the men who are doing this sort of work. However, it is a very easy thing to hold a nickel in front of your eye and blot out the sun. You are so wrought up with your enthusiasm that you forget everything else. I took up the kidney functional test somewhat tardily, after others had already published their series of cases. Since then it has seemed to me that in so far as the phthalein test was concerned, it prognostically made very little difference, and those with low phthalein that I operated on, because they seemed otherwise suitable cases and because they needed it, went on and recovered regardless of the phthalein findings. I have had two cases with a high phthalein output, one with forty-five and one with fifty, and they both died from an unassignable cause, other than renal insufficiency. While I believe that these pure laboratory studies are of tremendous value and that the men who are doing them should receive our heartiest appreciation, I do not believe I would hesitate because of a low phthalein output to operate where my clinical judgment said it was necessary. We have no right to disregard all our earlier clinical values whenever the latest laboratory claim is set up.

Dr. Louis E. Schmidt, Chicago: I would like to say that I agree with every word said by the two previous speakers, particularly Dr. Braasch, who went into details scarcely necessary for me to repeat; but there is no question that all of these methods of examination are completely secondary. I do not believe there is any general or genito-urinary surgeon who will refuse to operate on a patient if any one of these methods of examination should not bear out one or another theory.

In regard to cryoscopy, it is simply a routine method of examination. It is certainly fascinating, equally so as the phthalein test. I hardly think a day passes that I do not do more than one. The reason I mention that is this: it is not a method involving any great amount of work. I think it is a method that can be carried out just as quickly and as easily as any other. If anyone is interested in keeping up with work of this kind I think it is well worth while to make as many of these tests as possible, because in the future certain conclusions may be derived from these various findings.

Dr. A. J. Crowell, Charlotte, N. C.: The discussion brings out a fact that I tried to emphasize in my paper, that every available means at our command should be used in arriving at a diagnosis and ascertaining the best surgical procedure to pursue, and when to operate, but we must not depend on any one of them. I, like Dr. Braasch, think we should throw great stress on the clinical symptoms, yet I do not believe that any one of the means or aids at our command should be excluded in arriving, not only at our diagnosis, but in assisting us in deciding when to operate and what to do.

Dr. Granville MacGowan, Los Angeles: The condition of men who require prostatectomy, and the condition of the many people who have obstructive lesions in the anterior or posterior urethra, are very lamentable. It requires often a great deal of judgment to care for and preserve their lives. They will all die if you do not operate on them and many of them will die if you do, or do too much at one time. Much of your judgment must depend necessarily on the results of investigations which you make of the ability of the kidneys to keep the man alive. All people with chronic obstruction of the posterior urethra are already poisoned. They are to a certain extent immune to their infective organisms, but they are not immune to an extra accumulation of urea in the blood.

A surgeon who sees further than the local conditions will learn much of value in the formation of his judgment. If one simply tests the kidneys to find out how large a percentage of phthalein or of indigocarmin will pass through in a certain time, and bases operative interference on that alone, he will be chagrined to lose some patients in whom the output of phthalein is high, and, on the contrary, he will be astonished sometimes where there is a low output of phthalein to see an undisturbed convalescence. If the patient is drained preliminarily and the color tests applied, then the blood-urea tests, and if the surgeon possesses the technical skill, cryoscopy, material is gathered which when added to one's clinical knowledge and experience of general diseases, enables one to determine exactly what the clinical status of the individual is. Thus and thus only the operator will do the best for himself and also do the best for his patient, for he has neglected nothing bearing on the case, thereby becoming a successful operator, and the patient will recover from the troubles for which he seeks operation.

Probably the wisest genito-urinary specialist who ever lived was Albaran. In perfecting his judgment as to operative interference he depended almost entirely on the ability of the kidneys to secrete water under force, and on the output of urea in the urine under such forced output. This is something that you must not overlook. Practically we depend on the water output, on the estimation of urea in the urine, on the ability of the kidneys to put out phthalein and on the clinical appearance of the patient. I regard them all as necessary, and I look with favor on the usefulness of cryoscopy.

Dr. Martin Krotoszyner, San Francisco: I beg to take exception to Dr. Hinman's statement, that he considers blood-urea estimation preferable to cryoscopy as a guide to rational treatment. From my experience with blood-urea, although it is not as extensive as that with cryoscopy, I am, on the contrary, fairly well convinced of its superiority for therapeutic purposes. I agree with Dr. Stevens that too much stress is laid, especially in this country, on the exclusive use of phthalein, and also with Dr. Braasch, who warns against overestimating the evidence furnished by any or all laboratory tests. It is, for instance, a fact that by the exclusive use of the phthalein test, as it is at present done dogmatically in every clinical case of surgical kidney, some cases may be robbed of the benefit of a life-saving operation. The value of functional tests is not exhibited in clinically clear cases, which as a rule, can be sent to the operating room after a brief and more perfunctory functional study. However, the great value of determining kidney function becomes apparent in the clinically doubtful cases and particularly in those in which the prognosis is dubious. For these purposes we have found cryoscopy to be a valuable guide as indicating the reserve capacity of the kidneys. There, in reality, lies the most important aid that we can expect from any functional test, and since cryoscopy has apparently given the best results in this respect, we have, in spite of its technical difficulties, tenaciously clung to it and shall continue to do so in the future, unless we become convinced that equally good results are obtainable by another procedure.

Cancer Statistics.—On the Continent of America we also see a corresponding increase in the death rate from cancer. In New York the death rate from malignant disease in 1913 was 82 per hundred thousand of the total population, whereas for the previous five years the average was 79; in Boston it was 118, as compared with an average for the previous five years of 110; in Pittsburgh, 79 per hundred thousand, as compared with 70 for the previous five years; in Baltimore, 105 as compared with 94 for the previous five years; in Chicago, 86, as compared with 81 for the previous five years; in Philadelphia, 95, as compared with 88 for the previous five years; and in St. Louis, 95 per hundred thousand, as compared with an average of 85 for the previous five years. The mortality statistics for the whole of the United States give in 1900 a death rate from cancer of 63 per hundred thousand of the total population; in 1904, of 70.2; in 1909, of 73.8, and in 1912, of 77 per hundred thousand.—W. H. B. Aikens, *Practitioner.*

TRAUMATIC SEPARATION OF THE NERVE ROOTS FROM THE SPINAL CORD

REPORT OF A CASE

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The tearing away of the nerve roots from the spinal cord is, fortunately, a somewhat uncommon accident. When it does occur, however, the diagnosis should be made without much difficulty. In spite of the ease with which the diagnosis is made, the condition is often overlooked. In only a few instances has the diagnosis been verified at operation or at necropsy. Mills[1] reported a case in which operation had been done, and later Frazier and Skillern[2] also published a report of the same case. Of the twenty-three cases found by Frazier and Skillern in the literature on the subject, only one afforded an opportunity to determine at necropsy the extent of the damage done to the nerve trunks.

F. F., man, aged 36, was admitted to the Orthopedic Hospital and Infirmary for Nervous Diseases, May 28, 1912. He gave the following history: In 1907 he had fallen between some machinery, and his left shoulder and left arm had been severely wrenched. Any further details could not be elicited. Immediately after his accident the whole left upper extremity became paralyzed, and severe neuralgia set in and has continued ever since.

When examined, his left arm was found to be powerless and hung at his side. All the muscles of the left hand and forearm were totally paralyzed, as were also the serratus magnus, biceps, triceps and brachialis anticus. The deltoid and latissimus dorsi muscles retained considerable power, although they were weaker than the muscles of the opposite side. The rhomboids and the upper part of the trapezius contracted well. Movements of the left pectoral muscle were abolished.

The reaction of degeneration was found to be present in all the muscles of the hand and forearms, and the biceps, pectoralis major and triceps. The supraspinatus and infraspinatus and the latissimus dorsi and deltoid did respond to the faradic current, but not so readily as on the sound side. The rhomboids reacted normally.

The result of the ocular examination made by Dr. Langdon was as follows: The left palpebral fissure was narrower than the right, and the left eyeball seemed to be slightly contracted. The left fissure measured 9 mm., the right, 8 mm. The pupils were unequal in size, the right one measuring 3 mm., and the left one being slightly smaller. Both pupils reacted promptly to light, and accommodation was normal. Two drops of a 4 per cent. solution of cocain caused the left pupil to dilate 6 mm., but the same amount instilled into the right eye caused the pupil to dilate only 4 mm. Two drops of a solution of homatropin hydrobromid, 8 grains to the ounce, dilated the pupils equally, each measuring 6 mm. Measurements taken with the exophthalmometer showed that the left eyeball protruded 16 mm. and the right 17 mm. The optic disks were normal. Vision: O. D., 5/10; O. S., 5/6. The extra-ocular muscles were entirely normal.

Cutaneous sensation was completely abolished below the point corresponding to the insertion of the tendon of the deltoid on the outer side of the arm. Sensations of deep pressure were lost. The ability to recognize movements of the fingers, wrist, and elbowjoint was totally destroyed. The hand was swollen and cold and a purplish-red.

The patient complained bitterly of deep-seated boring and gnawing pain, which seemed to be localized to the palm of the hand and wrist. There was no tenderness, and movement or manipulation of the arm did not influence the pain. The patient described the pain as being constant and deep-seated, sometimes extending up to the elbow, and varying slightly in intensity from time to time.

An operation was decided on for the purpose of exploring the region of the brachial plexus.

June 10, 1912, Dr. William J. Taylor exposed the main trunks of the brachial plexus in the neck, just above the clavicle. On being exposed, the middle and lower trunks appeared to be involved in fibrous tissue. A small portion of the inferior trunk was resected, the adhesions were broken up, and the ends were reunited by suture.

After the patient had recovered from the operation, he was examined for further changes of sensation and motion. The same results were secured as before the operation: resection of the nerve trunk did not produce any additional anesthesia or motor paralysis, but the neuralgia did abate considerably—in fact it almost disappeared for two weeks, after which it gradually returned, and was just as severe as before operation.

After the resected portion of the nerve had been stained with hemalum and fuchsin, and by the Van Gieson and Wiegert methods, it was examined microscopically. The entire cross-section of the nerve trunk was found to be degenerated; not a single normal axis cylinder could be recognized, and there was marked proliferation of the endoneural connective tissue.

The neuralgia did not improve, and the patient continued to complain so much of the uselessness of his left arm that in August, 1912, it was amputated 4 inches above the elbow. The stump healed by first intention.

The nerves of the amputated forearm were dissected out and examined microscopically. The ulna, radial, median and muscle-spiral nerves did not appear to contain a single normal axis cylinder, and there was pronounced overgrowth of fibrous tissue. Degeneration was complete. The degenerative process in these nerves was exactly similar to that found in the resected portion of the inferior trunk. No difference was found in sections taken from any part of these nerves, the peripheral and the proximal portions presenting the same appearance.

The patient was again examined for sensation, and it was found that the upper limits were the same as before operation. The neuralgia seemed to subside somewhat for a few days, only to recur with equal intensity. After the amputation the patient insisted that he still felt the presence of the left hand and fingers, and that the pain seemed in the palm of that hand just as it was before operation. It felt, he said, as if the left thumb was tightly flexed and was boring into the palm of the hand. When asked to place his right index finger on the spot where the pain was felt, he indicated the inner side of the stump of the left arm. The pain was well localized and always located at the same point on the stump. Before amputation there was no contracture of the thumb and fingers of the hand, and they could be freely moved by the examiner, but not by the patient.

The profound motor paralysis and the complete anesthesia, together with the sympathetic paralysis of the eye on the afflicted side, would seem to indicate that the lesion must have been situated proximal to that point at which the posterior thoracic nerve is derived from the fifth, sixth and seventh anterior cervical roots, for the serratus magnus muscle was paralyzed; furthermore, the lesion must have been proximal to the point at which the sympathetic fibers arise from the eighth cervical and first thoracic roots. The deltoid was affected, but a portion of its function was still preserved; all the remaining muscles of the upper extremity, however, were paralyzed. The area of anesthesia conformed to the distribution of the fifth, sixth, seventh and eighth cervical and the first dorsal roots.

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[1] Mills: Pennsylvania Med. Jour., August, 1911.

[2] Frazier, C. H., and Skillern, P. G.: Supraclavicular Subcutaneous Lesions of the Brachial Plexus Not Associated with Skeletal Injuries, The Journal A. M. A., Dec. 16, 1911, p. 1957.

It seems evident, therefore, that at the time of the accident the anterior and posterior roots, from which the brachial plexus is derived, had been torn away from the spinal cord. As the deltoid and the rhomboids were not totally paralyzed and the cutaneous sensation was only partially destroyed in the area supplied by the fifth cervical posterior root, it is probable that neither the anterior fifth cervical root nor the posterior fifth cervical root was completely ruptured. Conductivity through these roots, though imperfect, may still have been retained.

This case furnishes additional proof of the accuracy of the present-day teaching that when an anterior spinal nerve root is cut, all the fibers below the point of section die. The distal portion of the root degenerates completely. When the posterior root is cut, all the fibers proximal to its ganglion and between the point of section and the spinal cord die, whereas all the fibers between the divided portion and the ganglion still live. Nevertheless, having been separated from the cord itself, sensations can no longer be conveyed to the brain. It is obvious, therefore, that so long as pain persists, this communication cannot be entirely destroyed; in this case probably portions of one or two posterior roots were not entirely ruptured.

In cases such as that just described, the treatment must be directed merely toward relieving pain. This can be accomplished only by complete section of the intraspinal sensory roots already injured, but still capable of conducting painful sensations. Alcoholic injections into the peripheral nerve trunks would have had no effect, since degeneration had already taken place.

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A PLEA FOR CHOLECYSTECTOMY

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Ochsner,[1] in his "New Manual of Surgery," states: "Cholecystotomy is the operation of choice for removal of stones from the gallbladder." Experiences in the past year convince me that cholecystectomy is the operation of election for cholelithiasis. In 1887 the first excision of the gallbladder was performed by Langenbuch for carcinoma. Since that time the operation has been performed by ever increasing numbers of surgeons. The presentation of a plea for its even more frequent performance is the object of this paper.

In approaching the subject a brief review of the facts known about the gallbladder is of value. The gallbladder, with the liver and pancreas, develops from that part of the fore intestine which later becomes the duodenum. The bile duct and the pancreatic duct drain conjointly into the duodenum at the ampulla of Vater; hence the gallbladder, pancreas and duodenum are anatomically closely related. The bile and pancreatic juice are great factors in the complicated process of digestion, and stimulation of the splanchnic nerves will inhibit the flow of each. Each of these organs, having a common origin, is possessed of the same nerve supply.

The function of the gallbladder is, as yet, not completely known. The physiologists maintain that its main object is the storing of the bile until needed for digestion. J. B. Murphy thinks its action is similar to that of the secondary bulb in a bellows, that is, to maintain a steady, even pressure. This theory is ingenious. At operation, however, the gallbladder is not always found in a state of tension; not infrequently it is seen almost collapsed. The maintenance of secondary bulb action is not absolutely necessary to the individual, as patients from whom the gallbladder has been removed can testify.

The mucous membrane of the gallbladder secretes a clear fluid, which is undoubtedly of some use to the human organism, but this fluid is not a vital necessity to an individual. Mayo[2] has suggested that the organ, like the appendix, is an "obsolescent" stage of human embryology. This sounds reasonable.

The pathology of gallbladder disease has been clearly set forth by MacCarty[3] and reference to his article is desirable. Given a pathologic gallbladder, what should be the choice of operative procedure? Convincing arguments lead to the adoption of cholecystectomy as the ideal procedure, and the relegation of cholecystostomy to a position as an operation of necessity — just as drainage of an appendix abscess without appendectomy is necessary at times, but not ideal. There are certain conditions associated with pathologic gallbladder in which cholecystectomy is contraindicated. In acute and chronic pancreatitis of an advanced type biliary drainage is of distinct advantage, and cholecystectomy out of the question.

In cases in which there is an insurmountable obstruction of the common duct it is self-evident that cholecystectomy would be a fatal procedure. The objectors to cholecystectomy do not, in my opinion, present a very strong case. They state that the gallbladder is a necessary part of the body and therefore should not be removed. Moynihan[4] answers this argument succinctly: "The gallbladder is devoid of any strikingly useful purpose."

A very important statement by the advocates of cholecystotomy is that cholecystectomy is more dangerous. Crile[5] says:

> . . . in cases of acute cholecystitis, with protective adhesions, in which the cystic duct is obstructed, cholecystectomy will give a higher mortality than will mere drainage of the gallbladder, for the reason that during the excision of the viscus, even with the most careful technic, it is necessary to traumatise the surrounding tissue to such an extent that the local immunity of the tissues is impaired. . . . In such cases it is probably wiser to merely drain the gallbladder, interfering with the local tissues as little as possible. Later, if necessary, the gallbladder may be excised.

It has been my experience that even in such cases cholecystectomy is safer. I have never yet been able to find a trochar which did not leak around its puncture site, and have always felt that the danger of peritonitis from cholecystotomy was greater than from cholecystectomy. It is not possible to do a cholecystotomy without soiling the field to a greater or less extent. Moynihan states, following the previously given quotation from him: ". . . and its (the gallbladder) removal does not add appreciably to the danger of the operation."

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[1] Ochsner: New Manual of Surgery, Ed. 4, Chicago, Cleveland Press, 1915, p. 517.

[2] Mayo, W. J., and Mayo, C. H.: Keen's Surgery, iii, 991.

[3] MacCarty: Collected Papers, St. Mary's Hospital, 1910, p. 181.

[4] Moynihan: Abdominal Operations, Ed. 3, Philadelphia. W. B. Saunders Company, 1914, ii, 289.

[5] Crile: Surg., Gynec. and Obst., 1914, xviii, 430.

In defense of cholecystostomy the statement is made that true reformation of gallstones is rare.[6] I believe this to be true. Recurrence of symptoms is, however, not rare. Finney[7] writes:

> When we add to the mortality of secondary operations performed after cholecystostomy, the number of which is undoubtedly greater than after cholecystectomy, there is probably little to choose from in respect of the mortality rate between the two. There is always an appreciable percentage of recurrences of gallstones after cholecystostomy, probably less than 1 per cent. But many overlook, of course, doing an operation in which the gallbladder is not responsible for symptoms.

It is urged against cholecystectomy that conditions may arise in the upper quadrant when the need of drainage is urgent, but impossible, on account of the earlier removal of the gallbladder. This is so rare that it can be disregarded. It would probably be more apt to occur if the gallbladder were left behind, as this organ, in my opinion, is the cause of many of the troubles in the epigastric region.

Cholecystectomy has many advantages over cholecystostomy. Primarily, cholecystectomy, in cases of cholecystitis, with or without gallstones, removes from the body the natural habitat of gallstones, the place where the majority of said stones foregather; hence, it takes away the main chance of recurrence and gives the most likelihood of permanent cure.

The most striking advantage of cholecystectomy and the obvious one to the operator is the immediate convalescence. The patient on whom a cholecystostomy has been performed goes back to bed with rubber tubing ¼ inch to 1 inch in diameter and 2 or 3 feet long emerging from his belly. This is attached to a drainage bottle and pinned, to prevent its pulling out of the gallbladder, to the sheeting. For from seven to fourteen days, and perhaps longer, in some cases, this tubing remains, constantly tugging and pulling on the tender wound, causing untold agonies. After removal of the drainage tube the abdominal wall is bathed in biliary discharge, dirty and sticky, if not irritating — on the whole a rather miserable existence for a person of fine sensibility.

Contrast that picture with that of the immediate convalescence in cholecystectomy.

The abdominal wound can be closed without drainage or at most a small cigaret drain for forty-eight hours. This makes the convalescence immeasurably more comfortable and also shortens it greatly.

Some months ago I made a cholecystostomy for cholelithiasis. Ten days later, two cholecystectomies were performed for similar conditions, and both these patients left the hospital over two weeks before the cholecystostomy patient.

A young woman on whom a simultaneous appendectomy and cholecystectomy were done was out of bed on the fifth day and left the hospital on the seventh day, feeling very well, with the wound entirely healed. It is impossible to get any such result from a cholecystostomy. Hence, cholecystectomy has an economic advantage in lessening the stay of the patient in the hospital.

The higher mortality for cholecystectomy quoted by the majority of writers is due not to the operation per se but to the delay in reaching operative interference.

Deaths from appendicitis are due to delay, not to the operation performed, be it excision or drainage. This is the case with cholecystitis.

The public should be educated concerning diseases of the gallbladder, as it has about appendicitis, and there is no doubt that it will respond as quickly.

The series of cholecystectomies on which I base this paper number seventy-seven. In these there have been but two deaths. One death occurred in a case in which the gallbladder had spontaneously anastomosed with the duodenum, and, after closing the opening in the doudenum and removing the gallbladder, I found carcinoma obstructing the common duct. This death was due to bad judgment, not to the cholecystectomy per se.

The second death occurred in a case of cholelithiasis, in which the patient went to the operating table without the proper previous medical examination. No operation of any kind would have been performed if the status of kidney and heart had been known previous to operation. Cooperation between medical and surgical science in hospitals is absolutely necessary to good operative results.

In two of the cases, in addition to the cholecystectomy, both an appendectomy and a gastro-enterostomy were done at the same time.

VIABILITY OF BACILLUS TYPHOSUS IN ICE CREAM *

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The use of various frozen foods and confections in which milk and milk products serve as a basis or constituent has become so great as to demand serious attention from sanitarians. The persistence of the typhoid bacillus in milk and milk products is well known, and many cases and epidemics are recorded which have been transmitted by this food. It is also known that *Bacillus typhosus* is not a normal inhabitant of milk. In only one instance,[1] and this is not accepted by some bacteriologists, has *Bacillus typhosus* been demonstrated in the flesh and organs of the cow. Through polluted water, from the hands or person of convalescents or carriers, or in some similar way the bacillus gains entrance into milk. In other words, *Bacillus typhosus* in milk and milk products comes from human sources. It is for these reasons that the milk products which are handled the most are the most liable to contain the micro-organism.

Ice cream is a complex mixture, the number of ingredients being variable. Because of the liability of contamination, great care should be used in its preparation. That great care is not always exercised was shown by Wiley[2] in 1906-1907, who found that in the city of Washington of a number of places manufacturing ice cream three were clean, nineteen were dirty, sixteen were fair and nine filthy. Wherever investigations have been made in places where regulations or their enforcement were lax, conditions have not been found highly satisfactory.

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[6] Stanton, E. MacD.: Ann. Surg., February, 1915.

[7] Finney: Canada Lancet, 1913-1914, xlvii, 892.

* From the Department of Preventive Medicine and Hygiene, Harvard Medical School.

[1] Levy and Jacobstahl: Arch. f. Hyg., 1902, xliv. Hirschbruch and Marggraf: Arb. a. d. k. Gsndhtsamte., 1913, xliii, 623.

[2] Wiley: Washington Med. Ann., 1908-1909, vii, 61.

The bacterial count of ice cream is usually high, but is much lower with cleanly prepared products. The presence of such a large number of bacteria complicates experimental study. Bahlman[3] found that other substances besides milk, particularly gelatin, frequently contain a large number of bacteria, but because of the amounts used, that milk and cream are the main sources of bacteria.

The impossibility of excluding other probable sources of infection makes epidemiologic studies of supposed ice cream epidemics unsatisfactory. There are five instances in the literature in which ice cream is mentioned as acting, or possibly acting, as a conveyor of typhoid fever. Turner,[4] in 1892, reported an epidemic of typhoid fever which to his mind was transmitted through ice cream. This outbreak occurred in the Sanitary Districts of Greenwich and Rotherhithe, England. An extensive investigation was made by Turner and other health officers with the result that they believed nothing but ice cream sold by Italian venders was responsible for the epidemic. Several of the Italians had typhoid fever in their families; one dealer had two cases which occurred just before the epidemic.

Munro[5] studied an epidemic of 800 cases of typhoid fever which occurred in Mid-Renfrewshire, England, in 1893. The water supply was found polluted, but it was thought that eighty-six of the cases were traceable to ice cream.

Hope,[6] in 1898, investigated an epidemic of nineteen cases of typhoid fever which occurred in the suburban district of Knotty Ash, near Liverpool, England. With the exception of temporary closets, which were used while the drainage system of the school was being repaired, and a foul brook nearby, no possible source of infection was noted until the evidence pointing to ice cream sold by an Italian vender at a fair was obtained. All the sick were schoolchildren, and all of them had been to the fair. Hope states that the water and milk supplies could be excluded.

Behla[7] reported an epidemic caused by whipped cream and ice cream.

Rosenau[8] makes the following mention of ice cream: "Freezing kills only a certain percentage of typhoid bacilli. In Washington several cases of the disease were traced to ice cream."

The epidemiologic studies are not numerous or extensive enough to be very valuable. Some of them are highly suggestive, but the evidence cannot be considered as certain proof of ice cream transmission.

EXPERIMENTAL DATA

In order to study the viability of *Bacillus typhosus* in ice cream, six mixtures were frozen. *Bacillus typhosus* was then incorporated in the preparations. Samples of 100 c.c. were removed from each and placed in covered glass containers, and these were packed in a salt and ice mixture. The temperature throughout the experiments varied from 3 to 4 below zero Centigrade.

Experiment 1.—Ice cream was made according to a formula in Fannie M. Farmer's cook book. One-half teaspoonful of flour, a few grains of salt and one-half cup of sugar were mixed, and to this were added half an egg, slightly beaten, and 1 cup of scalded milk. The mixture was then cooked in a double boiler for twenty minutes. When cool, 1 pint of thin cream and 1 tablespoonful of vanilla were added. The mixture was then frozen. The number of typhoid bacilli added was 70,000 to each cubic centimeter of ice cream. Samples were removed twenty-four hours after inoculation and plated on Endo's medium and plain agar. Many typical typhoid colonies were present on the Endo plate. Subsequent culture and agglutination proved the bacteria to be typhoid bacilli. The total bacterial count was 450,000 per cubic centimeter. After four or five days the ice cream became separated into a watery and a cream layer. This separation occurred after each examination when the preparation was well stirred and the different layers thoroughly mixed. *B. typhosus* was recovered for the last time on the twelfth day after inoculation. No attempt was made to study the percentage of *B. typhosus*, but it was easily noted that a gradual decrease took place. At the time of the last isolation, the total bacterial count was 900,000.

Experiment 2.—Ice cream made with 1 pint of thin cream, one-half cup of sugar and 1 tablespoonful of vanilla was treated similarly to the ice cream in Experiment 1. To each cubic centimeter of the ice cream 70,000 typhoid bacilli were added. The total bacterial count, twenty-four hours after inoculation, was 300,000, and many typical typhoid colonies appeared on Endo plates. Subcultures and agglutination were positive. The last isolation, thirty-nine days after inoculation, showed very few colonies of any kind, and the total bacterial count was only 16,000. The ice cream showed the same separation as that of Experiment 1.

Experiment 3.—To an ice cream made like that of Experiment 1, except that to the quart 1 level tablespoonful of Knox gelatin was added, 40,000 typhoid bacilli per cubic centimeter of ice cream were introduced. The ice cream was kept like that of previous experiments. After twenty-four hours the total count was 660,000, and Endo plates yielded many colonies which proved to be typhoid bacilli. The ice cream remained quite hard for about ten days and then softened, became separated into layers, was semifluid and stringy. *B. typhosus* was isolated for the last time twenty-five days after inoculation, and the total bacterial count on that day was 5,600,000.

Experiment 4.—Ice cream was made like that of Experiment 2, except that to the quart 1 level tablespoonful of Knox gelatin was added. To each cubic centimeter of the ice cream, 40,000 typhoid bacilli were introduced. Packing and storage was the same as in other experiments. After twenty-four hours, the total count was 1,200,000, and a large number of typhoid colonies, as shown by subsequent tests, were present on Endo plates. The consistency of the ice cream remained about the same as that in Experiment 3. The number of typhoid bacilli gradually decreased, and the last positive examination was made twenty-one days after inoculation. The total count at that time was 500,000.

Experiment 5.—Ice cream was made the same as in Experiment 1, except that pasteurized milk and cream were used and nine grams of "Flake" were added to the quart. Flake is a powder prepared by the Murray Company, 224 State Street, Boston. According to a circular accompanying the powder, the preparation "is a pure, wholesome powder, which can always be relied on, and is essential in making an exquisitely smooth ice cream." To each cubic centimeter of the ice cream, 320,000 typhoid bacilli were added. It was then packed and stored. After twenty-four hours the total count was 1,440,000, and typhoid colonies were numerous on Endo plates. After a few days the ice cream became quite soft, and separated into a watery and a cream layer. Examinations made every few days gave positive results until thirty days after inoculation, when the experiment was discontinued. The total count at the time of the last examination was 990,000.

Experiment 6.—To a preparation like that of Experiment 1, except that pasteurized cream and 9 gm. of Flake to the quart were used, *B. typhosus* to the extent of 320,000 per cubic centimeter of ice cream was added. After storage for twenty-four hours, the total count was 1,600,000, and typhoid colonies were numerous on Endo plates. The last positive result was obtained twenty-seven days after inoculation, when only one subcultural colony from the Endo plate proved to be *B. typhosus*. On the date of the last finding, the bacterial count was 1,060,000. After a few days' storage this ice cream showed the same changes as that of Experiment 5.

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[3] Bahlman: Am. Jour. Pub. Health, 1914, iv, 1009.
[4] Turner: Practitioner, London, 1892, xlix, 141.
[5] Munro: Public Health, London, 1894-1895, vii, 30.
[6] Hope: Liverpool Med.-Chir. Jour., 1898, xviii, 185.
[7] Behla: Klin. Jahrb., x, 256.
[8] Rosenau: Preventive Medicine and Hygiene, New York, D. Appleton & Co., 1913, p. 90.

All of the preparations had about the same odor at the beginning. They were pleasant smelling, owing largely to the presence of vanilla. After a few days they began to lose their sweetness of odor, and at the time of the last examinations they gave off mildly unpleasant odors.

CONCLUSIONS

1. *Bacillus typhosus* survives in ice cream for varying lengths of time, in the recorded experiments from twelve to thirty-nine days. It is plain, therefore, that ice cream may easily transmit typhoid fever.

2. The findings emphasize the necessity of strict cleanliness in the manufacture of ice cream, and the importance of pasteurization of milk and milk products used in these mixtures.

1011 Madison Street.

TYPHOID FEVER RESULTING FROM INFECTION OF AN UNPASTEURIZED MILK SUPPLY

REPORT OF A SERIES OF FIVE CASES

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This series of five cases of typhoid fever is reported merely to emphasize (1) the dangers of an unpasteurized milk supply, and (2) the necessity of reporting contagious diseases to the proper authorities. The details of the onset, the incidence of age, sex, etc., are in the records of the division, but are unnecessary in this brief report.

Late in January and early in February, 1915, five cases of typhoid were reported to this division, each one of the patients having received his milk supply from the same dealer. This, with the explosive character of the outbreak, made us suspect that infected milk was the cause. With this in mind, the following plan of investigation was outlined: first, investigation of the milk depot; second, of the dairy from which the milk came, which was located 90 miles from Cleveland; third, of the cases and their relation to other people to exclude contact; fourth, of the train-men; fifth, of the handlers at the depots at the shipping and receiving points.

This procedure, including detailed data concerning the families of those inspected, yielded negative results until the handler who took the cans from the train in Cleveland was seen. He stated that his wife had been ill about eight weeks with "what the doctor said was typhoid fever," but the doctor failed to report to the health department. He said also that he had been given permission by the dealer to open the cans and take such milk as he required from them, and that this had been done both before and after and during his wife's illness. Two weeks previous to the onset of her illness he had been off duty himself for five days with what he thought was the grip, but no doctor's diagnosis is obtainable. The Widal on his blood gave a suspicious test, and on that of his wife a positive test in dilution as high as 1 : 100. Stool examinations in both cases were negative, but were first taken several weeks after the onset of the disease. We feel justified, however, in believing that these five patients, of whom one died, were infected by milk contaminated by this man. Investigation showed that he had dipped the milk from the cans with a cup from his own dinner pail which was carried back and forth with him from his home. The difficult point in the differentiation is whether the infection came from the man himself during an attack of typhoid which he thought was grip or from the infection of the wife, whose care was largely in the husband's hands.

Had the milk been pasteurized on its arrival in Cleveland, this trouble would not have occurred. Had the case of typhoid been reported by the physician in charge, the routine investigation would have given us at once information which would have prevented the carrier from coming into contact with the milk at any time. Another point of value is that if the cans had been sealed, this series of cases could not have occurred.

DESTROYING LIMITED OBSTRUCTIVE GLANDULAR GROWTHS IN THE POSTERIOR URETHRA BY THE HIGH FREQUENCY CURRENT *

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We are agreed, I take it, that for the most part cautery work in the posterior urethra, or at the bladder neck, by the various methods now in common use through an electrically lighted instrument, is tedious and capable of destroying but a small amount of tissue at a sitting. The ordinary electric cautery point, while marvelously efficacious in relieving the early irritability and early irritation of incipient prostatism and also of ridding the patient of quite small projections and growths—even this requires many treatments at not too short intervals. If the obstructing part or growth is considerable, it is often impossible to treat it effectively in this manner. An ordinary urethral electric cautery point small enough to be accurately placed in plain view of the operator through an average sized urethra is so small, develops so little heat comparatively and in contact with living tissue is so quickly cooled that only the very small or succulent masses may be made to slough.

High frequency current methods have attained great vogue, and justly. But the methods of application are capable of great extension as, one at a time, difficulties are overcome. The Oudin or monopolar current has been efficacious in bladder papillomas especially, where there is plenty of room to manipulate the electrode and obtain a long spark gap. In the urethra it is more difficult by reason of close quarters, gases collecting and obscuring the view; also work in small space requires shortening of the spark gap to avoid unpleasant ground shock. This is much easier to prevent with the bipolar current—the large neutral electrode being placed under the buttocks or over the pubes. The devitalizing of tissue is much more rapid and extensive and secondary hemorrhage is less likely to occur. We have had one case of very distressing and with difficulty controlled secondary hemorrhage after so-called fulguration with the Oudin current of a posterior urethral polyp; we have had none follow the bipolar method, though the latter has been more frequently used.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Whether or not we use the Oudin or bipolar current, the work has been done through various types of instruments as follows: once, through an open tube with the McCarthy fulguration electrode handle; but usually through a Buerger convex sheath operating cystoscope; a McCarthy cysto-urethroscope or a Braasch single catheterizing. The differences in construction make one instrument applicable where another after a trial may prove not to be. The Squier-McCarthy electrode was found most convenient and efficient, both the No. 6 and No. 11.

One has cases, however, in which neither the ordinary electric cautery or the foregoing high frequency methods is adequate. Such cases comprise carcinomatous prostates in which a partial removal has been done and a suprapubic fistula will not close; bladder neck contractures, when a punch will not pass; also bladder neck contractures when hemorrhage is feared, or for some reason adequate attention following the punch operation is not feasible; bladder neck shelves and band hypertrophy of the region about the glands of Albarran when a punch will not enter; benign growths of considerable size, comparatively, in the posterior urethra or at the bladder neck; cases of excessive pocket formation in the prostatic bed after enucleation for benign growths.

The reason for the failure of the previously described procedures is plain. The lesions are comparatively gross but mainly focal so far as obstruction is concerned. There is simply too much tissue too dense to be destroyed by any such available and insulatable amount of electrical energy. Up to the present time, so far as I have been able to learn, there has been brought forward no substance surrounding a conducting wire in sufficiently small radius and flexible enough that it can be fed into the very largest cystoscopic or endoscopic catheter channel now in actual use, capable of insulating the amount and kind of electrical energy absolutely necessary to completely devitalize such obstructions and cause them to slough. We trust some one will soon bring to light some such substance.

In lieu of the ideal insulating substance that is also flexible, we have resorted to the use of a nonflexible insulating material which also serves the purpose of a guard to regulate the depth of penetration of the electrode points. It is simply a convenient length—8 or 9 inches—of silica tubing the diameter of a No. 11 Charriere catheter. One end is fitted into a groove of a pistol-shaped handle of fiber and made tight with a set screw. The inside diameter is approximately 1 mm. or that of a No. 3 Charriere ureteral bougie. Through the top of the pistol handle and on through the bore of the silica tubing is inserted a convenient length of drill rod or piano wire, sharpened to a needle point on the business end. The usual length is about a foot. The excess, bent over behind the handle, forms a small loop on the end in which to fix, with a watch-chain snap, the high frequency connecting cord. The sharpened end of the wire is pushed out beyond the distal end of the silica tubing to any desired distance, usually 0.5 to 2 cm., and is fixed with a second set-screw. The wall of the silica tubing being over a millimeter in thickness, acts as an efficient guard to prevent too deep penetration, and when fully up against a tissue produces a sense of resistance to the operator's fingers. The manner in which it is used is very like the treatment of a mole by an ordinary electrolysis needle, except that the needling is all by parallel insertions. The insulated and guarded needle is inserted through any open endoscopic tube most suitable for bringing that particular growth or obstruction into view and into direct line. The most generally satisfactory tube with us has been the MacGowan urethroscope. This with the vacuum-pump attachment keeps the field free from urine or blood present and the flat side enables one to place the electrode to better advantage. A MacGowan-Swinburne tube is useful sometimes. A Young's punch in bladder neck contractures and polypi that will present into the fenestrum is also exceedingly useful. Once we used a single catheterizing Braasch with water distention. In this case 1 cm. of the wire at the needle end was bent at an obtuse angle from the body of the wire to better catch a nodule and polypoid growth.

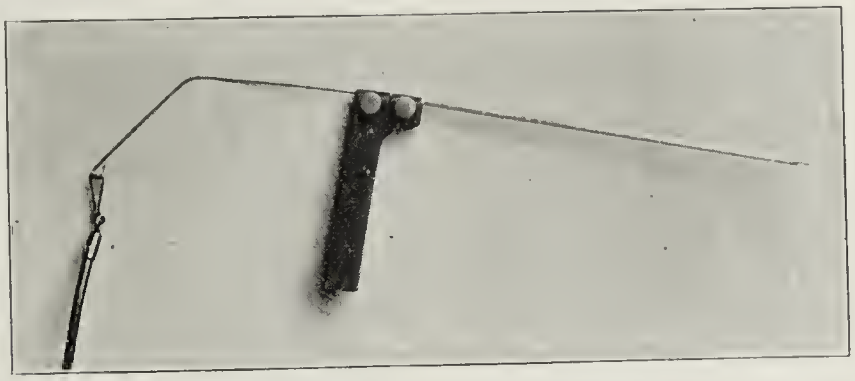
The part to be destroyed is brought into view at the end of the endoscopic tube and the electrode inserted to a depth previously determined on and insured by tightening the set-screw. The current is then turned on with the foot-switch for from two to ten seconds, depending on the amount of tissue to be destroyed, the amount of current used, and the length of the spark gap. The electrodestructive action extends radially around the needle and is quite circumscribed at both the periphery and the point. The usual diameter of the slough is 3 or 4 mm., as we have made the applications. One must use judgment as to the points of insertion, their number and their depth; usually two or three separate needle insertions being sufficient. This is best learned by experimentation with small surface growths, whose progress and sloughing can be watched subsequently at frequent intervals. The sloughs come away in from forty-eight to sixty hours if the needling has been well performed.

The silica tubing is quite brittle and sometimes breaks; but a new piece is easily and quickly inserted. It would be nearly ideal except for this friability. Larger sizes than are really needed for insulating purposes are for this reason necessary. We have endeavored to find something superior. The most promising prospective substance is Bakelite. The authorized molders of Bakelite discouraged us at first in the use of this; but just recently the General Bakelite Company has given us faith that they will be able to supply us electrodes that will be more easily handled. This should give the method a wider application in the urethra and in the bladder particularly with the electrode inserted through a single catheterizing Braasch. In this way the number of treatments could undoubtedly be greatly reduced.

The type of machine used should be one giving a constant milliamperage, no matter what amount of current (in reason) is being consumed; an absolutely induced current and one which is not taken off the main transformer, thus avoiding ground shocks. This of course means a bipolar current; a d'Arsonval current may be used, but unquestionably the ordinary d'Arsonval has been improved on for this purpose. If only this type of current is supplied by the machine, it considerably cheapens the cost and lightens the weight, thereby making it much more conveniently transportable to and from hospitals.

I shall report the following cases occurring in the private practice of Dr. Granville MacGowan and myself. Out of 39 cases of intra-urethral or bladder neck cautery operations during the past thirteen months, 31 were by either the simple electric cautery or high frequency cauterization with flexible electrodes; 8 were done by the silica insulated wire needling and bipolar current. Only selected cases were chosen for this method. There were two failures and six successful operations.

Case 1.—W. M., a large fat man, aged 65, had complete retention for the first time in September, 1913, with practically continuous catheter life thereafter for four weeks at hospital; when the bladder was opened suprapubically a large indurated prostate with both an anterior and posterior bar was found to be the cause of the obstruction. Enucleation proved very difficult on account of the adhesions of the surrounding parts; the vesical sphincter and a portion of the seminal vesicle were partially torn away in an effort at enucleation and had to be removed with scissors. The peritoneal cavity was accidentally opened at the bottom of the wound. It was not considered necessary to dissect it away further, for there appeared to be a free enough channel without this; tissue being apparently cancerous and the hemorrhage very free, and as the peritoneal cavity had been opened in the removal of the vesicle, doubt was entertained as to his operative recovery anyway. When the packing was removed the peritoneal wound gave no trouble and had apparently closed. With time the suprapubic wound healed with a small fistula. Urination was very difficult and became progressively more so. The bladder was reopened and an attempt made to remove the anterior obstructing bar. He had a very thick abdomen, which with its powerful muscles made it impossible to reach all of the obstructing parts and do a complete resection of the growths and bar. After wearing the suprapubic drain for months he was subjected to high frequency cauterization. No instrument could be made to pass through the urethra into the bladder. A MacGowan urethroscope was inserted down to the obstruction, which presented very definitely against the opened end of the endoscopic tube but from the anterior wall. Two insertions were made, with the silica-guarded needle, about 1 cm. apart. In less than sixty hours six or seven sloughs came away and then he urinated for the first time in many months. We repeated this cooking process in three weeks, cleaning away the rough points. The suprapubic wound closed and the urine thereafter passed freely per urethram for eleven months, when the stream again slowed; and after the passing of a steel sound for dilatation, a terrific hemorrhage occurred which was very difficult to control. The suprapubic wound opened again for a few days but finally closed, and he urinates again with reasonable comfort and frequency.



Silica insulated and guarded electrode.

Case 2.—A. S. P., aged 69, in September, 1914, had partial enucleation of the prostate which, microscopically, was carcinomatous. A piece was removed the size of a walnut. Beginning one month later through MacGowan tubes in the urethra, and Kelly tubes suprapubically, we needled the obstructing and irregular projections at four sittings. The surface healed and was fairly smooth. The suprapubic fistula closed, he went home and has urinated easily ever since.

Case 3.—B. H., aged 76, in September, 1914, came from a neighboring state almost delirious after a twenty-four hour trip without urinating. It was impossible to introduce a cystoscope. Drained suprapubically for three weeks until phthalein increased and was constant. The operation was a partial removal of the prostate, which, microscopically, showed cancer. The suprapubic fistula healed tardily and he had from 2 to 6 ounces residual at all times. Pocketed. To improve matters he was needled through the urethra. The needling could not be done at the crest of the obstruction. The result was nil except a very disagreeable convalescence.

Case 4.—C. C. W., aged 65, in June, 1914, underwent enucleation of the prostate for fibro-adenomas. Several months later a soft rubber catheter would not enter the bladder or return injected fluid. Some slight irritation resulted and 1 ounce residual. Needling in office was done under alypin and cocain anesthesia through a MacGowan tube. The patient passed sloughs in thirty-six hours thereafter. Since then a soft rubber catheter enters easily and residual has disappeared.

Case 5.—I. C. G., aged 50, came to Los Angeles suffering with extremely painful erections, occasional small urinary hemorrhages and sharp pain in perineum and rectum. Small projections were at the sides and posterior surface of the urethra in front of the bladder neck. Residual, if any, not determinable, for the reason that no type of catheter large or small, nor any cystoscope, would pass into the bladder. Most of the anterior nodules were burned away with electric cautery. The needling operation was unsuccessful, the needle going into the tissues at an angle back of the urethra and not entering the crest of the obstruction. He was later opened suprapubically, and had a banded bar at the bladder neck which was cut away with rongeurs and Young's punch. Recovery, and objectively cleared up as subsequently determined by cystoscopic and urethoscopic examinations.

Case 6.—J. W. S., aged 54, in June, 1913, stone in the bladder, with 4 ounces residual. I crushed the stone and fulgurated the polyp in the posterior urethra near the bladder neck. Cystoscopy revealed marked trabeculation and a large diverticulum on the right side. One year later residual was 70 c.c. Only long curved silver catheters or cystoscope would enter the bladder, there being inability to pass any flexible catheter. Young's punch was inserted and needling done. The spark gap had to be shortened by reason of metal contact at the end. The punch could not be easily pushed back into the bladder and so it was decided to punch out the cooked portion. After two hours in office and practically no bleeding he went home 18 miles by trolley car, returned in three days and emptied his bladder and had had practically no bleeding. Residual is 5 to 10 c.c. at present.

Case 7.—J. W. B., aged 45, in January, 1914, underwent suprapubic cystotomy for stone. A large diverticulum was on the right side near the ureter opening. The bladder neck was very much contracted. Circumstances over which we had no control gave us no chance to examine and study the case previous to operation. The suprapubic fistula would not close. In September, 1914, a radical operation for the cure of the large bladder diverticulum was preceded by needling of the posterior bladder neck through an endoscopic tube. The patient left the hospital in seven weeks with no residual and has no residual at present.

Case 8.—J. W. A., aged 60, had 2 ounces residual urine. The urine from the left kidney contained a small amount of pus. He had constant pains in the left testicle. There was obstruction from a nodule on the left side of the posterior urethra near the bladder neck. An ordinary electric cautery failed to make any impression on the obstructing nodule. Operation was by needling through a single catheterizing Braasch with water distention. Endoscopic examination six weeks later showed a smooth surface and residual had disappeared.

CONCLUSIONS

1. A much greater amount of tissue can be cooked at a sitting than by ordinary high frequency methods.
2. The point of application can be made to better advantage in some cases—especially when the urethra is somewhat choked.
3. Masses can be made to slough which could hardly be impressed by the usual procedures.
4. There is little fear of even slight hemorrhage and very little postoperative reaction.

Lissner Building.

ABSTRACT OF DISCUSSION

Dr. Stanley R. Woodruff, Bayonne, N. J.: The use of the cysto-urethroscope is very important, because there are so many lesions in the posterior urethra which are entirely overlooked. It is particularly in these cases that the cysto-urethroscope is used and is of so much value, because the posterior urethra and bladder can be examined at one sitting. The instrument of Dr. McCarthy is an indirect instrument, and another good point about it is that it is a near vision instrument. Nearly all of the other indirect instruments are what we term far vision instruments; that is, one must hold the instrument at a considerable distance from the object in order to get a good view of it. This instrument being a near vision instrument, one can put it exactly on whatever object one wishes to look at and get a clear view and the focus will be good. I believe that patients, especially those coming to you complaining simply of frequency, in order to make a proper diagnosis, should have the posterior urethra examined as well as the bladder. If you pass a cystoscope into the bladder and examine that alone, you have not done enough. We have at present three young men complaining ever since birth of enuresis. They have had almost everything done without effect. These cases under examination all showed a growth of tissue back of the verumontanum, filling up the fossa and even impinging into the internal sphincter, which gives you the reason why they were troubled as they were. Every time the internal sphincter shuts down it would grasp this little mass of tissue. We use entirely the d'Arsonval current. We have given up the Oudin current. The latter makes more fuss and cauterizes more quickly, but has not as deep an effect. I have yet to see a case in which we could not burn out all the tissue necessary. We use a constant irrigation, for at the same time you can burn and carry away all the bubbles, leaving a clear field of vision. There has never been any trouble about getting sufficient penetration. The electrode which Dr. Day has shown I have had no experience with. It seems to me pretty sharp to use in the posterior urethra. Sometimes your patient makes a jump. I should be rather afraid it would traumatize the urethra. If there is any part we wish to traumatize less, it is the posterior urethra. We have observed cases following injuries to the posterior urethra, showing nervous conditions, inability to have erections, and often inability to ejaculate. We use the ordinary soft, flexible, urethral electrode with the olivary tip.

Dr. W. P. Willard, San Francisco: Surely a note of warning should be sounded against the promiscuous use of instruments in the posterior urethra. Unless a man has had experience in making an examination of the posterior urethra, and knows what he sees and can differentiate the normal from the abnormal, he should not use these instruments.

I have had within the last year two cases I would like to cite on account of the remarkable improvement they made in a very short space of time from the use of the Oudin current. One of these cases was a man of 50 and the other was a man of 70. The prostates were not enlarged in any way, and there was no residual urine, but they each complained of great frequency, one man as often as every hour and the other man probably every two hours day and night. They were examined cystoscopically and the prostatic outline appeared normal and the sphincter outline was regular. The only thing noticed was a large number of small cysts projecting, as I have seen many times before, from the prostate and within the internal urethral orifice. I used the Buerger cystoscope with the single wire and punctured as many of these cysts as I could. In both cases I did it all at one sitting. The man of 70 reported back within a week and he said he had not felt as well in twenty years. Within three or four days after the manipulation, after the irritation from the instrumentation had subsided, he said he could hold with very little difficulty his urine for three hours, and had gone as long as four hours at night.

Dr. Granville MacGowan, Los Angeles: I am astonished by the dogma put forward by one of the speakers that we must not injure the posterior urethra. No one is going to use this instrument without a definite reason therefor. The excuse is some pathologic condition requiring removal. The warning is applicable to those only who would indiscriminately operate for the sake of experience. One cannot use an instrument in the posterior urethra without traumatizing more or less. The urethra can be thoroughly anesthetized by the use of stovain or alypin nitrate, either of which will be effective generally for a sufficient length of time; if not, a reasonable amount of 10 per cent. solution of cocain placed in there with a fine urethral syringe will do the trick. This, however, should always be guarded by an equal quantity of 1: 1,000 solution of epinephrin, or the tissues can be injected through an endoscopic tube by means of a very long and fine hypodermic needle with a 5 per cent. solution of novocain.

Dr. Robert V. Day, Los Angeles: Regarding the danger from the sharp point referred to by the first speaker, it is made purposely this way so that it does not shove the tissues out of the way. For that matter it may be probe pointed or bayonet shaped. In regard to the amount of tissue it will take away, it is not intended for those cases which can be treated successfully through the McCarthy fulguration urethroscope, but for those lesions that are larger than can be shown in the field at the close range of the McCarthy instrument, or those which choke the passage. I am not very much impressed with the Oudin current in cases of this kind. It relieves a great many times, but our method is not intended for small obstructions that can be reduced by the ordinary high frequency methods, which means we use extensively also, when applicable.

Florida and a "Health City"

At the meeting of the American Medical Association at New Orleans in 1885, Dr. Washington Chew Van Bibber, a distinguished physician of Baltimore, read a paper on Florida and its climate. It is an interesting circumstance that thirty years afterward the *Manufacturers Record* should find in this paper observation and comment of sufficient value to interest its readers. In its October number, the *Record* makes long quotations from this paper which deal chiefly with the advantages of the state as a winter resort, or as a resort all the year round, not only for pleasure seekers, but also for invalids of various types. Dr. Van Bibber contrasted Florida as a health resort with other sections of the United States and with the well-known resort regions of Europe.

He made the interesting proposal that a "health city" should be built in Florida, and suggested that the nations of Europe and America be invited through the medical, social and scientific press to unite in the erection and improvement of such a city. This he felt was necessary because at that time the resorts of Florida were not in a sufficient state of sanitary development and improvement to fulfil the requirements of a perfect "health city."

Dr. Van Bibber died in 1892. He did not live to see the fulfilment of his "health city" project, but with the modern development of city sanitation, all health resorts should become "health cities."

ANTEVERSION OF THE NECK OF THE FEMUR

IN CONNECTION WITH CONGENITAL DISLOCATION OF THE HIP *

RUSSELL A. HIBBS, M.D.
NEW YORK

A careful study of my failures in the treatment of congenital dislocation of the hip has convinced me that some of those failures were due to anteversion deformity of the head and neck of the femur which was not recognized before operation.

A certain number of those cases have since been treated with complete success by the method to be described.

Anteversion of the head and neck of the femur has of course been recognized, but the frequency of its occurrence has not been appreciated, at least by me, nor its influence on the final result in the treatment of congenital dislocation of the hip. Much more consideration has been given to defects in the acetabulum, and without doubt the acetabulum is more or less defective perhaps in all cases, and in some, to such a degree as to prevent cure. I believe, however, that this deformity of the femur is more often the cause of failure to secure ideal results. No case of congenital dislocation can be considered absolutely cured until the head is wholly in the acetabulum and the gait of the patient and function of the joint normal. It does not seem possible to me to obtain such a result when this deformity exists to any considerable degree.

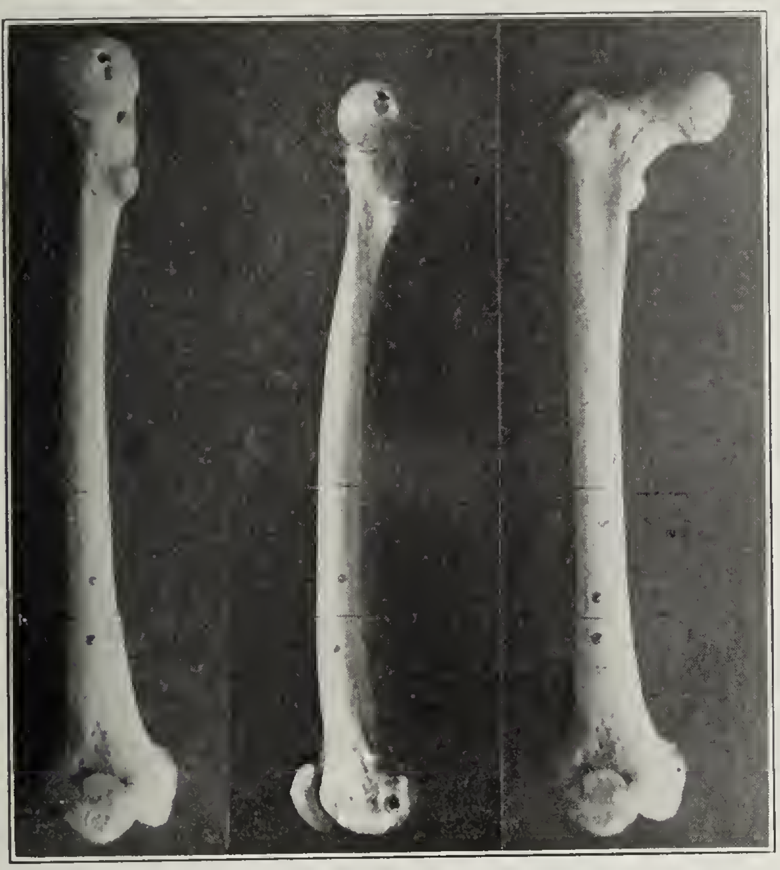


Fig. 1.—An osteotomy of the femur at its lower third for the correction of anteversion of neck. Bone at left shows anteverted head; in center, lower fragment twisted out correcting deformity; at right, deformity corrected, normal bone.

There is a certain amount of anteversion in the normal femur, but probably not more than from 10 to 15 degrees. Dr. Durham, one of my staff at the Orthopaedic Hospital, recently made a study of 200 normal femora, and found that the average amount of anteversion was 11 degrees. More than this amount is abnormal, and certainly when it is as much as from 75 to 90 degrees, grossly so. With the leg straight and the toe and patella pointing forward in the normal direction, the head of the femur cannot be completely in the acetabulum. With the head thus partially engaged in the socket, weight bearing is uncertain and there is always a limp.

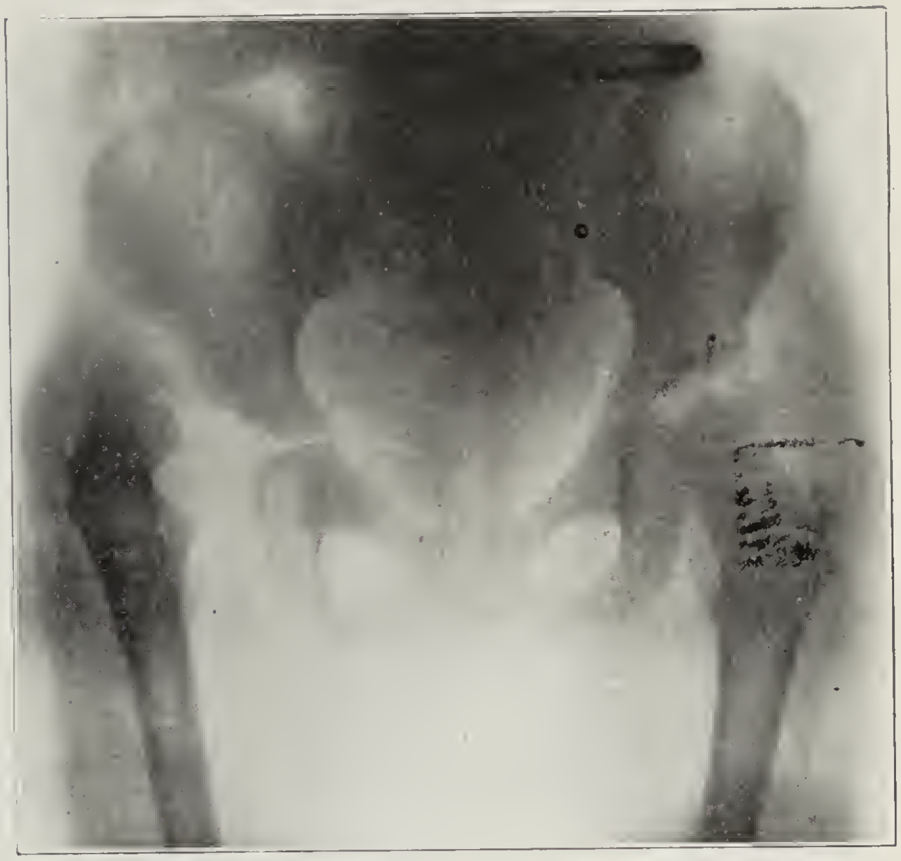


Fig. 2.—Congenital dislocation of hip with anteverted head and neck of femur.

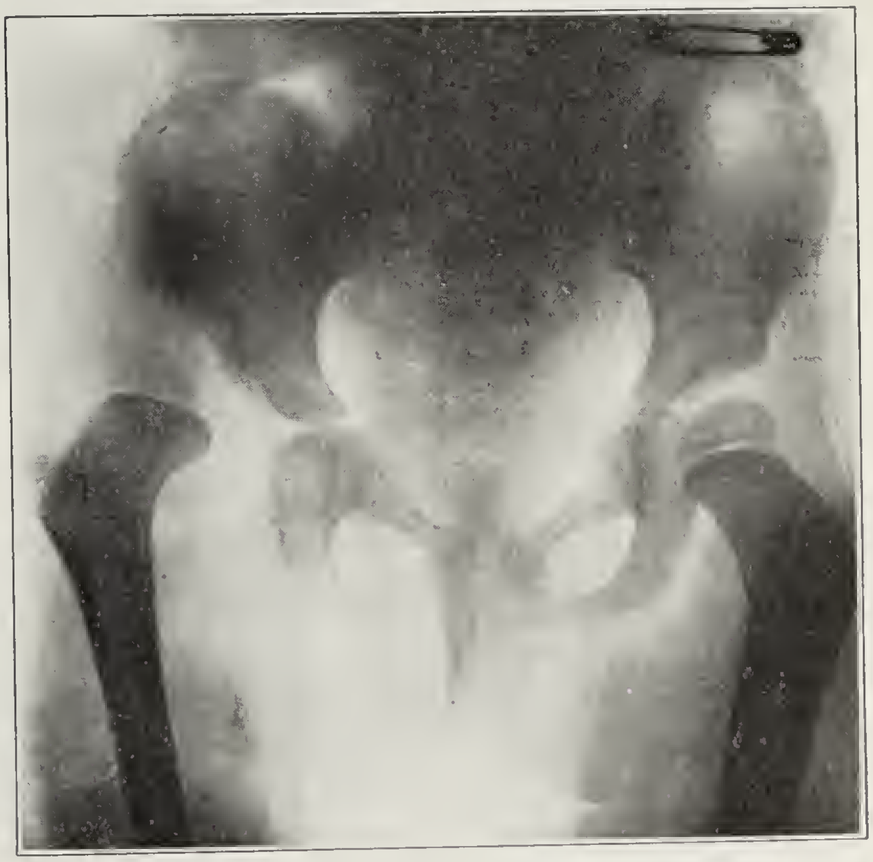


Fig. 3.—After osteotomy; deformity corrected.

The question as to where the deformity takes place is an important one. It seems probable that it is due to a twist in the shaft of the femur, because by Roentgen-ray study there is found no appreciable

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* From the Service of the New York Orthopaedic Hospital.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

change in the relation of the head and neck to the two trochanters, as would be the case if the deformity were due to any change there.

Two roentgenograms in a given case will demonstrate this conclusively, the first taken in the usual position with the patella and toe pointing forward, the second with the femur in internal rotation, the patella and toe pointing inward. A comparison of the two plates will show that a perfectly normal head and neck exist in a normal relation to the two trochanters and indicate that the deformity is in the shaft of the bone.

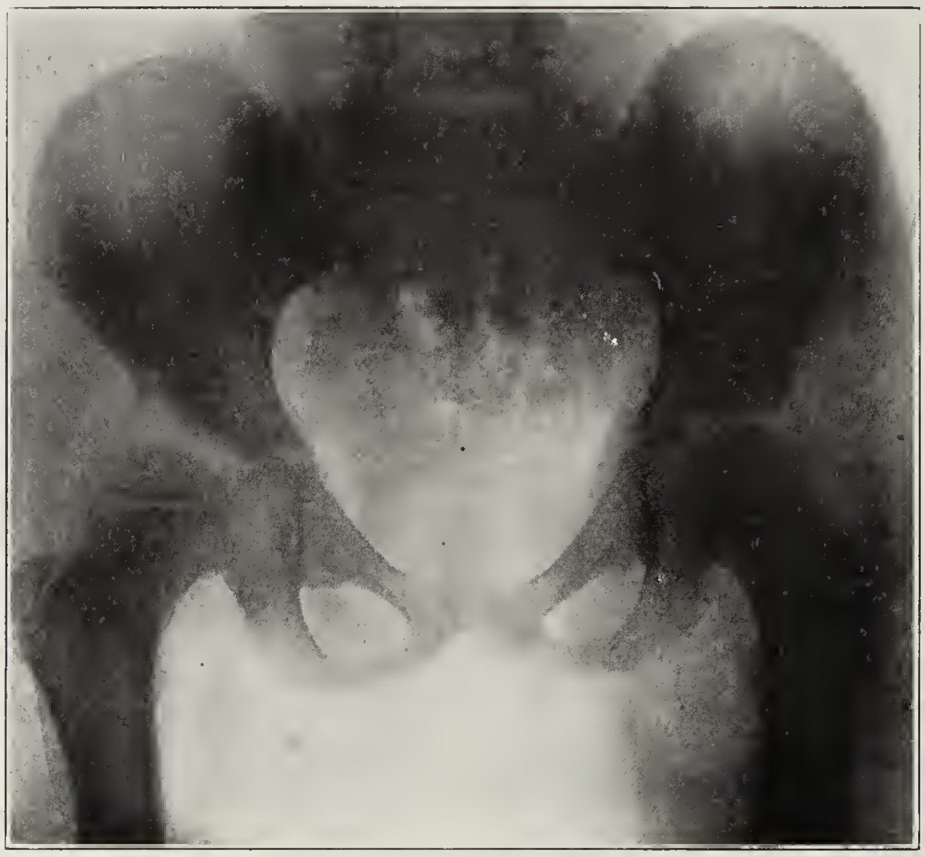

Fig. 4.—After reduction of dislocation; normal hip.

It would seem logical, therefore, to treat the matter as a twist of the shaft of the femur, and correct it by osteotomy before any attempt is made to reduce the dislocation. That is what has been done in a series of twenty-nine hips in twenty-six children at the Orthopaedic Hospital, all the earlier patients having been previously operated on for dislocation once and in some instances twice, with failure. The first three cases were shown before the orthopedic section of the New York Academy of Medicine, April 18, 1913.

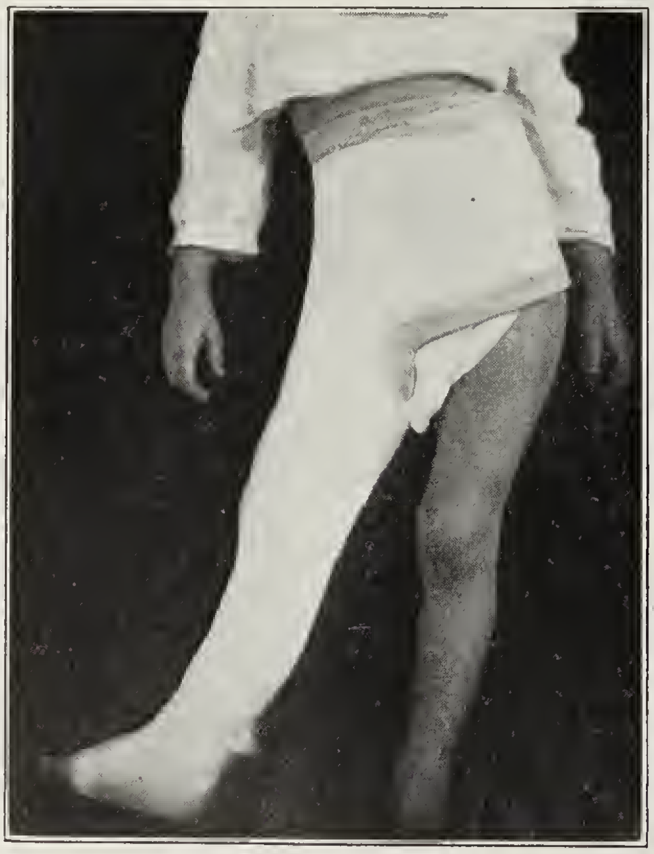

Fig. 5.—In plaster after osteotomy.

No attempt has been made recently to reduce the dislocation until this deformity is corrected. It is done by an osteotomy at the lower third of the femur. After the bone is divided, the lower fragment is twisted outward to the degree that the head is abnormally anteverted. After the bone unites, the patient is allowed to walk from eight to ten weeks until the external rotation of the leg is corrected by exercises and it takes the normal position in walking, the patella and toe pointing forward. At this point in the treatment the dislocation should be reduced.

The lower third of the bone is selected for operation for two reasons: first, because at this point there is the least interference with muscle attachments, and second, because both fragments are long enough to give perfect control of them. Both of these are important considerations in the accurate correction of the deformity and the preservation of the function of the muscles.

Figure 1 is a photograph of a femur on which the operation has been done.

A. E., girl, aged 5 years, had congenital dislocation of the left hip with 1½ inches shortening and an anteversion of head and neck of femur of 85 degrees. Two unsuccessful operations had been done for the dislocation, the deformity not having been recognized.

February 14, 1913, osteotomy of the femur was done and the deformity corrected by external rotation of the lower fragment; a plaster spica was applied. At the end of six weeks the plaster was removed, walking permitted and exercises begun.

May 17, 1913, external rotation was entirely corrected. The dislocation was reduced. Plaster was applied, changed at intervals of three weeks, and removed at the end of two months. Result, May, 1915: head of the femur in the acetabulum, limbs equal, joint function perfect, patient walks without limp.

The roentgenograms taken in this case are shown in Figures 2, 3 and 4. Figure 2, in the ordinary position, toe and patella pointing forward; Figure 3, after osteotomy taken in the usual position, toe and patella pointing forward showing deformity corrected, and Figure 4 showing head in the socket, a normal hip.

It does not seem necessary to report in detail more than this one case, as in every essential the procedure was the same in all of them, except the younger patients wore plaster after the hip was reduced for a longer period, three to four months.

It is important, however, to emphasize the need of great care in correcting the deformity after osteotomy. In two of my earlier cases the lower fragment of the bone was not rotated enough to entirely correct it. Figure 5 is a photograph of such a patient in plaster after operation. When this deformity exists in both hips, it is corrected in the two at the same time.

The operation for the dislocation in all of these cases has been done by the method previously described by me[1] and with the aid of the table designed for that purpose.

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[1] Hibbs, R. A.: An Original Method of Operating for Congenital Dislocation of the Hip, New York Med. Jour., April 25, 1908.

CONGENITAL DISLOCATION OF THE HIP

REDUCED BY MANIPULATION FOLLOWED BY ARTHROTOMY *

JAMES T. WATKINS, M.D.
SAN FRANCISCO

There has been considerable speculation as to what actually occurred when a congenital dislocation of the hip was reduced by the mechanical method. So far as my reading goes, no one has reported any attempt to determine by operative procedure whether the femoral head became directly applied to the acetabulum or remained separated from it by a fold of capsule. This paper records an attempt to solve this question.

My clinical experience with congenital dislocations of the hip has been sufficiently extensive. On the other hand, my opportunities to observe in detail pathologic anatomy have been meager.

Two specimens were seen at the clinic of the late Professor Hoffa; one was shown me by M. Redard; Dr. Bradford demonstrated for me, if I remember aright, three specimens from the Warren museum, and I made a necropsy on one several years ago for Dr. Sherman (a baby that had died of the measles).

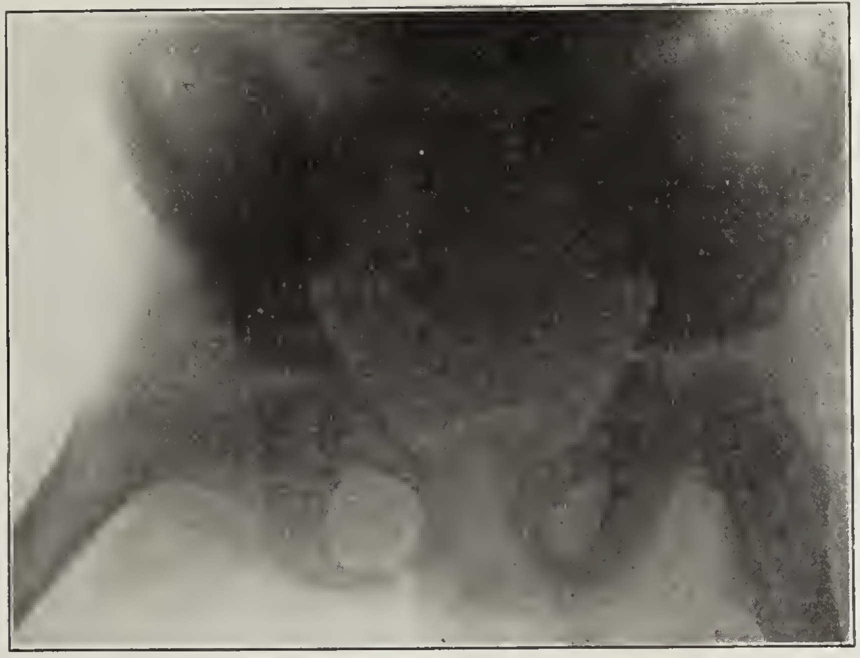

Fig. 1.—Right-sided congenital dislocation of the hip. Reduced by manipulation and subsequently verified by arthrotomy.

Observing these, I had been able to verify what is common knowledge today of this condition, but found myself in much perplexity as to the changes brought about in the mutual relations of femoral head, capsule and acetabulum by the manipulative or mechanical reduction.

In the Hoffa specimens I noted a demifacet in the anterior rim of the acetabular roof. I regarded this as evidence in support of Lange's contention that the femoral head originally left the acetabulum by the anterior route. I noted also that the specimens from older children presented a ligamentum teres drawn out to the thinness of a thread, when it was not actually absent. It will be recalled that M. Redard, in discussing personal statistics of one thousand cases, calls attention to late-appearing deformations of the femoral head and neck in cases in which operation had been successfully performed by the mechanical method.

I felt that it would not be unreasonable to attribute this late-appearing distortion to defects of nutrition consequent on the occlusion of the artery in the ligamentum teres. I was unable to explain, however, the roughness which he and we here have noted in the floor of the acetabulum in certain of these cases. Possibly it is due to modified statics consequent on the changed shape of the femoral head.

The hour-glass constriction of the capsule was apparent in all cases in which the patient had walked, as was the forward twist of head and neck on the shaft.

One noted, too, that frequently there was a slight bowing of the neck with the concavity looking forward.

The changes in the muscles, the shortening of adductors and hamstrings, I had demonstrated clinically, but the lengthening of pelvitrochanterics, to which Lorenz had called attention, was not apparent, and until just recently did not seem particularly significant.

So much for a hasty review of the anatomy.

In 1903 I had assisted Dr. Sherman in operating on a patient on whom Professor Lorenz had previously performed a manipulative reduction. In this case it was found that the femoral head had ruptured the capsule and come to lie among the adductors of the thigh.

I pause to observe that I really believe Lorenz deliberately tried for an antero-internal transposition, because I can recall his first assistant Scholl telling us once in particular, after a mishap in which the patient went into sudden shock and there was reason to believe that one of the great vessels had been ruptured, that these accidents would not happen if the professor would content himself with a simple reduction and not try to displace the head internal to the acetabulum.

I believe that, at that time at least, Lorenz attributed the permanent stability of his reduction to the tension of his pelvitrochanterics, and that he attempted, therefore, by the maneuver described, to bring their origins and insertions nearest together during the period of immobilization. He also laid great stress on the stretching of the anterior capsule, though it is probable that he did not contemplate the rupture and escape of the head which actually occurred.

Again, Lange demonstrated by means of a series of roentgenograms, of which I had tracings, but which were lost in the great fire of 1906, that except where an exceptionally long neck was present, the so-called "frog position" was apt to put, not the femoral head, but the greater trochanter into or on the acetabulum.

Both he and Hoffa, who at that time was doing the open operation exclusively, immobilized in moderate abduction, full extension and internal rotation.

When I discussed this with Lorenz, he assured me that he had nothing to say against internal rotation provided one employed external rotation first.

The late Professor Panzeri of Milan employed abduction and an exaggerated internal rotation with knee flexed.

These were the observations, for the most part undigested, which I brought back from Europe with me. In view of them, first, and in view of the fact, secondly, that when I made the necropsy on Dr.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Sherman's measles patient I did not think it mechanically possible to put the head by manipulation into the socket, and thirdly, because I found the capsular constriction exceedingly resistant even to a very sharp knife. I became convinced that it was not possible by manipulation to place the head in the acetabulum, cartilage to cartilage; and in this idea I remained for several years.

Last year I came across Dr. Ridlon's description of his technic. It sounded so easy that I thought I would try it as a preliminary to arthrotomy.

My opportunity came October 31 of last year, when I performed a manipulative reduction on a muscular little boy of 6 years and 3 months.

Without any great difficulty the head appeared to me to enter on rather than into the socket. My associate, however, was very sure that it was only on the posterior rim of the acetabulum.

Therefore, pending the test of the Roentgen ray, we immobilized the limb in abduction extension and internal rotation.

Then the little boy got sick and stayed sick, so that it was not until Jan. 30, 1915, that he came to the second operation.

Permit me here to interpolate from the clinical records my notes of Dec. 30, 1914, as well as those made at the time of operation.

Stereoscopic views were taken in two positions yesterday: (1) with thigh in the position in which it had been held in plaster of Paris, that is, in very marked abduction and inward rotation; (2) with thigh in diminished abduction and patella looking forward. It was agreed by all who studied the plates, Dr. Birtsch, Dr. McChesney and myself, that the head of the affected thigh was at the level of the acetabulum, and that the circle represented by the outline of the head and the circle of which the acetabulum formed an arc were concentric, but that the femoral head lay in a plane anterior to the acetabulum.

Physical examination gave a resistance beneath the femoral artery, but no undue fulness beneath Poupart's ligament, such as we see in frank anterior transpositions. There was no shortening; a false acetabulum was apparent above the site of the true one. The latter appeared to have a fair "roof."

January 30, 1915, under the strictest aseptic precautions the usual longitudinal incision between the tensor fasciae and sartorius was made, and the capsule opened. The capsule appeared to be adherent to the anterior aspect of the neck up to the junction of bone and cartilage. The head was in the acetabulum, from which it was easily luxated. Synovialis about head and capsule not adherent. No fold of capsule in front of head as latter had entered acetabulum. Ligamentum teres gone. Considerable fat in floor of acetabulum. Anteversion of head and neck not marked. Stability after reduction of dislocation excellent. Wound closed in usual way and immobilized in abduction and internal rotation.

June 14, 1915, cast off, stability good, walks with a sway but without a limp. To come back in December for inspection.

Subsequently a little girl, aged 4, appeared in my wards who had presented a bilateral congenital dislocation of the hip. These, however, had been the subject of attempts at mechanical reduction at another institution.

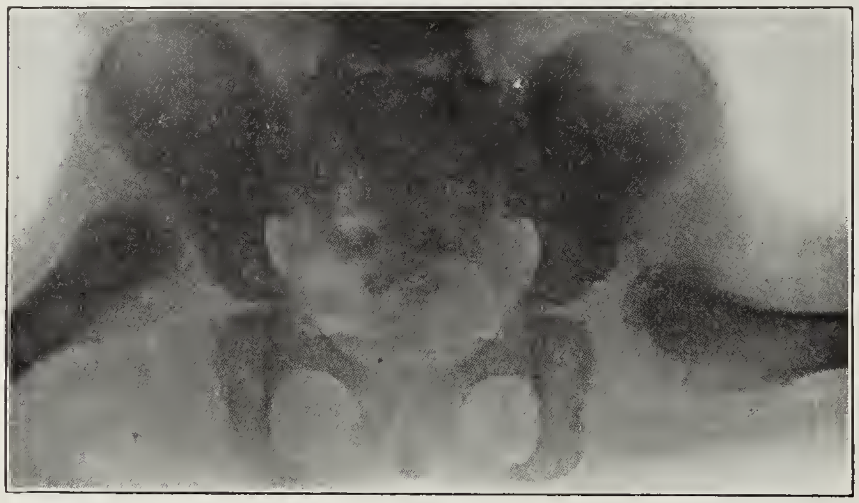

Fig. 2.—Bilateral congenital dislocation of the hip after attempted reduction by manipulation. The right had reluxated. The left was shown at operation to be within the capsule, but anterior to the bony part of the joint.

Here the stereoscopic pictures as well as the clinical findings seemed to show the right side in anterior transposition and on the left a frank reluxation.

An arthrotomy was therefore done on each side, using the anterior incision. On the left side reposition was easy, nor could one draw any conclusions as to the success or failure of the previous manipulation. On the right side the head was not out. In fact, because of the shrinkage which the pelvitrochanterics had undergone, it was only with difficulty dislocated. On the other hand, the dilatation of the anterior capsule had been so complete that the joint would appear to have lost the feature which kept the head pressed back into the socket when the limb went into hyperextension.

You will recall that the center of gravity of the body falls in a plane behind that in which lie the femoral heads. Therefore, in such a case during the maintenance of the erect posture, the head must be tilted forward, and sooner or later acquire a subspinous position.

Though not germane to this subject, I interpolate here that this child suffered a secondary hemorrhage on the left side two days after the operation. In stopping the hemorrhage there ensued a superficial infection, and in treating this a reluxation of the head on that side took place.

Finally, I would say I am not satisfied with this demonstration. It remains for one of us to approach the joint from the inner side, that is, behind the pectineus, then to incise the capsule longitudinally and actually see the femoral head peeping at us through the hourglass constriction. Next close the wound and do a mechanical reduction, and finally reopen the wound and see in what way the relation of head, capsule and acetabulum had become modified. Then we will cease speculation and actually know what we are talking about.

Personal Liberty and Infectious Diseases.—The right to restrict the social activities of persons suffering from, or exposed to, certain infectious diseases is today everywhere admitted. Possibly in future additional restraints will be imposed by the community on its infected members—though not necessarily without recompense to individuals—as the importance of checking certain infections becomes more widely recognized. The havoc wrought by Typhoid Mary is not unlike the damage done by a mad dervish running amuck with a naked knife in his hand. Why should the community expose itself to such exploits on the plea of maintaining personal liberty? There is no principle of personal right in such cases that must be maintained at all hazards. The question of expediency in each case must be the deciding factor. It is the right of the community to determine how far, at the moment, it is desirable to protect itself from hygienic evils. Restrictions on the carriers of disease germs, on the employers of labor, and on the drinkers of alcohol, are in themselves perfectly proper and to be judged on the basis of community welfare, not merely on the basis of individual pleasure, profit or convenience.—E. O. Jordan, Commemoration Volume, 1915.

STRUCTURAL CHANGES IN CONGENITAL HIP DISLOCATION *

WALLACE BLANCHARD, M.D.
Assistant Clinical Professor in Surgery (Orthopedic), Rush Medical College; Orthopedic Surgeon, Home for Destitute Crippled Children and University Hospital
CHICAGO

A diversity of forms of dismantlement and reconstruction are always shown in the roentgenographic presentation of a number of congenital hip dislocations taken before and several years after reduction. In every case the roentgenogram offers a suggestion as to the best position in which to place and hold the leg in the plaster-of-Paris spica in order to secure stability of the head of the femur and ultimately a good functionating joint.

In congenital hip dislocation, the obliteration of the acetabulum, the flattening of the head of the femur and the changing shape and direction of the neck are always shown in varying forms. When the mushroomed or cone-shaped head of the femur is placed and held approximately where the acetabulum once existed, the head usually again develops and cartilage grows up around it and deepens till, by a rebuilding process, a more or less functionally perfect joint is formed. The technic of bloodless reduction has steadily improved since the first visit of Professor Lorenz to this country in 1902. The forceful stretching method then employed, which frequently resulted in fracture of the femur without replacement, was superseded in 1904 by Prof. Albert Hoffa's milder manipulative reduction.

Some operators stretch every possible set of muscles and reduce over the superior or posterior rim of the acetabulum. Other operators, without preliminary muscle stretching, flex the hip and press strongly and continuously down on the knee till the head is pushed below the acetabulum, and then lift the head over the lower rim into position. The dangers of fracture or of other injury are largely decreased when the head is reduced over the more shallow lower rim. A reduction should not be accepted as satisfactory unless the head of the femur can be felt in the groin.

After the reduction, it is the position of the limb in the plaster-of-Paris spica that gives it stability or lets it go out. The roentgenogram usually gives a good indication of the position in which the leg should be held to secure stability.

If a small portion of the roof of the acetabulum is left so that it is shown in the roentgenogram even as large as a pea, a posterior dislocation may be reduced with a reasonable certainty that it will remain secure if the hip is firmly held in the Lorenz position of 90 degrees both in flexion and abduction.

The short unilateral plaster-of-Paris spica secures sufficient fixation for practical purposes of stability. The following case is presented to cover several points, including the opposing views of many European surgeons who agree with Bankart[1] that "a unilateral plaster is unsatisfactory as it does not fix the hip properly."

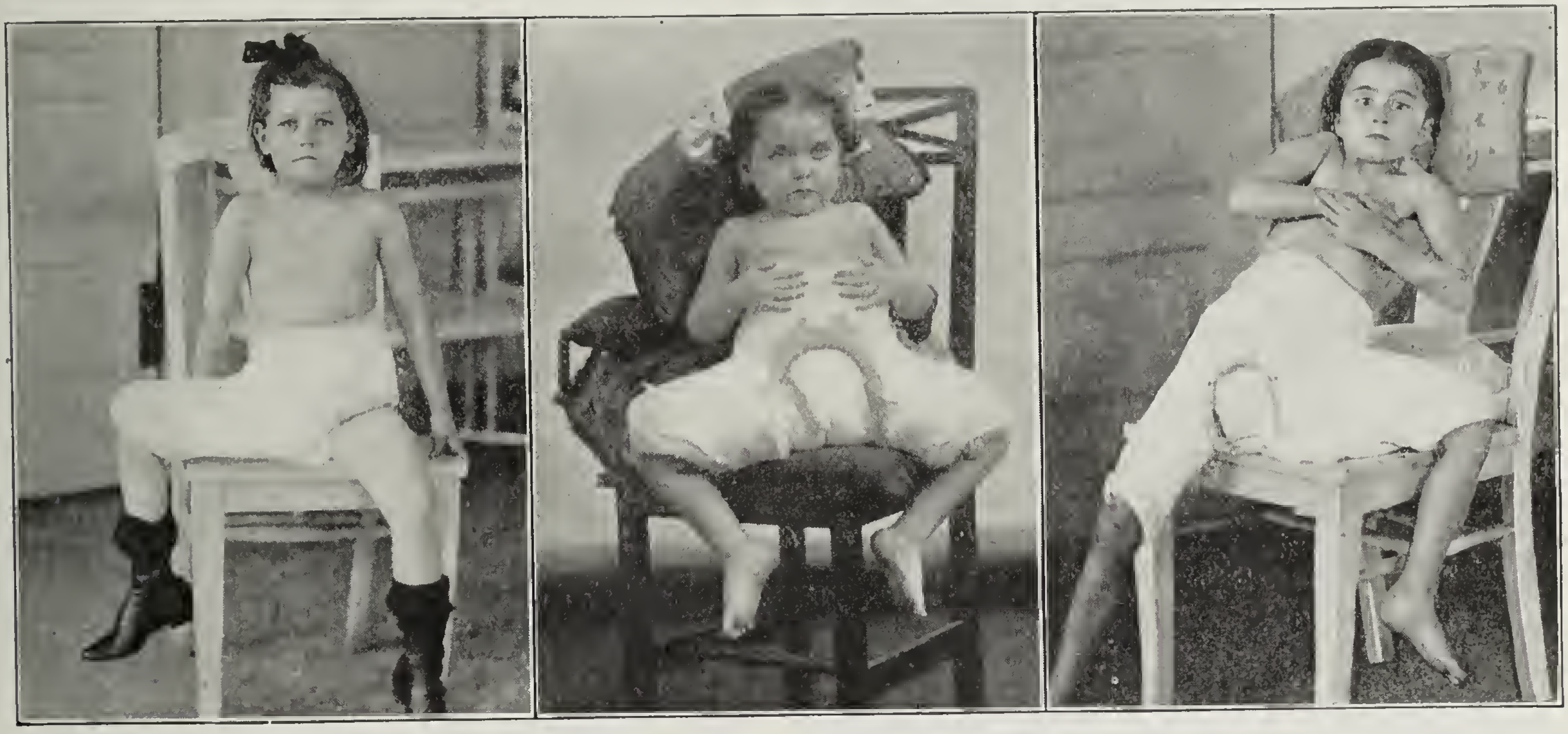

Fig. 1.—*A* (at left), B. J. (Case 1) in plaster-of-Paris spica after reduction of congenital hip dislocation. *B* (in center), R. G. (Case 2) in plaster soon after reduction. *C* (at right), H. F. (Case 3) in plaster soon after reduction.

CASE 1.—B. J., girl, aged 6 years, with a congenital dislocation backward of the right hip, and the leg 3.5 cm. short. The roentgenogram showed the acetabulum obliterated except for a small flat button that was left of the roof. The head was atrophied and mushroomed to half its normal size and thickness. The neck was shortened and elevated. The dislocation was reduced and the hip was placed in the position of 90 degrees flexion and abduction and put in the short unilateral spica, as shown in Figure 1 *A*. One month later the patient contracted diphtheria and, following the use of antitoxin, developed a dermatitis under the plaster spica necessitating its removal. Pneumonia followed the diphtheria, and after eight weeks without the plaster I found the head of the femur still in place. The rebuilding of the articulation had gone on without interruption. The plaster spica was renewed, and eight months after the reduction it was discontinued and the patient left to her own devices.

A roentgenogram (Fig. 2) taken soon after the removal of the spica showed a tilted pelvis of abduction with the head in place. A light strip between the head of the femur and the acetabulum indicates the space that is filled by the new acetabulum that is not yet sufficiently advanced in calcification to show in the picture, but is serving well for retention.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Bankart, A. S. B.: Treatment of Congenital Dislocation of the Hip, Brit. Med. Jour., 1913, i, 1044.

Walking for several months after the plaster spica has been removed with the leg in abduction has a double advantage of deepening the acetabulum and of keeping the head more securely in place.

A roentgenogram (Fig. 3) taken three years after reduction shows a new femoral head built up over the atrophied and mushroomed head to the full size of the normal head, and above that a new acetabular roof shows dark and strong, and the hip is functionally good.

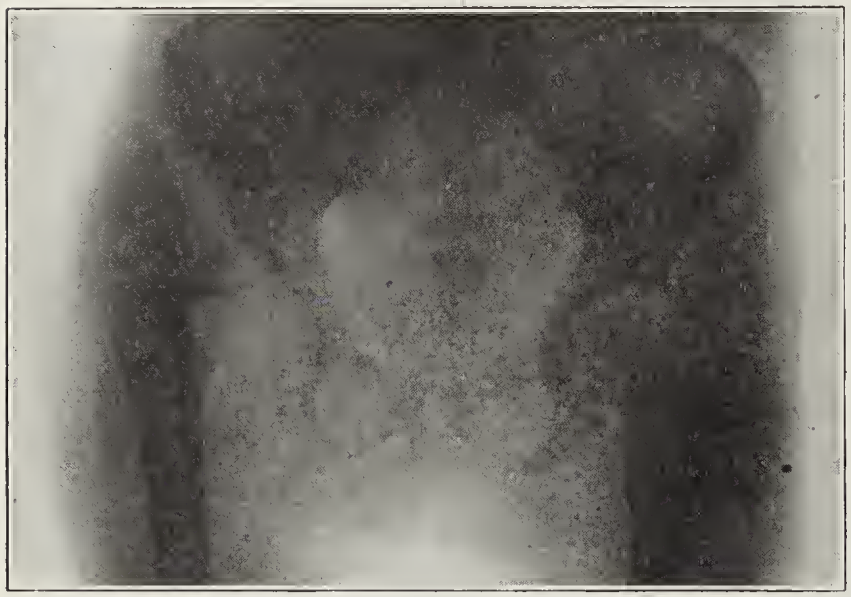

Fig. 2 (Case 1).—Roentgenogram taken soon after the removal of the plaster spica.

Case 2.—R. G., girl, aged 3½ years, with double congenital hip dislocation. A roentgenogram (Fig. 4) showed a double congenital hip dislocation with small buttons as the only remnants of the overhanging roofs. Reduction was made over the lower rim, and the hips put in plaster in the right angle flexion and abduction position.

A photograph (Fig. 1 *B*) was taken soon after the reduction. One month after the reduction the patient was reported dangerously ill with diphtheria, and following antitoxin a dermatitis developed under the plaster, which was removed. After four weeks without the plaster spica a roentgenogram was taken that showed both femoral heads to be in place. The legs remained in the "frog position," and a new plaster spica was applied.

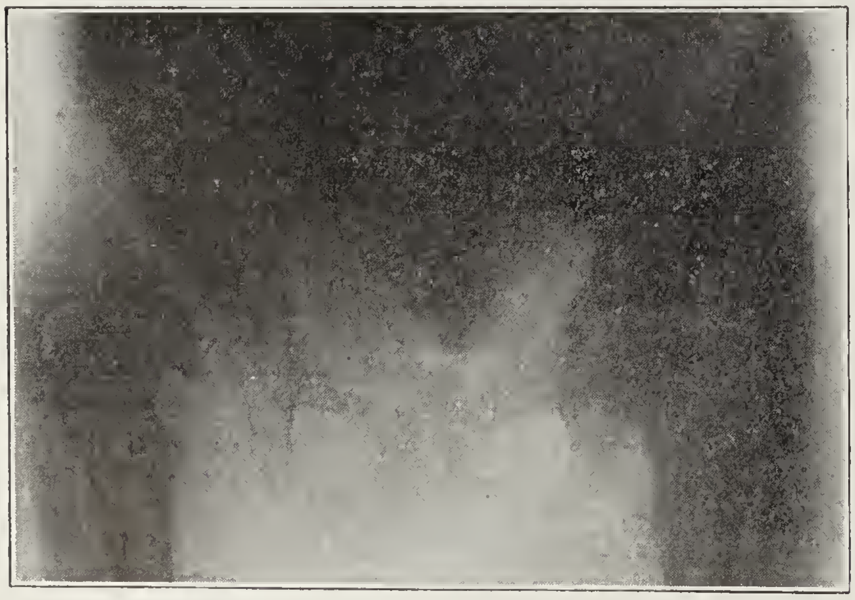

Fig. 3 (Case 1).—Three years after reduction.

The roentgenogram of this case showed small round buttons of bones as all that remained of the roofs. The visible remnants of the roofs were, of course, supported by considerable decalcified bone, and these formed buttresses against redislocations.

Case 3.—H. F., girl, aged 6 years, with left hip dislocated posteriorly and leg 3.5 cm. short. The reduction was too easy and no security was imparted to the head with the leg either in the primary position of Lorenz, or in the Lange position; but elevating the hip to 30 degrees above the Lorenz position toward Werndorff's axillary position imparted stability. A plaster spica was applied with the hip in this exaggerated position and left for eight months in the belief that the objections to so doing had not been sustained. The normal leg was included in the plaster as a counter lever to secure fixation, as shown in Figure 1 *C*. The plaster spica was removed after eight months and the patient left to her own devices. The leg was over a year coming down from abduction to normal position.

The roentgenogram (Fig. 5) taken soon after the removal of the plaster shows a tilted pelvis, decalcification of the upper end of the femur and the adjoining pelvic bone as well as a roughened outline at the original seat of the acetabulum. An irregular cavity marks the original site of the acetabular roof, which explains why the leg had to be elevated toward the axillary position to secure stability.

The second roentgenogram (Fig. 6), taken two years later, shows a recalcification of the lightened bones. Also a new roof shows the dark shadow of strength, and the head of the femur is in place. Even after three years there remained a slight suggestion of abduction, though the leg was functionally perfect.

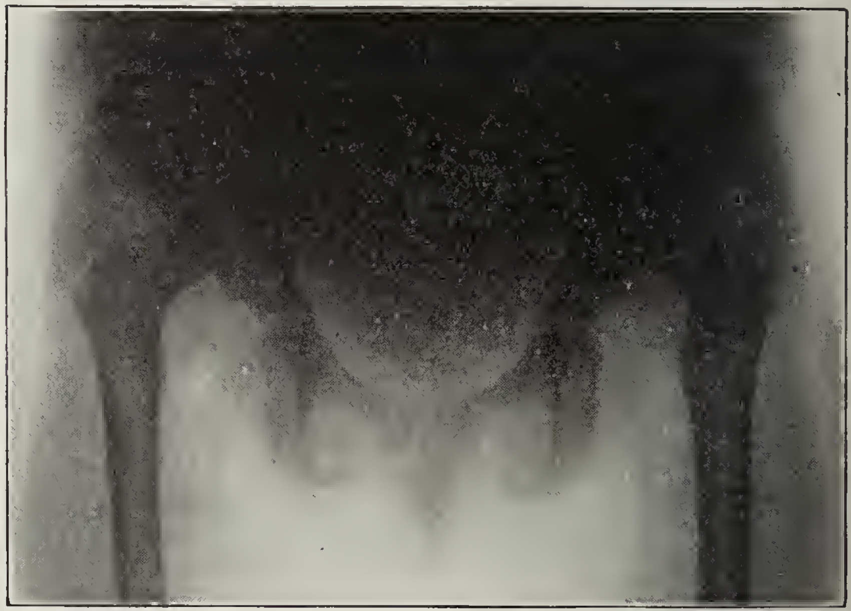

Fig. 4 (Case 2).—Double congenital hip dislocation with small buttons as the only remnants of the roofs.

From three to five years may be taken as the age for reduction to get the best ultimate results. The increasing dismantlement of the unreduced hip joint as the child grows older and the insufficient ossification in younger children that allows soft bone to give way during and after reduction must be considered. The following case presents the two sides of the question:

Case 4.—M. H., girl, aged 2 years and 3 months, with congenital dislocation backward of the right hip, and the leg 3.3 cm. short. A roentgenogram (Fig. 7) taken before reduction showed that the right upper femoral shaft and neck had about one half the diameter of the left. The head of the femur had almost disappeared, and the overhanging shelf was nearly obliterated. A roentgenogram (Fig. 8), taken two and one-half years after reduction, showed a redevelopment of the upper femoral shaft, neck and head. Also the roof had reappeared dark and strong. But note the wide strip of light between the head of the femur and the nearest bone of the pelvis that indicates the situation of the soft reforming acetabulum and femoral head. Experience shows that weight bearing will cause this pliable acetabulum and head to give somewhat so as to produce some shortening before recalcification and ossification are sufficiently advanced to afford a stable joint. The ultimate result is likely to show that the reduction was made too early, though at present the legs are the same length and function is perfect.

Changing the position of the leg after two and a half months in plaster, as is advised by Calot and others, interrupts the rebuilding of the articulation which is necessary to secure a stable joint.

The prognosis may be said to be favorable in posterior dislocation, unfavorable in forward dislocation and unfavorable in upward dislocation, if on rotation of the leg the head can be felt both anteriorly and posteriorly.

Bankart's[1] conclusion that "no operative method reaches the excellent results obtained by manipulative reduction" has been quite generally accepted. The elimination of unnecessary violence has marked every step forward in the reduction of congenital hip dislocation.

CONCLUSIONS

Experience seems to warrant the following conclusions:

A shortened or twisted neck in a coxa valga position may look unpromising in the roentgenogram, and yet present no bar to a good reduction and ultimately to a good functioning joint.

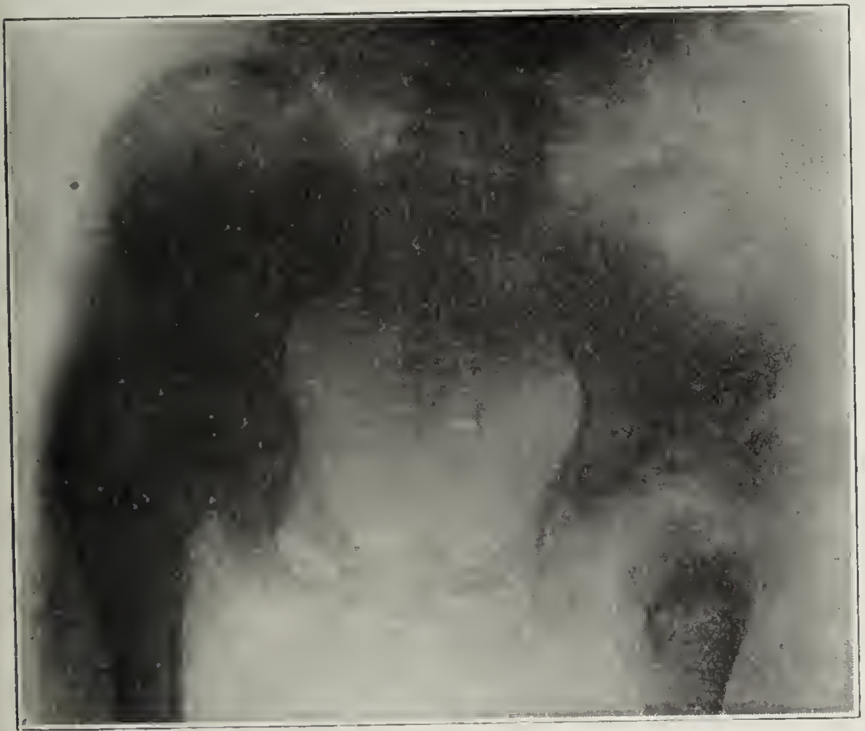

Fig. 5 (Case 3).—Soon after removal of the plaster.

Eight months is the shortest time in which a dependable acetabulum reforms, and any radical change in the position of the leg interrupts the rebuilding process. The unchanging pressure of the femoral head accelerates the absorption of the extraneous structures that obstruct the acetabulum. After the plaster spica has been removed, the child should be left to its own devices, and the longer the abduction remains, the more stable the joint will become.

The best functional result may be obtained in children from 3 to 5 years of age and with from 2.5 to 4 cm. of shortening. There is no age limit, upward. The older the child and the greater the shortening, the more secure the replacement, if it can be made. The difficulty of reduction increases with the shortening after 4 cm. have been passed. A reduction by steps can be gained in older children with 5 cm. or more of shortening by following the practice of the Vienna school. The head should be brought as near as possible to the acetabulum and put into a plaster spica just the same as if reduced, and a second attempt, made three weeks later, may result in a satisfactory replacement.

Reduction should be delayed in all cases of 3 years or younger and that show 2 cm. or less of shortening.

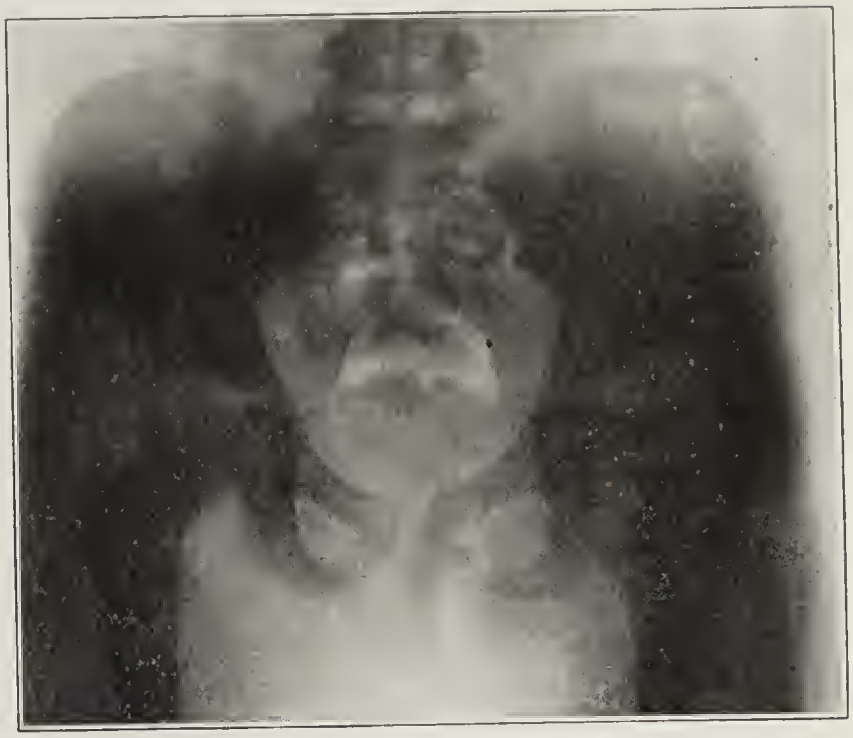

Fig. 6 (Case 3).—Two years after removal of the plaster.

The child needs all the freedom that can be safely accorded, and a great majority of unilateral cases will do best in unilateral plaster spica.

The reduction must be made at an age of susceptibility to diphtheria and other children's diseases, and the two cases here given show that if the plaster spica has been on a month or more and the roentgenogram reveals even a small remnant of the roof, the plaster may be left off one to two months with the patient on the bed without much danger of a redislocation.

If the roentgenogram shows delayed ossification from rickets or other causes, the reduction must be postponed. Roentgenographic observations of the hips should be taken before and after reduction and at frequent intervals so that a careful watch may be kept of the bone regeneration that produces a good joint.

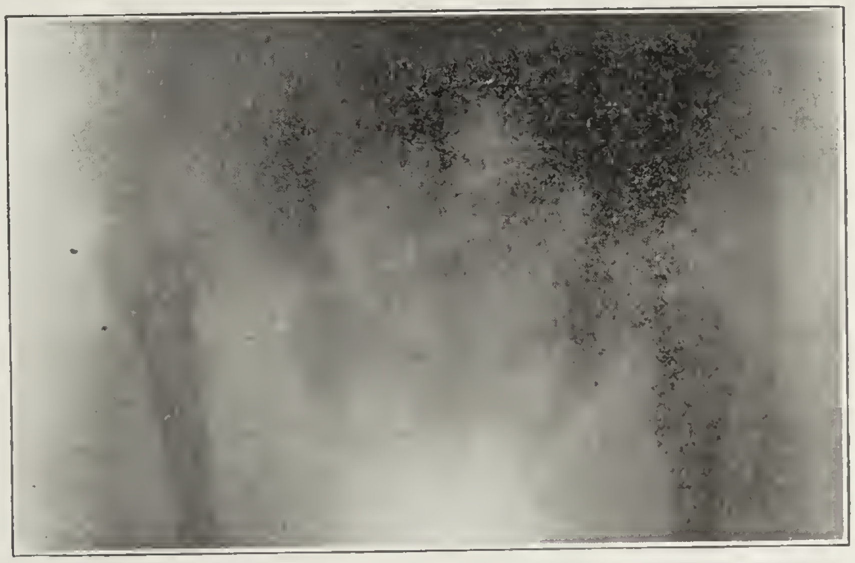

Fig. 7 (Case 4).—Before reduction.

Perfect or satisfactory function may be obtained in a large majority of the unilateral and a fair proportion of the bilateral cases.

The case that looks the best may turn out the worst, and the reduced hip that feels the most stable may be the first to go out; but a careful roentgenographic study of each case will go far toward placing the reduction of congenital hip dislocation on a more assured basis.

15 East Washington Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HIBBS, WATKINS AND BLANCHARD

Dr. John Ridlon, Chicago: I believe that Dr. Hibbs' operation is wholly unnecessary. He was good enough to let me replace one hip after he had turned the thigh bone, as he showed you today. I was very anxious over the case and found it very difficult because things did not feel natural. I believe that the operation recommended by Dr. Watkins and done by Dr. Sherman yesterday is wholly unnecessary. I believe that there is a great deal less deformity about the head and neck of the femur than we have been accustomed to believe. Some hips are dislocated backward and upward, some are dislocated forward and upward, and some are dislocated directly upwards. We have talked about the twisting of the neck for years and years, and believed that existed. I do not know whether it does or not. Now we are told that it is not there, that it is in the shaft, but I do not know whether the shaft is twisted or not. We have believed that all these dislocated hops had "hour-glass" contraction, so that the head could not be tucked back through the narrow passage. I do not think they all have it; some of them may, and very likely some of them do have it. We have been taught that the sockets were all malformed and filled with fat, fibrous tissue, and the cotyloid ring had so narrowed that the head could only go to the opening of the socket and not into the socket. Now I am sure that is not so in some cases. I am sure that the main fault in most of these congenital hips is because of a defective and a shallow socket, and here is my evidence, in two pictures that I will pass: first, of a man, 52 years old, a policeman, 6 feet 4 inches tall, and tremendously broad and heavy, and he had never had a particle of trouble with his hips in his life. These pictures show that in one hip only two-thirds of the head is included in the socket, and in the other hip one-half of the head is included in the socket. Here is another picture with a socket no deeper than the palm of my hand. I replaced this hip several years before Lorenz came here. When the plaster was taken off, the hip appeared to be normally in place. I did not see the child again until several years afterward when the existing condition was found. She walked with scarcely a perceptible limp. I believe no man, whether he manipulates by my method or Lorenz' method or Davis' method or any other method, or cuts down on it by Hibbs' method or Sherman's method, will get a better socket than Hoffa used to get, and many of his slipped out.

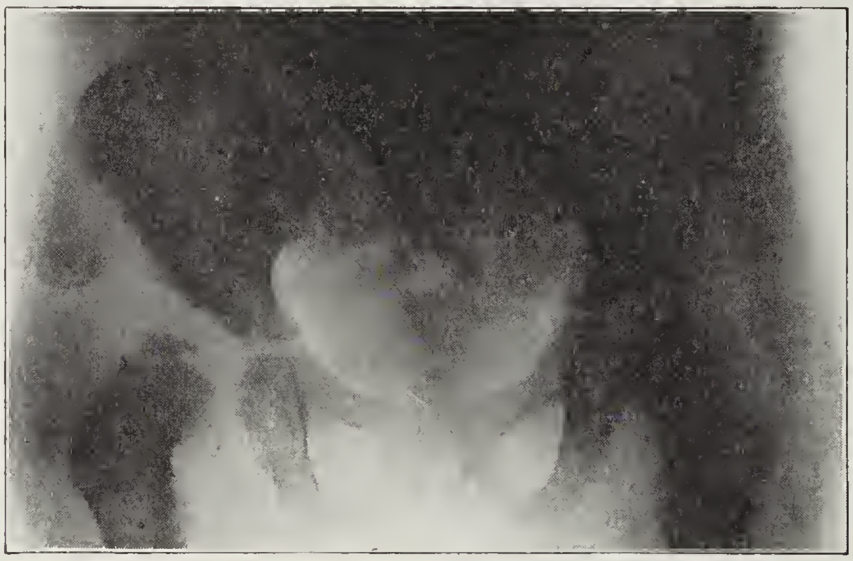
Fig. 8 (Case 4).—Two and a half years after reduction.

However you operate, whatever your methods are, you will get, according to your skill, a certain percentage of good cases, and you will have a certain percentage of cases in which the hip slips out.

Dr. Leonard W. Ely, San Francisco: During the reading of these papers a thought has occurred to me which I think would be well to mention. In visiting one of the hospitals in the city here a few days ago I saw a patient who was to be operated on for congenital dislocation of the hip. The roentgenogram showed the dislocation. There was no wound on the leg, no history of any disturbance at all. The mother had simply brought the child in and left it on account of its failure to walk. I recognized the child as a patient I had treated several months before for arthritis. I had withdrawn a syringe full of pus from the hip. The arthritis slowly subsided without further treatment, leaving behind a typical dislocation of the hip, with no sign whatever of any operation, and I wondered how many of these cases that come to us in this walk of life are of the same kind.

Dr. Russell A. Hibbs, New York: There is one other point which I did not make in my paper. There must be some relation existing between the direction of the head and neck of the femur and the direction of the center of the acetabulum. It is quite possible in some cases that the amount of anteversion in normal femurs and in normal heads varies, and to meet that condition there must be a variation in the direction of the center of the acetabulum. It is obviously very difficult to determine that question.

Dr. James T. Watkins, San Francisco: Among the procedures which we of the Children's Hospital staff have been employing of late years in the treatment of our congenital hip dislocations has been the subtrochanteric osteotomy which was first advocated by the late Professor Schede of Bonn as a means of correcting the forward twist of the upper end of the femur on the shaft. We differ from Dr. Hibbs in that we make the correction after reduction instead of before it, and attack the upper instead of the lower end of the shaft. Regarding the results of arthrotomy followed by osteotomy, our most careful estimate has given rather better than 70 per cent. of cures, which were both anatomically and functionally complete. Dr. Ridlon has lifted a great weight from my mind. If I understood him aright, one may reduce a congenital dislocation of the hip, and if God so wills it will stay reduced; otherwise it will not. Often in the still watches of the night I have worried lest imperfect results in my cases of congenital dislocation might be due to my own defects, and, humbly confessing my sins before God, I have sought diligently wherein I might do better. But now since I learn that not I but God did it, I feel better and shall sleep better.

Dr. Wallace Blanchard, Chicago: Wolf's law governs in dislocation of the hip and in the replacement of the head of the femur, the same as it governs and controls the breaking down and reconstruction of other parts of the body. The acetabulum distorts and flares out and the direction of the head and neck changes during the whole period of dislocation, but after replacement, the head builds up in the direction where the stress of weight bearing occurs and the overhanging shelf builds up where the stress of weight bearing must fall, and so Wolf's law governs and helps to replace the hip joint and make it somthing toward the normal.

Top Notchers and Thoroughness.—The third class are the top men, men who are careful, thorough and conscientious in their every relation to their patients and to their profession. There are more of them in Tennessee this year than there were last year, and there will be more next year than this. Their example is telling, and they all belong to their county medical societies. Had you noticed that?—Editorial, *Jour. Tennessee State Med. Assn.*, August, 1915.

THE SIGNIFICANCE OF THE FIXATION OF CERTAIN ABDOMINAL ORGANS IN THE HUMAN BODY *

ROBERT C. COFFEY, M.D.
PORTLAND, ORE.

In studying the abdominal cavity from the standpoint of comparative anatomy we find that in man the capsule of the liver has fused with the diaphragm, while in the quadruped the liver is suspended by a mesentery the same as other organs. In man the duodenum is firmly fixed to the right abdominal wall, while in the quadruped it is freely movable. In man the ascending and descending colon and the two flexures are normally fixed to the posterior abdominal wall without the intervention of mesentery, while in quadrupeds the large intestine has a long mesentery and is therefore freely movable. In man the great omentum grows down over the transverse colon and adheres to it. This does not occur in the quadruped. In man the omental bursa is usually obliterated by adhesion of its layers together. Obliteration does not take place in the quadruped. In man the pancreas has been rotated behind the peritoneum and fixed to the abdominal wall. In quadrupeds the pancreas lies between the layers of the mesentery. In the monkey, which is a quadruped with a tendency to stand erect, the pancreas becomes adherent and the duodenum is more firmly fixed than in the original quadruped.

Going more into detail we find that in early fetal life, soon after the beginning of the formation of the alimentary canal, as it elongates, the duodenum, which at first has a mesentery or mesogastrium, turns over to the right carrying, with it the buds of the pancreas. The duodenum with its mesentery or mesogastrium lies down, so to speak, on the right posterior primitive parietal peritoneum and adheres to it. Thus the duodenum and pancreas become retroperitoneal and fixed. As the colon elongates the cecal end works its way upward and to the right and then down again, locating itself on the posterior and right lateral wall of the abdominal cavity, external to the kidney. The same position is assumed by the descending colon on the left side. At these points the ascending and descending colon and posterior layers of their mesenteries become adherent to the posterior parietal peritoneum, the endothelial surfaces of which become obliterated. Thus the ascending and descending colon not only fix themselves, but put in front of the kidneys the fibrous elements of two extra layers of peritoneum and the vascular and connective tissue structures of the mesenteries of these parts of the colon. The ascending and descending colon and their angles are not only fixed thus by adhesions, but are fixed on a shelf, having an angle of 51 degrees to the perpendicular. This leaves the transverse colon unsupported, except at the flexures and for its own mesentery, until the omentum grows down in front of it and attaches to it. This adds two more layers to its mesentery but does not give it any material support, owing to the fact that primarily the omentum is a sac and the transverse colon is only attached to the posterior layer. Later on, however, often not until nearly adult life, the omental bursa becomes obliterated up to the transverse colon, which gives the colon an extra support from the bottom of the stomach, in the form of a gastrocolic omentum. It is well to bear in mind that the gastrocolic omentum gives no support whatever to the colon until such peritoneal adhesion and consequent obliteration of the omental bursa takes place.

Unfortunately these adhesions do not always take place in man. Very rarely is it true that the duodenum and pancreas fail to adhere to the posterior abdominal wall. Occasionally the omental bursa completely fails to obliterate and permits the center of the transverse colon to swing from the flexure without the support of gastrocolic omentum, and occasionally this condition produces serious intestinal stasis. Occasionally the descending colon alone is not fused with the parietal peritoneum and produces, once in a great many cases, a unilateral left floating kidney. The relative infrequency of a left is probably due in a large measure to the costocolic ligament and the gastrosplenic omentum which hold the splenic flexure up much more firmly than the right is held. From 20 to 30 per cent. of human beings have an incomplete fusion of the cecum and ascending colon and its mesentery with the posterior parietal peritoneum. This deficient fusion is of several degrees.

First, the cecum and ascending colon alone may be mobile and very baggy and dilated, swinging from a hepatic flexure which is firmly fixed in its normal position. In a few of this type of cases a false membrane or veil has formed, known as Jackson's membrane. This type occurs so frequently and is so slightly mobile that it may be classed as normal.

In the second class of cases the colon has only partially migrated and has attached the hepatic flexure to the front surface of the kidney, leaving the cecum and ascending colon (while the patient is in the erect posture) swinging from the peritoneum on the front surface of the kidney. This peritoneal attachment has been described by Longyear as a distinct anatomic entity under the name of nephrocolic ligament. In some instances the weight of this baggy cecum dropping directly downward pulls the kidney out of position and produces the frequently seen right-side floating kidney. At other times the kidney holds its position, the pendulous colon swings from its attachment as a tube hung over a nail, producing an intermittent obstruction with consequent dilatation of the cecum and ascending colon, resulting in severe intestinal stasis, or the intestine may pull loose, leaving the kidney in its normal position while the hepatic flexure is mobile also. Some of these cases have become partially fixed by a Jackson's membrane.

In the third degree of nonmigration the hepatic flexure attaches to the front surface of the duodenum, when the pendulous baggy cecum with its fluid contents, especially in an individual who has become thin, at times pulls down so strongly on the duodenum as to kink the duodenum at the ligament of Treitz, and also at the junction of the first and second portion of the duodenum. Such a case shows a duodenal stasis with the Roentgen ray, the symptoms of gastric ulcer in the clinical history, and a dilated duodenum at the time of operation. We have seen such patients whose stomach symptoms were entirely relieved as soon as the cecum and ascending colon had been removed. We have seen other cases in which the same relief was obtained by fixation of the ascending colon and the first half of the transverse colon which makes the colectomy unnecessary.

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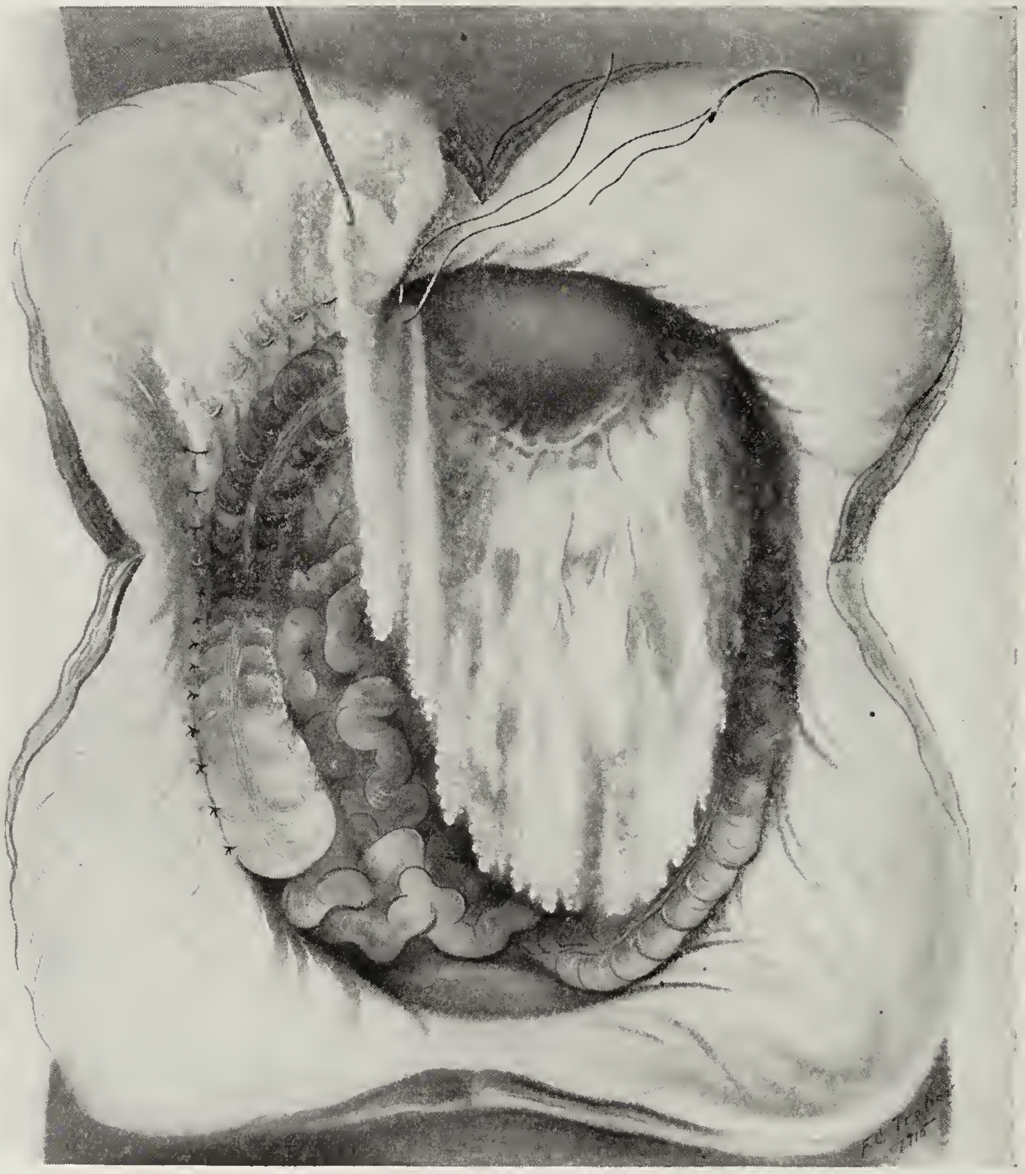
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The fourth degree of nonfixation of the ascending colon is seen occasionally and is complete nonfusion in which neither the kidney nor duodenum has been covered by the mesocolon in which very extreme intestinal stasis existed which was relieved entirely by fixation operation by the method shown in the illustration.

In a certain per cent. of human beings there is a nonfixation of both the ascending and descending colon. These are the cases in which the so-called congenital type of enteroptosis occurs, in which both kidneys and all the hollow viscera tend to fall to the bottom of the abdomen, so that when the child reaches maturity the lower abdomen is dilated, the upper abdomen is contracted, the back is straight in an effort of the body to get in under this load and assume the carrying position. We contend that this typical picture of so-called congenital ptosis is due, in nearly all if not in all cases, to a deficient peritoneal fusion, and that the peculiar body formation is nature's effort to make the best of a bad job. It is in these cases of nonfusion that all floating kidneys occur. We have been carefully watching for four years and have not found a single case of floating kidney which was not proved on the operating table to accompany a deficient fusion of the ascending or descending colon. In other words, a floating kidney is entirely a secondary condition, which accounts for the fact that the operation for floating kidneys has been considered a failure by most surgeons.



Scheme of operation for anchoring the cecum and ascending colon and suspending the first half of the transverse colon by the great omentum, for a certain form of intestinal stasis.

What is the remedy for these defects? In cases of deficient fusion on both the right and left sides, resulting in ptosis with the characteristic body formation, surgery is usually not advised nor indicated. Forced feeding, thereby increasing intra-abdominal pressure, with exercises such as Goldthwaite and also Martin have recommended, will produce the best results. Occasionally the symptoms of a patient suffering from general ptosis are so severe as to require surgical procedure, in which case nothing short of the following operation will do permanent good, namely, the fixation of the ascending and descending colon and the two kidneys, through two separate posterior incisions as described later.

Second, the opening of the abdomen and making a complete partition in the abdominal cavity by stitching the omentum beyond the colon to the parietal peritoneum from one side to the other, thus making a water-tight partition, as we have had opportunity to see at a later operation.

After this operation has been completed the upper abdomen is expanded. Fortunately this very extensive operation is rarely necessary but if any surgery is attempted in the case of general ptosis with the body habitus described by Glenard and Goldthwaite, it is perfectly useless to do less. I have performed this complete operation for general ptosis six times with very satisfactory results, and with much improvement in the patient's health.

A right-side ptosis, however, calls for more frequent surgical interference. A right-side ptosis with a floating kidney accompanied by severe intestinal stasis, pain not relieved by dietary measures, admits of surgical treatment which consists first in making a posterior incision made just as if it were intended to remove the kidney and the first part of the ureter. Before the kidney is disturbed the peritoneum is opened, the appendix removed and the colon sutured to the parietal peritoneum. The peritoneal opening having been closed, the fat capsule of the kidney is opened, a door-flap hinge 1½ inches wide, of fibrous capsule of the kidney, is peeled off each side, a piece of the quadratus lumborum muscle as large as the middle finger is split off, two or three quilt chromic catgut sutures are passed through each flap of fibrous capsule, the two from the posterior flap are drawn around back of the separated strip of quadratus lumborum and tied to the corresponding sutures from the anterior, thus using the flaps of kidney capsule like a basket handle around the muscle. The posterior part of the fat capsule is now brought up through the same slit in the muscle and sutured to the front part of the capsule, thus making an additional basket handle of fat capsule.

There are also certain cases of severe intestinal stasis in which the kidney is not movable and in which the hepatic flexure may or may not be movable, giving severe pain in the right side or possibly dragging on the duodenum and producing symptoms of duodenal ulcer, but not relieved by any kind of dietary measures. Such a patient may be entirely relieved by suturing the cecum and ascending and first half of the transverse colon by its omentum to the parietal peritoneum. This, the most frequent operation indicated in the dealing with all defects of peritoneal fusion, is performed as follows: A long right rectus incision is made to expose the entire length of the cecum and ascending colon. If any false bands or membranes have formed they should be cut and a series of purse-string sutures of very fine linen or silk passed but not tied, beginning at the cecum. Each purse-string suture should begin at the true parietal peritoneum to true peritoneum of the colon preferably including a small bight of a longitudinal band. Small bights of the intervening loose tissue should be included. These sutures should be placed every ½ to ¾ inch back toward the normal location of the kidney where the hepatic flexure is fixed. Then the intestine is turned forward and attached by its loose peritoneal connective tissue to the lateral peritoneum to within an inch of the incision and also near to the beginning of the omentum. At this stage of the operation the wall on the median side of the incision is lifted and the omentum sutured to the anterior parietal peritoneum from the median line backward to meet the other line of sutures. The omental sutures are of chromic catgut to avoid the danger of extension of a possible infection of the abdominal wound to the line of linen sutures which in two of my early cases kept up a discharging sinus for months until the linen sutures came out.

Occasionally a very severe case of constipation is due to the lack of obliteration of omental bursa, and cannot be cured by either dietary or medical means, but is entirely cured after suturing the omentum to the abdominal wall, thereby at once obliterating the omental bursa and holding up the middle of the transverse colon, which prevents the drag of a loaded transverse colon on the flexures.

CONCLUSIONS

1. Prenatal fixation of the pancreas, duodenum, ascending and descending colon and their mesenteries to the parietal peritoneum; of the liver to the diaphragm; of the omentum to the transverse colon; and the obliteration of the omental bursa, are evolutionary changes which help to fit man for the erect posture are not found in quadrupeds.

2. All cases of floating kidney with general visceroptosis are found in patients whose ascending and descending colon with mesenteries have failed to properly adhere to the parietal peritoneum. Surgical fixation of a floating kidney without fixing the colon is not based on sound surgical and anatomic principles; hence the failure of such operations in the past and necessity for surgical fixation of the colon at the same time.

3. Many cases of intestinal stasis are caused by the disturbed relations of the parts of the intestinal tract resulting from normal fixation of the ascending colon. While most of such cases are relieved by medical means, a few require surgical fixation.

Surgical fixation of the ascending colon should be extended to the suspension of first portion of the transverse colon by the omentum, for purpose of preventing harmful angulation at the hepatic flexure.

4. Some cases of persistent stomach trouble are due to the weight of a distended mobile cecum dragging on the third portion of the duodenum, and are relieved by anchoring the ascending colon and suspending the first half of the transverse colon.

789 Glisan Street.

ABSTRACT OF DISCUSSION

Dr. Max Einhorn, New York: I am glad that Dr. Coffey does not commend these operations for enteroptosis. From my experience in enteroptosis, which extends probably over a period of twenty-seven years, I would say that I have not yet seen cases in which an operation was distinctly imperative. Enteroptosis, as such, does not demand surgical intervention. Enteroptosis itself is not of such great consequence nor does it interfere in such degree with the well being of the patients, and we can always do something to relieve them of their symptoms.

It is impossible to fasten each organ in the abdomen. I think we should take it for granted that, having developed from quadrupeds and assumed a standing position, nature probably in the course of the development has already accomplished what we require, and we do not need to worry about it at all or try to imitate those quadrupeds. I do not think they are any better off than we, so that if some organs are not entirely fixed in the abdomen that does not show that they are diseased or that we should change them. A flexible organ can sometimes do its function very well, and if we try to change it we sometimes do harm. That we should bear in mind when we want to interfere.

As to the medical treatment of enteroptosis there are symptoms sometimes requiring correction, and one should try to build up the patient. A great many of these patients with enteroptosis suffer from bad nutrition. They are afraid to eat, and owing to the lack of fat they have those symptoms. If we make them eat and support the abdomen (sometimes such a support is not urgent and they can do without it) we pull the organs up and they improve and we bring about a change in the position of those organs, especially where the enteroptosis has developed after some sickness; the loosening up of the abdominal muscles through this added fat will do wonders. If we build them up, with fat and muscles the organs very often go back of themselves to their natural positions. So in these simple means of nourishing a patient we have our ideal remedy at hand to cure a great many of these patients without surgical intervention.

Dr. Albert Goldspohn, Chicago: While the previous speaker was speaking there occurred to me what has frequently been a paradox to me in the feeding question, namely, if these patients do not eat there is something wrong about their gastro-intestinal apparatus causing lack of appetite or fear of the distress which they would afterward realize. Now, if they are to be permitted to walk about on two feet and not be compelled to go on four, how is the physician to succeed in getting them to eat? And if they are crowded to eat more than they want, is there a proportionate increase in digestion and assimilation following forced feeding?

We all operate for floating kidney rather infrequently. There is probably no operation that I do less frequently than that, and as Dr. Coffey has said, simply fixing the kidney and ignoring the colon, especially when this is done by various uses of the fibrous capsule alone or chiefly, is extremely uncertain in its duration and very unsatisfactory in its results. Dr. Longyear, in suggesting the connection between the kidney and the colon, and speaking of his nephrocolonic ligament, made a step which leads us to think of a possible cause for this dissatisfaction, but I, like many other men, have not been able to trace that ligament. I know, however, that there is a united descent between the kidney and the ascending colon; that the colon is dislocated with the kidney; and I knew that before I had learned of Dr. Coffey's explanation. The technic which I have resorted to, therefore, is chiefly that suggested by Dr. Edward Andrews of Chicago, which consists in making a hammock back of and beneath the kidney out of the fatty capsule and making use of the fibrous capsule only as an adjunct or incidentally. By drawing forward and upward the fatty capsule gathered together on both sides of the kidney, we raise the colon likewise if there is a connection between the two, and by fastening the capsule like the meat in a sandwich, between the muscles in closing the wound by mattress sutures, we can make a fixed and permanent anchorage. This process in the operations that I have performed for floating kidney has been very satisfactory; and I think it coincides with the reasoning and the technic which Dr. Coffey suggests. I think it will be even better to do as he does: enter the abdomen from behind and laterally and anchor the colon and then do this work as he does it on the kidney.

Dr. A. N. Creadick, Portland, Ore.: Dr. Coffey's paper discussed one type of ptosis, namely, congenital, and not the acquired type such as we see in postpuerperal cases, with lost tone of the ventral abdominal wall, a flaccid lower abdomen and the resultant symptoms caused thereby. Let us lay down two or three simple rules for ptosis that will meet with common approval. First, ptosis is established when any supra-umbilical viscus is permanently and wholly below the level of the umbilicus, is then provocative of the usual course of symptoms and requires surgical intervention. No remedy can be applied to this type except the prostrate position or surgical procedure—some such operation as this devised by Dr. Coffey. Second, the "acquired ptosis" patients have some hope in medical treatment of their general asthenic state. The result of such medical treatment is very satisfactory in our hands. A large number of patients are relieved by medical treatment alone. Third, the factors which cause ptosis of the acquired type consist of (a) posture, the loss of the supporting shelf of the spinal column, which Dr. Coffey describes as an angle of 55 degrees from the horizontal; (b) the tone of the musculature of the ventral abdominal wall and (c) subperitoneal fat. In acquired ptosis the posture can be corrected by gymnastics, which also tone up the abdominal wall as well. (I use the frame devised by Dr. Martin of Chicago, elevating the foot to a window sill, securing an exaggerated Trendelenburg position, then requiring the patient to do regular leg exercises.) Hot compresses on the abdomen and forced feeding are useful.

Dr. H. O. Pantzer, Indianapolis: I proceed on a theory just the opposite of Dr. Coffey's. Instead of further fixing these organs for cure, I loosen all such angulations, kinks and distortions as interfere with function. In other words, in effect, I choose rather to reestablish the old quadruped condition. I may say that the clinical results are at least equally as satisfactory as those obtained by the fixation methods, which, too, in single cases, are not all we could wish for.

Dr. R. C. Coffey, Portland, Ore.: I never think of operating in these cases until the abdomen is black with blisters which the internist has produced with hot packs during forced-feeding process. The first thing is to have the internist try them out. My colleague Dr. Jones has an institution devoted to the forced feeding treatment. Occasionally there is a case that will not be relieved for mechanical reasons. I know an internist in my city who claims, like Dr. Einhorn, that he can cure them all, but I will say that many of the cases I get come through his hands.

A great many of our best surgeons are inclined to call everything general ptosis. Now Dr. Creadick spoke of acquired ptosis. There is the most definite ptosis seen in the abdomen. The ascending and descending colon have blended in perfectly with the parietal peritoneum and remain in normal position, but the stomach and the middle of the transverse colon have dropped down. This is the most troublesome type of ptosis. It has nothing to do with the subject of my paper and the majority are cured with fattening. Fattening will cure nearly all these cases by increasing the intra-abdominal pressure. The type we are discussing in the paper is an embryologic defect.

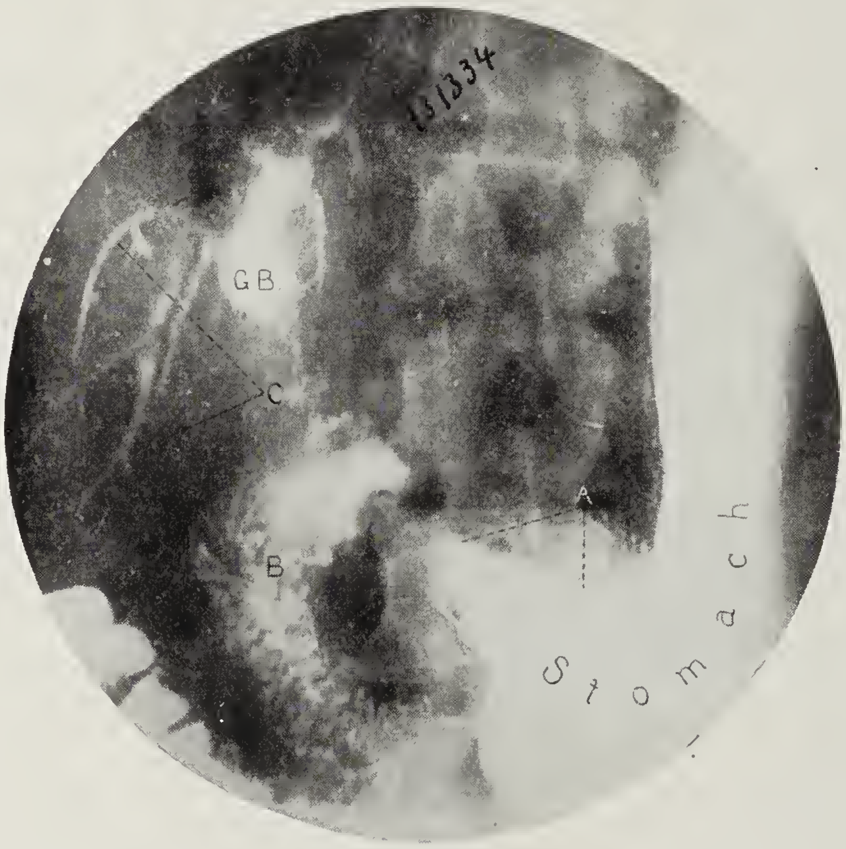
ROENTGEN OBSERVATION OF THE GALLBLADDER AND HEPATIC DUCTS AFTER PERFORATION INTO THE DUODENUM

R. D. Carman, M.D., Rochester, Minn.

The roentgenologic demonstration of a barium-filled gallbladder in a living patient is sufficiently unusual to warrant its report. So far as I am aware, no similar case confirmed by operation or necropsy has appeared in the Roentgen literature.

The patient, a woman aged 54, had had a cholecystostomy for gallstones in January of this year, elsewhere. She came to the Mayo Clinic May 22. In the scar of the operation wound were two sinuses, discharging pus, and surrounded by a movable, nodular mass. The total acidity was 4, all combined; no food remnants. Hemoglobin 80 per cent. The clinical symptoms consisted chiefly of some hunger distress, belching and watery regurgitation.

At the Roentgen examination no retention from the six-hour meal was found. When the stomach was filled with the second meal, the pyloric end showed a smooth, concentric filling defect, giving the lumen a conical form, and typical of scirrhous carcinoma. Far up in the right abdominal quadrant was a dense collection of barium with sprig-like branches (Fig. 1). From its situation this was believed to be in the gallbladder, indicating a communication between it and the upper intestinal tract, which was reported to the clinicians in charge of the case. The tendril-like branches were deemed to be due to the extension of barium into the hepatic ducts.



Roentgenogram: *A*, carcinoma, pyloric end of stomach; *B*, duodenum; *G, B*, barium in gallbladder; *C*, barium in hepatic ducts.

At operation (E. H. Beckman, June 28, 1915) the external sinuses were found to lead into a dense carcinomatous mass surrounding the gallbladder and involving the stomach. By reason of its extent the cancer was not exsectable. The gallbladder itself, which was excised, simply showed a chronic cholecystitis with particles of barium adherent to the mucosa. The fundus of the gallbladder communicated with the duodenum through a perforation.

At necropsy on the following day the perforation, which had been covered by the surgeon as well as possible, was found in the anterior wall of the first portion of the duodenum, toward the former site of the gallbladder. Metastases were noted in the liver. Some barium was seen in the hepatic ducts.

Cooperation.—Cooperating with an efficient health officer, physicians can make the efforts of the health department successful or their success impossible.—Trask.

New Instruments and Suggestions

A PRACTICAL OPERATING MASK

Richmond Stephens, M.D., New York

The variety of caps and masks in use for covering the heads and faces of doctors and nurses in an operating room indicates that the ideal head protection has not been devised. A mask or hood which completely covers the head is usually uncomfortable, while those that are comfortable do not protect the field of operation.

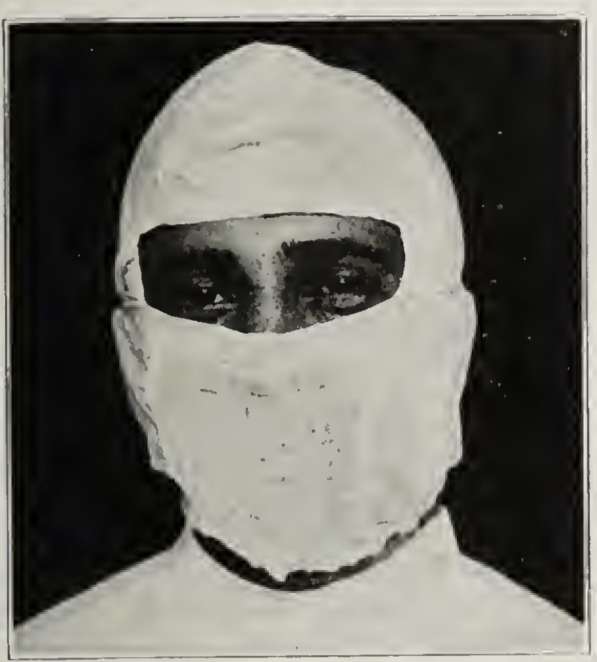


Fig. 1.—Practical operating mask.

A hood is the proper head dressing for routine use, but there are serious objections to the hood usually employed. It is made of muslin, and although not very heavy, is warm and interferes with free breathing. When eye-glasses are worn, the glass often becomes clouded by the breath. We have devised a hood which is more comfortable and satisfactory.

1. A gauze window about 4 inches square is inserted in the front over the mouth and nose. The window is made of two thicknesses of ordinary gauze.

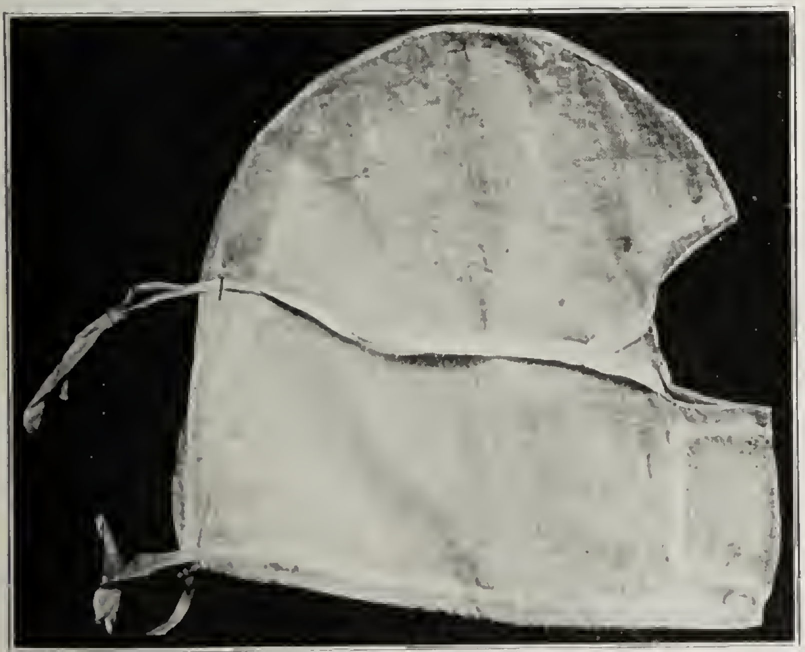


Fig. 2.—Side view of mask.

2. Tapes from the corners of the eye-opening hold the mask tight across the nose and prevent it from slipping down. The broad double attachment of the tapes prevents interference with vision by the approximation of the upper and lower edges of the eye-opening.

3. A thin, fine mesh material known as Japanese nainsook is used for the body of the hood. This is cool, and just as protective as muslin.

The size of the mask must vary somewhat for different individuals, yet a universal size may be employed which can be adjusted by means of the tapes to fit the head.

A draw-string is provided at the bottom of the mask to tie around the neck.

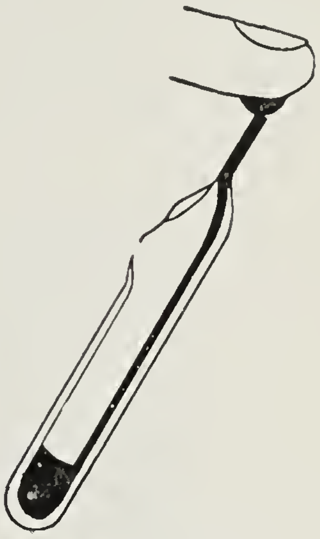
With reasonable care when coughing, talking, etc., it seems that the gauze is a sufficient filter of the air to protect the wound.

Second Surgical Division, New York Hospital.

AN EASILY FILLED CAPSULE FOR COLLECTING BLOOD

M. W. Lyon, Jr., Ph.D., Washington, D. C.

The ordinary Wright capsule requires considerable skill in filling. The modified form illustrated here in sectional diagram can be readily filled by any one. Sufficient serum for a Wassermann test is more readily obtained than by venipuncture in the hands of one who is not expert in the latter procedure. The capsule is made by closing one end of a piece of glass tubing and drawing out the other to a capillary point and closing the capillary end. The air-tight tube is then held in the flame just below the origin of the capillary end until the heated and expanding air causes a bulging on one side, which finally ruptures with a "pop," leaving a small round hole. After this the capillary end should be broken open. In use, blood flows into the capillary end and trickles down the side to the bottom of the tube, the enclosed air passing out the hole in the side. The capsule is easily placed in a centrifuge and serum readily obtained without danger of breaking the tube.



Capsule for collecting blood.

Sterile blood can be obtained by placing the capsule in a plugged test tube and heating in the hot air sterilizer. The capillary end may be sealed in a flame after filling. Sterile cotton over the side hole will permit air to pass out and prevent entrance of germs, or the unsealed capsule may be returned to the sterile test tube.

In calling attention to this easily filled capsule I wish to disclaim originality, as its use was shown me by a student who said it was employed in a laboratory at Asheville, N. C. It does not seem to be described in books dealing with technic.

George Washington University.

AN IMPROVED STOMACH TUBE

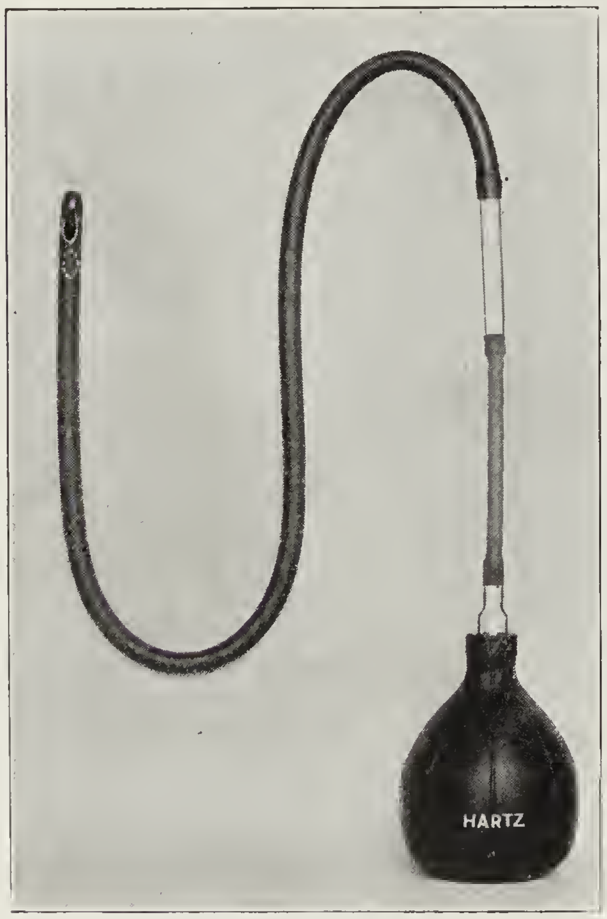
Charles D. Aaron, Sc.D. M.D., Detroit

Professor of Gastro-Enterology, Detroit College of Medicine and Surgery

The tube is made of soft rubber, but, though readily flexible, is nevertheless rigid enough, owing to its size and the thickness of its walls, to avoid all danger of coiling or kinking in the pharynx or esophagus. It is 84 cm. (32 inches) long, rounded and solid at its lower end, with two lateral openings, one about 2 cm. (three-fourths inch) from the end, the other just above it on the opposite side. These openings run obliquely upward, and have no sharp edges; the edges have been smoothed away in molding (velvet-catheter eye), so that traumatism or other injury to the mucous membrane from contact is impossible. The openings are large, rendering aspiration of the stomach contents easy. The lower end is made solid so that no particles of food can accumulate there, as frequently occurs in tubes with a terminal culdesac. The main distinguishing feature of this stomach tube is that the closed, smooth, rounded end contains a heavy piece of lead. This weighted end facilitates the passage of the tube down the esophagus without any effort on the part of the patient. Most patients regard the swallowing of a formidable-looking stomach tube as somewhat of an ordeal, but there is no need of swallowing or "gulping" when this tube is used.

METHOD OF PROCEDURE IN ASPIRATING THE STOMACH CONTENTS

The patient should sit upright, with his head bent slightly forward and held absolutely motionless. He is instructed to breathe slowly and regularly through the nose and to pay absolutely no attention to what is about to take place. The physician, standing in front of the patient, dips the free end of the tube in cold water and passes it directly to the posterior pharyngeal wall, which guides it downward toward the entrance of the esophagus. The weighted end carries the tube to the laryngopharyngeal opening, where it stops. A gentle push on the tube is now all that is necessary to carry it over the cricoid cartilage down the esophagus into the stomach, provided there is no obstruction in the esophagus. It is unnecessary to tell the patient to swallow, except in rare instances when the muscles of the neck contract spasmodically holding the tube tight. Many times the tube passes so quickly into the stomach that it is advisable to move it backward and forward to irritate the throat and induce gagging, which greatly assists the aspiration process.



Improved stomach tube.

Before passing the tube, I have the external end connected with an evacuating bulb by means of a short piece of glass tubing and a soft-rubber tube about 16 cm. (6 inches) in length. The bulb is then compressed, and a bend in the soft-rubber tube held with the thumb and finger of the left hand prevents it from filling with air. As soon as the tube reaches the stomach, the soft-rubber connecting tube is released, and the bulb, recovering its natural expanded form, aspirates sufficient gastric contents for analytic purposes.

Should lavage be desired, it can be readily and safely carried out with the tube and the evacuating bulb. The food residue in the stomach is aspirated as completely as possible with the empty bulb; the bulb is then detached, filled with water, reattached and slowly compressed until all the water has been introduced into the stomach. Then, by the mere act of releasing the pressure on the bulb, the water is withdrawn by aspiration from the stomach. This procedure is repeated with a second bulbful, and as often as may be necessary, until the water returns perfectly clear. It has been shown by Sawyer (Sawyer, John P.: Study of Methods of Lavage, Tr. Am. Gastro-Enterol. Assn., 1914, p. 146) that this method of lavage is far superior to any other.

When the tube is not in use it should never be coiled, but laid out straight. If this precaution is observed, the original shape of the tube will be maintained so that it will glide easily through the esophagus into the stomach as described.

38 West Adams Avenue.

A DIAGNOSTIC URETHRAL SOUND

Francis J. W. Maguire, B.S., M.D., Detroit

This diagnostic sound is unlike the regular sound, since a short distance from the blunt point is an hour-glass-like constriction or neck (Fig. 1). A similar constriction of the sound's diameter is located on the straight portion of the instrument. The strictures are easily felt by the operator as the hollows of the sound slip by them or hug the elevated points (Fig. 2). Physicians with an "educated" tactile sense very soon become familiar with the jerky feeling, and with this instrument can tell the precise condition of the caliber of the entire urethral canal. The sound is an ideal one in cases in which the lumen is small and very sensitive, inasmuch as its construction permits the use of instruments of very small caliber. They are made at present in sizes 18, 21 and 24, French.

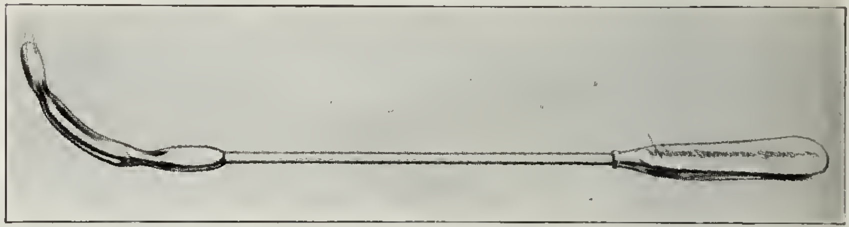


Fig. 1.—The Maguire diagnostic sound for diagnosing single or multiple strictures of the male urethra. Depressions or "necks" on the sound cause abrupt jerks as they pass the cicatrices, giving the operator a complete survey of the urethra.

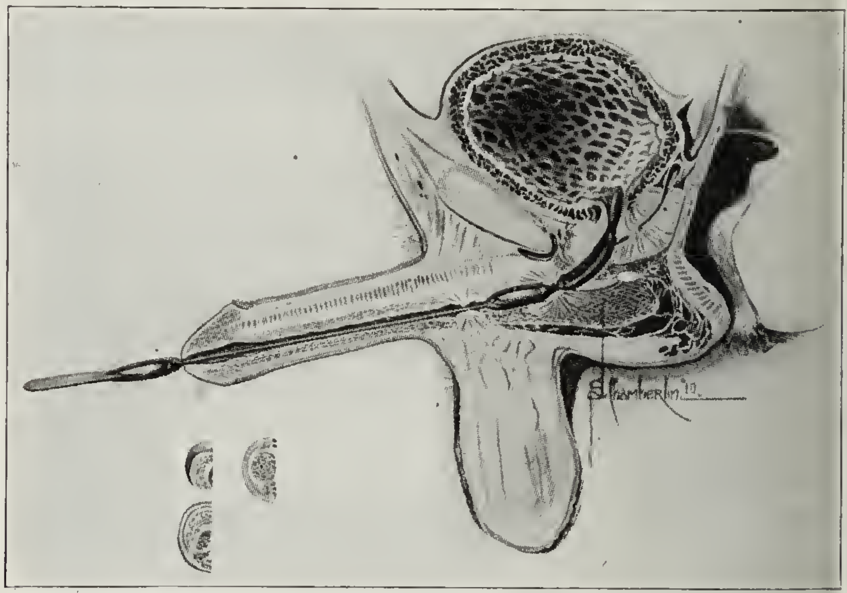


Fig. 2.—The instrument in situ. The posterior stricture is seen hugging a depression or neck in the sound.

Team Work in Disease Prevention.—There is not a solitary line of preventive and constructive work in which we do not sooner or later run up against insufficiency of community work, of registration, of collaboration, and even of mere acquaintance of those who should work together. Over and over again we become guilty of the common mistake of giving to every good worker a bigger field than can possibly be covered.—Adolf Meyer.

Therapeutics

THE MORPHIN HABIT

With the enforcement of the Harrison Narcotic Law the number of morphin habitués will rapidly diminish. Illegitimate cases of this habit must soon either be cured or must become legitimate cases and sooner or later die of the disease on account of which the morphin is used. The morphin habit may be termed legitimate when it is acquired by patients who are suffering from an incurable painful disease. Such a habit may be life prolonging, e. g., in cancer where there is pain, and in heart disease where there is cardiac dyspnea, insomnia, etc. Incidentally, cases of morphinism will probably always occasionally occur, but they should become less and less frequent. Recurrent painful conditions should not be treated or prevented by morphin until every other resource has failed. No physician in general practice can honestly say that morphin should never be given for asthma, for cardiac dyspnea, and sometimes for terrible headaches, associated with uncontrollable vomiting. Of course, there is always danger that a few of such patients will ultimately acquire the morphin habit, and such patients will always furnish a small clientele for treatment to cure the habit. At the present time there is a considerable number of patients who have acquired the habit of self-drugging by obtaining morphin after their physicians have supposed them cured of their desire for it. Another group includes those who smoke or use opium. Such patients may be termed illegitimate morphin habitués. The following article will describe several methods for the treatment:

THE EFFECT OF MORPHIN ON THE SYSTEM

The primary effect of morphin is too well understood to require more than a brief reference: In the human being it stops pain; quiets the central nervous system, except in such patients as show an idiosyncrasy against it; causes sleep, if the dose is of fair size; inhibits all secretions, except at times that of the skin; slows up or inhibits digestion in the stomach; inhibits the peristalsis of the intestines, causing constipation; diminishes the absorption of nutritive or other fluids in the intestines; inhibits and hampers the activity of the liver, and soon of the pancreas; slows the heart; may increase blood pressure, unless the dose is a prostrating one, and of course slows the respiration. A small dose may stimulate the central nervous system, especially the spinal cord, may cause the individual to become more talkative, and may cause him to appear more active mentally, although his judgment is not improved and may be impaired, as well as his self-control. Sexual stimulation may occur, and peripheral irritations may be ignored. This action of small doses is what frequently occurs in morphin habitués when they take their ordinary dose. In other words, the ordinary dose for them acts as a small dose for the individual who is not used to the drug.

The patient who is not used to morphin may have nausea, vomiting, faintness, cardiac depression and subnormal temperature when the effects of an ordinary large dose are passing off. The habitual user of morphin becomes nervous, irritable, depressed, is unable to concentrate for any physical or mental work, often has no appetite, may have loose bowels, and may have various other nervous disturbances such as an irregularly acting heart, cold, clammy hands, cough, hiccup, nausea, and various peripheral pains, all depending on the length of time he has gone without the drug.

A considerable part of the drug is destroyed in the body by oxidation, probably in the liver and tissues; some is excreted with the urine, but a portion is excreted through the mucous membrane into the stomach and intestines, from which organs a part may be again absorbed. Excretion commences soon after the ingestion of the drug, but continues for hours and sometimes for days after the last dose has been taken, if the patient has had several doses, or is a habitué.

SYMPTOMS OF CHRONIC MORPHINISM

The morphin habitué may take his drug by inhaling the smoke from burning opium, or by taking it by the mouth, or by hypodermic injection. The use of the hypodermic syringe has become more and more frequent in these patients, as they get the action of the morphin much more quickly by this method, and they have found that it does not so much upset the stomach and digestion. The effect of the habitual use of morphin is primarily an insatiable desire for more and more frequent doses and for larger doses, in order for the individual to receive the same stimulation and the same sensations of comfort. Sooner or later there is a weakening of the moral character so that the statements of the individual are entirely unreliable, and even when not directly under the influence of the drug he will not only tell plausible untruths, but also may relate peculiar and interesting stories of events that never occurred. Later there is a weakening of the mentality, and absence of all desire for exertion, either mental or physical; the patient becomes irritable, is muscularly weak, and may show some tremors; the heart may act irregularly and become feeble; there is more or less impairment of digestion, with more or less concentrated urine, often showing bile and indican, and the mouth and skin may show a low grade of jaundice. In other words, the patient is suffering a chronic toxemia from the action of the drug, morphin.

If the dose of the drug is diminished or withdrawn the patient not only suffers the symptoms described above, but the pains may become almost intolerable, there is absolute insomnia, and the nervous irritability, excitement, and sometimes almost delirium may be succeeded by such a depression of spirits as to simulate melancholia. Consequently, the treatment of the real morphin habit is always a serious proposition. Patients may die while taking the treatment for the cure of their habit. This does not mean that it is difficult to withdraw the drug gradually and completely, without the patient's knowledge, when it has been given temporarily for a short period to an acutely sick patient. This can easily be done by the careful physician almost without the patient's knowledge, either by a gradual withdrawal of the drug or by substituting temporarily some other narcotic or hypnotic.

While there is not now the danger of writing a prescription containing opium, morphin, codein or heroin, lest it be repeated by the patient unknown to the physician, that there was before the Harrison law went into effect, still it is usually unwise for the patient to know that he is receiving a narcotic of this series. The physician may give personally to the patient the dose of the drug that he is to use.

METHODS OF TREATMENT

The choice of the method of treatment for the morphin habit is of great importance. The treatment which will cure the habit most quickly, which is the least dangerous, and which will afford the patient the greatest comfort during the period of his craving for the morphin should be the one of choice. This is not to declare that there may not be several treatments, varying slightly in their application, that may fill these requirements.

The treatment of an individual addicted to the use of opium or morphin should not be attempted unless the physician is certain that the patient is absolutely under his care and that his directions will be carried out in the minutest detail. With a reliable nurse, treatment may be attempted in a patient's home, but it is not often advisable. If a patient is to be treated at home, the physician should remember that he may become delirious, not only from the withdrawal of the morphin, but from any one of the atropin treatments, and that he might injure himself, or might jump out of a window in order to escape and obtain, if possible, what he thinks he needs. Also, the convalescence of these patients, like hysteria, is better treated at an institution. In fact, it should be stated that generally better results are obtained in an institution for the treatment of this habit, or in a public or private hospital. The physician should exercise the greatest patience, and should show that he has sympathy for his patient during his mental and physical trial. At the same time the physician should be firm in carrying out the details of the treatment. He should also in every way encourage the patient to exercise his own will-power in controlling the symptoms, and later in refraining from the use of the drug.

SOME OF THE SPECIAL TREATMENTS OF THE MORPHIN HABIT

1. *The Towns-Lambert Treatment.*—Mr. Charles B. Towns, a layman, discovered and offered a treatment for the morphin and alcohol habit in 1904, at which time, however, he did not explain the ingredients of the preparation that he used. Later, in 1909, he did explain this treatment to Dr. Alexander Lambert of New York, who tried it, and described it in The Journal, Sept. 25, 1909. Subsequent articles have been published by Lambert and others. The treatment consists of the administration of mercury in the form of compound cathartic pills, and of blue mass, to produce free catharsis and relieve the congestion and inactivity of the liver. The other medicinal treatment is a mixture as follows:

℞	Tincture of belladonna............	2 fluidrams
	Fluidextract of xanthoxylum.......	
	Fluidextract of hyoscyamus...each	1 fluidounce

Mix.

A 15 per cent. tincture of belladonna should be used, not the official 10 per cent. tincture.

2. *The Pettey Treatment.*—Dr. George E. Pettey (of Memphis, Tenn.) also causes catharsis, and has the patient drink large amounts of water to dilute the body fluids, and to cause watery movements and a large amount of urine. He gives his patient tub and vapor baths. His cathartic combination is as follows:

℞	Calomel	
	Powdered extract of cascara sagrada ....each	10 grains
	Ipecac	1 grain
	Strychnin nitrate..................	¼ grain
	Atropin sulphate...................	1/50 grain

Mix, and make 4 capsules.

His other medicinal treatment is scopolamin in 1/200-grain doses, spartein sulphate in 2-grain doses, and during the scopolamin treatment 20 grains of sodium thiosulphate every two hours for twenty-four hours or more.

3. *The Sceleth Treatment.*—This treatment is advocated by Dr. Charles E. Sceleth, who is medical superintendent of the Sceleth Emergency Hospital and of the Hospital of the House of Correction in Chicago. In these institutions the majority of the cases of drug addiction in Chicago are treated. The treatment (The Journal, March 13, 1915, p. 927) consists of saline cathartics and the following combination:

℞	Scopolamin hydrobromid..........	1/100 grain
	Pilocarpin hydrobromid...........	1/12 grain
	Ethyl-morphin hydrochlorid.......	1/2 grain
	Fluidextract cascara sagrada......	15 minims
	Alcohol	35 minims
	Water ....q. s. ad	1 fluidram

The dose of the foregoing is varied according to the amount of morphin taken.

All final treatments of the convalescence must aim to build up the physical condition, occupy the mind of the patient, and stimulate and encourage his self-control.

THE OBJECTS OF TREATMENT

The objects aimed at in the treatment of the morphin habit are: to eliminate the morphin that may be left over in different parts of the body; to stimulate the activity of all glands, and especially the liver; to combat the narcotic by a physiologic antidote; while these objects are kept in view, to give the patient as much rest as possible, and to stimulate and support the heart and the circulation.

Severe prostration must occur with almost any successful treatment. The strongest opponent to chronic morphin poisoning is atropin in some form. The Towns-Lambert treatment contains belladonna, which contains atropin, and hyoscyamus which contains atropin as well as scopolamin. The Pettey treatment contains atropin and scopolamin. The Sceleth treatment contains scopolamin. Thus, each of these three treatments combats morphin with atropin, reduces the intake of morphin more or less rapidly, and in the meantime causes catharsis, practically to the limit of tolerance. Just why these particular combinations should be more successful than any other combination, or than atropin given hypodermatically, is a question for careful investigation by those who are in charge of institutions for the treatment of morphinism.

The exact physiologic activities of the drugs used are as follows:

Tincture of Belladonna. — This has no activity except that of atropin, and atropin stimulates the respiratory center, accelerates the heart, causes more or less contraction of the blood vessels, may raise the blood pressure, wakes up the brain, dries up all secretions, may cause flushing of the face, may cause parched lips and throat, dilates the pupils, and in poisonous doses causes serious tachycardia and respiratory paralysis.

Fluidextract of Xanthoxylum—Xanthoxylum is a drug which is so little used and has so little standing that it is not mentioned by some of the best books on materia medica. Others which mention this preparation state that it is seldom prescribed. The only official preparation is the fluidextract.

Xanthoxylum (prickly ash) contains a volatile oil which is irritant. Since prickly ash was first used as a drug it has been recommended for various conditions, but has not been proved to have any special activity.

t probably has some laxative properties, and may in mall doses be a stomachic stimulant, while in large loses it would cause irritation of the stomach. Any liuretic, circulatory, or expectorant action, or any ction on the nervous system is very doubtful. The uestion naturally arises, scientifically, if this drug in he Towns-Lambert mixture could not be replaced by ome more rational preparation. In other words, it s not evident just why this atropin mixture is better when combined with prickly ash. One might almost wonder if xanthoxylum had not the same bearing in he mixture that the zodiacal sign over the Latin ℞ at the beginning of the prescription is supposed to ave — an invocation to the gods that the prescription will do good.

Fluidextract of Hyoscyamus.—Hyoscyamus (henbane) contains hyoscyamin, scopolamin and a small amount of atropin. Hyoscyamin and scopolamin are really atropins, and act more or less like atropin, with the following exceptions: Hyoscyamin, which is probably always more or less contaminated with atropin, is nearly twice as strong as atropin in its ability to paralyze peripheral mechanisms. While scopolamin resembles atropin in its action, it acts as a hypnotic, unless the patient has an idiosyncrasy against all atropins, when it will cause excitation and delirium. Scopolamin acts more strongly on the peripheral nerves than does atropin. Hyoscyamin can readily cause severe prostration. In large doses scopolamin can also cause severe prostration and collapse. The fluidextract of hyoscyamus contains only 0.075 per cent. of alkaloids. The dose is 0.2 c.c. (3 minims).

It will thus be seen that the action of the fluidextract of hyoscyamus, added to the action of the tincture of belladonna, will simply intensify the action of belladonna, with possibly a slight sedative effect from the very small amount of scopolamin contained in the fluidextract of hyoscyamus. Why, then, give both hyoscyamus and belladonna?

Compound Cathartic Pill.—It should be recalled that the compound cathartic pill which enters so largely into the Towns-Lambert treatment contains a mixture of cathartics, namely, colocynth, aloes, scammony, calomel, jalap and camboge. The united effect of these cathartics, especially when given in the large doses recommended and combined with blue mass, is very free purging. This causes a depletion of the portal system, a lessening of liver congestion, an increased excretion of more or less toxic bile, and secondarily a great relief to the kidneys, on account of less toxins being absorbed from the intestines, which must later be passed off by the kidneys. There can be no doubt also that such brisk, free purging must cause a purer blood, and one that is better able to remove toxins and the products of sluggish metabolism from all parts of the body, especially from the nervous system, in these morphin patients.

Once more let it be said that there is no peculiar, wonderful action in the old and ancient compound cathartic pill. It is quite probable that any other method which would thoroughly relieve the intestines and at the same time increase the excretion of bile would have the same beneficial effect.

Pettey's purgative combination consists of calomel, cascara sagrada, ipecac, strychnin and atropin. The action of these drugs is sufficiently understood to require no further elucidation. Ipecac will increase all secretions more or less, perhaps especially the intestinal secretions. The addition of atropin to the purgative prescription might be questioned, except that it is a fact that every successful treatment seems to require something of the atropin series. Also, atropin is known to stop the griping of cathartics by dulling the peripheral nerves and preventing intestinal spasm. On the other hand, the strychnin will increase normal intestinal peristalsis, which in morphin takers has become more or less decreased. The above-mentioned cathartic is aided later by castor oil or magnesium citrate. This cathartic treatment emphasizes the fact that catharsis is what is needed, and not necessarily any particular one or more cathartic drugs. Scopolamin and strychnin are added to his treatment.

Sodium Thiosulphas (Sodium Hyposulphite).—This is largely used externally, rarely internally, and has been used as a food preservative. There is no doubt that some other drug would serve Pettey's purpose as well, especially as this drug has not been shown to have any special beneficial physiologic activity.

Spartein.—This is a liquid alkaloid obtained from the broom plant, scoparius, and has been used in medicine in the form of crystalline salt, spartein sulphate. It is a nervous depressant, and especially a motor paralyzant. Earlier experimentation seemed to show that spartein could raise the arterial pressure as well as quicken the pulse rate. Clinically, however, it has been found that in small doses it has little or no action, and in large doses it may cause circulatory depression. It has been largely used in irregular or intermittent heart and in palpitation, but it has not stood careful clinical or hospital tests, and is now very rarely used in cardiac depression.

Sceleth combines the laxative cascara sagrada with his scopolamin, pilocarpin and ethyl-morphin hydrochlorid treatment.

Pilocarpin.—This is an antagonist to scopolamin, as it promotes all secretions, especially the secretion of the saliva, of the bronchial mucous membrane, and of the sweat. It also acts against the atropin series in causing contraction of the pupils. Unlike the atropins, it is never stimulant, is always depressant, and the secondary effect is that of prostration. A single dose of the pilocarpin salt, as the hydrochlorid, nitrate, and hydrobromid, is about .01 gram, or 1/6 of a grain.

Ethyl-Morphin Hydrochlorid (Dionin).—This is the hydrochlorid of ethyl ester of morphin, that is, a morphin derivative, and the action is more or less closely like that of morphin, with a possibility that its secondary effects are more depressant. Sceleth in his treatment also uses strychnin.

These three treatments are all atropin treatments, with free purging, and the more or less gradual withdrawal of the drug, with a subsequent building up of the general system and a development in the patient of self-control.

The drugs used in these systems of treatment are not here criticized from an unfriendly standpoint, but to stimulate, if possible, a more careful study of the condition of morphinism in institutions that do not blindly follow one orthodox method. There is no halo, and there is no zodiacal sign, and there is no one prayer, that necessarily accompanies these particular combinations of drugs. It is largely the forcefulness of the men who carry out the treatment and the persistency in obtaining the object aimed at through some antagonistic drugs, profuse purging, and support of the patient through his trial.

(To be continued)

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SATURDAY, NOVEMBER 20, 1915

STUDIES OF PELLAGRA

The zeist theory of the origin of pellagra is not yet entirely abandoned, and some students of the subject are still endeavoring to connect the incidence of pellagra with some factor related to maize, or Indian corn, in the diet. At the present moment, however, a greater interest centers in the broader hypothesis that pellagra is due to some communicable factor and should be placed in the category related to that of infectious disease. The Thompson-McFadden Pellagra Commission[1] has stated that its efforts to discover the essential pellagra-producing food or the essential pellagra-preventing food have not been crowned with success. Their evidence suggests that neither substance exists in the population studied by them. Hence they have been inclined to postulate a communicable agency in the etiology of pellagra.

Within a few days, Goldberger of the U. S. Public Health Service and his associates have announced the experimental causation of pellagra in a group of human beings, as well as the cure and prevention of the disease among three groups of persons widely separated from each other geographically.[2] As a result of epidemiologic studies, Goldberger had concluded in effect that pellagra is not a communicable disease, that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately large, and that no pellagra develops in those who consume a mixed well-balanced and varied diet.[3] Having already observed the benefits of dietary treatment prescribed by Lorenz and others,[4] Goldberger and his associates began a series of feeding experiments to confirm their epidemiologic findings.

The first series of these to cure and prevent pellagra were undertaken at two orphanages in southern Mississippi. During the spring and summer and up to September 15, 1914, there had occurred at one of these institutions seventy-nine cases of the disease among a total population of about 200 inmates and employees, and at the other 130 cases among a total of about 220 inmates and employees. September 15, the diet at both institutions was supplemented by a very decided increase in the proportion of the fresh animal and leguminous protein foods. This increased diet has been continued to date, a period of about fourteen months. Of these cases, sixty-seven in the first institution and 105 in the second institution were continued under observation by the investigators for more than one year, and in only one case was there evidence of the recurrence of the disease, following the change in diet mentioned. Among the residents of these orphanages who had not had pellagra in 1914, a total of ninety-nine and sixty-nine, respectively, none developed the disease subsequently. In other words, in these two institutions, with a total population of approximately 420, almost 50 per cent. of whom had pellagra in 1914, the disease entirely disappeared, following the use of the supplemented diet, and in only one case has there been a recurrence.

In the second experiment, undertaken in December, 1914, in the Georgia State Sanitarium, about forty white and forty colored insane adults who had had pellagra in 1914 were placed in separate wards, and the diet supplemented, and special care taken in supervising the feeding. At the beginning, many of these patients presented "marked residuals" of their attacks. Of the pellagrins mentioned, seventy-two have remained under observation to date. Of the thirty-six colored patients, eight had given histories of at least two annual attacks, and of the thirty-six white patients, ten had given histories of at least two annual attacks. None of the seventy-two patients have had recurrence this year. During the same period, not less than fifteen of thirty-two control female pellagrins developed recurrences. In all the institutions, except for diet, the hygienic and sanitary conditions were unchanged. From these experiments, it is evident that pellagra has not only been cured but also prevented by means of appropriate diet.

In order to test further the relation of diet to pellagra, however, Goldberger and Wheeler[2] undertook to produce the disease among convicts who had volunteered for this experiment on promise of a pardon. The experiment was carried on at an isolated convict camp at which, beside the twelve volunteers, there were about seventy controls, twenty of whom were kept under special medical surveillance throughout the period of the experiment, that is, from Feb. 4 to Oct. 31, 1915. There had been no history of pellagra at this camp. These volunteers were strictly segregated and kept under guard night and day. From February 14 to April 19 no change of diet was made, and on careful routine examination, no evidences of pellagra were detected. At noon on the latter date, the diet was changed, the quantities of the different articles of food comprising it during a sample week (August 2-8) being as follows:

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[1] Siler, J. F.; Garrison, P. E., and McNeal, W. J.: Further Studies of the Thompson-McFadden Pellagra Commission, a Summary of the Second Progress Report, The Journal A. M. A., Sept. 28, 1914, p. 1090.

[2] Goldberger, Joseph; Waring, C. H., and Willets, D. G.: The Prevention of Pellagra: A Test of Diet Among Institutional Inmates, Pub. Health Rep., Oct. 22, 1915, p. 3117. Goldberger, Joseph, and Wheeler, G. A.: Experimental Pellagra in the Human Subject Brought About by a Restricted Diet, ibid., Nov. 12, 1915, p. 3336.

[3] Goldberger, Joseph; Waring, C. H., and Willets, D. G.: The Treatment and Prevention of Pellagra, Pub. Health Rep., Oct. 23, 1914, p. 2821.

[4] Lorenz, W. F.: The Treatment of Pellagra: Clinical Notes on Pellagrins Receiving an Excessive Diet, Pub. Health Rep., Sept. 11, 1914, p. 2357.

> Biscuits, 41.81 pounds; corn bread, 24.56 pounds; grits, 27.06 pounds; rice, 24.25 pounds; fried mush, 33.87 pounds; brown gravy, 37.81 pounds; sweet potatoes, 23.62 pounds; cabbage, 4.25 pounds; collards, 23.75 pounds; cane syrup, 5.94 pounds, making a total of 255.67 pounds of food consumed during the week, or 3.32 pounds per man per day, having a caloric value of 2,952 calories per man per day. The sugar was white granulated, the syrup a "homemade" cane syrup. No vegetable fats entered into the diet. The corn meal and grits were of the best quality obtainable in the local market and the same as used at one of the orphanages ("M. J."), Jackson, Miss., at which a feeding experiment to prevent pellagra was conducted and at which no pellagra occurred this year.

The general sanitary environment of the volunteers and controls was the same, but the personal cleanliness and freedom from insects and vermin were in favor of the volunteers. Of eleven volunteers who completed the experiment (one was released because of prostatitis), six developed symptoms, including a "typical" dermatitis justifying a diagnosis of pellagra. The nervous and gastro-intestinal symptoms were mild, but distinct. In all six, the skin manifestations were first detected on the scrotum, in two subsequently on the backs of the hands, and one on the back of the neck.

These positive experiments demonstrate that pellagra is a nutritional disease, but they do not single out any particular article of food. From these studies, and observations in other places, it is unlikely that any single article of food will be incriminated, for the "grits" which entered into the diet of the convicts who developed pellagra also entered into the diet of the children of one of the orphanages who entirely escaped the disease. Moreover, in Nairobi, where 119 cases have been reported, no maize had been raised, and "none had ever been brought into the country."

A statistician of the Public Health Service[5] has suggested a possible relation of the incidence of pellagra to certain conditions of an economic character. His industrial investigations show that the lower the economic status of the white American family, the greater is the pressure for sacrifices in diet, particularly in animal protein foods, since these are the most expensive. The economic status of wage earners' families in the Southern states, particularly of cotton mill families, is lower than that of wage earners' families in other sections of the country. Certain factors have tended to restrict the supply of protein foods in southern industrial localities that do not restrict, at least to the same extent, the supply of carbohydrates and fat. Budgetary studies of a large number of native white wage earners' families, generally comparable as to family income and size, indicate that the proportion of proteins in the diet of southern families is considerably less, and of carbohydrates and fat considerably greater than in the diet of northern families. Certain factors have tended to intensify this condition in recent years, particularly since the industrial depression began in the latter part of 1907. While the supply of a better balanced diet in southern industrial localities has apparently not been improved materially, the economic status of wage earners' families, especially in the cotton goods and lumber industries, has been lowered, and retail prices of foods have greatly increased, this increase being more pronounced, particularly since 1907, than in other sections of the country. The increase in retail food prices has been at least 40 per cent. higher for proteins than for carbohydrates or fat. The available data thus point to a lessened financial ability of southern wage earners' families to provide a properly balanced diet, as well as a decrease in the availability (measured by retail prices) of an animal protein food supply for the wage working population, particularly since about 1907 or 1908. Incidentally they tend to support the view that pellagra may be a deficiency disease, as are beriberi and scurvy, which have so often been discussed in relation to it.

It remains, therefore, to determine by further dietary and laboratory studies, which will of necessity be of a highly technical nature, the deficient or disproportionate elements in diet responsible for this disease. Judging by the advancements recently made, the problem will be eventually solved. In the meantime, there is available a practical means of prevention and cure, and to Goldberger and his associates great credit is due for their work. In view of the increasing prevalence of pellagra, and the fact that over 7,500 people in the United States will die of the disease during the present calendar year, the value of their studies from both public health and economic standpoints may be compared to those of the discovery of the relation of diet to beriberi, or the mosquito to the transmission of yellow fever.

TOBACCO AND THE HEART

The question of the effects of tobacco on the heart is an old one, and has often been discussed. The phrase "tobacco heart" has become a commonplace not only with the profession but also with the laity. Yet the amount of accurate information on this subject is still meager. This is not surprising, however, for all investigations have at least this in common: they show what a great number and variety of factors may be involved. There is indubitable evidence that the use of tobacco causes changes in the caliber of the blood vessels; there may be a constriction or a dilatation. The former, leading to a rise of blood pressure, is the more characteristic effect. Changes in the blood vessels react on the heart. It is widely held by clinicians that nicotin (and the effects of tobacco are probably chiefly nicotin effects) has a special action on the coronary arteries; to this is usually attributed the angina-like attacks frequently seen in excessive smokers. Sensory disturbances of obscure origin, but referred to the heart, are among the most pronounced symptoms of the "tobacco heart."

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[5] Sydenstricker, Edgar: The Prevalence of Pellagra: Its Possible Relation to the Rise in the Cost of Food, Pub. Health Rep., Oct. 22, 1915, p. 3132.

Recently, special attention has been devoted to the disturbances of the rhythm of the heart, use being made of the newer methods of studying these to which attention was recently called.[1] Such studies have been made on both man and the lower animals. The latter studies are in some respects of special importance, for it is only under experimental conditions, which can be controlled, that results capable of clear interpretation can be expected in such complex conditions as are evidently present. Although in animal experiments extreme, obviously "toxic," effects are frequently studied, effects which can rarely be anticipated in man, the fundamental and possible actions of a drug are often most clearly seen in such experiments. It is unsafe, however, to predict that what seem to be extreme conditions in animal experiments will not be found in man. An interesting illustration of this is seen in the discovery of the condition of auricular fibrillation now recognized as of very frequent occurrence in heart disease. Fibrillation of the auricles was produced in dogs by Cushny, and its effects on the pulse described; Cushny and Edmunds described a case in man in which a very similar pulse occurred, and suggested that in man, too, auricular fibrillation may occur—a suggestion received with incredulity, but soon found to be amply justified.

It has long been known that nicotin acts on the heart chiefly through the nerves, the vagus and the sympathetic or accelerators. The chief action is exerted on the ganglion cells interposed in the course of these nerves between the central nervous system and their endings in the heart. These ganglion cells, like all others belonging to the autonomic nervous system, are first stimulated and then depressed by nicotin. Since these nerves are antagonists and since, also, both are in a condition of tonic activity, the vagus tending to slow and the sympathetic to accelerate the heart so that the usual rate of this organ is the resultant of these two actions, it is evident that if the activity of these nerves is either increased or diminished, several results are conceivable. Thus a slowing of the heart may result from stimulation of the vagus or from paralysis of the accelerators; an increased rate may result from either a paralysis of the vagus or from a stimulation of the accelerators. The sequence in which the nerves are affected by nicotin and the response of the heart (depending on its condition) determine the end-result: the heart may be slowed, accelerated or the rate remain practically the same. All of these effects have been seen in both animals and man in nicotin poisoning. A maximum acceleration occurs if the stimulation of the accelerators coincides with the paralysis of the vagi.

Clinically, however, irregularities of the heart accompanying the excessive use of tobacco have attracted more attention than changes in rate. Many of these irregularities have recently been traced back, in part at least, to changes in the activities of these nerves, for these nerves influence not only the rate of the heart but also the conduction of impulses from one part to another and, further, the ability of different parts of the heart to take up a spontaneous rhythm.

Thus stimulation of the vagus delays the conduction of impulses from auricle to ventricle, causing partial heart block; stimulation of the accelerators facilitates the conduction of such impulses; paralysis of the accelerators delays the conduction and so may contribute to the appearance of a heart block, especially if the vagus is in a condition of increased activity. Increased activity of the accelerators facilitates the process of stimulus formation, and so may lead to the appearance of extrasystoles. The action of the vagus is exerted primarily on the auricle and the upper part of the tissue connecting auricle and ventricle; it has little direct action on the ventricle. The accelerators influence the ventricles as much as they do the auricles, if not more, and thus the simultaneous stimulation of a vagus and the accelerators may lead to a condition of ventricular tachycardia, that is, a condition in which the ventricles are beating at a rapid rate entirely independent of the auricles.

By the use of graphic methods, including that of the electrocardiograph, Pozzi and Clerc,[2] and Bull, Clerc and Pozzi[3] have observed in dogs under the influence of nicotin a great variety of cardiac irregularities identical with those which result from stimulation of the cardiac nerves, either singly or together or from stimulation of the one and paralysis of the other. Among the effects noted were simple bradycardia (with normal rhythm) probably due to the action of the vagus on the sino-auricular node; incomplete or complete heart block probably due to disturbances of conduction (vagus effect) combined with accelerator or muscle action; a shortening of the interval between the contraction of auricle and ventricle, and finally an auriculoventricular rhythm such as may be obtained by stimulation of the accelerators and, under some conditions of the vagus; the appearance of extrasystoles of various origins; marked acceleration, and a retrograde rhythm in which the auricular follow the ventricular beats.

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[1] The Rhythm of the Heart, The Journal A. M. A., Oct. 23, 1915, p. 1462.

[2] Pozzi and Clerc: Jour. phys. et path. gén., 1913, xv, 1.

[3] Bull, Clerc and Pozzi: Bull. Soc. de biol., 1914, lxxvii, 213.

As yet only a few of these effects have been described in man after the excessive use of tobacco; but bradycardia, tachycardia and the appearance of extrasystoles have been noted. These animal experiments, however, may help in the interpretation of symptoms already known and indicate what other symptoms may be expected. All of these nervous disturbances of rhythm from nicotin seem to be purely functional, and to disappear on the discontinuance of the drug.

SOME INTERRELATIONS OF DIET AND MILK PRODUCTION

Since the advent of our present-day knowledge of nutrition, it can no longer be believed that the proteins of the body fluids and tissues are merely replicas, so to speak, of the albuminous substances which enter into the diet. There may be a wide divergence in the chemical make-up of the food and body proteins, respectively, a fact which led to the statement, widely quoted in the lay press a few years ago, that cannibalism is theoretically an ideal mode of nutrition. The remark was, of course, originally intended to indicate that any scheme of diet which would supply the nutrient units—the amino-acids in the case of proteins—most nearly in the quantities and proportions in which they are to be used or deposited in the body, approaches the theoretically correct ration. Precisely so, one could most easily build a Gothic cathedral by demolishing carefully a structure of this type and using the building material thus acquired for the reconstruction of a new edifice.

The investigations of Abderhalden, Osborne, Mendel, McCollum and others[1] have given unmistakable evidence that individual proteins from different natural sources in the plant or animal kingdom have unlike efficiency in the nutritive functions. This is particularly conspicuous in the case of growth, for which some of the isolated proteins seem to lack essential constructive units. The recent studies carried on in this country, notably by Osborne, Mendel, McCollum and their co-workers, have aimed to ascertain what amino-acid groups are really indispensable for growth or maintenance, so that it may be known to what extent they must be provided for in any adequate dietary. We have already pointed out that so long as the constructive capacity of the body is largely unknown and this field of investigation remains open to further research, the safe guide in nutrition will direct us to the use of a liberal mixed diet, in which the law of chance makes the serious lack of any essential diet component less likely.

The production of milk calls for unique metabolic performances in which the production of protein is involved. In the case of a lactating individual, this participation of the mammary glands in the need of suitable food is far from negligible. The occurrence of lactose, special proteins like casein and lactalbumin, and the lower fatty acids in milk leaves little doubt that the function of milk production involves special constructive powers. It might be assumed, therefore, that despite the dependence of a growing organism on a suitable kind or variety of protein to secure perfect growth at a normal rate, the mammary gland is independent, to a larger degree, of the kind of protein in the diet. Synthesis might play a larger part in this structure.

Experiment alone can answer the inquiry here raised regarding the possible extent of special synthetic power for the formation of amino-acids needed to elaborate milk. It has long been known that the nature of the milk proteins is not altered by the character of the maternal diet, however much the volume of milk flow may be modified. Hart and Humphrey,[2] of the Wisconsin Agricultural Experiment Station, have examined the possible relation of the quality of proteins to milk production on cows. By making the ration of successive periods of observation strictly comparable in respect to total quantity of protein, "nutritive ratio," that is, relation of protein calories to the total available energy intake, and amount of "roughage" fed, they were able to note the amount of milk protein produced at the expense of a given unit of food protein. There was clearly a marked difference in the efficiency of the proteins from corn, wheat and milk, respectively, for continued milk production. In the concentrations of corn and wheat proteins used, the body always lost nitrogen after feeding with rations containing these nutrients, whereas, a positive balance followed the use of the same amount of milk proteins in the diet. Evidently the synthetic power of the mammary gland will not compensate for deficiencies in protein structure. Under the special conditions imposed in the Wisconsin experiments, it was found that milk proteins had an efficiency for milk production and tissue restoration of about 60 per cent., while the corn and wheat grain proteins showed an efficiency of 40 and 36 per cent., respectively.

As Hart and Humphrey express it, this opens up anew the problem of the protein requirements for milk production, which must be studied from the newer angle of protein structure. They also point out the somewhat astonishing fact of the influence of the forces of milk secretion in maintaining a yield of milk at the expense of tissue protein. Instead of finding a marked drop in the production of milk either in volume or concentration when their animals were fed on the relatively inefficient and insufficient corn or wheat ration, not only the flow but also the quality of the milk was maintained. This was, of course, done at the expense of distintegrated body tissue.

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[1] For a review of this subject consult Mendel, L. B.: Nutrition and Growth, The Journal A. M. A., May 8, 1915, p. 1539.

[2] Hart, E. B., and Humphrey, G. C.: The Relation of the Quality of Proteins to Milk Production, Jour. Biol. Chem., 1915, xxi, 239.

These experiences do not apply so practically to the human subject, who enjoys a wider latitude of choice in diet. Nevertheless, they give added support, if such is needed, to the desirability of including a liberal allowance of milk and milk products in the regimen of lactating women. It is doubtless true that these individuals are not infrequently producing milk at the expense of their own tissues, when a more rational scheme of diet would insure gains instead of losses.

ATTEMPTING TO CRIPPLE THE FOOD AND DRUGS ACT

The federal Food and Drugs Act was passed in 1906. By one of its most important provisions a drug product may be declared misbranded, "the package or label of which shall bear any statement . . . which shall be false or misleading in any particular." In due time, the interests affected attacked this portion of the law. A "cancer cure" quack who had been sued by the government contended that the law did not apply to claims for the curative effects of medicine but only to claims regarding composition and source of origin. The quack argued, in other words, that when Congress said "false or misleading in *any* particular" it really meant "false or misleading in *certain* particulars." When the case reached the Supreme Court of the United States the quack's contentions were upheld — in a divided opinion. So badly crippled was the Food and Drugs Act by this decision of the Supreme Court that the president sent a message to Congress urging an amendment to the law so that it might be restored to its previous efficiency. In his message the president said:

> "I fear that if no remedial legislation be granted at this session the good which has already been accomplished in regard to these nostrums will be undone, and the people of the country will be deprived of a powerful safeguard against dangerous fraud."

As a result of this message the Sherley amendment was passed. This amendment declares that a drug shall be deemed misbranded:

> ". . . if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article, or any of the ingredients or substances therein, which is false and fraudulent."

While the amendment did not give to the law the strength that might have been given, it gave the public some measure of protection against those who would swindle the sick. Naturally, the amendment was — and is — viewed with disfavor by the "patent medicine" fraternity, and it was bound to be only a matter of time before the exploiter of some fraudulent nostrum should attack the validity of the amendment. This has finally been done. As the original law was attacked by a "cancer cure" faker so the amendment is now being fought by a "consumption cure" promoter.

"Eckman's Alterative," a fraudulent consumption cure, was "discovered" by a "horse doctor." It was examined in the Association's laboratory and a report published in The Journal.[1] This, in effect, declared the stuff to consist, essentially, of alcohol and calcium chlorid, flavored with cloves. Later the federal authorities made a seizure of this nostrum, declaring it misbranded because, among other things, it claimed to be a cure for consumption, "whereas in truth and in fact, said article of drugs would not cure tuberculosis or consumption." The company was found guilty and a decree of condemnation and forfeiture was entered.[2] The concern thereupon carried up the matter on a writ of error and it is now before the Supreme Court of the United States.

The Eckman concern raises a number of technical points in its attempt to justify the fraudulent business in which it is engaged. These are described in a recent issue of the *Oil, Paint and Drug Reporter*. One is said to be based on the fact that the claim made that Eckman's Alterative will "cure" consumption appeared, not on the label attached to the bottle, but on the circular around the bottle. It is contended that as the contents of this circular did not become known to the purchaser until the package had been purchased by him and had left the realm of interstate commerce and entered that of domestic commerce, Congress could have no control over the wording of the circular. By far the most important point raised, however, is that attacking the constitutionality of the Sherley amendment. In its writ of error the company is said to allege that the Pure Food Law is unconstitutional, "in that it undertakes to regulate statements regarding the curative and therapeutic effect of the articles, which said statements are mere opinions which cannot be regulated by an act of Congress." Continuing further in this strain, the Eckman Company is quoted as saying:

> ". . . we want to call in question the power of Congress to prevent a person from making statements or claims concerning the virtue of drugs, whether modest or extravagant, and we say that an owner, when advertising his drugs has a right to exploit them and advance opinions concerning the curative properties thereof, notwithstanding the fact that such opinions may be objected to by others, and that he may make claims as to the result which will follow the use of his drugs which to some may appear unreasonable, because, in doing so, he is only doing that which the law gives him the right to do."

Moreover, this firm, engaged in one of the cruelest of the "patent medicine" frauds — that of selling an alleged cure for consumption — is said to declare:

> ". . . whether or not a person should be prosecuted for an offense or his property condemned, back of the prosecution

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[1] "Nostrums and Quackery," Ed. 2, p. 90; also a later article in The Journal A. M. A., Nov. 7, 1914.

[2] Notice of Judgment No. 2995, March 30, 1914, issued Aug. 3, 1914.

or back of the condemnation, must be an offense or crime defined by law, not merely an offense that is to be determined by the state of public opinion or of scientific opinion."

The company apparently ignores the fact that the law has already made lying on the label an offense and that such a law was passed because public opinion has been aroused to the way in which the "poisoners of the public health" have, in the past, plied their wretched trade. The argument that the curative properties of drugs are matters of opinion and, therefore, not subject to legislation was splendidly met by Justice Hughes of the United States Supreme Court, one of the three members of the court who dissented from the opinion that made the Sherley amendment necessary. Said Justice Hughes:

> "Granting the wide domain of opinion and allowing the broadest range to the conflict of medical views, there still remains a field in which statements as to curative properties are downright falsehoods and in no sense expressions of judgment."

This opinion must surely be held by all right-thinking persons who have given the subject any consideration.

WOMEN PHYSICIANS AND THE WAR

The present war, in draining the belligerent countries of their male population, has naturally thrown unwonted responsibilities on women. In various callings, positions from which women had previously been rigorously excluded, or to which they had been admitted only under protest, are now being thrown open, and women are eagerly invited to enter. In the medical profession especially the demands of the military service have produced a deficiency in the supply of civilian practitioners which can be remedied only by utilizing the services of women physicians.

Our London correspondent[1] reports that the medical journals in Great Britain are full of advertisements offering posts to women, and that the situation has become so acute that a large hospital sent an application to the secretary of the London School of Medicine for Women, "Send us *any* women at *any* salary." A daily newspaper also states, on the authority of the London School of Medicine for Women, that an infirmary post in the Whitechapel district, previously held only by a man at a salary of $500 a year and emoluments, is now advertised as open to a woman at $1,000 and emoluments. This extreme demand for women, of course, cannot continue indefinitely after the close of the war. Still, for many years after the cessation of hostilities, it will probably be literally impossible to fill all medical posts with men as exclusively as heretofore. Not only will the medical staffs of the armies in the field return from the front with ranks thinned by the hazards and hardships of war, but also the younger generation of men physicians will be greatly depleted for a time by the fact that the young men who should now be acquiring a medical education are serving under the flag. This prospect of a continuance of the demand for women physicians, at least for some years, has caused a marked increase in the numbers of women medical students.[2] The registration in the London School of Medicine for Women has doubled. Other British medical schools and hospitals are said to be considering the admission of women,[3] and one (Charing Cross Hospital), it is reported, has already opened its doors to women students.[4]

In Germany, according to press reports, in spite of the absence of the customary numbers of American, Russian, English and Swiss women students, the enrolment of women medical students has risen from 874 to 1,150, and the entry of German women in the medical course has been greatly facilitated by a recent measure recognizing the diplomas of girls' schools as adequate entrance credentials throughout the empire.

While at the close of the war men will tend to displace women physicians again to a greater or less extent, it may be taken for granted that the old order will never be reestablished in its entirety. If there are fields of medical work for which women are entirely unfitted, the fact will have been demonstrated and they will be replaced as speedily as possible; but if there are posts which a competent woman may fill as well as a competent man (it is said, by the way, that even in the organization and administration of Red Cross units women have done excellent service), it will be impossible for conservatism any longer to deny all opportunity to women. If there is any department of medicine to which women are especially adapted, that fact also will probably have been demonstrated on a larger scale than has hitherto been possible. After the war, in short, there will be a readjustment accompanied by more or less friction; but European women physicians may undoubtedly look forward in the end to a fair field, from which old prejudices have been to a considerable degree eliminated by the pressure of necessity. It will be interesting to see what use they make of their enlarged opportunities.

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[1] Women Physicians and the War, London Letter, THE JOURNAL A. M. A., Oct. 23, 1915, p. 1474.

[2] The Opening of the Medical Schools, London Letter, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1566. Walker, Jane: How is Medicine as a Profession for Women Affected by the War? Practitioner, London, September, 1915, p. 288.

[3] Willey, Florence E.: War and Medical Education of Women, Lancet, London, Oct. 9, 1915, p. 802.

[4] Modern Hospital, September, 1915, p. 150.

Marriage of Tuberculous Persons.—The supreme court of New York has decided in the case of Sobol vs. Sobol that the marriage of a person suffering from tuberculosis might be annulled at the instance of the other party to the marriage when the existence of the disease had been concealed. The court decided that in view of the possible serious consequences of such a marriage to the wife, to the children if any were born, and to the community, the marriage contract should be annulled. The legal basis of the decision was the fraud of the defendant in concealing and misrepresenting the condition of his health.—*Public Health Reports.*

Current Comment

A MODEL BILL FOR HEALTH INSURANCE

A tentative draft of an act to provide for compulsory health insurance of wage earners appears in a pamphlet[1] just issued by the American Association for Labor Legislation. This pamphlet, containing the thirty-page outline of a bill and an explanation of its provisions, embodies the results of three years' study by the social insurance committee of that association, which has been particularly fortunate in having the aid of the country's leading experts, including, among others, Miles M. Dawson, actuary, and joint author of "Workingman's Insurance in Europe"; Dr. S. S. Goldwater, late commissioner of public health of the city of New York; Dr. Alexander Lambert, chairman of the Judicial Council of the American Medical Association, and I. M. Rubinow, actuary, and author of "Social Insurance." This tentative draft provides that the cost of insurance is to be distributed among employers, employees and the state. This will entail no new expense for the working man, since the contributions of the employer and the state will enable the working man to purchase the full benefits of the act for the same outlay he now makes for burial insurance alone. The benefits included within the draft are medical care, nursing attendance, medical and surgical supplies for a limited period, cash payments during sickness for a maximum of twenty-six weeks in a year, special obstetric aid for the family, and a funeral benefit on the death of the insured. To administer the benefits, employers and employees are to be grouped in mutual associations, supervised by the state and organized according to trade and locality. It is anticipated that this method of organization, with the possibility of reducing insurance rates with an improvement in health and of cooperating with the public health authorities, will lead to an effective campaign for the conservation of health. The committee has very wisely not attempted to outline the machinery necessary to organize and provide this medical care, because it considers that provisions so vitally affecting the medical profession can be worked out most advantageously by physicians themselves. Since the pamphlet is published for the express purpose of drawing constructive criticism from the parties most interested, this is the time for the profession to express its preference. The suggestions received will be used in preparing a bill for introduction into the legislatures of 1916. It is hoped that physicians will take advantage of this opportunity and that it will be possible to avoid that lack of cooperation between the physicians and legislators which, for a time, marred some of the foreign legislation. The time to influence legislation is when it is in a formative stage. If physicians will study this important and rapidly developing problem and help to work out an equitable method of furnishing medical care and relief for working men, much dissatisfaction later on can be avoided. In England, physicians failed to make themselves heard until after the law was enacted.

A SWINDLE IN AUTOMOBILE SUPPLIES

Have you been approached by a suave salesman who is willing to let you in on a ground floor proposition to obtain your automobile supplies at cost? If you haven't, you may be! He is abroad in the land, and physicians should look out for him. They are his special "game." A certain "T. A. Buck" claims to be the representative of "the Auto Owners' Service Company of Toledo, Ohio," and offers for $10 a yellow paper certifying that the purchaser "is a member of the Auto Owners' Service Co., and shall receive all automobile accessories and supplies which he may purchase from the said company at cost f. o. b. factory for one year." But the trouble is that neither the city nor telephone directory of Toledo contains the name of the concern or the name of T. A. Buck. Further, owners of public garages and other concerns of Toledo that ought to know say that no such company exists in that city. As one of our correspondents puts it, there have been "several dozen" of such companies in Toledo, "all of which border on the fraudulent." Toledo, however, is not the only city that has been honored as headquarters for concerns that offer to furnish automobile supplies at less than cost. Physicians must be on the watch. There are reliable concerns that furnish automobile supplies on favorable terms, but these, as a rule, do not have traveling men selling certificates of membership for cash. In any event, if contracts are to be entered into, let the company send the bill in the regular way. This will give time for investigation and cool thinking after the smooth-talking representative has departed, which is far better than doing the cool thinking after the cash has departed.

THE RETIREMENT OF DR. S. S. GOLDWATER

In a brief service of less than two years as commissioner of health of the city of New York, Dr. S. S. Goldwater effected many important reforms which mark his tenure of office as unique in efficiency. The current issue of the *Weekly Bulletin* of the New York City Department of Health lists these services as follows:

1. Placing most of the important supervisory positions on a full-time basis, with a corresponding increase in the salary attaching to the positions.
2. Establishing a bureau of public health education under a director chosen as the result of an open competitive examination, and insisting on education as an indispensable factor in public health administration.
3. Establishing a division of industrial hygiene, thereby properly claiming as a health department function an important but hitherto neglected field of public health activity.
4. Establishing a division of statistical research by readjustment of existing positions within the bureau of records.
5. Revision of the sanitary code and formulation of a complete set of regulations thereunder.
6. Advancing the work of school medical inspection by providing that private physicians may make the required physical examinations.
7. Broadening the application of the dog muzzling ordinance and thereby reducing the prevalence of dog bites and the number of rabid animals in this city.
8. Waging a persistent campaign against fraudulent patent medicines and securing the adoption of an ordinance provid-

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[1] Health Insurance, the American Association for Labor Legislation, 131 East Twenty-Third Street, New York.

ing that the names of the ingredients be printed on the label of all nostrums sold in this city.

9. Providing for the regular annual physical examination of all employees of the department of health.

10. Reorganizing the bureau of food and drugs and placing at its head a recognized authority in this field, chosen as the result of an open competitive examination.

11. Inaugurating a campaign of education against the use of alcohol as a beverage.

12. Insisting on the recognition, as a menace to health, of overcrowding in the street cars, and compelling the street railway companies to provide the service needed to the limit of their capacity.

THE JOURNAL from time to time has commented on some of these enterprises. Perhaps of greatest importance are those reforms listed under headings five and eight. They represent widely different aspects of the work of a modern health department, but are evidence of the thoroughly scientific, yet at the same time intensely practical knowledge of his work possessed by the retiring commissioner. Some of the reforms are distinctly novel, and yet the campaign of education against the use of alcohol and the recognition of overcrowding in street cars as a menace to health, all will agree, are distinctly problems within the scope of an adequate health service. In conducting these activities, Dr. Goldwater has not in any case exceeded the duties of an efficient health officer, but has demonstrated that the office may be filled to best advantage by a man of thorough scientific training, untiring zeal and uncompromising courage. It is gratifying to learn that his successor, Dr. Haven Emerson, "is in full accord with the aims and policies of the retiring commissioner."

EDWARD LIVINGSTON TRUDEAU

When Dr. Edward Livingston Trudeau, whose death is announced in another column, himself a sufferer from tuberculosis, sought health in the Adirondack Mountains, in 1884, there were available in this country practically no provisions for the treatment and control of tuberculosis. The establishment of the Adirondack Cottage Sanatorium at Saranac Lake in New York marked the erection of the first institution devoted to the fresh air treatment of tuberculosis and stimulated the movement for sanatoriums, hospitals and dispensaries devoted wholly to this disease. Now, after thirty years, there are approximately 575 sanatoriums and hospitals with a capacity of 35,000 beds, 450 tuberculosis dispensaries, more than 1,000 physicians and over 4,000 nurses devoted wholly to the treatment and study of tuberculosis. More than 400 open air schools attest the practicality and success of Trudeau's idea. All are expressions of the influence of the Adirondack Cottage Sanatorium. In connection with the sanatorium should be mentioned the work of the laboratory established by Trudeau at Saranac Lake. During the last two decades monumental and important contributions to the study of tuberculosis, particularly the field of immunity, have emanated from this laboratory. Under the guidance of Dr. Trudeau, a number of men have studied at Saranac Lake, whose names today are of international importance in their relation to the study and control of this most dread disease. There is something stimulating in the very idea of the fresh air treatment of tuberculosis. There is something of the hero in the work of Trudeau, who, himself a sufferer from a wasting and fatal disease, devoted a lifetime to the alleviation of the distress of fellow sufferers from tuberculosis. Certainly, his name should endure as one who devoted himself, without hope of personal or pecuniary gain, to the proving of a principle of lasting benefit to mankind.

SECTS IN MEDICINE—THEIR ABSURDITY

On another page[1] appears a statement regarding the action taken by the Ohio State Medical Board in its attempt to regulate the medical cults in Ohio under the new law. The situation in that state furnishes an excellent illustration of the utter absurdity of the conditions which must result in any attempt to recognize by legislation the various medical cults which are continually springing up and demanding the right to practice medicine under lower educational standards than are required of physicians. The fact that fourteen different cults are specifically mentioned in the Ohio law shows how ridiculous the situation has become. Much confusion already exists in all but a few of the states in which there has been legislation recognizing sectarianism or cults. The New York legislature, in 1907, recognizing the possibility of an endless number and variety of cults arising in the future, refused to recognize any, and provided a single license and the same educational qualification for all who desired to treat the sick. Similar action has recently been taken by the New Hampshire legislature. In other states the measures thus far provided as the result of the clamor of these cults have been compromises; they have resulted in lowering, to a greater or less extent, the minimum qualifications of those who are to practice the healing art, and to the same extent subjecting the public to the danger of ignorance and incompetence from those so licensed.

SUBSCRIPTION SWINDLERS—ONCE MORE A WARNING

In the department of Queries and Minor Notes in this issue of THE JOURNAL appears again a warning against a fraudulent soliciting scheme twice previously mentioned in THE JOURNAL.[1] Several letters have been received from physicians in New York and New Jersey, indicating that this form of subscription swindling is particularly active at this time. The young man who works the scheme approaches physicians with the story that he is anxious to acquire a college education and that this may be obtained by securing subscriptions to various periodicals, which entitles him to a number of votes. He then presents a subscription blank like the one reproduced in THE JOURNAL, October 23. Several forms are used under such headings as the "Cornell Educational Association," "Michigan Educational Association," the "National Society of Universities," etc. We are trying our best to warn our readers regarding this particular scheme because it is one that appeals to the generous and philanthropic instincts of the average human being. It is, therefore, the most contemptible type of swindle. So far as The Journal is concerned, those representatives who are authorized to collect money carry a letter of authorization signed by the Editor and General Manager, bearing the seal of the Association and the signature of the agent.

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[1] Medical Education, THE JOURNAL A. M. A., this issue, p. 1838.

[1] Cornell Education Association—A Warning, General News, THE JOURNAL A. M. A., Sept. 4, 1915, p. 888; Subscription Swindlers Still at Work, Oct. 23, 1915, p. 1472.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Personal.—Dr. J. C. Helper, Woodriver, who a month ago was afflicted with anthrax, has been pronounced cured.——Dr. James M. Postle, DeKalb, was severely injured in an automobile accident near Bartlett, November 4.——Dr. William S. Howell, Winnebago, who has been ill for several months, is convalescent.——Dr. Eley E. Perisho, Streator, was operated on for appendicitis in the Streator Hospital, November 4.——Dr. Harriett B. Ward, Elgin, is preparing to leave for Los Angeles where she expects to spend the winter and may make her home.——Dr. Anda Garrison, Galatia, fractured both bones of the right forearm while cranking his automobile, November 5.

Warning Against Diphtheria.—On November 12, Dr. C. St. Clair Drake, secretary of the State Board of Health, declared that Illinois is threatened with one of the worst epidemics of diphtheria in the history of the state. The disease has appeared simultaneously in every section of the state and its spread is greatly feared by the health authorities. Dr. Drake urges that quarantine be rigidly enforced; that no case of diphtheria be declared cured until examination of cultures from the throat prove negative; that all children exposed to the disease should have cultures taken, that the prophylactic use of antitoxin should be general, and that tests should be made to ascertain what members of the family are subject to the disease.

Chicago

Personal.—Dr. Theodore B. Sachs has been reappointed a member of the board of trustees of the Municipal Tuberculosis Sanatorium and continues as director of the institute.——Dr. Thomas A. Hogan has been appointed a member of the staff of the dispensary of the Municipal Tuberculosis Sanatorium.

Typhoid Carriers Under Guard.—The commissioner of health reports that he has three typhoid carriers under surveillance. They will be guarded night and day by policemen as the County Hospital will not take patients against their will and as placing them in the Municipal Contagious Disease Hospital would expose them to the risk of other communicable diseases.

Semicentennial of Hospital.—The semicentennial of Mary Thompson Hospital for Women and Children was celebrated from November 16 to 20. On November 16 a public meeting was held in the rooms of the Chicago Woman's Club at which a history of the hospital was read by Miss Brayton, and addresses were made by Mrs. George Bass, president of the board of trustees, Mrs. Ella Flagg Young, Dr. Homer M. Thomas and others. On Wednesday a formal reception was given at the hospital at 6 p. m., in honor of the graduate and pupil nurses of the Training School for Nurses of the hospital. On Thursday evening a banquet was held at the LaSalle Hotel, and during the entire week special clinics were given by members of the staff at the Hospital, from 8 a. m. to 5 p. m.

INDIANA

Personal.—Dr. Marcus Ravdin, Evansville, who has been seriously ill with gastritis, is now convalescent.——Dr. Samuel A. Shoemaker, Bluffton, started November 1 for a trip to the Pacific Coast, visiting en route many of the medical colleges of the West.

Dispensary-University Trouble Settled.—The Board of Health of Indianapolis and the Indiana University School of Medicine have come to a satisfactory settlement of the difficulties mentioned in the last issue of The Journal. An agreement has been made whereby the college is allowed to use the City Hospital for clinical purposes and the city agrees to pay the college for conducting a free dispensary. The board of health retains the power to appoint and discharge employees and in case of disagreement, the question will be decided by a committee of three composed of one member of the faculty of the college, one member of the board of health and a third to be selected by these two.

IOWA

Health Survey Finished.—The health survey which has been conducted by Dr. Freeman of the United States Public Health Service in Dallas County has been completed. In 500 homes which were revisited the owners or occupants had already made efforts to follow out the suggestions made on the occasion of the first visit.

Home for County Society.—Dr. Archelaus G. Field, Des Moines, has made a proposition to the Polk County Medical Society to provide the organization with a home. Dr. Field's offer is to allow his residence on Thirteenth Street to be appraised by a competent board and after the price is fixed agrees to donate a considerable part of the cost to the society.

KANSAS

Public Health Nursing Association.—The Public Health Nursing Association of Topeka now has nine nurses on its staff, one of whom is to be assigned to duty with patients suffering from communicable diseases.

Personal.—Dr. Philip B. Matz, Leavenworth, has been appointed physician to the Kansas Penitentiary, succeeding Dr. James T. Faulkner, resigned.——Dr. Walter S. Sutton, Kansas City, has returned after service with the French Army.——Dr. Charles Hedinger, Canton, is still in the active practice of medicine although he has just celebrated his ninety-fourth birthday.

MARYLAND

Meetings.—A meeting of the Physicians' Civic Club was held November 11, at the Medical Library Building, for permanent organization and to listen to an address by Frederic C. Howe, commissioner of immigration at New York.——The permanent organization meeting of the Interstate Psychiatric Association will be held at the Sheppard and Enoch Pratt Hospital, at Towson, on November 23. A constitution has been drawn up and will be voted on at this meeting. Addresses will be made by Dr. Lewellys F. Barker, Baltimore, and Dr. Henry A. Cotton, Trenton, N. J.

Pasteur Institute to Close.—Announcement has been made that the work of the Pasteur Institute at Mercy Hospital, which is a department of the University of Maryland, is to be discontinued, and that the federal government will take up the work of the institute. Patients desiring treatment will have to go to New York, Philadelphia or Washington until the government makes arrangements with the local health department for the distribution of the serum used in the treatment of hydrophobia. Dr. Nathaniel G. Keirle, director of the institute, who has been in charge of the work for the past twenty years, will continue as professor of medical jurisprudence at the university.

Academic Day.—Academic Day was observed at the Univesity of Maryland on November 11. At the celebration, the Provost, Dr. Thomas Fell, announced that the university officials hope in a short time to acquire an endowment of a quarter of a million dollars at a very conservative estimate. He further added that the outlook for making the University of Maryland the recognized state university by the next legislature was encouraging. The event was the first since the merger of the university with the College of Physicians and Surgeons. The three institutions now incorporated as the University of Maryland—the university proper, St. John's College and the College of Physicians and Surgeons—were represented.

Personal.—Dr. Frederick Janney Smith, chief resident physician of the private medical wards at the Johns Hopkins Hospital, has resigned to become superintendent of the Henry Ford General Hospital in Detroit.——Dr. Ralph B. Seem, lately in charge of the dispensary of Johns Hopkins

Hospital, has been made first assistant superintendent, to fill the vacancy caused by the resignation of Dr. Karl H. Van Norman.——Dr. Lewis A. Sexton has been promoted from admitting physician to the directorship of the dispensary, succeeding Dr. Scem.——Dr. Martin L. Jarrett, Jarrettsville, is improving after undergoing an operation at St. Joseph's Hospital.——A luncheon was given in honor of Dr. Hugh H. Young, Baltimore, by the Chamber of Commerce at San Antonio, Texas, November 11. In the afternoon a reception was given in Dr. Young's honor by the local chapter of the United Daughters of the Confederacy.——Dr. John D. Fiske, Baltimore, fell while boarding the steamship *Manhattan* at Canton, November 4, sustaining painful injuries.——Dr. William B. Hunter, Baltimore, superintendent of Kernans' Hospital and Industrial School for Crippled Children, has resigned and will practice in Wilmington, N. C.——Dr. Charles A. Hellingsworth, Bel Air, is reported to be critically ill.

MASSACHUSETTS

Mental Hygiene Exhibit.—A mental hygiene conference and exhibit was held in Ford Hall, Boston, November 17 to 19, under the auspices of the Massachusetts Society for Mental Hygiene.

New Surgical Unit for War Service.—The second Harvard surgical unit to carry on the work at a British base hospital, which was inaugurated last spring, under the charge of Dr. E. A. Nichols, is rapidly being recruited. All the nurses have been enrolled and many of the medical officers. The unit will be in charge of Dr. David Cheever, Jr., and Dr. Wilfred Grenfell of Labrador was one of the first to volunteer.

Problems of State Health.—At the quarterly meeting which followed the meeting of the State Association of Boards of Health, October 28, the present defects in the executive and financial operation of boards of health in large towns of the state, were discussed. E. A. Ingham, Boston, claimed that an experienced medical man cannot be secured to serve on boards of health because of insufficient salaries and the many duties imposed on those who do serve. Septic sore throat, which has recently been added to the list of reportable diseases, was described by Dr. Eugene R. Kelley and Dr. Francis P. Denny, Brookline, advocated free hospital treatment for contagious diseases. Prof. W. T. Sedgwick of Harvard Medical School urged adequate training in the health service through conferences and courses of instruction. The meeting was presided over by Dr. Milton J. Rosenau of Harvard Medical School.

Personal.—Dr. George C. Shattuck of Harvard Medical School has returned from Serbia and at the University Club, November 4, gave an address on his experience there, illustrated by stereoptican views.——Dr. Charles A. Keegan, Arlington, was struck by an automobile in Nashway, November 4, dislocating his shoulder, fracturing his nose and rendering him unconscious. He is under treatment at St. Joseph's Hospital.——Dr. Louise Taylor-Jones, Boston, has returned from service in Serbia.——Dr. Merrill Foote, who has been on duty at Mrs. Harry Payne Whitney's Hospital at Juilly, France, arrived home, October 5.——Dr. Hugh Barr Gray has been appointed superintendent and physician to the Washingtonian Home, Boston, succeeding Dr. D. A. Ellsworth, deceased.——Dr. Alura A. C. Hughes has been placed in charge of the division of child hygiene of the Health Department of Boston.——Dr. E. Philip Lasky has been elected school physician of Haverhill, succeeding Dr. Hugh Donahue, resigned.

MICHIGAN

Diseases Close Schools.—The death of one child and the illness of several other children from infantile paralysis has caused the closing of the schools at Bentley.——Because of an epidemic of diphtheria the schools of Caro were closed for the week, November 2.

Personal.—Dr. Oscar LeSeure, chief surgeon of Grace Hospital, Detroit, since 1889, was the guest of honor at a dinner given by his medical friends November 12 at the Hotel Statler. Dr. Albert McMichael, president of the Detroit School Board, presided and about one hundred and twenty were present at the dinner.——Dr. Frank B. Marshall, Muskegon, fractured his arm while cranking his automobile, November 7.——Dr. Samuel E. Barnhart, Battle Creek, who has recently recovered from injuries received in an automobile accident at Whittier, Calif., expects to return to his duties by the first of next month.——Dr. Bartlett H. McMullen was elected mayor of Cadillac, November 2.——Dr. James W. Inches, St. Claire, has gone abroad.

MISSISSIPPI

Sanitary Survey.—Dr. J. A. Walter Bancroft, U. S. P. H. S., has been making a sanitary survey of Forest County with the idea of instructing the inhabitants of the rural commmunities what to do to safeguard their health, happiness and homes.

Society Favors Institution for Feebleminded.—At a recent meeting of the Hinds-Rankin Medical Society in Jackson, a resolution was unanimously adopted memorializing the state legislature to take steps toward the establishment of a vocational institution for the care of the feebleminded of the state.

Tuberculosis Campaign Work.—The Mississippi Antituberculosis Campaign Committee is endeavoring to secure funds for the establishment of a tuberculosis camp in Mississippi and has ordered one million Christmas seals which will be offered for sale in the state. All the funds derived from the sale of the seals will go toward the establishment of the sanatorium.

Pellagra Squad Pardoned.—The twelve convicts at the Rankin State Prison Farm, who were selected as the pellagra squad to work out the theory of Surg. Joseph Goldberger, U. S. P. H. S., that pellagra is produced by an unbalanced ration and can be cured by proper food, have been pardoned. One was released because of physical breakdown and eleven who had completed the test which began February 15, received pardons, November 1.

NEW YORK

Tuberculosis Notes.—The proposition calling for an appropriation of $30,000 for the establishment of the Steuben County Tuberculosis Sanatorium has received a majority of nearly 3,000 votes.——The referendum in Jefferson County for a tuberculosis hospital was carried by a majority of 5,020.——The tuberculosis camp maintained in Caton for the past four months for the Corning Social Service Society was closed October 28. With two exceptions the patients showed a decided improvement in health and strength as a result of their stay at the camp.

Conference of Medical Inspectors.—The annual fall conference of the New York State Association of Medical Inspectors and Physical Educators will be held November 23, at Rochester, meeting as the Section on Hygiene and Physical Education of the New York State Teachers' Association. The chairman of the section is Dr. Clinton P. McCord, Albany. The morning session will take up the subjects of: attainment of correct posture; the physical aspects of school hygiene; defective vision among school children; military training in public schools; hygiene of school buildings, and some aspects of nutrition of schoolchildren. The afternoon program consists of an informal round-table discussion of the various aspects of physical training and school hygiene.

New York City

Dinner to Dr. Goldwater.—A testimonial dinner was given by the officials of the Department of Health to Dr. Sigismund S. Goldwater on Saturday evening, November 6, at the Hotel Savoy. Dr. William H. Guilfoy, registrar, acted as toastmaster. On this occasion Dr. Goldwater outlined his conception of a modern health department as one that would serve for the maintenance of good health rather than temporizing with attempts to cure ill health.

Columbia Plans School for Health Officers.—Plans have been prepared for a two-years course of study at Columbia University leading to the degree of doctor of science in sanitation. Those taking the course must have the degree of M.D. or of C.E. in sanitary engineering or an equivalent degree. It is stated that the teaching staff will be made up of members of the faculties of the schools of graduate engineering, law, medicine, political science and pure science. The course will probably be offered for the academic year 1916-1917.

Merger of City Department.—The mayor and controller plan extensive reorganization of the city government along lines intended to promote economy and efficiency. The first step will be to ask the legislature to revise the city charter, combining into one organization the present health department, department of charities, and Bellevue and allied hospitals, under the name of the Department of Social Service. It is announced that the head of this department will be Dr. Sigismund S. Goldwater who recently resigned as head of the health department.

Occupational Diseases in Fur and Felt Shops.—A report recently made by Dr. Louis I. Harris of the Health Department as to the sanitary and clinical conditions found in the fur and felt shops of this city shows that more than 1,000 employees were examined. Among these 80 cases of chronic mercurial poisoning were found 65 cases of chronic pharyngitis, 95 of hypertrophic rhinitis, besides a number of cases of sore gums, tremors, tuberculosis, skin diseases, asthma, and anemia. As a result of this, orders have been issued to seventy-one factories to install additional health protective devices, such as dustless fur-beating machinery, protective clothing, and hygienic floors.

Mortality of Children of Alien Parents Lower than that of Native Population.—The results of a study of the relative mortality of children of native and of foreign parents made by Dr. William H. Guilfoy of the Health Department has just been made public. It shows that of every 1,000 children of native white parentage 44 boys and 35 girls do not reach their fifth year, whereas on the same basis 39 boys and 32 girls the offspring of foreigners die in early childhood. The infant mortality figures are increased when the records of negro children are considered. Among this class 112 males and 95 females out of every 1,000 die before the fifth year. The better showing made by the children of alien parentage is attributed to the fact that foreign mothers are more likely to stay at home and look after their children than are native mothers, and also to the fact that the health authorities come into more personal contact with the foreign mothers.

Anniversary Meeting of Academy.—At the anniversary meeting of the New York Academy of Medicine, November 18, the topic of discussion for the evening was "Disease and Crime—An Analogy, Has Not the Time Come When Ethics, the Law and Medicine Should Join Hands to Form a Constructive Program Aiming to Do for Crime What Has Been Done for Disease Through Systematic Study and Classification, Leading up to Effective Measures of Prevention and Intelligent Individual Treatment?" The speakers were George W. Wickersham, president of the Bar Association of New York, who spoke on "The Concern of Society in the Problem of Crime"; Warden Thomas Mott Osborn of Sing Sing Prison, who discussed "The Part Which Penal Institutions Might Be Made to Play in the Solution of the Problem"; and Chief Justice Harry Olson of the Municipal Court of Chicago, whose topic was "The Progress That Has Been Made and What the Future Promises."

Report of Public Health Committee of Academy of Medicine.—The public health committee of the New York Academy of Medicine has presented a summary of its activities since last May, among which may be noted the following: They have studied the problem of drug addiction and find that in dealing with this problem there is a lack of constructive social policy; they recommend the development of the Farm Colony at Warwick so that cases of drug addiction may be admitted to it and adequately cared for and they also recommend changes in the present court procedure with reference to commitments and the establishment of a colony for female cases, and follow-up service for patients discharged from the Farm Colony, in order to guide them in securing employment and keep them from falling again into the conditions that were responsible for the development of their drug habit; in cooperation with the Municipal Civil Service corporation this committee has considered the proposed change in the qualifications for medical inspectors in the department of health and has endorsed the requirement of one year's experience in a hospital as intern as a condition of eligibility for medical inspectorship in the department of health; they urged the importance of oral tests in examination for medical positions; they have interested themselves in urging the transfer of quarantine from the state to federal control; in street cleaning, studying the relation of dust and dirt to mortality and morbidity; in studying, in cooperation with the American Museum of Safety, the effects of certain occupations on the health of those employed in such occupations; in assisting in the preparation of a circular letter issued by the State Department of Health which was intended as a guide to physicians in the performance of vaccination against smallpox, and in considering the question of sewage disposal into Lake Mohansic; and they have made recommendations for a state policy for dealing with mental defectives, and a number of suggestions designed to add to the efficiency of the health department of the city, such as recommending the establishment of two new milk stations, endorsing the department's request for several additional physicians and nurses in tuberculosis clinics, and the request of the department of charities for a larger nursing staff in the city hospitals.

PENNSYLVANIA

Fountain Unveiled.—The memorial fountain at the entrance of the Twelfth Street Playgrounds, Harrisburg, erected in honor of Dr. William H. Jones, an esteemed colored practitioner of Harrisburg, was dedicated with appropriate ceremonies, November 6.

Medical Society Conducts Clinic.—Physicians from the eight northwestern counties of Pennsylvania conducted a medical clinic held at St. Vincent's and Homot hospitals, Erie, November 9. The clinic was held under the auspices of the Erie County Medical Society.

Dispensary Opened.—The Allentown Free Medical Dispensary of the Associated Charities was formally opened, November 4, and the third annual meeting of the Associated Charities Society was held at the recently acquired headquarters. The dispensary will be under the direction of Dr. William H. Hartzell.

Children's Ward Opened.—The new children's ward of the York Hospital was opened October 27. The ward has accommodations for twenty-five patients and at the time of opening eight were under treatment. The ward was donated to the hospital by Dr. H. David Smyser, York, and the equipment was supplied by the Ladies' Auxiliary Society.

Jefferson Alumni Hold Meeting.—At the annual meeting of the Jefferson Medical Alumni Association of northeastern Pennsylvania, held in Scranton, October 21, special medical and surgical clinics were given by members of the faculty of the college. In the evening a banquet was held at which the following officers were elected: President, Dr. Frederick L. Van Sicle, Olyphant; vice-presidents, Drs. Edward F. Hanlon, Hazleton; George R. Andreas, Wilkes-Barre; and Lewis Edwards, Kingston; secretary, Dr. John D. Williams, Scranton; treasurer, Dr. M. J. McGuire, Wilkes-Barre; auditor, Dr. Merton E. Marvin, Luzerne.

Personal.—Dr. Joseph A. Stockler, Mont Alto, has been appointed laryngologist at the State Sanatorium, Hamburg.——Dr. Howard L. Hull, Chambersburg, has been appointed associate chief medical inspector of the Department of Health of Pennsylvania with headquarters at Harrisburg.——Dr. Fannie Davis, Pittsburgh, is reported to be critically ill in a hospital in Pittsburgh.——Dr. Frank I. Walters, Pine Grove, who has been seriously ill, is reported to be improving.——Dr. George W. Mellon, Beaver, has returned from service with the American Red Cross at Belgrade.——Dr. John Spearman, Sharon, has returned after service of a year and one-half with the German army at Gleiwitz, Silesia.

Philadelphia

Vital Statistician Resigns.—Miss Eva Deerdorff, who has been chief of the division of vital statistics of the department of health and charities since February, 1914, has resigned to assume the position of assistant director of the bureau of municipal research.

University Approved Merger.—On November 8 the trustees of the University of Pennsylvania empowered their finance committee to make arrangements with the committee representing the trustees of the Medico-Chirurgical College for the merging of the two institutions. The Medico-Chirurgical board has given the same power to its committee. The joint meeting was held November 15.

Testimonial Banquet.—A testimonial banquet was given to Dr. Daniel J. McCarthy, November 4, to celebrate his return from service in the war zone.——A dinner was given by the West Philadelphia Medical Society, October 26, in honor of Dr. Charles E. A. Codman, president elect of the Medical Society of the State of Pennsylvania. Dr. John Welsh Choskey acted as toastmaster.

Aid Association Election.—At the thirty-seventh annual meeting of the Aid Association of the Philadelphia County Medical Society, November 8, a bequest of $5,000 by the will of Dr. Eugene I. Santee was announced. This raises the total beneficient fund to $50,000. Dr. Jacob R. Shellenberg was elected president; Dr. James T. Wilson, vice-president; Dr. Lewis H. Adler, Jr., secretary, and Dr. John B. Turner, treasurer.

Personal.—Dr. Richard H. Harte, former director of health and charities, in this city, is one of the six surgeons appointed by President Wilson on the newly created board of first aid standardization. The board will teach civilians first aid in time of peace, that the knowledge may be available for military requirements in the time of necessity.——Dr. Rufus S. Reeves has been appointed surgeon to the University Settlement Dispensary at Twenty-Sixth and Lombard streets.——Barton Cooke Hirst received the degree of LL.D. from Pittsburgh University at the ceremonies incident to the dedication, on October 28, of the Elizabeth Steele Magee Hospital.

Health Budget.—The council's committee on health and charities visited a number of public institutions on November 9, the annual visit incident to recommending appropriations for the coming year. Dr. S. Lewis Ziegler, director of health and charities, accompanied the committee men. He explained that the bureau of health asked for $754,340 for next year, as against $456,265 given this year, an increase of $298.075. In the bureau of charities $1,039,688 is asked for, or $179,336 less than was given this year. This decrease is due largely to the fact that a number of sums are available this year for improvements, including $100,000 for the erection of a power plant at the Home for the Indigent at Holmesburg, $80,000 for a power plant at the Institution for Feeble Minded at Byberry, $40,000 for steam and electric ducts and cables at the same place, and also $30,000 for a sewage disposal plant, $38,160 for a heat, light and power plant and $90,655 for the erection of buildings for the care of the feebleminded.

SOUTH CAROLINA

Personal.—Dr. Davis Furman has been reelected chairman of the Greenville board of health.——Dr. Luther A. Riser, Columbia, is taking a special course in public health conservation at Tulane University, New Orleans.

Hospital News.—Magdalene Hospital, Chester, has made an application to amend its charter that it may be known as Pryor's Hospital.——Dr. Frank H. McLeod will entirely rebuild his hospital at Florence at a cost of about $30,000.——St. Mary's Hospital, Anderson, owned and operated by Dr. C. Singleton Breedin, was opened to receive patients, October 26.

Tuberculosis Items.—The Greenville County Tuberculosis Camp was formally opened November 2. The camp has a modern building of sanitary construction and will accommodate from sixteen to twenty patients.——An acre of land one mile beyond Ridgewood has been donated by Mr. L. T. Wiles, Eau Claire, as a site for a tuberculosis camp. Plans have been prepared for four open air cottages, each to accommodate four patients. There are at present eleven patients in the camp.

TENNESSEE

Health Talks.—As a part of the public health campaign which is being carried on actively in Nashville, almost every pulpit in the city was occupied October 17 by physicians.

Tuberculosis Camp to Remain Open.—The tuberculosis camp at the Tri-State Fair grounds, Memphis, will be kept open all winter under the direction of the Batchelor Baby Association. During the summer 220 children were cared for and there are at present six in residence.

New Pellagra Hospital.—A movement has been inaugurated by Hamilton County to take immediate steps in providing an isolation hospital for the treatment of persons suffering from pellagra.——At the Orchard Knob Hospital there have been about fifty deaths from pellagra this year.

Personal.—Dr. Robert H. Newman, Knoxville, who has been on duty with the American Red Cross in Germany for several months, has applied for further leave of absence and expects to go to Russia.——Dr. Philander D. Sims, Chattanooga, celebrated his eighty-seventh birthday anniversary, October 22.

Hospital News.—Large additions are to be made to the private hospital of Drs. Robert P. Oppenheimer and Henry J. Kelso, Knoxville. Improvements will include a large and modernly equipped operating room.——Baptists of Memphis plan to erect a new wing to the Baptist Memorial Hospital to cost $100,000.

Contagious Disease Ward.—Contracts have been let for an isolation ward to be erected on the rear of the Erlanger Hospital lot, Chattanooga. The plans call for a one-story building with two wards each of four beds, eight private rooms, a sterilizing room and quarters for the resident nurse. The building is to cost $6,000.

Sanatorium Trustees Appointed. — The governor has appointed the following trustees to establish the Tennessee State Sanatorium for Tuberculosis: Drs. Olin West, Nashville, and Jere L. Crook, Jackson; and Messrs. W. P. Shipp, Centerville; George D. Richardson, Murfreesboro, and George R. Burry, Rogersville. The board has already looked over the Herbert domain, one of the sites proposed for the sanatorium.

Diphtheria.—The presence of diphtheria in Memphis caused the city board of education, through Superintendent A. A. Kincannon, to close all the white public grammar schools in the city, October 14, until further notice. The Central High School and the Vocational School were not affected by the order. There was no diphtheria among the negroes. It is said that this order was not made on account of the fear on the part of the authorities that the disease would spread, but because the parents of schoolchildren were becoming "panicky" and the attendance at many of the schools had fallen off remarkably. The regular attendance at the Gordon school is 400; October 13, it had fallen to 100. The disease has not been severe and there were few fatalities. Dr. James L. Andrews, on behalf of the department of health, issued a statement explaining the situation to the citizens.

TEXAS

State Surgeons Meet.—At the annual meeting of the Texas Surgical Society in San Antonio, October 19, the following officers were reelected: president, Dr. James E. Thompson, Galveston; vice presidents, Drs. Joseph H. Reuss, Cuero, and Frank Paschal, San Antonio; secretary, Dr. W. Burton Thorning, Houston; and treasurer, Dr. John B. Smoot, Dallas. Dallas was selected as the next place of meeting.

Higher Entrance Requirements.—A report from the University of Texas, Department of Medicine, says that beginning in 1917, in addition to a four-year high school education, two years of college work, including courses in physics, chemistry, biology, English and either French or German, will be required for admission. This makes fifty medical schools which have adopted for admission the requirement of two years of collegiate work.

Sanatorium Items.—Bids have been asked by the Texas Tuberculosis Sanatorium, Carlsbad, for the construction of two two-story and basement dormitories, a dining hall addition to the present subsistence building with basement, and remodeling of the old building, and a sanitary dairy, all these structures to be of reenforced concrete and fire-proof construction.——Contracts have been awarded for the erection of a solarium at the Tuberculosis Hospital connected with the Bexar County farm.——The Floresville Sanitarium, which is under the management of Drs. John F. and Laura Beckmeyer, San Antonio, was formally dedicated October 28.

WISCONSIN

County Sanatorium Opened.—Muirdale, the new tuberculosis sanatorium for Milwaukee County, with accommodations for 275 patients, was formally dedicated November 14, and three days later was opened to receive patients.

Sterilization Law.—It is reported that ten male inmates of the State Home for the Feebleminded have been sterilizd under the new state law. Operations on the fourteen remaining male inmates of the home will be deferred until the results of the ten operations already performed have been observed.

Rabies.—The head of a cow sent from Norrie, Marathon County, when examined in the state hygienic laboratory, was found to be affected with rabies. This is the first case of rabies found in the state for more than a year. Stringent measures have been advised in the community to prevent the spread of the disease.

Tuberculosis Notes.—The seventh annual meeting of the Wisconsin Antituberculosis Society was held in Milwaukee, November 18 to 20. On the first day a sanatorium conference was held with Dr. Thomas Willett, West Allis, as chairman; on the second day the business meeting and annual dinner occurred, and on the third day there was a nurses' conference.

CANADA

Toronto Base Hospital in Greece.—The University of Toronto Base Hospital, which has been in Alexandria, Egypt, has gone to Saloniki.

Tuberculosis Sunday.—November 14 was Tuberculosis Sunday throughout Ontario, and about 18,000 Ontario clergymen received instructions to preach on the subject.

Sanitary Institutions.—Sanitation is to be an important matter in the various military camps throughout Ontario this winter. Sanitary squads are being organized by the Ontario Board of Health under Dr. John W. S. McCullough, Toronto. Each squad will consist of one commissioned officer, fourteen noncommissioned officers and forty privates.

Personal.—Capt. B. S. Hutcheson has arrived in Toronto to be medical officer for the American regiment being recruited in Toronto for overseas service. All the members of this company are to be American residents in Toronto. They take the oath of allegiance to the king, for a period of six months after the war.——The Hon. Dr. Preston, a member of the Ontario government, is to represent that government at the funeral of Sir Charles Tupper in Halifax.——Dr. J. R. L. Christison, Edmonton, Alta., is visiting in Toronto on his way to Europe to join the R. A. M. C.——Dr. Thomas D. Cumberland, assistant in the Hospital for the Insane, Toronto, is with the R. A. M. C. in Belgium.

Hospital News.—Word has been received by Canada's minister of militia, Sir Sam Hughes, that the new hospital for Canadian soldiers, financed by the Massey-Harris Company, Toronto, located in Chatham House, Ramsgate, will be ready for use shortly.——The Ontario Hospital staff for the new hospital being erected in Orpington, England, will be appointed by Canadian military authorities in England. The appointments will be made from Canadian physicians already in England or on the continent. Some will, however, be nominated by the Ontario government. These appointments are causing some dissatisfaction both among the medical men in the Canadian militia, as well as among those in private life who have volunteered their services. It is reported several of the latter have withdrawn their offer of services on account of the manner in which selections are to be made.——There is said to be considerable of a tangle in connection with wounded soldiers returned to Canada unfit for further service. Lieut.-Col. Marlow of the camp in Toronto with his medical board have been ordered to investigate the matter at Quebec. The other members of the board are Major C. J. Currie and Capts. F. J. Munn and F. N. Hughes.

GENERAL

Child Welfare Exhibits.—The Children's Bureau of the Federal Department of Labor announces that a bulletin has been prepared to serve as a reply to the many inquiries about child welfare exhibits, which may be had in single copies for the asking. To those who are planning a baby show, a children's health conference, or to communities which expect to observe Baby Week next March, the bulletin offers the benefit of expert advice and practical experience. It is full of suggestions for communities of all sizes, but advises that no community undertake a child welfare exhibit without the cooperation of all social agencies of the community. Instances are given of the benefit to communities in the way of increased appropriations, permanent improvements and a combination of social welfare agencies to secure and carry out a program of legislation and welfare work following child welfare exhibits.

New Officers for Southern Physicians.—At the annual meeting of the Southern Medical Association held in Dallas, Tex., November 9 to 11, Atlanta, Ga., was selected as the next place of meeting. Dr. Robert Wilson, Jr., Charleston, S. C., was elected president, and resolutions were adopted recommending that the proportion of medical officers in the regular military establishment of the United States should equal at least seventy-five one hundredths (75/100) of 1 per cent. of the enlisted strength "or such number as the surgeon general deems necessary." The following section officers were elected: medical section—Dr. Khleaber H. Beall, Fort Worth, Tex., chairman; Dr. Frederick C. Moor, Tallahassee, Fla., vice-chairman, and Dr. Thompson Frazer, Asheville, N. C., secretary; surgical section—Dr. John H. Blackburn, Bowling Green, Ky., chairman; Dr. F. Webb Griffith, Asheville, N. C., vice-chairman, and Dr. Lucian A. Andree, New Orleans, secretary; eye, ear, nose and throat section—Dr. J. Williamson Jervey, Greenville, S. C., chairman; Dr. Thomas W. Moore, Huntington, W. Va., vice-chairman, and Dr. William T. Patton, New Orleans, secretary.

Metal Mine Accidents in 1914.—In Kansas, Minnesota, New Jersey, New Mexico, Oregon, South Dakota, Virginia and the Territory of Alaska, during 1914 there was a reduction of more than 20 per cent. in the fatality rate in metal mines. There was a slightly higher injury rate for most of the mining states for the same period, but, it is believed, as set forth in the report of Albert H. Fay, mining engineer of the bureau of mines, that the enactment of workman's compensation laws and the educational campaign conducted by state inspectors, mine operators and the bureau of mines has resulted in the more accurate figures concerning mine accidents and therefore more nearly represents the real hazards of the industry than the reports of former years. The number of fatalities during 1914 was 559 as compared with 683 in 1913. The number of men employed for 1914 was 158,115, while for 1913 it was 191,276. The fatality rate for 1914 was 3.54 per 1,000 employed, as against 3.57 in 1913. There were 5,073 serious injuries which resulted in the loss of time of twenty days or more, as compared with 5,890 for 1913. The serious injury rate for 1914 is 32.08 per 1,000, as compared with 30.79 for 1913. There were 25,143 slight injuries resulting in the loss of less than twenty days in each instance, as compared with 27.081 for 1913, or, 159.02 per 1,000, as compared with 141.58 for the preceding year.

Infant Mortality Conference.—Launching a concerted movement to "save the babies" of the whole United States, the American Association for Study and Prevention of Infant Mortality closed its sixth annual convention November 12. The delegates, who had been in session at the Bellevue-Stratford for three days, adopted a resolution calling on the association's members to cooperate with the Federal Children's Bureau at Washington, and the American Federation of Woman's Clubs in holding "Baby Saving Week" in every city in the country from March 4 to March 11, 1916. Uniform laws in all the states regarding the regulation of child labor and the enforcement of laws requiring all births to be reported within five days, under severe penalty for failure to do so, will be among the aims of the nation-wide campaign. Congress will also be urged to defeat any bills which allow narcotic drugs to be used as constituents of "soothing syrups" and similar "remedies" for children's ailments. The legislation passed in many states, purporting to regulate such "patent medicines," actually exempted from their provisions many deleterious preparations, it was said. The next annual convention of the association will be held in Milwaukee in November, 1916. The following officers were elected: president, Dr. Samuel McClintock Hamill, Philadelphia; vice presidents, Drs. Joseph S. Neff, Philadelphia, and Dr. Thomas C. McCleave, Berkeley, Cal.; secretary, Dr. Philip Van Ingen, New York; treasurer, Austin McLanahan, Baltimore, and executive secretary, Miss Gertrude B. Knipp, Baltimore.

FOREIGN

Annual Meeting of the Organized Profession in Ecuador.—The first Congreso Medico-Ecuatoriano was held last month at Guayaquil with a large and representative assemblage. Numerous communications were read and public health matters discussed, the time proving all too short for all the papers that had been presented and surgical demonstrations planned. The closing banquet was a brilliant and cordial conclusion to the meeting.

Monument to Carrion.—August 27, the thirtieth anniversary of Daniel R. Carrion's inoculation of himself with Peruvian verruga, a bronze memorial plate was unveiled to his memory. The memorial is in the general hospital at Lima, Peru, and was erected by the medical staff of the hospital where Carrion, a medical student, made his experiment, the "Hospital Dos de Mayo." The *Cronica Medica* mentions that his aged mother was present. The same issue gives a Spanish translation of the report on verruga and Oroya fever published by Strong, Tyzzer and Sellards in The Journal, March 6, 1915. Young Carrion's experiment resulted fatally and the scientific results were not conclusive.

Deaths in the Profession Abroad.—E. Jeger, known for his experimental work on surgery of the vessels and for the surgical articles he despatched by aviator post during the siege of Prszemysl, was taken prisoner by the Russians and died recently in captivity.——F. M. Oberländer, one of the leading urologists of Germany, aged 67. He was one of the founders and editors of the *Klinisches Handbuch der Harn- und Sexualorgane*, and of the *Centralblatt* for the same specialty, and the *Monatsschrift für Urologie*.——E. Ludwig, professor emeritus of applied medical chemistry at the University of Vienna, aged 73, author of several textbooks on medical and pharmaceutical chemistry. His contributions to chemistry were numerous, principally in the line of analysis. He served as president of the national public health service and was a member of the upper house.

WAR NOTES

Exportation of Medical Publications Forbidden.—The *Allg. med. Central-Zeitung* relates that the publishers of medical works and periodicals in the Marken states of Germany have been notified that the military authorities cannot consent further to medical works being sent to the enemies' countries if the works contain anything that might help the enemy in conducting the war. The publishers are asked to confer with the medical branch of the war department in case of doubt. Brandenburg, including Berlin, is one of the marches.

Alternating Service of the Medical Force with the French Army.—A Paris exchange states that the government has made arrangements by which physicians wearied by fifteen months' service with the active army can yield their places to others now in the home zone. Among the 8,000 with the army, 1,500 have expressed a desire to be relieved of this service, but there are only 600 available among those who have not already gone to the front. The exchanges are made very gradually so as not to interfere with the workings of the service.

Visit of Inspection to Camps of Prisoners in Austria.—The officers of the international committee of the Red Cross, which has its headquarters at Geneva, recently visited Vienna to inspect the camps of prisoners of war and of interned civilians. The party included the president, Ador, Dr. Ferrière and Dr. Schulthess-Rechberg. They visited the camps at Ralzenau, Lengbach, Wieselburg and Mauthausen, and the Vienna information bureau for prisoners of war, and also the various activities of the Austrian Red Cross, which facilitated their mission in every way.

Bathing Facilities for the Soldiers on the Firing Line.—The bath trains and similar arrangements for bathing require a track or good roads, and hence cannot be utilized by the soldiers at the farthest front. To remedy this, the Austrian Red Cross has provided a bathing outfit which is contained in two wooden boxes that can be carried in any vehicle. Three hundred such outfits have been despatched to the extreme front and are proving very satisfactory. The outfit was devised by Dr. J. v. Winter, and is adapted for field hospitals and for disinfection purposes.

The Medical Profession of France and the War.—A complete list of all French physicians and surgeons who have been killed, wounded or taken prisoner in the war to date has been issued at Paris by the Société d' anatomie comparée. It is called the "Livre d' or de la grande famille médicale." and contains also the names of all who have been honored in any way for conspicuous gallantry, with the details, both for army and navy medical officers and civilian physicians and surgeons, veterinarians and pharmacists. The price of the work is 2 francs. It is published by Maloine, 25 rue de l'Ecole de Médecine, Paris, the proceeds, we understand, to go to the relief fund for members of the profession during the war.

PARIS LETTER

Paris, Oct. 21, 1915.

The War

ROTATION IN SERVICE AT THE FRONT

Many physicians who have been at the front since the outbreak of the war have complained of the injustice in the fact that many other physicians have continued to be stationed at a distance from the front. In a previous letter (The Journal, Sept. 4, 1915, p. 891) I mentioned an article by M. André Maginot which voiced some of these complaints. The undersecretary for the military medical service has therefore given instructions that, in each regional division, a system of rotation in service shall be established, and each physician shall declare, within the forty-eight hours following the receipt of the order for his departure, if he is unfit for active service in the field. There are, however, regimental physicians who are entirely willing to remain at the front if necessary. They ask why such relief should apply solely to physicians and not to officers as well.

THE MEDICOSURGICAL STATISTICS OF THE WAR

I mentioned in a previous letter (The Journal, May 15, 1915, p. 1671) the character of the medicosurgical statistics of the war that had been decided on by the minister of war. Certain journals have been ridiculing the idea of such statistics, and Dr. Jacques Bertillon, formerly head of the bureau of municipal statistics of the city of Paris, has come to its defense. He mentions that the military surgeon Chenu compiled medicosurgical statistics on the Crimean and Italian wars which marked an epoch in the history of the science. In particular, conservative surgery, today triumphant, drew from Chenu's statistics the first arguments for its defense; these proved that at this time useless or even harmful amputations were too often made, and that depriving the patient of a limb too often endangers instead of saving his life. How many times has there not been occasion to regret that no such researches were made in 1870-71!

PROHIBITION OF DELIVERY OF ROENTGENOGRAMS TO THE WOUNDED

The attention of the minister of war has been called to the serious disadvantages resulting from the delivery of tracings or roentgenograms to soldiers who have sustained wounds of war. These pictures, which are scrupulously preserved by the wounded, often give rise to functional incapacities, suggested to the patients by the presence of a foreign body. The minister has therefore given instructions that roentgenograms, etc., as well as the case records, shall never be turned over to the patients on their successive discharges from the various hospitals, but shall be transmitted under seal from one hospital to the other, being preserved in the last hospital where the patients have been treated, or finally transmitted to the administrative office of the regional medical service, where they may be consulted whenever it is desirable.

The minister, moreover, reminds the roentgenographers that they are not to perform roentgenoscopy on the men who have been sent back to their military duties after cure, such examinations being reserved for patients under treatment.

EXAMINATION OF THE URINE OF SOLDIERS PRESENTING PICRIC ACID JAUNDICE

At the Réunion médico-chirurgicale de la X-e armée Dr. Launoy, speaking on the same subject, recommended that the test be performed, not on the urine itself, but on a concentrated and carefully purified urinary extract. The reaction of the strip of wool (The Journal, Sept. 25, 1915, p. 1124) ought to be considered positive only when the coloration obtained resists the decolorizing action of a 1:9 solution of liquor potassae chlorinatae. When possible, the reactions of the urine should be controlled by the character and reactions of the blood serum.

SERUMS FOR THE USE OF CIVILIAN PHYSICIANS

The attention of the minister of the interior was called to the serious inconvenience which the civilian population suffers through the fact that civilian physicians cannot procure serums which are indispensable for the practice of their profession. He replied that civilian physicians may procure antidiphtheric, antitetanic, antimeningococcus and antidysenteric serums directly from the Pasteur institute. The only reservation is, in the case of the last three, that the needs of the army must first be supplied. The supplies of the same serums, moreover, are as much as possible put at the disposal of the prefects for use in charity work. In urgent cases, serum may be supplied to physicians who need it immediately for their private practice.

GENERAL INSPECTION OF THE HYGIENE OF THE ARMY

A general inspection of the hygienic condition of the troops stationed in the interior has just been ordered for the duration of the war. Dr. Vaillard, medical inspector general of the military medical service, is to have charge of this inspection, and is to be responsible directly to the minister of war. His jurisdiction is defined by the assistant secretary for the military medical service as covering the study and examination on the spot of matters relating to the hygiene and material conditions of the life of the troops, their sanitary condition and the measures necessary to prevent or check the development of epidemics either among the soldiers or among the civil population.

THE DIFFICULTY OF OBTAINING ALCOHOL FOR PHARMACEUTICAL USE

Alcohol has been requisitioned for the manufacture of powder. To obtain the alcohol necessary for their work, therefore, pharmacists each month have to address a request to the Office des produits chimiques et pharmaceutiques (The Journal, Nov. 14, 1914, p. 1775). This alcohol is exclusively for use in filling prescriptions and preparing medicines, and is not to be sold as such. Pharmacists are to ask for no more than the carefully calculated monthly needs of their laboratories. The Office des produits chimiques et pharmaceutiques issues vouchers by means of which pharmacists may procure alcohol, either directly or through their regular dealer, from the distillery indicated on the voucher. The alcohol is furnished by the distillery at the price of requisition, which is now about 100 francs (about $20) per hectoliter (about 26 gallons) at the producers. The Office des produits chimiques et pharmaceutiques accedes to demands of pharmacists and manufacturers of pharmaceutical products employing not more than 3 hectoliters a month; it cannot comply with demands for larger quantities.

BERLIN LETTER

Berlin, Oct. 20, 1915.

Personal

Prof. Ferdinand Götz, sanitary expert and director of the German system of physical exercise, died in Leipzig, October 13 at the age of 88 years. Early in his career he became interested in gymnastics and shortly after arriving in Leipzig in 1855, he was instrumental in organizing several turner or gymnastic societies. He also assumed the editorship of a number of journals devoted to gymnastics. He was the author of several books on gymnastics and for many years was chairman of the Association of German Turner Societies. His eighty-fifth birthday was celebrated by all the German turner societies, and an honorary Ph.D. was conferred on him by the university of Kiel.

Professor Sklarek, for many years publisher of the *Naturwissenschaftliche Rundschau,* died in Berlin, October 10, at the age of 80. He has been given the credit of having brought the progress made in the natural sciences and medicine before the public in a popular manner by means of lectures delivered before the Berlin Workers Society and by editorials in the daily press as well as in the journals he edited. In 1868 he published a work on the care of the health. He was also one of the founders of the Berlin Meteorological and Physiological Society.

Professor Boveri, ordinary professor of zoology and comparative anatomy, died in Würzburg October 16 at the age of 53 years. He became lecturer at the university of Munich in 1888. In 1893 he was appointed ordinary professor of zoology and comparative anatomy, succeeding Professor Semper, and director of the zoologic institute in Würzburg. He remained loyal to this institution, refusing the call to Freiburg in 1912 as successor to August Weismann, and also refusing to accept the directorship of the new Kaiser Wilhelm Institute for Biology in Berlin. His work in histology, embryology and comparative anatomy was epoch making. He revolutionized the conception of the tissue cells by discovering the chromosomes (simultaneously with v. Benecken) in the cell nucleus and establishing the important function played by them in cell division. His studies made in connection with these investigations on cells of various forms of animal life were contained in three volumes entitled "Cell Studies" (Jena 1887-1890). His continued research on fertilization and nutrition of the cell placed the study of embryology on an entirely new basis. Much of his work was done on the amphioxus, coral zoophytes and similar animals. In 1909 he published his researches on the determination of sex in the "Physikalischmedizinische Gesellschaft" at Würzburg. One of his most important publications was that setting forth the results of his study of the pathologic anatomy of tumors. In 1914 he published his theory of the development of malignant tumors deduced from his extensive research mainly on the egg of the sea urchin. The basis on which he places the etiology of these malignant growths is a developmental defect of the cell nucleus. His theory did not meet with the approval of well-known pathologists.

Family Life and the Nation

The activities before the beginning of the war directed toward stopping the diminution in the birth rate of Germany have received a tremendous stimulus by the enormous loss of life caused by the war. Shortly after the Franco-Prussian war, the birth rate increased rapidly, reaching the highest point in 1876, namely, 42.6 per thousand. This rate gradually diminished, and in 1913 had fallen to 28.3 per thousand. In Prussia the birth rate in 1899 was 37.5 and in 1913 was 29 per thousand. With regard to the excess of births over deaths, this, too, is changing. In 1895, in Prussia, it was 14 per thousand; in 1913, it was only 13.2. In order to meet the exigencies of the occasion, the newly founded German Society for Bevölkerungspolitik, organized for scientific study of the subject, met recently in Berlin and discussed the question very fully. The presiding officer, Dr. Julius Wolf, in his address directed attention to the Russian statistics showing an increase in population of 3,000,000 to 4,000,000 per year as against 800,000 in Germany. The population of Russia is 180,000,000 as against 68,000.000 in Germany. The difference between the French and German increase is not so great. Previous experience tends to show that there will not be a continuous increase in births after the war. In fact, a large number of cripples and partial invalids and the labor which necessarily must be performed by women will tend to lower the birth rate and do it rapidly, much more so than would otherwise be the case. Dr. Wolf directed attention to every condition bearing on this point, and finally suggested three aims to work for as helps toward the solution of the problem: (1) To exert influence to increase the number of marriages and families with a larger number of children. In Prussia the average age of men when they marry is twenty-nine years, which means that for at least ten years they have been exposed to venereal infection with the resulting possibility of sterility. To combat this, he urged a reform in the present methods of training men for trades, so that they might begin to earn more money earlier. Next to be considered, he said, were the questions of furnishing living places, motherhood premiums, and here the experiences made in Australia would be of great value. The money, he thought, could be provided by taxation, the single man carrying the load, the man of family contributing but little, instead of the present per capita system. The workman can hardly be expected to have a large family unless he is assisted financially; the community would have to assume the burden. The third child is liable to upset the family budget; the fourth child brings the wolf to the door. The community must share this burden of care.

(2) Success in the campaign against venereal diseases would increase the number of births by 100,000 and more. Infant mortality must also be lowered. The infant mortality of Germany is now 15 to 100 born living; in Norway, it is 7 and in Australia only 5 per cent. Infant mortality is highest in Bavaria. Augsburg shows 21 deaths among infants as against 15 in Berlin and 11 in the Hanse towns. "And certainly," Wolf exclaimed, "the constitution of the Berlin and Hamburg child is no better than that of the Bavarian child." . . . "Pediatrists to the front!"

(3) Emigration to new territory offers another solution which should be considered as a means of furnishing facilities for better means of living and increased incomes.

LONDON LETTER

London, Oct. 29, 1915.

The War

THE TOTAL BRITISH CASUALTIES NOW HALF A MILLION

The total British casualties up to October 9 have just been published. In the western area, that is, France and Belgium, 4.401 officers and 60,059 men have been killed, and 9.169 officers and 225,716 men have been wounded; 1,567 officers and 61,134 men are missing; the greater number of the latter are probably killed. This makes the total casualties 362,046 in the western area. In all fields of operation, 6,660 officers and 94,992 men have been killed; 12,633 officers and 304,832 men have been wounded, and 2,000 officers and 72,177 men are missing. The total British casualties, therefore, were 493,294. At the time of writing, they must have reached half a million.

CHILD LIFE AND THE NATION

The great loss of life in the war has stimulated the recent movement to promote the welfare of motherhood and infancy. A meeting organized by the "Central Economic Guild" of the "Central Committee for the National Patriotic Organization" has been held to inaugurate a campaign with the object of coordinating all the efforts in this direction on national lines. Representatives of the government and prominent philanthropists and physicians were present. Mr. Herbert Samuel, the postmaster general, said that the nations of Europe were engaged in the destruction of life on the most colossal scale known to history. Ready to our hands and obvious was the remedy, so far as this country was concerned, to make good the loss. Much of the mortality among infants was not inevitable, and in addition they must consider antenatal mortality. The saving of these lives was one of the few questions in which the government and the legislature were ahead of the nation. The majority of local authorities showed little activity. Public opinion should be made more vocal. Pressure should be brought to bear on lethargic local authorities, and a greater number of men and women who have the time should throw themselves wholeheartedly into the work of the health associations and other organizations engaged in this movement.

Sir James Crichton-Browne said that up to the present we had irreparably lost at least 150,000 of the flower of our manhood, and this waste of human treasure imposed on us the obligation to practice the strictest economy in human life. It was disconcerting to find that the supply of infants was falling off. Having regard to the vital importance to the economic future of the country of copious reinforcement of infant life, attention should be given to the neomalthusian propaganda, which was largely cutting off these reinforcements. Referring to the effect of the industrial occupation of women on prenatal mortality and on the health of the infant, Sir James said that now that we had a larger number of women than ever before engaged in industrial pursuits, we must give them the benefit of the best antenatal hygiene. We wanted, not puny, atrophied, debilitated brats, but promising little pink buds of humanity. That much of the mortality among infants could be prevented was beyond question. Doctors' babies died at the rate of only 40 per thousand in the first year because doctors knew how to look after them, whereas those of miners who did not know how to look after them died at the rate of 160. In conclusion, Sir James suggested that further investigation into antenatal pathology should be made, and that for this purpose stillbirths should be registered and centers of scientific research established.

An American Nostrum in Australia

William W. Dobson, the agent in Western Australia for Radam's Microbe Killer, has been charged at Fremantle with having published a statement in connection with this nostrum which was false. He admitted the offense and pleaded for a light penalty on the ground that he was merely a subagent, and was not responsible for the wording of the pamphlet. The prosecution was based on the fact that Radam's Microbe Killer was vaunted as a cure-all; the venders claimed that it was perfectly safe, and contained no acids. The health department has purchased four bottles at the cost of $5, and it was found that it contained 0.5 per cent. of sulphurous or sulphuric acid, and 99.5 per cent. of water. It was therefore stated that Radam's Microbe Killer was a fraud. It appears that this fluid was manufactured in America, and had proved a failure. Later it reappeared under another name until its importation was prohibited by the commonwealth authority. The proprietor next attempted to import the "Microbe Killer" into the commonwealth, but the federal authority prohibited it as well. The firm thereupon started concocting the "Microbe Killer" in the eastern states. In order to show how serious the result of the false statement in the pamphlet might be, the prosecution announced its intention of calling expert medical evidence. The defendant objected to this on the ground that he had pleaded guilty. The objection was upheld, and the prosecution was therefore prevented from bringing corroboration of the statement that the claims of the venders were untenable. In the end, Dobson was fined $25, with $28 costs.

Marriages

Walter Charles August Steffens, M.D., College Point, N. Y., to Miss Catherine MacDougal of Burlington, Vt., in New York City, October 30.

Lieut. Henry L. David, M. R. C., U. S. Army, Fort Terry, N. Y., to Miss Mary A. Story of Canaan, N. H., at New London, Conn., October 14.

James A. Ramsey, M.D., Arlington, Texas, to Mrs. Fletcher J. Lively of Prineville, Ore., at Fort Worth, Texas, recently.

Harry Aloysius Bishop, M.D., Washington, D. C., to Miss Roberta Morgan at Fort H. G. Wright, N. Y., October 6.

Raymond Canfield Dodd, M.D., Glen Ridge, N. J., to Miss Edna Houston Jones of Bloomfield, N. J., October 12.

Lowell Mason Campbell, M.D., Minneapolis, Minn., to Miss Elda Bishop of Dodgeville, Wis., November 3.

William Sweeny Stucky, M.D., to Miss Anne Clay McDowell, both of Lexington, Ky., November 15.

John Ira Spooner, M.D., to Miss Annette Beneta Folmar, both of Donalsonville, Ga., November 2.

George Carroll Smith, M.D., St. Louis, to Miss Margaret Clare Shirley of Chicago, November 6.

Constantine Theodore, M.D., to Miss Marion Cronin, both of Chicago, November 6.

John George Williams, M.D., to Miss Angela Sause, both of Brooklyn, November 3.

Deaths

Edward Livingston Trudeau, M.D. College of Physicians and Surgeons in the City of New York, 1871; a pioneer in the fresh air treatment of tuberculosis; died at his home in Saranac Lake, N. Y., November 15, aged 67.

Dr. Trudeau was born in New York, Oct. 5, 1848, the son of Dr. James and Cephise (Berger) Trudeau. A year after his graduation in medicine he began practice in New York City, but on account of tuberculosis of the lungs was forced to leave his work. He decided to go to the Adirondacks, and established a home at Saranac Lake. His belief in the efficacy of fresh air in the treatment of incipient tuberculosis worked so well in his own case, that in 1884 he founded the Adirondack Cottage Sanatorium for the Treatment of Incipient Tuberculosis in Working Men and Women, the first institution of its kind to be established in the United States.

The theories of Dr. Trudeau there first put in practice are now acknowledged the world over, and the best testimonial to the worth of the treatment is the immense number of those who have graduated, cured, from the institution. Ten years after he founded the Adirondack Cottage Sanatorium Dr. Trudeau established the Saranac Laboratory for the Study of Tuberculosis, the first research laboratory on this subject to be established in the United States. He continued in charge of both of these institutions until his death.

Dr. Trudeau was given the honorary degree of M.Sc. by Columbia University in 1899, and the degree of LL.D. by McGill University, Montreal, in 1904, and nine years later by the University of Pennsylvania. In addition to his fellowship in the American Medical Association and New York Academy of Medicine, Dr. Trudeau was a member of the Association of Pathologists and Bacteriologists, the Association of American Physicians and the American Climatological Association. He was the first president of the National Association for the Study and Prevention of Tuberculosis. In 1908, a "Festschrift" containing contributions on tuberculosis by his co-workers in the Saranac Laboratory was dedicated to him in honor of his sixtieth birthday.

He was widely known throughout the country, not only on account of the plucky fight which he made for more than forty years against tuberculosis, but because of his prolific contributions to the literature of the subject. His last illness began with an attack of pneumonia at Paul Smith's in the Adirondacks about two months ago.

Christian Berry Stemen, M.D. Medical College of Ohio, Cincinnati, 1875; aged 75; a Fellow of the American Medical Association; for a quarter of a century chief surgeon of the Pennsylvania System at Fort Wayne; dean of the Fort Wayne College of Medicine and for many terms a member of the board of regents of the University of Indiana; once president of Taylor University and for two years professor of surgery in the University of Kansas; one of the most prominent and esteemed surgeons of the Middle West; died at his home in Fort Wayne, Ind., November 13.

George F. Chittenden, M.D. University of Louisville, Ky., 1855; aged 84; assistant surgeon of the Sixteenth Indiana Volunteer Infantry and later medical director of General A. J. Smith's Division of the Thirteenth Army Corps, and medical director of Camp Morton, Indianapolis, after his resignation from the service; representative from Madison and Henry counties in 1868 and a commissioner of the State Hospital for the Insane five years later; died at the home of his daughter in Anderson, Ind., October 31.

Perry Jaffa, M.D. Gross Medical College, Denver, 1900; aged 45; a Fellow of the American Medical Association and formerly vice president of the Colorado State Medical Society and secretary of the Las Animas County Medical Society; city physician, health officer and secretary of the Board of Health of Trinidad, Colo.; local surgeon of the Colorado and Wyoming Railroad and Colorado Fuel and Iron Company; died at the home of his brother in Denver, November 2, from heart disease.

Hermann E. Hasse, M.D. University of Würzburg, Germany, 1861; aged 79; major and surgeon of the Twenty-Fourth Wisconsin Volunteer Infantry during the Civil War; an authority on botanical subjects and especially lichens; the author of a monograph on the Lichens of Southern California, published by the Smithsonian Institute; for seventeen years chief surgeon of the Soldiers' Home, Santa Monica, Calif.; died at his home in that city, October 30.

Joseph P. LeFevre, M.D. University of California, San Francisco, 1881; aged 60; formerly a Fellow of the American Medical Association and superintendent of the San Francisco City and County Hospital; local surgeon at Venice, Calif., for the Pacific Electric Company; who was seriously injured in a collision between his automobile and an electric train near Venice; died from his injuries, October 30.

Raymond Claude Fout, M.D. University of Maryland, Baltimore, 1901; aged 37; of Kemptown, Md.; formerly a member of the Medical and Chirurgical Faculty of Maryland; president of the Mount Airy People's Lumber and Supply Company; died in the Baltimore Eye, Ear and Throat Charity Hospital, November 2, from posttonsillar abscess for which operation was being performed.

Sigmund Tynberg, M.D. College of Physicians and Surgeons in the City of New York, 1885; aged 51; a Fellow of the American Medical Association; for several years a member of the staff of the City Hospital, Blackwell's Island, N. Y., and president of the medical board of that institution; died in St. Luke's Hospital, New York City, November 3, from arteriosclerosis.

Francis M. Perkins, M D. Indiana University School of Medicine, Indianapolis, 1911; aged 26; a member of the Indiana State Medical Association; a well-known practitioner of Pennville and Kendallville, Ind.; captain of Company B, Third Infantry, Ind. N. G.; died in Swan, Ind., November 1, from injuries received in the overturning of his automobile.

Myra Wheeler Knox, M.D. Cooper Medical College, San Francisco, 1884; aged 62; formerly a member of the Medical Society of the State of California; for twelve years a member of the Oakland (Calif.) Board of Education; physician to the State Home for the Blind; died in the Merritt Hospital, Oakland, October 31, from cerebral hemorrhage.

George Richard Montgomery Kuhn, M.D. Long Island College Hospital, Brooklyn, 1872; aged 68; a member of the Medical Society of the State of New York; pathologist, physician, secretary and once president of the staff of St. Mary's Hospital, Brooklyn; also a graduate in pharmacy; died at his home in Brooklyn, November 5, from cerebral hemorrhage.

William Hill Neel, M.D. University of Nashville, Tenn., 1860; aged 79; surgeon of the Twenty-Fourth Tennessee Infantry, C. S. A., during the Civil War; for twenty-two years a practitioner of Sumner County, Tenn., but since that time a resident of Mayfield, Kan.; died at his home in Mayfield, October 21, from cerebral hemorrhage.

Frank Herbert Daniels, M.D. Harvard Medical School, 1884; aged 59; a Fellow of the American Medical Association and vice president of the American Jurisprudence Society; for many years visiting physician to the J. Hood Wright Hospital, New York City; died at his home in New York, October 30, from heart disease.

Harry W. Barber, M.D. University of Vermont, Burlington, 1906; aged 35; a Fellow of the American Medical Association; anesthetist and assistant surgeon to St. Mary's Hospital, Rochester, N. Y.; one of the most promising young surgeons of Rochester; died at his home, November 2, from angina pectoris.

William M. Bartley, M.D. Baltimore Medical College, 1895; aged 46; a Fellow of the American Medical Association and one of the most prominent practitioners of North Dakota; coroner of Eddy County and a member of the legislature; died at his home in Sheyenne, November 6, from diabetes.

John B. McDill, M.D. Medical College of Ohio, Cincinnati, 1859; aged 81; formerly of Camp Grove, Ill.; assistant surgeon of the Sixty-Seventh Ohio Volunteer Infantry during the Civil War; died in the National Military Home, Danville, Ill., October 9, from arteriosclerosis.

George Andrews Hood (license, years of practice, North Carolina, 1895), aged 44; vice president of the Parrish-Godwin Company, Benson, N. C.; for many years a practitioner and druggist of Kenly, N. C.; died at his home, October 30, from rheumatism.

Patrick V. Dolan, M.D. Georgetown University, Washington, D. C., 1890; aged 56; for thirty years a law clerk in the Treasury Department, Washington; died in St. Vincent's Hospital, Norfolk, Va., October 30, from shock following the amputation of his leg.

Robert Luther Willis, M.D. Bellevue Hospital Medical College, 1875; aged 68; formerly superintendent of the Eastern Kentucky State Hospital, Lexington, Ky.; died in his office in Lexington, November 6, from cerebral hemorrhage.

Alonzo Cooper Kellogg, M.D. Bellevue Hospital Medical College, 1887; aged 70; a practitioner of Portage, Wis., for forty-five years; for nearly twenty years superintendent of schools of Portage; died at his home in that city, October 31, from cerebral hemorrhage.

James M. Bradbury, M D. Washington University, St. Louis, 1869; aged 76; of Coaldale, Colo.; a veteran of the Civil War; for many years a practitioner of Canon City, Colo.; died in the Red Cross Hospital, Salida, Colo., October 27, from pneumonia.

Henry Johnson, M.D. University of Michigan, Ann Arbor, 1867; aged 79; formerly a Fellow of the American Medical Association; surgeon of the Sixth Michigan Volunteer Cavalry during the Civil War; died at his home in Caseville, Mich., October 17.

Charles Shannon Butts, M.D. New York University, New York City, 1889; aged 43; a member of the Medical Society of Virginia and an esteemed practitioner of Newport News, Va.; died in a hospital in Oklahoma City, October 6, from typhoid fever.

John J. Youtsey, M.D. Northwestern University, Chicago, 1876; aged 75; for fifty-one years a resident of northern Colorado; and a pioneer practitioner of Larimer County; died at his home in Loveland, Colo., October 13, from acute gastritis.

Solomon Henry Secoy, M.D. Medical University of Ohio, Cincinnati, 1888; aged 74; a veteran of the Civil War; a practitioner for forty-five years; died at the home of his daughter in Jeffersonville, Ind., October 31, from cerebral hemorrhage.

William Wallace Chisholm, M.D. Hahnemann Medical College, Philadelphia, 1915; aged 21; an intern in the Hahnemann Medical College, Philadelphia; died in that institution, October 29, from septicemia.

Eugene A. Grove, M.D. University of Pennsylvania, Philadelphia, 1870; aged 65; for twenty-five years a practitioner of Carlisle, Pa.; died at his home in that place, October 23, from cerebral hemorrhage.

William Henry Scott, M.D. Berkshire Medical College, Pittsfield, Mass., 1862; aged 83; for more than half a century a practitioner of Manhattan and Brooklyn; died at his home in Brooklyn, October 27.

Samuel Watson Bragg, M.D. University of Vermont, Burlington, 1879; aged 55; a practitioner and druggist of Lincoln, Me., died at his home in that place, August 9, from cerebral hemorrhage.

Louis A. Monmonier, M.D. University of Maryland, Baltimore, 1864; aged 71; of Waverly, Baltimore; died at the home of his niece in Baltimore, October 26, from cerebral hemorrhage.

Eugene V. Chase (license, Michigan), aged 82; a member of the State Legislature of Michigan from 1877 to 1880; died at his home in Elsie, Mich., September 26, from intestinal obstruction.

James W. Kirkwood, M.D. University of Louisville, Ky., 1873; aged 64; of Wichita, Kan.; formerly a member of the staff of the Wichita Hospital; died suddenly in Wharton, Texas.

Frederick H. Flynn, M D. College of Physicians and Surgeons, San Francisco, 1912; aged 35; died in Los Angeles, August 27, from asphyxiation believed to have been suicidal.

Benjamin H. Chedeck, M.D. Minneapolis College of Physicians and Surgeons, 1903; aged 36; of Omaha; died in Somers, Wis., August 16, from cerebral meningitis.

D. R. Blair (license, Texas, years of practice, 1907), aged about 50; of Denison, Texas; died in Sherman, Texas, about August 25, it is said from drug addiction.

Harvey N. Abbott, M.D. University of Pennsylvania, Philadelphia, 1878; aged 59; died at his home in Philadelphia, October 25, from cerebral hemorrhage.

Augustus W. Crow, M.D. College of Physicians and Surgeons, Baltimore, 1875; aged 64; died at his home in Livia, Ky., July 18, from tuberculosis.

J. M. Saunders, M.D. Medical College of Georgia, Augusta, 1853; aged 89; died at his home in Winder, Ga., September 26, from nephritis.

Joseph Lawson Porter, M.D. Rush Medical College, 1881; aged 61; died at his home in Paola, Kan., September 10, from pernicious anemia.

James K. P. Idol, M.D. Washington University, St. Louis, 1872; died at the home of his daughter in Alden, Kan., October 22.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

FRAUDULENT MEDICAL INSTITUTES IN NEW YORK

The State Department of Labor of New York, in connection with the Bureau of Industries and Immigration, has been making an investigation of some of the fraudulent "medical institutes" in New York City. A report issued by the department contains a brief account of what has been accomplished in the protection of immigrants and aliens who have been made the especial prey of these frauds. A description is given of the methods of these medical fakers. They open sumptuous offices under high-sounding names and place advertisements in the foreign-language press. They also distribute circulars, in all languages, throughout the immigrant section of the city of New York, calling attention to the wonders of the "institute." These circulars and advertisements are so worded as to give the impression that the institute is a charitable organization with advice and consultation "absolutely free"—a charge being made for medicine only. What happens to a person who consults the swindlers who run these institutes is thus described in the report:

> "The applicant is ushered into a private office. To comply with the law a registered physician, under whose name the 'institute' operates and who is very often only an instrument in the employ of an unregistered financial backer, in addition to two or three interpreters, all representing themselves as physicians, take the patient in hand. He is placed before a large machine of complex appearance that conveys the impression to the ignorant immigrant of being costly and almost miraculous, and is examined by the two or more interpreters, who dramatically and with apparent emotion inform the patient that he is suffering from some dreadful disease, which if longer neglected, will result in death. The patient becomes alarmed and agrees to pay any price for a cure, which is guaranteed. A large sum is at first requested as part payment, but any amount that the patient has or can obtain is accepted. It is unnecessary to state that the so-called examination and later 'treatment' are absolutely without merit, and that unregistered assistants are acting as physicians and 'treating' the patient. No prescriptions are given, as the so-called 'institute' provides all medicines and medicinal appliances."
>
> The report also describes the "wax museum" method of roping in the unsuspecting immigrant. It is said, also, that some of these "institutes" and "museums" publish newspapers and books that are extensively distributed, describing the marvelous cures accomplished.
>
> "It is not uncommon for these 'physicians' to resort to forgery, trickery or any other device in order to obtain the savings of their unfortunate victims. They have been known to take bank books and withdraw entire deposits on such orders. Persons convicted in various states for similar practices are now operating in New York City."

One of the so-called "professors," in one of these institutes, who was not a registered physician, confessed to a representative of the bureau that before examination patients are asked to undress in an anteroom where their clothes are searched for bank books, money, etc., to enable the fakers to estimate the size of the fee they shall demand. The victims are invariably told that they are suffering from some dangerous ailment, and the report cites instances in which the victims who had been robbed of all their money were found by reputable physicians to be suffering from no disease at all. Details of a number of such instances are given in which the representatives of the bureau were enabled to recover large sums of money from these fakers. Although it is expensive and troublesome, the bureau has been able to secure evidence in many instances against these fraudulent institutes. It is estimated that thousands of people, especially immigrants, are daily victims of these leeches. One "institute," which was compelled to disband through the efforts of the bureau, had an enrolment of about 14,000 patients.

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

HILL'S FRECKLE LOTION

"Hill's Freckle Lotion" is said to be put on the market by J. V. Hill, Providence, R. I. The state chemists in the Report of the Connecticut Agricultural Station state that analysis showed the preparation to be a solution of corrosive sublimate and water in the strength of 1.84 per cent. bichlorid of mercury. According to the same report, the following claims were made for this product:

> ". . . is absolutely harmless when used externally according to directions."
>
> "Removes moth, tan, freckles, pimples, ringworms and all eruptions of the skin."

As the Connecticut chemists say, Hill's Freckle Lotion "is an extremely dangerous preparation."

KINGSBERY'S FRECKLE LOTION

"Kingsbery's Freckle Lotion (1st. strength)" is said to be put on the market by E. W. Kingsbery, Randolph, Mass. According to the Report of the Connecticut Agricultural Experiment Station, 1914, the following claims have been made for this product:

> "Will positively remove freckles, tan, moth patches, etc., from the face, hands and arms without the slightest injury to the most sensitive skin."
>
> "Unequalled for use in ivy and dogwood poison, insect bites and stings, salt rheum, eczema and all skin irritations, stopping the itching immediately and counteracting the poison."

Kingsbery's Freckle Lotion was analyzed by the state chemists of Connecticut who reported that it, like "Hill's Freckle Lotion," is a solution of bichlorid of mercury in water, containing 5.3 parts of the corrosive sublimate to 1,000 parts of water. As the Connecticut officials state this "is an exceedingly dangerous remedy to use." The use of the poisonous salts of mercury, even externally, is fraught with danger. There are numerous cases on record of poisoning from the external application of mercurial compounds. Taylor quotes a case of two brothers who died from the effects of absorbing corrosive sublimate through the unbroken skin. Death has followed the absorption of corrosive sublimate in dilutions of 1 to 1,000 and 1 to 2,000.

KULUX COMPOUND

Kulux Compound is sold by the Kulux Manufacturing Company, Rochester, N. Y., a concern that is apparently another of the numerous schemes emanating from the fertile brains that have conceived and executed many mail-order frauds. Our readers will call to mind such companies as the fraudulent "New York Institute of Science," the equally fraudulent "Cartilage Company," to say nothing of the "Okola Laboratory" swindle, the "Dr. Turner Obesity Cure" and a number of other concerns of similar type. Kulux Compound has been advertised on the "prescription fake" method under such claims as the following:

> "Makes the skin transparent and removes all defects such as freckles, tan, sun-spots, roughness and ruddiness."
>
> "Blemishes of every kind disappear as if by magic."
>
> "This is the private prescription of a famous Parisian beauty."

The alleged "prescription" calls for a "1 ounce bottle of Kulux Compound" which is to be added to a mixture of water and witch hazel. Kulux Compound has been reported on by several state chemists. The following, taken from the "Medical Frauds" bulletin issued by the Indiana State Board of Health may be taken as typical:

Zinc oxid	7 per cent.
Bismuth subcarbonate	5 per cent.
Glycerin	10 per cent.
Water	78 per cent.

The Indiana chemists state further that although the retail price of Kulux Compound is 50 cents, the value of the ingredients is 4 cents.

MRS. MC CORRISON'S FAMOUS DIAMOND LOTION NO. 1

According to the report of the Connecticut Agricultural Experiment Station for 1914, Mrs. McCorrison's Famous Diamond Lotion No. 1 is put on the market by E. K. Guenther of Waldoboro, Maine, under the following claims:

> "Will remove Moth, Tan, Freckles, Pimples, Blackheads, Salt-Rheum, Eczema and all the various affections of like character."
>
> "It is unlike any other preparation for the skin and complexion."

The Connecticut chemists reported that it was essentially a solution of bichlorid of mercury in the strength of 28.2 parts of the corrosive sublimate to 1,000 of water. The stuff is a dangerous poison.

NEROXIN

Neroxin is another one of the numerous "prescription fake" nostrums put out by the Cooper Pharmacal Company of Chicago. As has been mentioned before, the Cooper concern exploits its frauds in fake "Beauty Departments" under the name "Valeska Suratt." Here, for instance, is a paragraph from an advertisement put in the form of reading matter and supposed to be devoted to "Secrets of Remarkable Formulas Revealed by Valeska Suratt."

> "Blackheads will be removed in a few minutes by first washing the face, then sprinkling some neroxin on the sponge, wet with hot water, and rubbing over the blackheads for a few minutes. Then wash the face again. The neroxin can be procured for fifty cents at any drug store."

According to the bulletin on "Medical Frauds" issued by the Indiana State Board of Health, Neroxin contains:

Borax	55 per cent.
Soda	25 per cent.

According to the same authority, Neroxin retails for 50 cents; the value of the ingredients is 3 cents.

OTHINE

Othine is put on the market by a concern calling itself the "Othine Laboratories, Buffalo," which claim to be the "proprietors of Mrs. E. C. White's Famous Prescription, Othine-Double Strength." Othine is sold as a "remover of freckles" and such claims as the following are to be found among the advertising:

> "Othine is altogether unlike the old-fashioned skin remedies, complexion bleaches, lotions, etc., which irritate the skin beyond endurance."
>
> "It is absolutely harmless to the most delicate complexion. . . ."
>
> "If it contained a single injurious ingredient I certainly would not put it on my face."

Othine can be purchased at the drug stores—$2 for a 2½-ounce jar. Those who have written to the "Othine Laboratories" for information, have received a series of circular letters signed "Mrs. E. C. White." In the first letter the correspondent was told:

> "It requires at least a box of Othine to remove freckles. Samples would be too small to accomplish anything, therefore, I do not send them; so please do not write me for samples. The full treatment of Othine will be sent you in a plain wrapper, charges prepaid on receipt of $2.00."

Some time later—the $2 not having been sent—another letter came from the "Othine Laboratories" offering the 2½-ounce jar of Othine for $1. This offer also was ignored and in due time a third letter came in which the offer was made that a 1-ounce package of Othine would be sent for 50 cents!

Othine has been reported on by the state chemists of Connecticut, Indiana and Kansas. The reports all agree in essentials. According to the Connecticut chemists, Othine contains 7.7 per cent. bismuth subnitrate and 11.5 per cent. ammoniated mercury with a fatty base. Ammoniated mercury is a powerful caustic poison and it is little less than criminal that a product containing it should be sold under the claim that it is "absolutely harmless to the most delicate complexion."

Correspondence

An Important Rule for the Operating Room

To the Editor:—Never allow any relatives or friends of the patient to be present at a painful operation; nor at one requiring a general anesthetic. I adopted this rule twenty-five years ago, and its advantages have been so manifest that I cannot understand why it is not universally followed. So far as I know, it has cost me only one patient directly. One mother would not permit an operation on her child unless she could be present; but she was the only one of the sort. Indirectly it has probably cost me a few more. I have heard that some people think it very queer that "Dr. Gifford will not allow any relatives to be there"; but the statistics of my clinic do not indicate that any large number have stayed away on that account. When they object, I explain to them as kindly as possible that some people cannot control themselves at an operation, and that while I feel quite certain that they, in particular, would not be troublesome, still, a rule is a rule and must be enforced to avoid the appearance of partiality. Since I have learned to modulate my voice this has always worked.

I consider this rule an important one because it is best for the relatives, for the surgeon and for the patient. It is best for the relatives because it saves them the shock of witnessing the struggles and groans of the semiconscious patient. It is best for the doctor because it relieves him of the influence which the presence of anxious relatives always exerts. Generally this influence is merely depressing; but sometimes it is positively disturbing, as in one of the cases of my early practice, when a stalwart father stood by and encouraged me saying, "By Heaven, Doc, if you hurt my boy's eyes I'll kill you!" I think it was this case that made me adopt the rule. Moreover, if anything goes wrong with the anesthetic or the operation and you think the patient may be going to die, you all know how pleasant it is to have one or more relatives right at hand. Finally, and most important of all, the rule works in the best interests of the patient by leaving the mind of the surgeon free to follow the dictates of his reason and his conscience, regardless of appearances. There doubtless are surgeons of strong enough fiber to be above such influences; but I can easily conceive a situation in which the operator might swerve a little from the proper procedure because, to a relative, it would seem brutal or reckless; and in case of a bad result, he would be blamed. Even aside from such ticklish situations, I think it will be readily admitted that in all serious operations the surgeon will, in the long run, be better able to give the case the proper consideration if he is free from the bother which the presence of relatives produces. I am quite sure that many others follow this rule, but it is by no means as generally adopted as it should be. It ought to be practically universal, so that the public may be educated on the point and the young surgeon will not be afraid to enforce it.

Harold Gifford, M.D., Omaha.

Does the Cornea Aid in Accommodation?

To the Editor:—I have searched repeatedly for a statement that the cornea was concerned with the accommodation of the eye in vision, but so far in vain. When using the ophthalmometer in looking for astigmatism in children, I frequently see the cornea become more or less convex, in response to accommodation, sometimes as much as from 1 to 4 diopters. The ciliary muscle is circular—a sphincter muscle, so to speak. It acts at the edge of the cornea, and the eyeball is more or less elastic. When the ciliary muscle contracts to take the tension off the lens, it makes the cornea bulge or become more convex, thus aiding in the act of accommodation. Stress has been laid on the idea that the lens is the great factor in bringing the rays of light to a point on the retina, when the truth is that it does only four fifteenths of the work, the remaining eleven fifteenths being done by the cornea and aqueous. It may be asked why the young patient having cataract operation has lost all his power of accommodation. In reply I would ask why the person receiving a blow on the eye sometimes loses all his power of accommodation at once, and the eye becomes myopic and the pupil dilated with all the eye structures apparently physically intact.

C. S. Minnich, M.D., Palmer, Neb.

[Comment.—The foregoing theory of accommodation would be decidedly interesting and of undoubted value if the observations could be backed up by facts. This does not seem to be the case so far as these observations have a bearing on the actual mechanism of accommodation. The annular portion of the ciliary muscle, which has most to do with the relaxation of the suspensory ligament of the lens, is separated from the sclerocornea by the radiating fibers of that muscle, and it is difficult to see how the annular portion can exercise any action on the cornea: while the longitudinal portion of the muscle, having its origin near the sclerocorneal margin, is fixed at this point, so that when it contracts, its action is to bring the parts situated at its insertion in the direction of the origin of that muscle; that is, the movement is forward rather than backward. Thus it can have very little if any action in altering the shape of the cornea.

The radius of curvature of the cornea, when seen through the ophthalmometer, sometimes appears to change to a slight degree; but this can be caused by ever so slight a movement of the patient's head if it is not held absolutely firm against the head-rest of the instrument.

In referring to the indexes of refraction of the different mediums of the eye, our correspondent is confusing refraction with accommodation. No one will deny that the cornea and other mediums of the eye have much to do with refraction, but the mechanism of accommodation is an entirely different thing. The illustration used—of the absence of accommodation after the removal of the lens—proves conclusively that this act was accomplished by the lens; and loss of accommodation in an eye that has received a blow, when "the pupil is dilated, with all the eye structures apparently intact," indicates that the blow destroyed that branch of the third nerve which supplies the ciliary muscle and the sphincter iridis, resulting in the dilated pupil and absolute loss of accommodation.—Ed.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MECHANISM OF DEATH IN NEPHRITIS, ARTERIOSCLEROSIS AND ERYSIPELAS—EFFECT OF GROUND GLASS

To the Editor:—A medical witness was asked in court to describe to the jury the mechanism of death in (1) chronic nephritis, (2) arteriosclerosis and (3) erysipelas. (4) Now and then I read and hear of ground glass being employed because of its celerity of action. I have always thought this to be one of the many semimedical myths, and shall appreciate an explanation of this belief.

C. P. Frischbier, M.D., Brooklyn.

Answer.—1. It is believed that the cause of death in chronic nephritis is poisoning with the substances, their derivatives and antecedents, which, with healthy kidneys, are excreted by the urinary organs. The alterations in the body following death from nephritis indicate that there is a failure of the heart to maintain the circulation, and that this is accompanied by severe alterations in the central nervous system. The exact mechanism of death in nephritis will be better understood when the chemistry of this poisoning is fully demonstrated.

2. Death from arteriosclerosis, when uncomplicated by other serious diseases, such as cerebral hemorrhage, extensive renal alterations, etc., is usually "death from old age," although its development varies greatly according to the age of the individual. The ultimate mechanism is, of course, not the same in every instance.

3. Death from erysipelas is, if uncomplicated, due to the poisonous action of the toxins of this disease. The chemical nature of the toxins being as yet unknown, the mechanism of their action is unexplained.

4. Ground glass is mentioned among the mechanical poisons in comprehensive works on forensic medicines and toxicology. A finely ground glass like meal is regarded by some as harmless. When coarsely ground the mechanically produced lesions of the lining of the gastro-intestinal canal resemble a catarrhal and hemorrhagic inflammation. Death may be due to perforation of the stomach or bowel or to infection of the wounded places and extension of the inflammation.

FRAUDULENT CANVASSERS AND COLLECTORS

To the Editor:—Have you any agents or representatives of the poor student type who are making Herculean efforts to work their way through college by soliciting subscriptions to The Journal? This territory has been pretty well explored by an individual who professed to be authorized to solicit subscriptions. He claimed to be representing the Michigan Educational Association of 503 Woodward Street, Detroit. May I hear from you in regard to this matter?

Henry T. Kelly, M.D., White Plains, N. Y.

Answer.—We have repeatedly published warnings against fraudulent canvassers and collectors—sometimes in the Miscellany, sometimes in the News and sometimes in the Editorial department. We print the foregoing letter again to emphasize—and under Queries and Minor Notes—the need of being on the watch for this class of swindlers. This letter from Dr. Kelly is merely one of many which we have received.

In the past we have referred specifically to this scheme operated under the title "Cornell Educational Association," according to which the solicitor presents himself as a contestant for a scholarship offered by an organization of this name. The same plan is worked under other names, as for instance the "National Educational Association," the "Michigan Educational Association," etc. The form used in the last-named plan was reproduced in The Journal, Oct. 23, 1915, p. 1472.

ANAPHYLAXIS TO EGG ALBUMIN

To the Editor:—Recently I was consulted by a patient who was unable to take the smallest amount of egg in any form. If a spoon was used to beat eggs and then to stir his coffee, he became very much nauseated, and vomited violently, the symptoms being much like anaphylactic shock. Would injections of small quantities of egg at first with gradual increase of dosage create a resistance? F. C. Hodges, M.D., Richmond, Va.

Answer.—Such instances are typically anaphylactic and, therefore, susceptible to the same type of treatment as other instances of anaphylaxis. The following are references to recent literature on the subject:

Besredka, A., and Bronfenbrenner, J.: Anaphylaxis and Antianaphylaxis to Egg Albumin, *Ann. de l'Inst. Pasteur*, May 25, 1911.

Koessler, K. K.: Bronchial Asthma Due to Hypersusceptibility to Hen's Eggs, *Illinois Med. Jour.*, January, 1913.

Lesné, E., and Richet, C.: Alimentary Anaphylaxis to Eggs, *Arch. de méd. d. enf.*, February, 1913.

Miller, S. R.: Koplik's Spots on Tonsils of a Child Found to be Anaphylactic to Egg-Albumin, *Bull. Johns Hopkins Hosp.*, March, 1914.

Bronfenbrenner, J.; Andrews, V. L., and Scott, Z. R.: Nature of Idiosyncrasy to Egg-Protein in Human Beings, The Journal, April 17, 1915, p. 1307.

Rich, H. M.: Infantile Sensitization to Egg Albumin, *Michigan State Med. Soc. Jour.*, November, 1914.

Talbot, F. B.: Asthma in Children: Its Relation to Egg Poisoning, *Boston Med. and Surg. Jour.*, Nov. 5, 1914; abst., The Journal, Nov. 21, 1914, p. 1880.

ANESTHESIN

To the Editor:—What is the composition of anesthesin? Does it contain any narcotic or cocain? Is it under the ban of the Harrison Narcotic Law? Charles W. Knox, M.D., Indianapolis.

Answer.—Anesthesin is ethyl aminobenzoate, the ethyl ester of paraminobenzoic acid. As stated in New and Nonofficial Remedies (p. 30), anesthesin is one of the products which owe their existence to the discovery that the local anesthetic action of cocain is due to the radical of benzoic acid in combination with a nitrogen-containing basic group. On the whole, however, the constitution of anesthesin differs widely from that of cocain.

Treasury Decision 2194 requires the registration of any "artificial substance or preparation which is or may be substituted for cocain, alpha or beta eucaine, or any of their salts as ordinarily prescribed or used, and not necessarily to a purely synthetic substitute which, chemically, is identically the same as the drug for which it may be so substituted." This ruling evidently is intended to include anesthesin.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Medical Cults in Ohio

In Ohio the medical cult situation has about reached the limit of absurdity. Fourteen of these cults are specifically mentioned in the new license law, and others are provided for by the terms "any other similar branch of medicine and surgery that may now or hereafter exist and not here specified." The Ohio legislature did a sane thing, however, in having them all placed under the jurisdiction of the state board, thereby placing supervision of all practitioners of the healing art in a single board. In no other way would the public be protected against gross ignorance and incompetence on the part of practitioners of these various cults. Needless to say, the Ohio board will have its hands decidedly full. It has become its duty to work out many of the details for the control of these cults, and its experiences will undoubtedly be of value to other state boards, which sooner or later may have to deal with the same problems. At a recent meeting of the Ohio board, official definitions[1] were adopted for each of the medical cults, which have been classified in five groups as follows:

Group 1

Chiropractic is understood to be the detecting and adjusting by the hand of vertebral subluxations.

Naprapathy is understood to be the detection and correction, by the hands only, of diseased spinal connective tissue or ligaments.

Spondylotherapy is understood to be the examination, by palpation, of the spinal column for disease and its treatment by percussion, traction, vibrotraction, or vibration, and concussion.

Electrotherapy is understood to be the administration of electricity in any form for the relief or cure of the sick.

Hydrotherapy is understood to be the administration of water for the relief or cure of the sick.

Neuropathy is understood to be the specific treatment of the nerves by manual or physical therapeutic measures.

Mechanotherapy is understood to be the administration of manual, physical or mechanical therapeutic measures for the relief of the sick.

Group 2

Suggestive therapy is understood to be the treatment of disease by suggestion.

Psychotherapy is understood to be the treatment of disease by making mental impressions or suggestions.

Magnetic healing is understood to be the treatment of disease by applied suggestion.

Certificates authorizing practice under Group 1 or Group 2 permit the holders to examine and diagnose, and to assume responsibility for the care of the patient, but the holders must limit their practice to the branch or branches of medicine or surgery specified in the certificates.

Group 3

Massage is understood to be a systematic therapeutic friction stroking, kneading, or manipulation of the body.

Swedish movement is understood to be the treatment of disease by movements or exercise.

The two foregoing classifications include:

Medical gymnastics, which is understood to be systematic therapeutic muscular exercises.

Vibromassage, which is understood to be massage by rapidly repeated light percussion with a vibrating hammer or sound.

Electromassage, which is understood to be massage by means of an electric vibrator.

Heliotherapy, which is understood to be the exposure of the body to the sun's rays, or to the rays of light, as a therapeutic measure.

Thermotherapy, which is understood to be the application of heat as a therapeutic measure.

Electric light bath, which is understood to be the exposure of the body to electric lights, or other therapeutic rays, as a therapeutic measure.

Certificates authorizing practice under Group 3 do not permit the holders to examine, diagnose or assume responsibility or care of patients. Holders of these certificates must limit their practice to the branch or branches of medicine or surgery specified in the certificates.

Group 4

Chiropody is understood to consist of surgical treatment of ailments of the hand or foot, nonsystematic or infected in character. It shall also include the fitting, prescribing or recommending of appliances, devices or shoes for the cure, correction or relief of minor foot ailments.

Certificates authorizing the practice of chiropody permit the examination of the appropriate parts and diagnosis, but do not confer the right to operate on the hands or feet for congenital or acquired deformities, or for conditions requiring the use of general anesthetics or which require incision below the level of the skin. Holders of certificates authorizing the practice of chiropody must conform in their practice to the definition of chiropody as here given.

Group 5

Optometry is understood to be the employment of any measure other than the use of drugs, for the measurement of the powers of vision and the adaptation of lenses for the aid thereof.

Certificates authorizing the practice of optometry permit examination of the eye, but aside from the fitting of glasses do not permit any treatment of whatever nature for diseased conditions either local or general. Holders of certificates authorizing the practice of optometry must conform to the definition of optometry as here indicated.

Limitation of Practice

Those who receive licenses to practice one or more of these branches will be limited closely to the practice of the branches specified in their certificates, in conformity with the definitions as herein given, and will not be permitted to practice any other branch—even though the second branch is in the same grouping. For example, a man licensed to practice spondylotherapy will be forced to confine his practice to the "examination, by palpation, of the spinal column" for the cause of the disease, and will also be permitted to treat "by percussion, traction, vibrotraction or vibration and concussion." He will not be permitted to administer electric treatments, unless he is also licensed as an electrotherapist, or to use hydrotherapeutic measures, unless he is also licensed as a hydrotherapist. In his practice he will be confined strictly to the definitions given above, and encroachment on other fields will subject him to revocation of his limited license. This point will be emphasized by the parchment licenses to be issued by the board. They will bear in bold letters an exact statement of what the practitioner may do.

Educational Requirements

The board has established minimum educational requirements for those who seek to enter any of the "limited fields" after Oct. 1, 1915, the final date fixed for applying under the exemption clauses. These requirements, as announced by the board, are as follows:

Groups 1 and 2

Those who make application to practice any limited branch or branches of medicine or surgery under Group 1 or 2 after Oct. 1, 1915, must submit documentary evidence of:

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[1] As published in the Ohio State Medical Journal, September, 1915, with modifications by the Ohio State Medical Board.

(*a*) Preliminary education received prior to entering on the study of a limited branch of medicine or surgery equal to that required of medical students prior to entering on the study of medicine, such requirements to be passed on by the entrance examiner of the state medical board in accordance with Section 1270, General Code of Ohio, and (*b*) satisfactory completion at a recognized school of a course of study consisting of:

1. At least two years of thirty-two weeks each, exclusive of holidays and vacations, in two separate calendar years, spent in the study of anatomy, physiology, chemistry, bacteriology, pathology, hygiene and diagnosis such as has been prescribed by the state medical board as the minimum requirement for medical colleges.

2. A third year of study at a recognized school including preventive medicine, symptomatology, diagnosis, pathology and therapeutics as it relates to the appropriate limited branch of medicine or surgery, certificate to practice which is applied for.

3 After having met the requirements of *a* and *b*, and after having satisfied the state medical board concerning the character and moral standing, the candidate must also pass a licensing examination, conducted by the board.

Group 3

Those who make application to practice any limited branch of medicine or surgery under Group 3 after Oct. 1, 1915, must submit documentary evidence of:

(*a*) Preliminary education equal to the first two years of a first-grade high school course of Ohio, and (*b*) satisfactory completion of a course of study in the appropriate branch in a school recognized by the state medical board, giving a course of practical and theoretical instruction in, and an approved amount of, anatomy, physiology, chemistry, bacteriology and hygiene, covering an instruction period of not less than four months.

(*c*) After having satisfied the board concerning the character and moral standing, the applicant must also pass a licensing examination conducted by the state medical board.

Group 4

Those who make application to practice chiropody after Oct. 1, 1915, must:

(*a*) Show proof of preliminary education equal to the first two years' work of a first-grade high school of Ohio.

(*b*) Submit a diploma from a school or college of chiropody, recognized by the state medical board.

(*c*) Pass a licensing examination conducted by the state medical board, after having satisfied the board concerning the character and moral standing.

Group 5

Those who make application to practice optometry after Oct. 1, 1915, must have completed two years of high school, submit a diploma from a school or college of optometry recognized by the state medical board, and must pass a licensing examination conducted by the state medical board, after having satisfied the board concerning the character and moral standing.

The requirements for those who seek to practice in Groups 1 and 2 are higher than in the remaining three. Candidates to practice in these groups must have completed a high school course, must have spent at least two years in a recognized medical school in the study of the fundamental medical sciences, and must have taken a third year in a cult school *recognized by the board*. Those who seek to practice massage movements must have completed at least two years of high school work and have taken a course of at least four months in a recognized massage school, including a small amount of work in anatomy, physiology, chemistry, bacteriology and hygiene. The requirements for chiropody (Group 4) and optometry (Group 5) are practically the same, with the exception that the length of the course is not mentioned and will later be fixed by the board. The reason for this variation in required qualifications lies in the fact that those who seek to practice under the first two groups set themselves up as "healers," ready and anxious to treat all conditions not specifically prohibited by the law. Chiropodists, masseurs and optometrists do not take in such a wide field.

Georgia June Report

Dr. C. T. Nolan, secretary of the Georgia State Board of Medical Examiners, reports the written examination held at Atlanta and Augusta, June 2-4, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 172, of whom 162 passed and 10 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
Birmingham Medical College		(1913) 81; (1914) 80.8, 84.2; (1915) 82.4, 83, 86.3, 86.7, 89.6, 91.5.
Atlanta Medical College		(1914) 82.5, 86.7; (1915) 80.1, 80.7, 81.5, 81.7, 82, 82.8, 82.9, 83.1, 83.1, 83.5, 83.7, 84.2, 84.2, 84.3, 84.4, 85.2, 85.2, 85.3, 85.3, 85.4, 85.4, 85.4, 85.5, 85.5, 85.5, 85.5, 85.8, 85.8, 85.8, 86, 86, 86.2, 86.4, 86.4, 86.4, 86.5, 86.6, 86.6, 86.7, 86.8, 86.8, 87, 87.3, 87.5, 87.5, 87.7, 87.7, 87.7, 87.8, 87.8, 87.8, 87.8, 87.9, 88, 88, 88.1, 88.1, 88.2, 88.2, 88.2, 88.2, 88.2, 88.4, 88.4, 88.4, 88.5, 88.5, 88.6, 88.7, 88.7, 88.9, 89, 89.2, 89.2, 89.2, 89.5, 89.5, 89.6, 89.6, 89.6, 89.7, 89.8, 89.8, 89.8, 89.9, 90, 90.1, 90.1, 90.2, 90.6, 90.7, 90.8, 90.9, 90.9, 91, 91.2, 91.2, 91.5, 91.5, 91.6, 91.6, 91.7, 91.9, 91.9, 92, 92, 92.2, 92.8, 93, 93.1, 93.2, 94.7, 95.2.
Georgia College of Eclectic Med. and Surg.	(1914)	89.4
Southern College of Medicine and Surgery	(1913)	88
University of Georgia	(1915)	81.1, 82.9, 83.1, 84.8, 85.3, 85.7, 87.9, 89.6, 90.2, 90.9, 92, 93.3.
Chicago College of Medicine and Surgery	(1915)	91.6
College of Physicians and Surgeons, Chicago	(1912)	85
Rush Medical College	(1915)	92.2
Johns Hopkins University	(1905)	94
Tufts College Medical School	(1914)	82.4
Leonard Medical College	(1892)	83.5
Jefferson Medical College	(1911)	88.1
University of Pennsylvania	(1914)	96.2
Meharry Medical College		(1912) 84; (1915) 80, 80, 80.1, 80.2, 83.1, 83.9, 86.3, 87.3, 87.4, 88.7, 88.7, 91.3, 91.3.
University of Tennessee	(1914)	80.7
University of Toronto	(1907)	90.5
FAILED		
Atlanta Medical College	(1915)	78.3
Bennett Medical College	(1914)	76.4
Knoxville Medical College	(1908)	74.1
Meharry Medical College		(1908) 64.4; (1912) 75.7; (1914) 73.4, 76.1; (1915) 74.1, 74.9, 75.6.

College	LICENSED THROUGH RECIPROCITY Year Grad.	Reciprocity with
Kentucky School of Medicine	(1891)	Kansas
Tulane University of Louisiana	(1913) (1914)	Louisiana
Johns Hopkins University	(1913)	Virginia
Central Medical College of St. Joseph	(1903)	Nebraska
Marion-Sims College of Medicine	(1892)	Iowa
North Carolina Medical College	(1902)	N. Carolina
New York Med. Coll. and Flower Hosp.	(1913)	New Jersey
Jefferson Medical College	(1912)	W. Virginia
University of Pennsylvania	(1896) (1912)	Penna.
University of Tennessee	(1914)	Arkansas
Baylor University	(1914)	Texas
University of Vermont	(1908)	Vermont
University of Virginia	(1911)	Penna.

North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the practical, oral and written examination held at Grand Forks, July 6-9, 1915. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 11, of whom 7 passed and 4 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
Rush Medical College	(1902) 78.8; (1915)	82
University of Louisville	(1910)	77
John A. Creighton Medical College	(1912)	75.5
Vanderbilt University	(1915)	75
University of Manitoba	(1915)	83, 83.5
FAILED		
Chicago College of Medicine and Surgery	(1915)	72
University of Illinois	(1914)	69.1
Starling-Ohio Medical College	(1913)	69.9
Milwaukee Medical College	(1912)	73

College	LICENSED THROUGH RECIPROCITY Year Grad.	Reciprocity with
Hahnemann Medical College and Hospital, Chicago	(1909)	S. Dakota
Northwestern University	(1909) Minnesota; (1911)	Illinois
Rush Medical College	(1912) Minnesota; (1914)	Illinois
University of Illinois	(1911)	Illinois
Indiana Medical College	(1906)	Indiana
University of Minnesota	(1912)	Minnesota
Barnes Medical College	(1907)	Illinois
John A. Creighton Medical College	(1912)	S. Dakota
University of Pennsylvania	(1877)	Iowa

Book Notices

Peroral Endoscopy and Laryngeal Surgery. By Chevalier Jackson, M.D., Professor of Laryngology, University of Pittsburgh. Cloth. Price, $5. Pp. 705; with 496 illustrations. St. Louis: The Laryngoscope Company, 1915.

The author carefully describes the technic of bronchoscopy and esophagoscopy, and gives good descriptions of the parts visualized. Of special value is his discussion of the subject of anesthesia. He has been a constant advocate for avoidance of anesthetics when possible, even those local in effect, in these operations. In the early part of this kind of work, few surgeons realized that a considerable number of operations could be done with very little discomfort to the patient and with much more safety without the use of any anesthetic, especially in children. In many other cases only a small amount of a local or general anesthetic is desirable. The volume is not limited to bronchoscopy and esophagoscopy, but treats quite fully the various surgical affections of the larynx, air passages and esophagus. The reader will be disappointed in the lack of authentic information regarding the mortality in operative procedures for the removal of foreign bodies from the air passages, and many operators will be surprised at the optimistic views on the results of treatment and surgical measures that appear to pervade the whole book. Although the author has been phenomenally successful in his own work we think it would have been better if the gravity of these procedures had been duly emphasized. On page 319, in a discussion of unsuccessful cases of bronchoscopy for foreign bodies, a slip of the pen is probably responsible for the following statement: "The cases where bronchoscopy has failed have been limited to cases in which the foreign body could not be found, and these have invariably been very small bodies far down and far out at the periphery." The latter part of this sentence overlooks some cases of comparatively large foreign bodies that have entered the bronchus leading to the upper lobe of the lung. The statement on page 320, "In case of small foreign bodies far down and far out at the periphery, after two expert bronchoscopists have failed to find the foreign body, the intruder should be removed by external operation, and the sooner after bronchoscopic failure the better," does not seem to be justified by experience, when we realize that such patients often live for years without operation and with little discomfort, and that the external operation is often unsuccessful and may prove fatal. In such cases, the question whether or not an external operation should be recommended would depend on many conditions that are not here considered. Again the possibilities of careful fluoroscopic bronchoscopy are not considered. The work is elucidated by means of numerous case records, which often prove of the greatest value to an operator. The volume is beautifully illustrated and contains an exceptionally good index.

The House Fly: A Slayer of Men. By F. W. Fitzsimons, F.Z.S., F.R.M.S., Director, Port Elizabeth Museum. Boards. Price, 35 cents. Pp. 89, with illustrations. New York: Longmans, Green & Co., 1915.

The warfare against the house fly seems to be going on in all lands. The most effective as well as the most necessary campaign method is the education of the people as to the nasty habits of the fly and the dangers of associating with him. The human race has for so long regarded him as an inevitable household companion that it is first necessary to convince people that the fly is neither desirable nor necessary as a room mate. This is both effectively and interestingly done by Fitzsimons. His object is to furnish a small book of a popular nature within the financial reach of everybody. In the ninety pages of the little volume are all the essential facts regarding flies, their origin, habits and dangers, and methods for preventing and destroying them, all told interestingly and well illustrated. While not so greatly needed in this country, in which the antifly campaign started and in which it is still several years ahead of any other country, this little book will undoubtedly be of great value in the antifly campaign in England.

Miscellany

Scarcity of Drugs in Austria

The *Wiener klinische Wochenschrift,* September 23, publishes a communication from the Pharmacologic Institute of the University of Vienna which embodies the results of investigation of the supplies of drugs in Austria. It comments on the effect of the war on the drug trade as not only preventing importation of drugs formerly procured from abroad, but also as affecting and reducing the production of medicinal preparations and drugs in the home country. This entails a scarcity of many drugs, and this scarcity can only increase with the duration of the war. It is emphasized, however, that the foregoing applies only to the civilian population. "The military authorities," it continues, "foresaw this lack of drugs and made provision accordingly, so that a scarcity of drugs in the army medical department is scarcely to be feared." By inquiring at hospitals and wholesale drug houses and pharmacies, the present supply on hand has been estimated, and a number of substitutes are proposed for the more important drugs. "Digitalis purpurea has hitherto been imported, mostly from Germany, but the German empire has now prohibited its further exportation, and there is a possibility of a dearth of this drug. In its place can be used the various preparations of digitalis, of which there are large supplies on hand. Or strophanthus can be used as long as the supply holds out." The yellow flowering digitalis grows in Austria, and is said to have the same qualitative action as digitalis purpurea.

To forestall a lack of camphor, physicians are advised to reserve camphor for internal use, and order other substances, such as spirit of mustard, instead of camphor rubs. "Ipecac and senega are drugs of foreign origin, the importation of which has been cut off by the war. In their place are recommended soap-bark (cortex quillajae) and the root of *Saponaria rubra,* in decoction, the dose of the quillaja being a third or a fourth of the senega dose, and of the root of the *Saponaria rubra* the same as the senega dose.

"The conditions in regard to opium may be changed by importation of Turkish opium, but at present the supply is scanty, and rigid economy in prescribing morphin and codein is recommended. Also the use of the synthetic preparation papaverin, in place of morphin, when cramps of nonstriated muscle are the indication for the sedative.

"Senna, aloes and jalap are also of foreign origin. Castor oil came from France and Italy, and the supply is entirely exhausted. In their place the use of phenolphthalein preparations and of purgative mineral waters or their salts is recommended. Frangula grows in Austria, and its extract ranks with cascara. The use of frangula is commended not only for the present, but also later, to promote its home production. Austrian rhubarb contains only about half as much of the essential element as the Chinese, so the dose must be doubled.

"There is a limited supply of atropin and scopolamin on hand, so they must be sparingly prescribed. The production of these alkaloids and also of salicylic acid and its preparations might well be undertaken in Austria, as the mother substances, belladonna, hyoscyamus and datura, as well as phenol are on hand in sufficient amounts and the manufacture does not present insuperable difficulties.

"Apomorphin is to be replaced by other emetics, such as copper sulphate. Physostigmin must be used sparingly. The obstetric and gynecologically important drug, hydrastis, is at present hard to obtain, and the supply of the drug and of its alkaloids threatens to run out completely. As a substitute should be used the cheaper and fully as effectual synthetic, hydrastinin, and the preparations made from it. The antipyretics, pyramidon and its synonymous trade names, amidopyrin, dimopyran, also antipyrin, phenacetin and antifebrin (acetanilid) are none of them of domestic manufacture, and their exportation has been prohibited. The supply of some of them is already exhausted, so that other drugs will have to be used in their place. The same applies to aspirin and its chemical equivalent, acetylsalicylic acid, which are no longer allowed to be exported.

"Among the drugs used for external application, both sulphur and iodin have been cut off. Economy in the use of each is therefore recommended. Instead of iodin, so far as surface disinfection is concerned, bromin, which is cheaper, should be used, dissolved in chloroform or benzin. A 5 per cent. alcoholic solution of tannic acid is proving useful likewise for this.

"In place of Peruvian balsam; the supply of which is now cut off, we have at our disposal ichthyol and its preparations (thiol, thigenol, etc.) as well as the tar preparations on the market, for surgical use.

"The pure zinc oxid of the Austrian Pharmacopeia (zincum oxydatum albissimum) is not produced in Austria, and its exportation is prohibited. For external use the domestic zincum oxydatum venale can be used instead, if the contaminating lead content does not exceed 0.5 per cent.

"There is no lack of disinfectants; boric acid, which is not to be obtained, can thus easily be dispensed with.

"A word in closing on another matter which affects the prescribing of drugs, that is, the question of proprietaries—*das Spezialitäten-Wesen oder besser gesagt Unwesen.* These manufactured specialties are put up ready for use in specified doses, and they are composed of at least two ingredients. On account of their durability and convenience, there is nothing to be said against the use of simple remedies put up in compressed form (tablets, pastilles, etc.), in exact dosage, and generally with the addition of some indifferent constituent. It cannot be denied that some of these ready-made combinations of drugs are well chosen. But the overwhelming majority of proprietary pharmaceuticals are made up so irrationally that the physician who prescribes them—regardless of all other phases of the matter—reveals the low level of his knowledge. It is time for physicians to break with this mode of prescribing, which has no advantage except that of convenience." The communication is signed by Profs. J. Moeller and H. H. Meyer, both authors of well-known textbooks on materia medica.

Scarcity of Drugs in Sweden

The authorities in Sweden have issued an official circular addressed to all physicians in regard to being economical in prescribing drugs. The circular refers to one issued April 23, 1915, in which all physicians, dentists and veterinarians were enjoined to observe rigid economy in prescribing drugs, and the drugs were enumerated which were the most difficult to procure and with which all concerned would have to be most sparing in their use. The new circular states that this admonition has hitherto been willingly followed and hence the work of the authorities to keep the country's supply of drugs from becoming depleted has been materially aided. In the meanwhile, circumstances have changed, so that the exportation of practically all drugs has been forbidden; but arrangements have recently been made with certain foreign authorities in regard to the importation into Sweden of supplies of drugs calculated to meet the need for half a year. The Swedish authorities appeal to physicians, dentists and veterinarians to use the greatest possible economy in prescribing drugs. The amount of the drug prescribed must be calculated for the patient's indispensable need and no more. Besides this, the drugs that are obtainable in Sweden should be given the preference, and when a drug of foreign origin has to be prescribed the least expensive should be chosen, so that the financial limit set by the exporters should be approached as slowly as possible.

Foreign proprietaries and medicinal preparations with protected names should be used as little as possible, and in their place Swedish preparations should be prescribed or the chemical equivalents, as given in a list enclosed. The circular emphasizes the importance of heeding exclusively the recommendations of this list.

Medicolegal

Fraud in Statements About Medicines

(United States vs. American Laboratories (U. S.), 222 Fed. R. 104)

The United States District Court for the Eastern District of Pennsylvania, in denying motions in arrest of judgment and for a new trial after the defendant had been convicted of violating the Food and Drugs Act and the amendment thereto, says, among other things, that the first three counts of the indictment were under the original act, and charged different acts of misbranding, or false and misleading statements respecting the composition of a medicine put out by the defendant under the trade-name of "Bad-Em Salz." The fourth count was under the Sherley amendment to the original act, and charged the offense of making false and fraudulent statements as to the curative properties of the salts manufactured by the defendant. The case was fully and exhaustively tried and defended, resulting in a verdict of guilty.

The first complaint was an attack on the constitutionality of the Sherley amendment. The position was taken that it is beyond the power of congress to make a crime of the act of a defendant in proclaiming his belief in the curative properties of a medicine. However, the argument on which this was based is so fully met by the opinions accompanying the ruling in U. S. vs. Johnson, 221 U. S. 488, that the court does not feel called on to give it further consideration.

But over and beyond the specific grounds of complaint lay the broader one that there was no evidence in the case to justify the defendant's conviction of a crime. The situation in this view of it might be voiced in the phrase that the defendant, if punished, would be punished for the crime of medical heterodoxy, and not for any offense against the law. In other words, the president of the defendant company, who was himself a physician, advanced a theory, advocated by others as well as by himself, for the treatment of what are commonly known as "gallstone cases." In opposition were eminent physicians and surgeons, and, as the argument might concede, the weight of scientific medical opinion was against him. Inasmuch, however, as the treatment was the subject of controversy, and its efficacy within the domain of opinion, the minority could not be convicted of crime merely because they were outnumbered. It is certainly true that a man should not be convicted of fraud merely because he advocates a theory of medicine which at the time has not received the sanction of the indorsement of the medical profession. It is equally true that a fraud or a faker cannot escape the consequences of his fraud by the mere fact that some one may honestly believe in the theory which he fraudulently and dishonestly exploits. The fact that there was a widely spread disposition among people to give credence to the statement because of a superstitious belief in its efficacy, or indeed such a reputation for the remedy itself as to make people prejudiced in its favor, would not diminish, but would increase the guilt of him who sought to make money by false statements and fraudulent devices.

The motive and policy of the law which lies behind legislation of this general kind is highly promotive of public good. The evils sought to be removed and prevented spring out of conditions requiring tactful, and even delicate treatment. Such laws, if arbitrarily enforced, may easily take the form of an unwise dictatorial interference with the pursuits of others. There is a natural temptation to overdo by trenching on the domain which properly belongs to the ethics of the medical profession. There is danger, also, that the public will come to rely on the protection promised by such laws, and therefore relax individual watchfulness. The temptation even to those who cannot fairly be termed unscrupulous is to yield to the suggestions of greed and come as close to the forbidden line as they safely can. The only sure course in the administration of laws of this kind is to leave the determination of guilt or innocence in a given case to the sound judgment of a jury, supervised by the wisest scrutiny which the trial judge can give to make sure that no one is convicted without guilt.

Right of State as Against Relatives to Discontinue Free Care of Patients

(*In re Clark* (*Mich.*), *152 N. W. R. 920*)

The Supreme Court of Michigan affirms a judgment requiring Sarah P. Clark, whose son was admitted to the state hospital as a patient in 1901, to pay to the state a certain sum for the cost of maintaining the patient at the hospital after the taking effect of Act No. 101, Public Acts of 1909, entitled "An act to revise the law relative to the care of the feebleminded and epileptic." The court says that no question was raised concerning the power of the legislature to provide for an enforced contribution from relatives for the support of patients committed to the institution as public patients. The only question was whether it was plain that it intended to make the law of 1909 apply to all public patients then in the institution as well as those thereafter received. Admitting that the state may cause these unfortunate persons to be segregated and kept and maintained at a public institution, and may compel relatives to bear, in whole or in part, the cost of maintenance, it seems clear that it may fix the time when such contributions shall begin. It would not lose the right by foregoing its exercise. No vested right in a relative to have the free maintenance of a patient continued would arise because for a period the state had freely maintained the patient. There is in Act No. 101 no language which implies that relatives of patients already admitted as public patients will not be called on to contribute to the expense of maintenance to be thereafter furnished by the state. Consequently, assuming the power to exist to enforce contributions at any time, fair construction would make the act applicable to the relatives of those then within the institution, as well as to the relatives of those thereafter admitted.

Discovery of Cancerous Condition After Judgment for Malpractice in Discontinued Operation

(*Mason, Evans and Keys vs. Mcloan* (*Ky.*), *177 S. W. R. 435*)

The Court of Appeals of Kentucky holds the defendants Mason, Evans and Keys, physicians and surgeons, entitled to a new trial after plaintiff Meloan had recovered a judgment against them for $3,500 damages for alleged malpractice in an operation for the removal of a goiter from the plaintiff's neck. The court says that the evidence for the defendants showed that they were regarded as competent, skilful surgeons in the community in which they lived and operated. It also appeared from their testimony that when they made an incision about half an inch deep for the purpose of removing the goiter and came into contact with a large vein which it was necessary to ligate, it was discovered to be in such a friable condition that it could not be ligated or closed by the usual methods, so that it became necessary to discontinue the operation and stop the flow of blood in the vein by putting pressure on it through packing inserted into the incision. Stated briefly, according to the evidence for the plaintiff, the defendants were not competent to perform the operation when it turned out to be more difficult than they had anticipated, and when the condition of the vein was discovered they became alarmed on account of their inexperience and incompetency, and their carelessness in leaving the packing in the wound too long caused an infection to set up that prevented the place from healing; while the evidence on behalf of the defendants was to the effect that the course they pursued and the treatment they adopted was proper, and the trouble resulted from the fact that the plaintiff left the hospital too soon and the wound did not have the proper treatment. But, after the trial and the rendering of the judgment against the defendants, another surgeon removed the goiter, discovering, in the course of the operation, a malignant, cancerous condition. Then a new trial was sought by the defendants, on the ground that the failure of the wound to heal was due to the cancerous condition of the goiter at the time the operation was attempted by the defendants, and not to any lack of skill or attention on their part. The court thinks that the evidence of the cancerous condition of the goiter was very material evidence in the case for the defendants, and, while it was true that the suit was defended by them on the theory that the wound was progressing nicely after the attempted operation, and would have healed if the plaintiff had remained at the hospital or had given it the proper attention, yet the court does not think this defense should preclude the defendants from obtaining a new trial on the theory that the condition of the goiter at the time they operated, and its failure to heal, was due to the cancerous condition that existed. The defendants did not know this condition existed and did not prosecute the operation far enough to discover it, but that it was present when the operation was performed was shown with reasonable certainty by the testimony of the surgeon who afterward operated. Probably if the defendants had been more skilful they could have controlled the flow of blood in this vein and have finished the operation, and the evidence for the plaintiff tended to show that the failure of the wound to heal was due to the negligence or lack of skill or want of attention on the part of the defendants. However, this was a matter for the jury on another trial. There was, the court thinks, sufficient evidence to take the case to the jury; but the new evidence made it clear that the defendants were deprived of a defense on which they were entitled to rely, and which they did not discover until after the trial. This new evidence developed facts that might have great weight with the jury in determining the cause that produced the condition of the wound from the time it was made until the date of the trial.

Constitutionality of State Food Law Prohibiting Use of Boric Acid

(*Price vs. Illinois* (*U. S.*), *35 Sup. Ct. R. 892*)

The Supreme Court of the United States affirms a judgment of the Supreme Court of the State of Illinois which affirmed a conviction of Defendant Price of violating the state pure food law. The violation consisted of a sale in Chicago of a preservative compound known as "Mrs. Price's Canning Compound," alleged to be intended as a "preservative of food," and to be "unwholesome and injurious in that it contained boric acid." The Supreme Court of the United States says that the state has undoubted power to protect the health of its people and to impose restrictions having reasonable relation to that end. The nature and extent of restrictions of this character are matters for the legislative judgment in defining the policy of the state and the safeguards required. In the avowed exercise of this power, the legislature of Illinois has enacted a prohibition—as the statute is construed—against the sale of food preservatives containing boric acid. And unless this prohibition is palpably unreasonable and arbitrary this court is not at liberty to say that it passes beyond the limits of the state's protective authority. But the action of the legislature cannot be considered to be arbitrary. Its judgment appears to have sufficient support to be taken out of that category. Nor can it be said that the legislature exceeded the bounds of reasonable discretion in classification when it enacted the prohibition in question relating to foods and compounds sold as food preservatives. It was contended that the statute as applied violates the commerce clause of the federal constitution, the doctrine with respect to sales in original packages being invoked. The clear inference from the evidence was, however, that the compound was offered for sale at retail in small packages (in envelops) suitable for the consumer, and, nothing appearing as to the character of the shipment into the state, it would be wholly unjustifiable to assume that, in commercial shipments into the state, the small package was segregated or separately introduced. Yet if these small packages were associated in their shipment into the state, as they naturally would be, and were subsequently sold separately or in various lots, these separate packages, although respectively in the original envelops, would not be classed as "original packages" within the rule invoked, so as to escape the local law governing domestic transactions. It does not appear that the state law as here applied is in conflict with any federal rule.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Oct. 6, 1915

The President, Dr. James C. Wilson, in the Chair

Some Applications of Physical Chemistry to Problems in Medicine

Dr. Henry Leffmann: Under the term, "physical chemistry" a vast and intricate science of molecular conditions and transformations has grown up, and has begun to throw light in many directions on the problems presented by both living and nonliving matter. The science is abstruse and the facts can only be treated in an elementary way. I will consider two phenomena, "ionization" and the "colloidal state." The phenomena of ionization are concerned especially with the condition ordinarily called solution, the latter term being here limited to fluids produced by association of substances, one of which is primarily a liquid. The term "solution" has a much wider significance in physical chemistry, common glass being considered a solution. Until a few decades ago, the liquids obtained in dissolving common sugar and common salt in water were designated "solutions." It is now known that the activity of the salt has been materially increased while the sugar has suffered no such change. The sodium atoms of the salt have by the act of solution acquired a positive electrical charge, while the chlorin atoms have acquired a negative charge. The proportion of salt thus modified is dependent largely on the mass of water present. The modification of a substance by which it acquires these electrical charges is termed "ionization"; the respectively positively and negatively charged elements are termed "ions." The importance of the change lies in the fact that the chemical activity of the substance and the pressure of the solution are much enhanced by it. It is found that the most potent ionizing liquid is water. Generally the degree of ionization is increased by dilution. Interesting explanations of well-known phenomena are now possible under these principles. Boric acid is of the same type as nitric acid, yet is far less active. The difference is due to the fact that boric acid is but feebly ionized, while nitric acid is largely ionized. This applies also in the dilution of concentrated acetic and sulphuric acids.

The application of the data of ionization to the interpretation of the action of medicines is complicated by the fact that living protoplasm and membranes have specific selective powers, and thus tests in vitro may mislead. For example, under given conditions, mercuric nitrate ionizes to a much greater extent than mercuric chlorid, yet the latter is ordinarily more toxic. According to Höber, this is due to the fact that the chlorid is more soluble in the lipoid substances contained in the membranes, and thus is enabled to get into contact with the protoplasm of the cells. Another important point is the influence of salts on one another. It is far from being generally true that when a mixture of two or more substances shows no appreciable change of condition, such mixture will have the properties of all the ingredients. An instance is that a mixture of mercuric chlorid and hydrocyanic acid is not equivalent to mercuric cyanid because the substances react in a different manner to the dissolving liquid. Inasmuch, however, as other solvents than water act but feebly in ionizing, it is not unlikely that an alcoholic solution of mercuric chlorid and hydrocyanic acid would have a closer equivalency to mercuric cyanid than a solution in water. The cyanids afford several striking instances of the anomalous effects of mixtures. These data seem to point to the importance of simplification in prescriptions. Another point brought into prominence by the progress of physical chemistry is the influence of extremely fine division. By dividing a material finely we greatly increase the facility of chemical action. We also confer among other qualities constant self-agitation and easier passage through porous partitions. Medicines that are insoluble or soluble with difficulty in the fluids of the body should be administered in as fine powder as possible. Manufacturing chemists do not always apply the highest principles of physical chemistry in their processes, and hence we sometimes find in drug stores preparations of distinctly inferior quality.

The physical chemistry of colloids is now occupying a vast army of workers. The initiative in this field is due largely to an English chemist, Thomas Graham, who, in 1861, published the results of experiments on diffusion through membranes, finding that when a mixture was made of two substances, one of which was crystallizable and the other not, the former would pass rapidly through the membrane, while the other would be held back. He divided substances into two classes, "crystalloids" and "colloids." It is now known that a classification of substances into crystalloid and colloid is not fundamental. These are conditions only, and the same substance may assume both states. The crystalline condition probably results when molecular attractions are allowed more opportunity of acting; the colloidal condition results when less opportunity is afforded. Hence we find that crystals are produced by the solidification of a substance from a liquid or gaseous state. Also, the presence of a minute amount of a crystal of the substance in solution will materially promote the separation in crystalline form, acting as a nucleus for the operation of the molecular forces. Whatever may be the effect of uric acid when in the blood or deposited in the tissues, it is a serious interference when separated in the crystalline form from the urine. Experiments made under the supervision of Dr. Martha Tracy of Philadelphia indicate that a full meat diet increases the acidity of the urine. If this is established, it will be an important point; for the principal danger from uric acid is in its separation in the crystalline form in some part of the genito-urinary tract. Such separation is promoted by increased acidity, and if a minute crystal is deposited at any point it will act as a nucleus, bringing about further separation of uric acid and of other compounds held in unstable solution in the urine. The administration of alkalies for the prevention of this separation may lead to the precipitation of substances not soluble in alkaline urine. It is obvious, therefore, how a full meat diet may cause or aggravate uric acid troubles, although not increasing the output of the acid itself. Knowledge of the nature and properties of colloids enables us to explain many physiologic and pathologic phenomena. Intimately connected with this field of chemistry is the subject of enzymes. These probably form the connecting link of living with nonliving matter. They show colloidal properties and possess high powers of absorption. The problem of the cell is largely a problem of physical chemistry.

DISCUSSION

Dr. S. Solis Cohen: So far as the physicochemical reactions in the living body are the same as those of the laboratory, we may apply the laboratory findings to the problems of biology—to physiology, to pathology and to therapeutics. But as regards the great and increasing number of the outstanding biologic problems of the day, the value of the unknown factor is so great that we must hesitate. Wolfgang Pauli, in an interesting series of studies of the effects of various ions on the living cell, investigated their comparative precipitating powers on proteins, and deduced the laws that: 1. The effect of a salt on a protein is made up in the main of the algebraic sum of the effects of the individual ions. 2. Anions and cations antagonize each other. Pauli found that sodium sulphocyanid tended to reduce blood pressure and to prevent deposition of calcium in the arterial walls, so that it could be used with good clinical results in cases of arteriosclerosis. He found also that sulphocyanids were even more active than iodids in favoring the formation of readily soluble protein compounds with the heavy metals, and thus favoring elimination in cases of chronic poisoning. Other considerations enter into this problem, as into that of decalcification, but the whole subject comes under the head of ion-colloid reactions important to pathologist and therapeutist. In connection with the subject of sulphocyanid ions, however, the warning should be given that whereas sulphocyanid may safely be administered in doses up to 1 gm. daily for sedative and analgesic, as well as pressure-lowering effect, yet any compound of the sulphocyanid ion with an ester will produce almost instant death, owing to the solubility of the cell lipoids in esters. In Pauli's experiments it seems strange to read that nitrate and acetate are ions inhibitive of precipitation, when we daily use nitric acid and acetic acid to precipitate albumin out of urine. But in acetic and nitric acids we have, according to the modern view, hydrogen acetate and hydrogen nitrate. Hydrogen is the cation, and if arranged in Pauli's series, should be placed as the strongest of all precipitants when ionized. Thus, too, we find acetic acid a more delicate test for albumin than nitric acid, because the acetate ion has less inhibiting power than the nitrate ion.

Dr. Alfred Stengel: Physical chemistry is a very new science, to the best informed a difficult and abstruse one, and one which those of us not technically interested in chemistry and physics can hardly hope to master even in its more elementary particulars. Practical physicians, however, should know something about the principles of physical chemistry and the newer principles of physics. Saline solutions are too often employed with the barest knowledge of the principles involved. The use of solutions of greater concentration than the solutions of the body will not bring about the desired results. The introduction of hypertonic solutions into the blood stream, as advised by some French clinicians, while carried out apparently without damage, is a questionable procedure. An argument in favor of physicians knowing something of the newer science is the principle of absorption in the combat against certain bacteria. This is demonstrated in the work of bacteriologists with fullers' earth in the treatment of local infections, in which it has proved of unquestionable value in the matter of diphtheria and typhoid carriers. By the administration of fullers' earth the bacteria have been removed in a way that chemical antiseptics are incapable of doing. Speculation arises in my mind whether or not the use of some of these insoluble substances may not act in the intestinal tract in this way. The work of Ehrlich comes closely on the topic of physical chemistry.

Dr. Thomas McCrae: It certainly behooves a clinician to tread warily when discussing the points brought before us tonight. One danger to which many of us are exposed, not only in respect to the application of physical chemistry, but also in other problems is that of picking up terms without learning their meaning. This subject of physical chemistry lends itself to that. It is easy to talk about ions and ionization without having a clear idea of what is meant; of colloids and crystalloids, without having any clear conception of their meaning. Ionization has a tremendous bearing on the bodily activities. Perhaps we are all familiar with the fact that ionization and electrolysis are closely connected. "Electrolysis puts life into the proteins." An interesting work is that done by Rogers in the giving of hypertonic solutions in the treatment of Asiatic cholera, in which his results justify the treatment. With Dr. Stengel I would emphasize the danger of introducing substances under the skin, one example being calcium lactate. The danger of such a method cannot be emphasized too strongly. In practical medicine we have a great deal to learn from physical chemistry. In speaking of colloids and crystalloids we must have some conception of what we are dealing with; must consider how much of the activity of our cells is due to difference in pressure. In clinical medicine we should do our best to make use of this knowledge, because it would lead us in many instances to a much more rational therapeusis.

Dr. Joseph Sailer: The subject illustrates, first of all, the sympathetic quality of the medical profession in that it must take toll of all the sciences for the understanding of disease and the welfare of the human race. The fundamental element in physics, in chemistry, and possibly the universe, is the atom; and it would seem that until we have a clear idea of the structure of the atom we could not go ahead in the solution of these problems. Until we have a clear conception of some of the problems of physics we are not at liberty to apply our methods with the idea that we are using a tremendous scientific advance in medicine. The application of definite facts of physical chemistry, however, is important, and as in the use of the Roentgen ray and all forms of radioactivity, must be carried out empirically before its value can be determined.

MEDICAL ASSOCIATION OF THE SOUTHWEST

Tenth Annual Meeting, held at Oklahoma City, Oct. 12-13, 1915

The President, Dr. J. D. Griffith, Kansas City, Mo., in the Chair

Psychic and Somatic Palsies Complicating Pregnancy

Dr. S. Grover Burnett, Kansas City, Mo.: A toxic palsy in the pregnant woman endangers her life, her mind and her physical well-being. Primiparas are seldom affected. An early abortion will prevent a complete attack. The pregnant state may slip something in the chemistry of metabolism, causing a toxic neural inflammation syndrome resembling that of Korsakoff's disease but differing in the acuteness of the toxemia, more often causing death by attacking the phrenics and pneumogastrics, and by the alcoholic etiology in Korsakoff's diseases, more chronic in character. The neural inflammation complicating pregnancy may be confined to a single nerve trunk, to one limb, to all the limbs including the trunk, the diaphragm, one or more of the cranial nerves, or the pneumogastric alone, causing death, or to the intercerebral structures, namely, the brain cells and their association nerves, causing only mental symptoms with or without delirium, minus fever. Severe and uncontrolled vomiting usually precedes a general paralysis. The vomiting is milder or absent in the mild or restricted palsies, indicating a severe or mild underlying toxemia, respectively. We must advise against a subsequent pregnancy when a previous hyperemesis gravidarum has occurred; the toxemia is apt to recur in intensified form.

DISCUSSION

Dr. G. W. Robinson, Kansas City, Mo.: I have had a patient under my care for ten days following pregnancy due to convulsions. If I had no history but examined that patient, I should say she has not Korsakoff's disease, but a multiple neuritis. She has hallucinations, both auditory and visual, with a confusional state. Psychoses resembling dementia praecox are not unusual. I have two such cases under my observation at the present time. All these cases are due to toxemia. There is reduced alkalinity of the blood, if not an acid condition. The best treatment is to decrease the alkalies and stimulate elimination by giving large quantities of fluid, a milk diet, and sodium bicarbonate in doses of 120 grains or more, two or three times a day. By means of this treatment I usually get good results.

Dr. G. W. Moody, San Antonio, Texas: It is difficult to determine the nature of the toxemia. It is not the ordinary toxemia which gives symptoms in other persons quite similar to some of the cases with lactation psychoses and neuroses. It could not be the cause because these patients do not eat much and frequently vomit what they do eat. It is in those cases attended with the vomiting of pregnancy that complications are more likely to occur; nevertheless it is a toxic condition.

The Early Pathologic Changes and Their Relationship to the Clinical Symptoms and Physical Signs in Pulmonary Tuberculosis

Dr. Francis M. Pottenger, Monrovia, Calif.: Pulmonary tuberculosis, as it affects the apex of the lung, is a metastatic infection coming from a focus which may be far distant in other parts of the body. This primary focus is commonly found in the peribronchial glands, but may be in other glands, such as the cervical and mesenteric. Often the pulmonary lesion is a renewed activity in an old focus. Under these circumstances we have different conditions present. First, as a result of the old chronic process, there is a degeneration of the muscles, skin and subcutaneous tissue, and, second, increased tone (spasm) in the muscles. If the wasting of the muscles has not been marked, the increased tone may be greater than normal; but if it is marked, the increased tone may not be detectable. Consequently, if we find on inspection and palpation that the muscles are wasted and smaller than usual and that they have an increased tone, and, especially, if we find that not only the muscles but also the subcutaneous tissue has degenerated and is not so marked as on the other side of the chest, then we are led to believe that we are not dealing entirely with a new lesion in the lung but with renewed activity in an old process.

Sometimes we are called on to determine whether an increased tone is due to hypertrophy from overwork or to a motor reflex. This can be determined in the following way: If the increased tone be due to overwork, it is most apt to affect the trapezius, levator anguli scapulae and pectoralis, and sometimes the rhomboidei. If it be due to motor reflex from the lung, the sternocleidomastoideus as well as these other muscles will be involved. In fact, the increased tone will show best, if the lesion be near the apex, in the sternocleidomastoideus, trapezius and levator anguli scapulae. When there is sufficient irritation to affect the apical muscles, the spasm also shows in the diaphragm in the form of a deficient motility. An increased tone of the apical muscles, particularly when the sternocleidomastoideus is involved, plus a lagging of the side, practically always means a motor reflex from the inflammation in the lung.

DISCUSSION

Dr. L. G. Moorman, Oklahoma City: We must diagnose pulmonary tuberculosis early. Headache is a great aid in making an early diagnosis. We should remember the symptoms that arise from toxins produced by the tuberculous infection, such as malaise, lack of endurance, indigestion, loss of weight, increased pulse rate, night sweats, elevation of temperature, and apparent anemia. There is an apparent anemia in tuberculosis.

Dr. F. W. Froehling, Kansas City, Mo.: I have seen real cases of apparent anemia in which I was compelled to assume that the patients in question had really too little blood. The quantity was too little, but the constancy of that quantity was all right. A great deal of reflex action is the cause of these apparent anemias.

Caudal Anesthesia (Analgesia) in Genito-Urinary Surgery

Dr. Bransford Lewis and Dr. Leo Bartels, St. Louis: The chief advantages of caudal anesthesia are extreme safety and absence of unpleasant or dangerous after-effects, as nausea, vomiting, pneumonia, etc. It has enabled us to operate with comparative safety on a class of patients in whom the risk of using general anesthesia would have been too great. Caudal analgesia is also very convenient to use in the office for painful cystoscopies, painful vaginal examinations, etc., and patients are able to go to their homes immediately afterward. Prostatectomy is relieved of one of its greatest objections. The patient goes through the operation without shock, without nausea or vomiting, and without menace to heart or lungs, and is as comfortable after its performance as he has been before it.

DISCUSSION

Dr. Julius Frischer, Kansas City, Mo.: In my experience with spinal analgesia, I have noticed that patients would have headaches following it, and I have tried to relieve this pain by placing three or four pillows underneath the patient's head, and bolstering him up in bed in a half sitting posture. The danger from spinal analgesia is respiratory or heart failure.

Dr. William J. Wallace, Oklahoma City: My experience with spinal analgesia has been limited to one case in which I did a perineal prostatectomy successfully.

Dr. J. D. Griffith, Kansas City, Mo.: Several years ago I used spinal anesthesia, not caudal, in seventy-two patients whose pathologic conditions were below the umbilicus. I have tried to use it in dealing with pathologic conditions above the umbilicus, but have failed. The last patient manifested disturbances of the nervous system which she had not shown before. The operation was done for the removal of pus tubes. I made up my mind I would quit spinal anesthesia.

Dr. Clifford C. Nesselrode, Kansas City, Kan.: A few years ago spinal anesthesia was quite popular in the Kansas City General Hospital. It was resorted to in the case of a woman for the removal of an ingrowing toe-nail. She had complete paralysis of the bowels and rectum following its administration, and so far as could be determined at the time it was likely to be permanent.

Dr. Leo Bartels, St. Louis: As far as the danger of caudal analgesia is concerned, there is no more danger from it than from ordinary infiltration anesthesia. There is no connection between spinal anesthesia and caudal analgesia. We do not enter the spinal canal. If we should accidently enter the spinal canal, we can withdraw the needle and change its direction, and wait three or four minutes before we make the other injection, giving the opening time to close of its own accord. Spinal anesthesia is the most dangerous of all methods of producing anesthesia, including chloroform.

Dietetic Treatment of Pellagra

Dr. J. Lewis Day, Normal, Okla.: Our most successful form of treatment has been dietetic. We have fed our pellagra patients on a diet rich in animal proteins and low in carbohydrates. This has been done regardless of diarrhea or stomatitis. We do not believe that any patient with diarrhea has been made worse by this diet. When a patient is first admitted, castor oil is administered, and then the diet is instituted. Many patients have given a history of having existed on liquid diet for six or eight weeks with progressive weakness and increasing severity of all symptoms. We place such patients on the above-mentioned diet with almost immediate improvement. Patients sleep in the open air when possible, and they are permitted to lie down a few hours each day. We do not allow them to sit in the bright sunlight, but our experience does not show that the ordinary daylight has any bad effect on the skin lesions. Seasons of the year have seemingly little to do with the progress of the disease, except that during extremely hot weather the response to treatment is slower.

What Are We Doing and What Should We Do for the Feebleminded?

Dr. W. L. Kendall, Enid, Okla.: A careful study into the causes of feeblemindedness has shown that it is very largely hereditary, at least two thirds of the cases being the children of feebleminded parents or grandparents or both. Colonization appears to be the ideal method. Under the compulsory education law, all children now come to public attention when they enter school. Placed in colonies, which are in reality well-regulated communities, where all these people do all the work that they are capable of doing, and live under conditions that are easy for them, the problem becomes simplified by the persons of intelligence who manage the colony, and these children become happy and harmless. A great many of them can be trained to do many things with their hands. They can carry on much of the work of the colony and become partially self-supporting, or even completely self-supporting under direction. The hygiene of the backward child, then, includes the recognition of his condition and the treating of him in accordance with his mental capacity.

(To be continued)

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

(Concluded from p. 1578)

Thoracoplasty for Chronic Empyema

Dr. W. D. Gatch, Indianapolis: The first point to determine in any patient having a chronic empyema, which has been thoroughly drained, is whether the lung is capable of expansion if freed from scar tissue. To discover this I rely on (1) the amount of uncollapsed lung as determined by stereoscopic roentgenograms; (2) the size of the cavity; (3) the presence of curvature of the spine and overlapping of the ribs; (4) the level of the diaphragm. If there is no uncollapsed lung, if the cavity is small, the diaphragm in a high position, the spine curved with its concavity toward the affected side, and if the ribs overlap one another or are close together, then I assume that any effort to bring about expansion of the lung is hopeless. The problem involved in the treatment is the obliteration of an infected cavity which is surrounded by rigid and poorly vascularized walls. The cure is to be accomplished by cutting away the firm walls on at least three sides and applying pliable structures with a good blood supply to the remaining wall. The very chronic cases can mostly be cured, barring the presence of bronchial fistula, providing the operation is thoroughgoing.

Some Surgical Disorders of the Upper End of the Femur

Dr. B. P. Weaver, Fort Wayne: Bone tuberculosis in the adult, involving as it often does the synovia and hip joint, demands radical treatment, which means resection to the point of removing just enough of the ends of the bones to secure apposition of bare bone to bare bone, producing an ankylosis. It is both needless and futile to attempt to remove all the tuberculous tissue, for once the function is arrested cure will follow in the average case under proper hygiene. The hypertrophied form, which may cause bony irregularities which interfere very materially with motion, offers an ideal condition for the application of Murphy's hip-joint arthroplasty, wherein the lip, if present, could be removed, the acetabulum reamed out, the irregular head properly rounded off with the end-mill, and recurrence prevented by the interposition of fascia-lata flap. Carcinoma of the upper end of the femur is practically always secondary to cancer in some other part of the body, chief among which are the prostate, thyroid and mammary glands, stomach, esophagus and uterus.

Uronephrosis

Dr. H. O. Mertz, Laporte: By uronephrosis I mean retention of urine in the upper urinary tract. Our experience with these cases seems to emphasize the fact that this condition should be recognized early, when constructive surgery may still suffice. Urine analysis is of very little value in these cases, and too much reliance on the pain symptom alone will often lead us astray in diagnosis. Pyelography has a definite field of usefulness early in the condition, but when end pathology is present it is seldom necessary or justifiable. Extreme care must be exercised at operation in interpreting lesions of the upper ureter producing stasis.

DISCUSSION

Dr. H. G. Hamer, Indianapolis: I would like to emphasize the importance of thorough and complete diagnosis in these cases. It is by making use of the cystoscope, ureter catheter, Roentgen-ray and function tests that we can obtain the information for a complete diagnosis. The neutral solution of thorium nitrate and sodium citrate is an excellent solution for pyelography. It is a clear, clean solution which flows readily through the catheter, is said to be nontoxic and nonirritating, the cost is small, and the shadows are much clearer than those obtained by the use of collargol or other solutions.

Dr. P. E. McCown, Indianapolis: It is better to point the way to a diagnosis of uronephrosis before such a condition arises. We should look into the bladder and kidney pelvis earlier in all abdominal conditions.

Diseases of the Gallbladder and Their Influence on Adjacent Organs

Dr. W. H. Williams, Lebanon: The readiness with which a toxic myocarditis or a chronic pancreatitis or the various symptoms of an infective cholangitis yield to prolonged drainage of the gallbladder is extremely gratifying to both patient and physician. The dissolving of gallstones by various remedies for which such claims are made is misleading, for they do not do the work claimed for them and valuable time is lost. All cases of gallbladder disease are not surgical, but they are medical first and continue so as long as we are getting rapid improvement, free from complications and recurrence of attacks; but if the latter is true we should urge surgical interference without delay.

DISCUSSION

Dr. Murray Hadley, Indianapolis: In regard to the source of gallbladder infection, two theories deserve consideration—that the gallbladder becomes infected by the bile which in turn was infected within the liver; or the gallbladder is infected by way of the lymph stream. The point of infection may be at a distance and the bacteria find their way to the lymph stream by the lymph channels within the organ. If the gallbladder is infected by the bile or by an ascending infection, we have a mucous membrane which will permit the organism through it. Perhaps the most interesting part of gallbladder surgery is the number of cases in which on operating we do not find stones.

Dr. Joseph Weinstein, Terre Haute: A gallbladder sufficiently diseased to produce symptoms that can be diagnosed, is a surgical condition. We are only justified in medical treatment after acquainting our patients with the possibilities and probabilities and their refusal to follow our advice.

Dr. Charles Stoltz, South Bend: When you have made a positive diagnosis of gallbladder disease, operate. By surgical treatment of these cases we are not groping in the dark; medically, we are.

Dr. E. H. Griswold, Peru: We are attributing the cause to the disease and not the disease to the cause. The question cannot always be answered by symptoms, for symptoms are conflicting. We get the cart before the horse when we lay the matter of gallstones at the door of an infected gallbladder.

Dr. Vincent A. Lapenta, Indianapolis: Gastric infections follow all lesions. Drain the gallbladder, but inspect the pylorus too—and we will have to operate less often. We are getting too far away from the idea that the stomach itself is the cause of disease.

Some Considerations in Pelvic Floor Work in Women

Dr. W. H. Baker, South Bend: The pelvic floor work of improved methods is not relieving as many of our patients as it should because of the neglect of frequent complications producing like symptoms. The round ligaments retard motion but do not hold the uterus in a forward position. The lower pole of the uterus must be mobilized in prolapsus uteri and retroversion. No operation should be done on the child-bearing woman that would retard the normal motion of that organ. Perineal muscles should be stitched only with their fascia covering included in the stitch, and the sutures should be of absorbable material and protected as far as possible from vaginal discharges by an unbroken vaginal mucous membrane. In all this work a thorough knowledge of the anatomy and physiology is most important.

DISCUSSION

Dr. G. G. Eckhart, Marion: If the levator ani muscle, the perineal and rectal fascia, make the lower floor, and the uterosacral and uteropubic fascia and the uterus and its attachments make the upper floor of the pelvis, then the shortening of the round ligaments along for retrodisplacement will not suffice. If the uterus has been heavy over a long period of time, backward displaced, shortening the round ligaments and rest in bed for the increased weight may give complete relief. No doubt the largest percentage of failures in pelvic floor work are reported in cases where future pregnancy is to be reckoned with.

Dr. Goethe Link, Indianapolis: Prevention is better than cure. If compensation for obstetrics were better, physicians could spend more time in making deliveries and could more often use professional assistants. There would then be fewer bad tears. A torn perineum can be made almost as good as new at the primary repair, but it is an operation requiring skilful work, good assistance and favorable surroundings. We have too many named operations on the perineum and not enough anatomy. All our efforts should be toward the restoration of normal anatomy and one pathologic condition should be replaced by another.

The Modern Conception of One Form of Nephritis

Dr. Charles P. Emerson, Indianapolis: Bright's disease is a term used correctly only when applied to the small, white, contracted, gouty kidney. The majority of cases of progressive nephritis are due to acute infectious diseases, but the disease will stop unless the infections repeat themselves. The pathologic lesion is due not to one infection, but to many; not to one trauma but to many. One of the most important recent advances is the demonstration that the kidney is capable of some regeneration of its specific elements if only the injurious agent producing the lesion stops its activity. In the diagnosis of nephritis the results of the urine examination must be interpreted by the history and physical examination of the patient. I feel that in no small degree the present chaos in our ideas of nephritis is the result of the separation of the laboratory examination of the urine and the physical examination of the patient. Examine the urine of patients more carefully, especially those who are only "neurasthenic"; have more blood cultures made even though the urine be normal, and if the patient's urine contains albumin, casts or both, allow the laryngologist, the dentist and the surgeon to do all they can for your patient before you subject him to the medicinal and dietetic care of chronic nephritis.

Toxemias of Pregnancy

Dr. Charles E. Ferguson, Indianapolis: The preventive and curative treatment of nephritis and preeclamptic toxemias are identical. Were women trained to put themselves under the care of a physician in the early weeks of pregnancy, the prompt diagnosis of toxemia would be simplified. So long as expectant mothers get no more care than that given by the midwife, or often not as much as that given to a valuable domestic animal under like circumstances, women will die and doctors will struggle with eclampsia and uremia that should have been anticipated and in most cases prevented. The urine of pregnant women should be examined for sugar and albumin every few weeks during the first six months and every three weeks during the last three months. The blood pressure should be taken from time to time; every patient should be impressed with the significance of dimness of vision, spots before the eyes, and particularly severe pains in the epigastrium. While it is true that eclampsia sometimes develops during labor without warning, the majority of cases reveal neglect of preeclamptic toxemia.

DISCUSSION

Dr. H. A. Duemling, Fort Wayne: I would like to emphasize two points—one is the importance of careful and thorough examination of the pregnant woman long before her anticipated confinement becomes due; the second is the looking for perineal tears. Physicians are in too much of a hurry, and consequently their patients are brought back to the hospitals, where they are helped, but never brought to the health they could have had the tears been taken care of at the proper time.

Dr. A. S. Jaeger, Indianapolis: The best way to prevent eclampsia is to treat it before it occurs, which can be done by the general practitioner. The men who see these cases only when some imperative emergency exists have not a chance to do anything except that which can be done at once. If a woman is in eclampsia at term, then my custom is to deliver as rapidly as possible. If she has no pulse and a rigid os, I do the cesarean section. If eclampsia comes at seven or eight months, I believe everything should be done to carry these women to term. The use of high forceps is criminal if used on an unengaged head, especially when the cesarean section can be done, saving the mother and child.

Case of Hysteria from the Viewpoint of the Freudian Psychology

Dr. Max A. Bahr, Indianapolis: Hysteria is a psychosis and not a neurosis. The psychology of hysteria is the psychology of subconscious states and their method of growth by a process of dissociation of the normal consciousness. These subconscious impressions still remain dynamic, however, in the life of the individual, and later acquire strength to dominate the entire personality. These so-called "submerged complexes" are capable of being revealed by means of association experiments and analysis of reveries and dreams. New complexes by themselves have influence only in so far as they are indissolubly bound up with emotions of painful content, consequently they become dynamogenic and when sufficient energy has been accumulated to overcome the resistance an explosion takes place and the result is the conversion of these complexes into crises such as we find in hysteria. We have violent outbursts of excitement, transient deliriums, and a multitude of other sensory and motor expressions—in fact there is hardly a symptom in the category of medicine, be it mental or physical, which may not present itself at one time or another in hysteria. The patient's dreams are symbolic of an inherent trend of the inner life of the individual. Psychic phenomena have efficient causes and are as definitely associated with these causes as are physical diseases. The technic of psychanalysis is to establish necessary and definite connection between these symptoms and the exciting causes. The methods employed vary with the individual needs, but the most satisfactory resources at our disposal are association tests and analysis of dreams. The association tests give us a ready method of gaining insight into the various complexes as well as a survey of the patient's general psychologic trend, while through analysis of dreams it is possible to enter the various crypts of the unconscious mind and bring to light many of the repressed and hidden experiences. The principle of analytic psychotherapy is to overcome mental conflict and make the patient realize the existence and influence of these unconscious and self-condemned desires. This psychanalysis cures patients as a result of self-knowledge and ascertaining the cause, although the method of treatment does not alter the neurotic inheritance which nearly all these patients possess. When the principles of this new psychology are more extensively known by the general medical practitioner, hysteria will rapidly decrease in frequency, for it is the general practitioner who is the first to come in touch with these patients.

DISCUSSION

Dr. Ernest H. Lindley, Bloomington: The emotions are the most vital diagnostic features. Ideas move the world, but they never move anything until the emotions get behind them and furnish the steam. The balking of emotion, the prevention of emotion finding its normal expression, is not infrequently the source of functional disorder, and where people live in repression they live at war with themselves, and this finds expression in convulsions and all kinds of physical disorders and excesses. The great bulk of nervous cases with which the physician has to deal are cases of balked desires, and the way out is to find normal expression for the emotions of these people. Give them something to do, something worth while for themselves and the community, and you cure them and at the same time give them their rightful place in society.

Dr. Albert E. Sterne, Indianapolis: Mind cannot exist independent of matter. The mind unquestionably influences the body, and it can influence our emotions. The most recent experiments indicate that the emotions are physical, that they are biochemical and that their results are as manifest and as definite as any organic clinical entity that we can demonstrate in organs outside of the nervous system and the mind which is its expression. To apply psychanalysis wholesale as a method of procedure would be wholly impracticable, not because of lack of ability on the part of the physician, but on account of lack of time and patience to do it. There is danger in psychanalysis applied irrelevantly, as there is danger in any other thing applied irrelevantly. The whole question may be summed up in the one word—self-control. Teach boys and girls self-control—to recognize that the two fundamental principles which guide all animal creation are alive in us and need control, and we will not have many cases of hysteria. It is the individuals who do not exercise self-control that we meet with in the realm of hysteria.

Dr. C. F. Neu, Indianapolis: Psychanalysis has come to stay, but it is not a "cure-all." We get temporary cures, but psychanalysis has not been in application long enough to say whether we get permanent cures or not. This analysis can only be carried out properly in the proper environment and with the proper attention, and that practically can only be obtained in institutional treatment.

Diagnostic Routine in General Practice

Dr. Charles R. Bird, Greensburg: The diagnosis of disease rests on three things: clinical history, physical signs and pathologic knowledge. In addition to noting the pulse, temperature, reflexes, etc., each patient has a right to expect of us a routine which includes nothing less than case history and case record, stripping to the skin, examination of chest and abdomen, urinalysis, blood pressure and hemoglobin percentage. It is not sufficient that we look for some definite pathologic lesion only when we suspect its presence.

DISCUSSION

Dr. William R. Davidson, Evansville: Too many doctors say they have not time to make examinations, but if we practice systematic routine in all examinations, beginning with the head and in an orderly, systematic manner going through the entire physical findings, particularly taking a full clinical history and writing it down, we will be surprised how much more accurate knowledge is becoming. We must first know the pathology and then know how to interpret that with the clinical history, for when all is said and done the main thing is the clinical history of the patient.

Dr. A. C. Kimberlin, Indianapolis: Get the facts from the patient first, which is the history, and then get what evidence you can from physical examination, before you prejudice yourself mentally, because there is where we make our errors most frequently—in following a line and keeping after it, even at the expense of putting aside something which another person sees in a different light. It is not a matter of what we know, but how we use our knowledge.

Dr. C. S. Bond, Richmond: A man cannot be a diagnostician unless he trains for that work—training his finger tips, his eyes and his ears. I believe the difference between men very largely is the difference in their ability to detect things by hearing, seeing and feeling. Then a man must take time and quietly consider his findings.

Dr. W. A. Fankboner, Marion: We are prone in recent years to lean on the test tube and microscope and blood count and things of that kind. I would not detract from the value of these things, but we must learn primarily to study the patient as a human machine and apply our educated senses to finding out what is the matter with him, using these laboratory methods in a corroborative rather than a primary way. Our success in diagnosis depends on our faculty in interpreting things at their full value.

Benzol in the Treatment of Leukemia

Dr. Joseph M. Barry and Dr. Jane M. Ketcham, Indianapolis: From a study of the literature and from our experience with one case we feel justified in concluding that benzol has a wonderfully selective action in chronic myeloid leukemia, if uncomplicated and not of too long duration; that one can count with considerable assurance on getting a rapid reduction in the number of leukocytes; on getting a normal blood formula; a rapid diminution in the size of the spleen; and an increase in the number of red cells and the hemoglobin percentage, with improvement in the general health of the patient, increase in weight, etc. One should never forget, however, that the drug is a powerful poison and that we must be careful not to carry its effects too far. The patient should be in a hospital, in bed; the gastro-intestinal tract, kidneys and liver should be watched carefully for toxic symptoms; blood counts should be made every few days; the benzol should not be increased in dosage without definite warrant, and its administration should be entirely stopped considerably before the white count has returned to normal.

DISCUSSION

Dr. A. C. Kimberlin, Indianapolis: In the treatment of these cases, the essential point is to be familiar with the temperature curves before beginning active treatment. In the Roentgen-ray treatment we should approach the spleen with care, and feel our way, marking our progress by the temperature, by the pulse and by specially close attention to the mucous membrane of the throat, especially of the tonsils. They have a tendency to take on hydroplastic conditions. Rise of temperature should always be taken into account.

Some Points in the Early Physical Diagnosis of Pulmonary Tuberculosis

Dr. A. C. Kimberlin, Indianapolis: When a case presents the only interest I have is, first, to make a diagnosis; next, if possible, to locate the lesion accurately. Family history is important. Do not take the word of the average patient as to a negative family history of tuberculosis—it is not worth anything. The physical examination is worth just about what one's services are, and that is what you are willing to make it. The first thing one should know in attempting this diagnosis is the anatomy of the chest; next, he should carry a clear picture in his mind of the manner in which pulmonary tuberculosis spreads; then he must know something of the acoustics of a normal chest as well as the pathology of early pulmonary tuberculosis. Percussion and auscultation are our chief and most reliable means of recognizing incipient pulmonary tuberculosis, but auscultation of the voice is of much greater value than ordinarily appreciated, especially if properly practiced and studied. During examination the patient should be at ease, both mentally and physically. He should sit at ease on a chair high enough to bring him on a level with the examiner, or in examining the axillary and subpectoral regions he should lie on a firm table, not a bed or couch with springs under it. We owe an everlasting debt to the roentgenologist for what he can and has done in helping us in our findings, and because he has been our "pace-maker" in teaching the possibilities of a properly made and refined physical diagnosis; but when a physical examiner applies himself, keeping his mind fully concentrated on what he is doing, eliminating all traditional customs of routine physical examination, he is quite able, with the advantage of personal and family history and a thorough clinical history, to arrive at conclusions which are of more practical value to the medical man than would be the findings of the roentgenologist, who only studies a picture showing change in density. A physical examination should be intelligent and conclusive and it should be reliable. One objective sign in diagnosing is worth a dozen subjective symptoms. What a patient tells you may be wrong, but what you find from physical examination, you are responsible for its interpretation and application.

DISCUSSION

Dr. Alfred Henry, Indianapolis: Early diagnosis of pulmonary tuberculosis entails great responsibility on the family physician. You had better say to your patient "You have tuberculosis" if you are in doubt, than to say "You have not tuberculosis." If you err it had better be on the other side. If he has tuberculosis he will do something to cure himself, and if he has not, what has he lost by sleeping out doors or with his windows open for a year? One of the landmarks in this diagnosis is the characteristic tired feeling. If that persists for a few weeks or for a month or two, be suspicious. Take your time; give each patient a half hour to an hour instead of a minute; take the temperature a dozen times, examine the sputum a dozen times, and train your ear to hear.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

November, XXXIX, No. 1, pp. 1-130

1 *Physiology of Stomach. Mechanism of Regurgitation of Duodenal Contents into Stomach. C. J. Hicks, Jr., and J. W. Visher, Chicago.
2 *Origin of Proteolytic Ferments of Blood. Question of Specific Character of Certain Ferments. L. H. Sloan, Chicago.
3 Oxygen and Carbon Dioxid Content of Blood During Hibernation in Woodchuck (Marmota Monax). A. T. Rasmussen.
4 Blood Counts in Frog, Turtle and Twelve Different Species of Mammals. J. J. Wells and J. E. Sutton, Jr., Ithaca, N. Y.
5 *Influence of Oil of Chenopodium on Intestinal Contractility. W. Salant and C. W. Mitchell, Washington, D. C.
6 *Influence of Stimulation of Depressor Nerve on Suprarenal Secretion. A. N. Richards and W. G. Wood, Philadelphia.
7 Respiratory Chamber for Small Animals. A. C. Kolls and A. S. Loevenhart, Madison, Wis.
8 *Mechanism Adapting Oxygen Capacity of Blood to Requirements of Tissues. H. C. Dallwig, A. C. Kolls and A. S. Loevenhart, Madison, Wis.
9 *Stimulation of Hypophysis in Dogs. R. W. Keeton and F. C. Becht, Chicago.
10 Physiology of Stomach. Gastric Hunger Contractions of Normal and Decerebrate Guinea-Pig. J. L. King and H. Connet, Chicago.

1. **Regurgitation of Duodenal Contents into Stomach.**—One hundred and fifty c.c., 0.5 per cent., HCl left in dogs' stomachs for fifteen and thirty minutes caused regurgitation in 38 per cent. of fifty-six trials. In man, an average of 32.6 c.c. gastric juice (acidity 0.411 per cent.) accumulated during twenty minutes' chewing of food, caused regurgitation in 40 per cent. of ten trials. Whereas, 100 c.c. of 0.4 per cent. HCl retained in stomach for twenty minutes caused no regurgitation in 100 per cent. of ten other cases. Duodenal regurgitation following the introduction of 0.5 per cent. HCl into the cat's stomach is effected by means of characteristic movements (mostly "rhythmic pulsations" or "segmentation movements") in the first portion of the duodenum, initiated by the passage of strong HCl into the duodenum, and occurring in the absence of extrinsic nervous connections. Regurgitation never occurred in the absence of these movements. Hicks and Visher claim that antiperistalsis of the duodenum is not concerned in this regurgitation.

2. **Origin of Proteolytic Ferments of Blood.**—There is an increased proteolytic ferment action of the blood serum during pregnancy. Sloan believes that this increased activity is probably in the main due to an increase in the polyvalent ferments. Normal blood serum has a weak nonspecific proteolytic action. The dialysis method of Abderhalden or the method of Williams and Pearce does not suffice to demonstrate a ferment developed during pregnancy acting only on placental protein. Many advanced pathologic conditions give a positive reaction within the time specified for the Abderhalden test of pregnancy. At present the Abderhalden test is a quantitative not a qualitative test.

5. **Influence of Oil of Chenopodium on Intestine.**—According to Salant and Mitchell, oil of chenopodium in dilutions of 1 : 5,000 and 1 : 10,000 in Locke's solution produces in the isolated intestine of rabbits a marked decrease of tone which remains permanent and diminishes frequency as well as force of contractions, which disappeared altogether in twenty to twenty-five minutes. Recovery occurred when the intestinal segments were placed in Locke's solution without oil of chenopodium. In carnivorous animals, oil of chenopodium usually, but not always, causes a preliminary rise of tone followed by a steady decline. Rhythmic contractions may increase in frequency, but disappear finally. Recovery may take place when the segments are put into Locke's solution. The reaction to oil of chenopodium was greater in the ileum than in the duodenum or jejunum, but was most marked in the colon. Caffein has no antagonistic effect, but may, on the contrary, aid depression of tone caused by oil of chenopodium. Neither barium chlorid nor pilocarpin has a true antagonistic effect, but may prevent to a small extent depression of tone when added before oil of chenopodium. Pilocarpin has no action on intestine which has been poisoned by oil of chenopodium, but barium produces an increase of tone. Nerve ends as well as muscle fiber are attacked by oil of chenopodium, but the latter is more resistant. Relatively large doses of oil of chenopodium are required to inhibit peristalsis in intact rabbits by intravenous injection. The presence of substances antagonistic to oil of chenopodium is offered as an explanation.

6. **Influence of Depressor Nerve on Suprarenal Secretion.**—Richards and Wood are convinced that the processes in the suprarenal gland which are responsible for the discharge of epinephrin into the blood are subject to reflex inhibition by way of the depressor nerves; in a word, the mechanism of suprarenal secretion is involved, not only in pressor, but in depressor reflexes.

8. **Mechanism Adapting Oxygen Capacity of Blood.**—The work done by the authors indicates that the increase in erythrocytes and hemoglobin noted by practically all workers at high altitudes is due largely if not entirely to the decreased partial pressure of oxygen at high altitude, but the rapid increases in the blood counts noted in man at high altitude and also the increases noted at comparatively slight elevations is not explained by them.

9. **Stimulation of Hypophysis in Dogs.**—Keeton and Becht found that electric stimulation of the hypophysis in dogs under insufflation anesthesia gives rise to an increase in the reducing substances in the blood. Drilling over the sella stimulates the gland mechanically, but not so efficiently as the induced shocks. If the stimulation is applied anteriorly or posteriorly to the gland, with precautions to prevent an escape of the current to the hypophysis, no rise in the reducing substances results. This rise on stimulating the gland does not occur in dogs whose splanchnic nerves have been previously sectioned, a fact which argues against the liberation of a hormone, which increases directly the cellular glycogenolysis. With active diuresis the threshold of glycosuria lies between 0.19 per cent. and 0.21 per cent. reducing power of the blood figured to dextrose. Once established, the sugar in the urine increases in concentration out of proportion to the reducing power of the blood.

American Journal of Public Health, Boston

October, V, No. 10, pp. 965-1102

11 Recent Public Health Work in United States Especially in Relation to Infant Mortality. J. S. Neff, Narberth, Pa.
12 Municipal Control of Diphtheria. W. G. McKay, Jacksonville, Fla.
13 Permanent Sediment Records for Water and Sewage. G. C. Whipple and J. W. M. Bunker, Boston.
14 Statistical Study of Whooping Cough. F. S. Crum.
15 Important Details of Practical Plumbing. H. Y. Carson, New York.
16 Standardization of Public Health Work. W. S. Rankin, Raleigh, N. C.
17 Incubation Time in Culture Diagnosis of Diphtheria. A. Gehrmann, Chicago.
18 Apparatus for Accurately Filling Dilution Blanks. R. Freas, Baltimore.
19 Outbreak of Cowpox. A. J. Douglas, Winnipeg, Canada.
20 Rural Sanitation and Uncinaria Disease. A. G. Fort, Atlanta, Ga.
21 Standard Certificate of Birth. W. A. Plecker, Richmond, Va.
22 Action of Certain Bacteria on Nitrogenous Material of Sewage. E. G. Birge, Boston.
23 Preparation of Ammonia-Free Water. E. J. Pugh, Philadelphia.
24 Report of Committee on Industrial Hygiene and Sanitation of Home. J. H. Landis, Cincinnati.
25 Report of Committee on Occupational Mortality. W. F. Snow, Sacramento, Calif.
26 Incorrigible Consumptive — Isolation of Persons Ill with Communicable Diseases. C. Bryant, Haverhill.
27 Some Inconsistencies in Dealing with Tuberculosis. F. G. Curtis, Newton.

Annals of Otology, Rhinology and Laryngology, St. Louis

June, XXIV, No. 2, pp. 193-428

28 Oral Tuberculosis. T. E. Carmody, Denver.
29 Sinister Unrecorded Anomalies of Sphenoid. A. W. Meyer, Palo Alto, Calif.
30 Pollen Therapy in Hay-Fever. J. L. Goodale, Boston.
31 Experiments with Autoserum in Treatment of Hay-Fever. Relation of Anaphylaxis and Eosinophilia to Hay-Fever. H. Hays, New York.
32 Accidental Pneumothorax During Tracheotomy; Report of Case. S. Iglauer, Cincinnati.

33 Simple Manometric Apparatus for Measuring Eustachian Tubal Patency and Tympanic Ossicular Mobility. L. M. Hubby, New York.
34 Accidental Injuries of Sigmoid Sinus Inflicted in Simple Mastoidectomy. W. A. Scruton, New York.
35 Ethmoidal Exenteration. C. M. Robertson, Chicago.
36 Use of Pituitary Extract as Coagulant in Surgery of Nose and Throat. H. Kahn and L. E. Gordon, Chicago.
37 Tuberculosis of Larynx. J. Holinger, Chicago.
38 Choanal Fibroma. N. H. Pierce, Chicago.
39 Hammond's Mastoid Skin Grafting. F. Allport and A. S. Rochester, Chicago.

Boston Medical and Surgical Journal

November 4, CLXXIII, No. 19, pp. 685-722

40 Medicine; Profession or Trade. H. Cabot, Boston.
41 *Late Results of Operations on Hip Joints for Hypertrophic Arthritis. E. G. Brackett and H. W. Marshall, Boston.
42 Therapeutic Value of Injections of Whole Blood. J. S. Davis, Dallas, Tex.
43 Massage and Remedial Exercises in Treatment of Children's Paralyses; Their Differentiation in Use. J. M. Colby, Boston.
44 Treatment of Acute Infections of Airways by Instillation of Aromatic Drugs. I. W. Voorhees, New York.
45 Studies in Speech Disorder. W. B. Swift, Boston.
46 Case of Thrombophlebitis of Veins of Cord Associated with Colon Bacillus Infection of Epididymis. E. G. Crabtree, Boston.

41. **Operations on Hip Joints for Hypertrophic Arthritis.**—The nine cases reported by Brackett and Marshall represent four arthrodeses, one decapitation of the femoral head, three cheilotomies and one arthrotomy for a loose body. Results of the four arthrodeses are as follows: Three patients were actively at work at the time the last observation was made on them and the fourth person was improved in health. The result of the decapitation of the femoral head represented some improvement. The three cases in which diffuse exostoses and bony lips were removed from hip joints (cheilotomies) varied considerably in their success. One, a teamster, was at work two years and ten months after operation, having begun again seven or eight months after leaving the hospital. The other two patients had both hips operated on, and neither had resumed his former occupation. One of the two could chore around home and did not need a cane except in the street. The third cheilotomy patient was operated on twice and walked with a crutch and a cane seven years after his first operation. At the last observation he was in fairly good general health with much less hip pain. The first joint treated was still quite serviceable, while the second one was neglected by him in its after care, so that it was badly rotated outward at the last examination. This case, the oldest of the series, originally had marked changes in both hips and had been disabled for two years. His efficiency was increased by surgery, but not to the point of work, and the main benefit has been relief from pain. The one case of arthrotomy for removal of a loose body in the joint probably had a traumatic origin, and at operation the joint did not show many other pathologic changes. Complete relief followed removal of this body, and the patient could walk easily and painlessly when seen after two years and one month.

Canadian Medical Association Journal, Toronto

October, V, No. 10, pp. 853-948

47 Disabilities, Including Injuries Caused by Bullets, Shrapnel, High Explosives, etc. A. Primrose, Edinburgh.
48 Nonmaterialism in Medicine. D. F. Harris, Halifax.
49 Case of Large Celled Splenomegaly (Gaucher Type). H. A. Bruce and O. R. Mabee, Toronto.
50 Subcutaneous Administration of Fluid in Acute and Subacute Conditions in Infancy. R. P. Smith, Toronto.
51 Method of Dealing with Tuberculosis in Public Schools of Toronto. F. S. Minns, Toronto.
52 Cholemic Hemorrhage. E. M. Von Eberts, Montreal.
53 Typhoid Cholelithiasis and Cholecystitis. E. M. Von Eberts, Montreal.

Florida Medical Association Journal, Jacksonville

October, II, No. 4, pp. 97-128

54 Reflections on Modern Methods of Treatment by Serums and Vaccines. W. S. Thayer, Baltimore.
55 Composite Board of Medical Examiners. R. H. McGinnis, Jacksonville.
56 Plea for Better Health Organizations in Smaller Municipalities of Florida. M. E. Heck, St. Augustine.
57 Some Thoughts on School Inspection. D. C. Main, Welaka.

Journal of Experimental Medicine, Lancastar, Pa.

November, XXII, No. 5, pp. 517-673

58 *Chemopathologic Studies with Compounds of Arsenic. Types of Arsenic Kidney. L. Pearce and W. H. Brown, New York.
59 *Id. Histologic Changes in Arsenic Kidneys. L. Pearce and W. H. Brown, New York.
60 *Id. Pathologic Action of Arsenicals on Suprarenals. W. H. Brown and L. Pearce, New York.
61 Immediate Effects of Reduction of Kidney Substance. H. T. Karsner, H. A. Bunker, Jr., and G. P. Grabfield, Boston.
62 *Bactericidal Action of Ethylhydrocuprein on Pneumococci. H. F. Moore, New York.
63 *Serum Ferments and Antiferment During Pneumonia. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
64 *Serum Changes Following Kaolin Injections. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
65 *Effect of Protein Split Products on Serum Ferments and Antiferment. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
66 *Effect of Killed Bacteria on Serum Ferments and Antiferment. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
67 Cultivation of Tubercle Bacillus Directly from Sputum by Method of Petroff. R. A. Keilty, Philadelphia.
68 *Experimental Arthritis in Rabbit. Contribution to Pathogeny of Arthritis in Rheumatic Fever. H. K. Faber, New York.
69 Action of Lethal Dose of Strophanthin in Normal Animals and in Animals Infected with Pneumonia. R. A. Jamieson, New York.
70 Origin of Tumors in Mice. Tumor Incidence and Tumor Age in Various Strains of Mice. A. E. C. Lathrop and L. Loeb, St. Louis.

58. **Types of Arsenic Kidney.**—Pearce and Brown found that injection of arsenious acid into dogs produces a uniformly red kidney. The type of kidney produced by injections of salvarsan, neosalvarsan and galyl falls into the general class of red kidneys, although certain differences relate them to the other main type, the pale kidney. These differences consist in a relatively greater degree of tubular necrosis and in the character of the vascular injury. Injection of arsacetin into dogs produces an exceedingly pale kidney. The organ is enlarged, soft and friable. Arsenophenylglycin and atoxyl produce pale types of kidneys, but the amount and extent of vascular injury are somewhat greater than in the arsacetin kidney. The cortical necrosis of the arsenophenylglycin kidney is extreme and is quite comparable to that produced by arsacetin.

59. **Changes in Arsenic Kidneys.**—Here Pearce and Brown show that while some arsenicals produce changes in which vascular injury predominates, others produce an equally dominant tubular injury. In either of these groups the character and degree of the vascular or tubular injury produced by different compounds shows further variation, such that the lesions of different arsenicals of the same group are not identical. Each compound of arsenic tested produced a lesion complex in the kidney that is relatively characteristic for that compound. The mode and character of the action of arsenicals are dependent on the chemical constitution of the compound.

60. **Action of Arsenicals on Suprarenals.**—Toxic doses of all arsenicals produce definite pathologic changes in the suprarenals of guinea-pigs. These changes include congestion, hemorrhage, disturbances in the lipoid content, cellular degenerations and necroses, and reduction in the chromaffin content. The character and severity of the injury produced by different arsenicals varies with the chemical constitution of the compounds. From these facts, Brown and Pearce believe that suprarenal injury is an important factor in arsenical intoxication, and suggest that therapeutic doses of some arsenicals may produce suprarenal stimulation.

62. **Bactericidal Action of Ethylhydrocuprein on Pneumococci.**—Moore claims that the serum of rabbits which have been previously treated with a single dose of ethylhydrocuprein exerts a bactericidal action on, and, later, inhibits the growths of pneumococci in the test tube. These actions are most evident in the serum of rabbits when the base (optochin base) is given in oil subcutaneously; somewhat less when the hydrochlorid of the drug is given in water subcutaneously; slight when the base is given in oil intramuscularly; and least evident, or absent, when the hydrochlorid in water is introduced directly into the stomach. To get these effects by the intravenous route, toxic doses must be given, and, even with toxic nonfatal doses, the effects do not last

long. In the case of the base given in oil subcutaneously to rabbits in a dosage of 0.1 gm. per kilogram of body weight, the bactericidal action of the serum is at its maximum about one hour after administration, and it passes into an inhibitory effect about four hours after the drug has been given. In man the same inhibitory and bactericidal actions of the serum are present when a single dose of 0.5 gm. of the hydrochlorid of the drug is given by the mouth or subcutaneously, but the bactericidal action is not so marked as in rabbits. When the optochin concentration in the serum has, apparently, diminished to a certain point in relation to the number of pneumococci present, the pneumococci which have survived the bactericidal action for a few hours acquire the power of growing freely.

63. **Serum Ferments and Antiferment During Pneumonia.**—The authors state that the crisis in pneumonia is usually accompanied by (*a*) decrease in the serum antiferment; (*b*) the mobilization of a nonspecific protease in the serum; (*c*) an increase in serum lipase; (*d*) a decrease in the noncoagulable nitrogen and of the proteoses in the serum. The crisis is associated with the beginning of an active autolysis, the latter depending on an altered relation between the ferment-antiferment balance. The fibrin and leukocytic débris must be considered as one of the potential sources of toxic substances. With rapid autolysis proceeding, only nontoxic materials are absorbed.

64. **Serum Changes Following Kaolin Injections.**—The intoxication produced by the intravenous injection of inert substances such as kaolin, the authors state, is due to protein split products derived from the serum proteins. The kaolin acts as an adsorbing medium for the serum antiferment, bringing about an alteration in the ferment-antiferment balance. The intoxication is accompanied by an increase in serum protease and proteoses. The serum lipase, the amino-acids and the total noncoagulable nitrogen show relatively little change. The antiferment shows an initial increase, followed by a loss.

65. **Effect of Protein Split Products.**—In dogs the toxic effect of primary proteoses is usually associated with the following serum changes: (a) an increase in serum antiferment, with a following fall in titer; (b) some increase in serum protease; (c) an increase in serum lipase; (d) a decrease in serum proteoses and amino nitrogen. Secondary proteoses produce (a) less marked changes in the antiferment titer; (b) a marked increase in serum protease; (c) an increase in serum proteoses; (d) only a slight change in serum lipase; (e) a primary decrease in amino nitrogen. The peptone the authors used (prepared from dog muscle) caused (a) a change in antiferment titer similar to that produced by the primary proteoses; (b) a marked increase in serum protease; (c) only a slight increase in serum lipase; (d) a primary decrease in proteoses, followed by an increase later; (e) an increase in amino-acids. A small dose of peptone resulted in a decrease in antiferment titer, together with a primary decrease in serum protease. The peptone preparation was nontoxic when introduced into the stomach or rectum, while the intestinal injection was followed by an immediate intoxication.

66. **Effect of Killed Bacteria on Serum Ferments.**—The intravenous injection of killed organisms is followed by the mobilization of a nonspecific protease and lipase; the rapidity and extent of this reaction depend on the toxicity of the organism and on the resistance of the organism to proteolysis. The temperature and leukocytic curve bear no relation to the ferment changes. The serum antiferment is usually increased after the injection. Of the organisms studied, the typhoid bacillus produced the most marked ferment changes and the tubercle bacillus the least. The toxicity of the dried organisms cannot depend wholly on proteolysis in vivo, but must depend in part on the preformed toxic substances liberated on lysis. Serum protease should not be considered as the sole exciter of intoxication through the production of protein split products; it seems possible that its function may in part be one of detoxication.

68. **Experimental Arthritis in Rabbit.**—By a process of sensitization described, Faber was able to cause arthritis in rabbits constantly after one intravenous injection of the streptococcus. This reaction is specific. By intravenous inoculation, without previous sensitization of the streptococcus used, it was possible to cause arthritis in rabbits only after three or more injections. An analogy is suggested between the arthritis induced by sensitization and the relapses in human rheumatic fever. A further analogy is suggested between the development in rabbits of arthritis after repeated intravenous injections and the development of the primary lesion in human rheumatic fever.

Journal-Lancet, Minneapolis

October 15, XXXV, No. 20, pp. 555-585

71 Contributions of Twentieth Century Toward Better Understanding of Gastro-Intestinal Ailments. F. Smithies, Chicago.
72 Exophthalmic Goiter; Report of Case. F. M. Crain, Redfield, S. D.
73 Nasal Accessory Sinuses as Foci of Infection. W. R. Murray, Minneapolis.
74 Cerebrospinal Meningitis. A. Kuhlmann, Melrose.

November 1, No. 21, pp. 587-617

75 Team Work. J. T. Rogers, St. Paul.
76 Inventory of Progress of Medical Education in America and in Minnesota. R. O. Beard, Minneapolis.

Lancet-Clinic, Cincinnati

October 30, CXIV, No. 18, pp. 387-406

77 Epinephrin Reaction in Gastric Crisis of Tabes and Significance of Betaiminazolyl-Ethylamin in Feces. B. Holmes, Chicago.
78 Non-Drug Therapy. R. Southworth, Cincinnati.
79 Diagnosis and Treatment of Gastric and Duodenal Ulcers. J. R. Wathen, Louisville, Ky.
80 Intestinal Prolapse and Adhesions. H. W. Bettmann, Cincinnati.

Laryngoscope, St. Louis

October, XXV, No. 10, pp. 675-738

81 Report of Collective Investigation on Curettement of Eustachian Tube in Chronic Aural Suppuration. S. Yankauer, New York.
82 Surgical Anatomy of So-Called Capsule of Faucial Tonsil. G. H. Makuen, Philadelphia.
83 Some Facts Not Generally Understood About Oil Ether Colonic Anesthesia. J. T. Gwathmey, New York.
84 Brain Infection of Otic Origin; Report of Five Cases. J. W. Murphy, Cincinnati.
85 Spindle-Cell Sarcoma of Nasopharynx. H. B. Orton, Newark, N. J.

Medical Record, New York

November 6, LXXXVIII, No. 19, pp. 769-814

86 Value of Scientific Doubt in Surgical Diagnosis. J. B. Roberts, Philadelphia.
87 Bone Grafting and Arthroplasty. G. H. Sexsmith, Bayonne, N. J.
88 Neglect of Injuries to Nose from Football. D. B. Delavan, New York.
89 Electromechanical Treatment of Genito-Urinary Diseases. W. B. Snow, New York.
90 Prevention of Insanity. W. M. Kenna, Central Valley.
91 Quinin after Rectal Operations. E. Bonnot, St. Louis.
92 Picric Acid and Benzidin Stain; Transitional Cell in General Paralysis. B. Lemchen, Dunning, Ill.

New Mexico Medical Journal, Las Cruces

October, XV, No. 1, pp. 1-39

93 Protest Against Ill-Advised Surgery. H. M. Smith, East Las Vegas.
94 Enzymes. E. S. Bullock, Silver City.
95 Nephritis of Infection. M. K. Wylder, Albuquerque.

New Orleans Medical and Surgical Journal

November, LXVIII, No. 5, pp. 287-358

96 Bacteriology and Pathology of Blastomycotic Infections. H. W. Wade, New Orleans.
97 Medical Aspects of Systemic Blastomycosis. G. S. Bel, New Orleans.
98 Cutaneous Blastomycosis. H. E. Menage, New Orleans.
99 Surgical Aspects of Systemic Blastomycosis. R. Matas, New Orleans.
100 Malaria and Carriers of Malarial Infection. J. C. Cole, New Orleans.
101 Cervical Myoma; Report of Unusual Case. M. A. Shlenker, New Orleans.
102 *Malignant Disease of Left Testis. R. Matas, New Orleans.

102. **Malignant Disease of Left Testis.**—The essential facts of Matas' case were the following: First, that a mixed tumor

of the testis developed rapidly and attained unmistakable characteristics in the course of nine months, dating from its first appearance. Castration, including the spermatic cord beyond the internal ring, was performed Dec. 19, 1914, nine months after the first appearance of the disease. July 15, or twenty-seven days after this thorough castration, Chevassu's operation for the removal of the primary lymph zone for preaortic and perirenal metastases was performed. This operation demonstrated that extensive glandular metastases had already occurred. All the visible glands were removed; the pathologist reporting an identical histologic structure, namely, mixed tumor, in the metastases, as he had found in the testis. The patient recovered from this extensive and serious operation. May 1, or scarcely four months after this operation, it became quite evident and demonstrable that many large metastatic deposits had occurred in the posterior mediastinum, pleura and lung. May 30 the patient died, in consequence of the thoracic metastases. Thus death occurred about thirteen months after the first signs of the disease had appeared in the testis, six months after castration; and five months after the attempt at radical extirpation or Chevassu's operation.

New York Medical Journal

November 6, CII, No. 19, pp. 929-976

103 Value of Roentgen Ray in Diagnosis of Gastro-Intestinal Disturbances. J. Friedenwald and F. H. Baetzer, Baltimore.
104 Chronic Intestinal Stasis. A. Bassler, New York.
105 *Sesamoids of Flexor Brevis Hallucis; Their Importance. N. P. Barnes, Washington, D. C.
106 Fibroid of Ligamentum Ovarii Proprium. A. M. Hellman, New York.
107 Clinical Delimitation of Hysteria. M. Solomon, Chicago.
108 Diarrhea in Infancy. C. K. Johnson, Burlington, Vt.
109 Immunization with Autogenous Proteins in Bronchial Asthma. H. Iskowitz, New York.
110 Vincent's Angina. A. G. De Sanctis, New York.

105. **Sesamoids of Foot.**—The sesamoids of the metatarsophalangeal articulation, Barnes says, demand attention. Their constancy and prominence is shown by all the plates taken at random of males and females from 15 to 75 years of age. Situated one in either head of the flexor brevis hallucis. They are bound together by a strong fibrinous structure and capsular ligament, forming a groove on the under surface for the passage of the tendon of the flexor longus hallucis. The sesamoid bones must be present and the great metatarsophalangeal joint must be normal for its proper functioning. Injuries to these bones are the result of direct violence, and the extent of injury is proportionate to the force of the violence or the length of time of its continuance. Thus, a heavy weight falling on the foot, the body weight being caught with great force on the ball of the foot, as in falling from a height or slipping while carrying a weight, or the twisting or slipping of the foot off the prong of an automobile clutch or brake, may fracture one or both of these bones completely. The inner bone situated directly under the head of the metatarsal is the more commonly injured.

The result of a serious trauma of this sort asserts itself with corresponding pain and tenderness, increasing with use. Disability, from resulting inflammation and sympathetically lame muscles, becomes complete. More frequently in these days of constant dancing, hard floors and pavements, high heels and thin shoe soles, the trauma comes on gradually. Short rests and cold applications at the onset give relief, but on resuming the excessive glide under the hypnotic sway of the rhythmical rag and the spirit of "on with the dance, let joy be unconfined," the heat and discomfort, pain and tenderness return. Continuance of this indulgence produces a cellulitis, tendosynovitis, periostitis, tissue thickening and sometimes exostosis and the corresponding lame muscles from unnatural walking. Trauma of the tissues thus produced naturally enforces some form of rest treatment. To this rest treatment the attendant may add counterirritants, heat and pads.

The plan Barnes has devised to protect these injured bones is effective. The shoes the individual has been wearing, the more worn and thin the better, are simply half soled with a good, thick leather, cutting out the inner surface completely corresponding to the position of the sesamoids. New shoes have the outer sole removed, corresponding to the position of the bones in question. A hole an inch or a little more in diameter is cut out sharply and completely in the inner sole. If the thickness of the sole is not enough to keep the sesamoids from touching the floor, an extra sole is applied cut out in the same way. No inner pads are used, but the projection is permitted to make its own depression on the soft inner sole, which acts as a hammock or drum head. In fracture or trauma followed by exostosis open surgery is needed. The former may be treated in the same manner as fracture of the patella, or the exostosis may be removed without disturbing the joint.

New York State Journal of Medicine

October, XV, No. 10, pp. 373-414

111 Spinal Fluid in Syphilis. S. R. Miller, Baltimore.
112 *Organic Obstruction of Ileum as Cause of Gastric Disturbance. G. Chambers, Toronto, Canada.
113 *Intestinal Prolapse and Adhesions. H. W. Bettmann, Cincinnati.
114 Intestinal Stasis. A. A. Jones, Buffalo.
115 Fractures in Vicinity of Joints. C. E. Caldwell, Cincinnati.
116 Available Fields for Research and Prevention in Mental Deficiency. M. G. Schlapp, New York.
117 Improvements in Technic of Cesarean Section. W. M. Brown, Rochester.
118 Case of Spontaneous Rupture of Uterus. R. McPherson, New York.
119 Case of Hydrocephalus. A. W. Armstrong, Canandaigua.

112 and 113. Abstracted in The Journal, May 22, 1915, p. 1787.

Philippine Journal of Science, Manila

July, X, No. 4, pp. 249-306

120 Pathologic Anatomy of Bubonic Plague. B. C. Crowell, Manila.

Surgery, Gynecology and Obstetrics, Chicago

November, XXI, No. 5, pp. 541-668

121 *Premature Separation of Normally Implanted Placenta. J. W. Williams, Baltimore.
122 What Has American Gynecologic Society Done for Gynecology? T. J. Watkins, Chicago.
123 *What Is Fate of Ovaries Left in Situ After Hysterectomy? H. N. Vineberg, New York.
124 *Ovarian Transplantation. F. H. Martin, Chicago.
125 *Subcutaneous Transplantation of Ovarian Tissue. S. A. Chalfant, Pittsburgh.
126 *Study of Management of Placental Stage of Labor. J. O. Polak, Brooklyn.
127 *Hair Balls, or Hair Casts, of Stomach and Gastro-Intestinal Tract. R. Matas, New Orleans.
128 Cysts of Prostate. J. H. Cunningham, Jr., Boston.
129 *Surgical Treatment of Tubercular Ureter in Female. D. Bissell, New York.
130 *Partial Occlusion in Treatment of Aneurysms. E. Martin, Philadelphia.
131 *Perinephritic Abscesses. W. F. Braasch, Rochester, Minn.
132 Obstetrics, Lost Art. R. W. Holmes, Chicago.
133 Chancre of Cervix Uteri. U. J. Wile and F. E. Senear, Ann Arbor, Mich.
134 Physiologically Active Substances Contained in Placenta and in Corpus Lutem. R. T. Frank, New York, and J. Rosenbloom, Pittsburgh.
135 Operative Treatment of Bad Results After Fracture. J. E. Moore, Minneapolis.
136 Construction of Artificial Vagina with Establishment of Menstrual Function. W. D. Ward, Rochester, N. Y.
137 Management of Deficient Lactation. N. S. Heaney, Chicago.
138 Small Doses of Pituitary Extract in Obstetrics. J. L. Bubis, Cleveland.
139 New Tonsil-Holding Forceps. S. C. Glidden, Danville.

121. **Premature Separation of Placenta.**—One of Williams' two patients, on whose cases this article is based, presented albuminuria and probably nephritis, while in the other the urine was normal both before and after the accident; yet both presented identical uterine lesions with striking arterial changes. Williams believes that they were both due to some common cause, which he assumes to be "toxemia" in character, but distinct from the usual toxemia of pregnancy, and concerning the nature and origin of which he is ignorant. The conclusions drawn from his study by Williams are: 1. That premature separation of the normally implanted placenta occurs much more frequently than is generally believed and may give rise to only trifling clinical symptoms or may put the life of the patient in the greatest jeopardy. 2. That in the severe cases, at least, the accident is associated

with profound disorganization of the uterine muscle by hemorrhage, the so-called uteroplacental apoplexy. 3. That its causation is probably dependent on some as yet undifferentiated form of toxemia, which may or may not be accompanied by albuminuria.

The author urges that the possibility of the accident should always be considered when dealing with antepartum hemorrhage, and that a tentative diagnosis should be made unless the existence of placenta praevia can positively be demonstrated. Furthermore, a diagnosis of concealed hemorrhage should be made whenever a patient in the later months of pregnancy complains of intense abdominal pain, is pallid, and presents a uterus of ligneous consistency, in the absence of external bleeding and even of the clinical symptoms of shock. The second important deduction is that hard and fast rules cannot be laid down for the treatment of premature separation of the placenta; but at the same time it should be regarded as axiomatic that even in slight degrees of separation the bleeding will continue until the uterus has been emptied of its contents and is able to contract down on and constrict the bleeding vessels. In general, the decision to interfere will depend on the amount of blood lost and the general condition of the patient. If the hemorrhage is slight, and is not associated with untoward symptoms, the case will usually terminate successfully by the unaided efforts of Nature; although it is understood that the patient should be watched carefully and interference resorted to on the first appearance of serious symptoms.

On the other hand, if the bleeding is profuse and the condition of the patient serious, prompt intervention is necessary, when the choice of operation will depend on the condition of the cervix—forceps, version, the introduction of Champetier de Ribes' balloon, or cesarean section being employed, according to the exigencies of the case. The latter operation should be chosen only when the cervix is but slightly dilated, or when the general condition of the patient is more serious than can be accounted for by the amount of blood which has escaped. All danger has not passed with the delivery of the child through the maternal passages, whether spontaneously or artificially; as the uterus frequently fails to contract satisfactorily, and death from atonic hemorrhage may result, unless radical measures are taken for its relief. Accordingly, when such an accident supervenes, time should not be wasted in employing hot intra-uterine douches, ergot, or pituitary extract and similar measures, but the uterus should be immediately packed with gauze. If this leads to forcible contractions and completely checks the bleeding, well and good; but if blood-tinged serum makes its way through the pack the abdomen should be opened immediately and the uterus removed in toto, or amputated supravaginally.

123 and 124. Abstracted in The Journal, June 12, p. 2014.

125. **Transplantation of Ovarian Tissue.**—Ovarian tissue was transplanted by Chalfant in thirty-two patients the first one Dec. 30, 1912, and the last one Jan. 27, 1915. In every instance it seemed necessary to remove the ovaries on account of infection, extensive cystic degeneration, damage from extensive adhesions, or impaired blood supply. In practically every instance, the tissue transplanted was abnormal. One patient died at the end of twenty-six hours from a peritonitis due to the bacillus aerogenes capsulatus. In spite of the fact that many of the sections were taken from ovaries in intimate contact with pus-tubes, in only one instance was the graft infected. In no case was convalescence influenced by the graft. In a few instances there was a little local tenderness for a time. In 13 patients one ovary was not perfectly normal and there was a possibility that it might require removal, or that the internal secretion from it might not be sufficient, so that it was thought wise to conserve as much ovarian tissue as possible.

The graft was palpable in 9 of the 13 cases, the oldest one, after one year. In two cases the graft increased in size and was tender and painful a few days preceding menstruation. Only one patient complained of flashes of heat or other nervous disturbances, and it is probable that in this case the ovary was infected and destroyed. Both ovaries were removed, but the uterus remains in two patients. One patient operated on May 22, 1914, menstruated the first time Sept. 1, 1914, and regularly each month including February, 1915. Since that time there has been no menstrual flow. Flashes of heat were moderately severe just after leaving the hospital, disappeared with the onset of menstruation and recurred again in March, at the time of her expected period, but were less severe and lasted about three or four weeks. The other patient has not menstruated. Menopausal symptoms began three months after the operation and have been quite severe. The uterus and both ovaries were taken from 17 patients. Five patients give evidence of continued function of the graft. Of these 17 patients, one died and one had moved and cannot be located. In the remaining 15, the graft was palpable in 12, not palpable in 3. It was tender in 6, but in only one was there much discomfort. This patient has such an unstable nervous system that it is extremely difficult to reach a true estimate of the severity of her discomforts. Distinct variation in the size of the graft was noticed by three patients. Two patients, 10.8 per cent., had no flashes of heat or nervous disturbances; in 7, or 41 per cent., the menopausal symptoms were slight, in 5, or 29.4 per cent., they were moderate; and in 3, or 1.77 per cent., they were severe. Of these 3, one is suspected of having a mild hyperthyroidism. Another has this condition.

126. Abstracted in The Journal, June 12, p. 2015.

127. Abstracted in The Journal, January 23, p. 367.

129. **Tuberculous Ureter in Female.**—Bissell advocates the removal of the ureter with the kidney whenever tuberculous changes in the ureter exist the adoption of the combined transperitoneal and retroperitonel routes when the ureter and the kidney are removed at the same time; the use of this same combination of routes when as a secondary procedure the ureter with its accompanying sinus is removed.

130. **Partial Occlusion in Treatment of Aneurysms.**—The treatment indicated in cases of pulsating exophthalmos, due to arteriovenous aneurysm, according to Martin, would be, after preliminary tests as to the effect of compression of the carotid: 1. An occlusion of the vessel by an absorbable ligature up to the point of stopping bruit and pulsation. 2. Ligation of one or more dilated orbital vessels. 3. Starvation diet, guarding against acidosis. Little fluid. Bowel evacuations, accomplished without straining, and two weeks rest in bed made, if not alluring, at least bearable by the judicious use of anodynes.

131. **Perinephritic Abscesses.**—Of 67 patients operated on at the Mayo Clinic, only 2 (3 per cent.) died as the result of operation. Three other patients were reported dead at three, seven and twelve months, respectively, after operation. The subsequent course was ascertained in 51 of the remaining patients. In 18 of this number the wound had healed in less than a month after operation. Of the remaining patients, 16 continued to drain for two months, 6 drained for three months, and 3 drained as long as six months after operation. The fistula persists to the present date in 4 patients, all of whom drained longer than six months. In 2 of these patients an etiologic renal lesion was ascertained at the time of drainage and subsequently nephrectomy was advised. In the other 2 no evidence of renal lesions was discovered on clinical examination; however, the more recent clinical tests were not employed. One of these patients, drained one and one-half years ago, has returned with cystoscopic evidence of an etiologic renal lesion not previously discovered.

Tennessee State Medical Association Journal, Nashville

October, VIII, No. 6, pp. 251-294

140 Heart in Some Acute Infectious Diseases. W. H. Witt, Nashville.
141 Gastro-Enterostomy. J. H. Maury, Memphis.
142 Teratology. S. M. Miller, Knoxville.
143 Treatment of Tubercular Peritonitis. W. A. Bryan, Nashville.
144 Contact Points of Medical Profession and Public. A. D. Dancy, Jackson.
145 Value of Necropsies in Hospital and Medical Practice. H. T. Brooks, Memphis.
146 Local Anesthesia in Rectal Surgery. P. DeWitt, Nashville.
147 Fistula in Ano. D. R. Pickens, Nashville.
148 Eugenics and Marriage. L. A. Stone, Memphis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

August, XX, No. 3, pp. 77-108

1 Roentgenologic Types of Pulmonary Tuberculosis. H. Walsham and W. Overend.
2 Localization of Projectiles by Roentgen Ray. F. de Courmelles.
3 Minor Points in Roentgenography. N. K. Cherrill.

September, No. 4, pp. 109-142

4 Roentgenotherapy; Its Scientific Basis and Its Teaching. (To be continued.) J. Joly.
5 Use of Intensifying Screens in Roentgenography. L. G. Heilbron.
6 Causation of Williams' Sign in Early Pulmonary Tuberculosis. H. Walsham and W. Overend.

October, No. 5, pp. 143-174

7 Gastroptosis. A. F. Hertz.
8 Roentgen Diagnosis of Fracture of Skull. W. H. Stewart and W. H. Luckett.
9 Roentgenotherapy; Its Scientific Basis and Its Teaching. J. Joly.
10 Two Cases of Electric Burn Successfully Treated by Ionization. A. MacGregor.
11 Location of Foreign Bodies. E. M. Smiles.

British Journal of Tuberculosis, London

October, IX, No. 4, pp. 171-233

12 Open-Air Hospitals. A. E. Shipley.
13 Subcutaneous Tuberculin Injections and Diagnosis of Pulmonary Tuberculosis. E. G. Glover.
14 *Dispensary Treatment Without Tuberculin. A. Sandison.
15 Sanatorium Benefit for Tuberculous Subjects. H. A. Ellis.
16 Nourishment for Tuberculous. W. B. Milestone.
17 Antiformin and Examination of Tuberculous Sputum. W. J. Matthews.

14. **Treatment Without Tuberculin.**—Sandison claims that tuberculin should not be a necessary part of treatment at a tuberculosis dispensary; it is usually not even desirable, because: 1. Its administration cannot be effectively and safely controlled through a dispensary. 2. Its value is problematical, as no reliable statistics are possible under dispensary conditions, owing to the number of factors involved. 3. It is not the only way by which the attendance of patients can be secured. Dispensary treatment of tuberculosis must be based primarily on an intimate personal knowledge by the physician of the psychologic as well as the pathologic conditions of his patient. The principles of "graduated rest and exercise" can be effectively carried out in considerable detail by dispensary patients, and produce excellent results. The use of inhalants on a respirator is applicable to nearly all cases of pulmonary tuberculosis, and is a valuable adjunct to general treatment.

British Medical Journal, London

October 16, II, No. 2859, pp. 557-592

18 Ureteral Calculus; Its Symptoms and Treatment. (To be continued.) D. Newman.
19 *Removal of Bullet from Right Ventricle of Heart Under Local Anesthesia. L. H. C. Birkbeck, G. N. Lorimer and H. M. W. Gray.
20 *Drainage of Gunshot Wounds. C. M. Page.
21 Recruit's Heart. J. Mackenzie.
22 *Employment of Bandages for Irrigation of Wound Surfaces with Therapeutic Solutions and Draining of Wounds. A. E. Wright.

19. **Removal of Bullet from Heart.**—The soldier whose case is reported by the authors was admitted to a general hospital, July 19, 1915, having been wounded eight days previously. The bullet had passed through and killed a man in front of him. The patient was knocked down, but did not lose consciousness, and had not had any discomfort other than slight pain from the wound. There was a small dirty wound (one-half inch in diameter) just below and to the right of the xiphisternal junction, and also a painful swelling of the right parotid gland, which disappeared the next day. The patient showed no other symptoms during the first few days. He was kept in bed. The heart appeared to be normal and regular. The pulse varied between 80 and 90. The evening temperature rose to 100 to 101 F. Roentgenoscopy showed that in the lower portion of the heart shadow was a sharply defined dark shadow moving with the heart, and also apparently laterally in relation to the heart. It was seen to lie quite definitely in the substance of the heart. It had a distinct rocking movement. No anteroposterior movement was visible in relation to the heart. The object seemed to be in, or close to, the lowest portion of the wall of the right ventricle. Its shape and size, so far as could be made out, were those of a rifle bullet. Attempts to take roentgenograms were unsuccessful.

As the pulse had shown some irregularity, rate 65 to 95, and the heart had occasionally dropped beats, an operation was decided on. Under local anesthesia a wide horseshoe-shaped incision was made, convexity upward, extending along the sixth costal cartilage on each side and across the sternum at the level of the attachment of the fifth cartilage. The perichondrium was separated from the left sixth cartilage, which was cut across at the costochondral junction and used as a lever to elevate the sternum while the triangularis sterni, pericardium, etc., were being separated off the posterior aspect of the flap. A small portion of the right sixth rib was removed close to the costochondral junction. The sternum, at the lower border of the fifth costal cartilages, was divided with bone forceps. The soft parts were then separated from the sternum and ribs. A hole about an inch long appeared in the pleura on the right side, in the track of the bullet.

The pericardium opened obliquely from the base to near the apex of the heart. About a dram of slightly blood-stained fluid was noticed in the pericardial cavity. The heart looked normal. No wound could be seen. On digital exploration the bullet was felt to be lying, apparently fixed, at the back of the heart, either in the wall or cavity of the right ventricle. The point of the bullet was near the apex of the ventricle. During the manipulations the heart was noticed to miss a beat occasionally—when touched at the upper and back part of the interventricular septum. The right ventricle was seized with a pair of catch forceps near the apex. When it was seen that this caused no disturbance a suture was passed through the muscle adjacent, and by these the heart was held forward. This in no way agitated the patient. On further exploration the bullet was definitely located by probing with a needle, and was thought to be fixed in the right ventricle near the posterior coronary vessels. After manipulation, the bullet was felt to change position and to be free inside the ventricle. It was worked away as far as possible from the coronary vessels and grasped between the thumb and finger. Two stitches were inserted into the muscle wall over the bullet.

The wall of the ventricle was incised for half an inch, and the bullet removed with forceps. While the wall of the ventricle was still being held firmly between the finger and thumb the stitches were tied. On removing the catch forceps there was brisk bleeding, which was stopped quickly by an under-running stitch. The pericardial cavity was wiped free of blood clot and was filled with normal saline to expel the air; it was then sewed up. The right pleural cavity was next filled with saline and the injured pleura sewed up. While the wound was being closed the chest was aspirated to remove the saline. About four hours after the operation the respirations rose suddenly to forty-eight a minute, and remained at about that level till he died four days after the operation. There was never any indication that the operation on the heart had interfered with its action, which, though quick (average 120 to 130), was wonderfully strong up to within a few hours of his death. No dropping of beats was noticed after the operation. The wounds in the heart had healed perfectly. The cause of death was judged to be multiple pulmonary infarction from clots derived from the right ventricle.

20. **Drainage of Gunshot Wounds.**—Page uses a tube made of rubber. In section it is star or pinion shaped. The outside diameter should be the same as that of full-sized ordinary drainage tube. For certain cases the drain should be provided with a central lumen. The tube is passed through the entire length of the wound track; the upper projecting extremity is capped by a piece of thin rubber tubing for example, a cut rubber glove finger—which extends just into the entry of the wound. As a result, a series of gutters lying against the wound surface extend the length of the track. When fluid is syringed into the cap, it passes down each

gutter, so as to bring the solution into contact with practically the whole wound surface, at the same time clearing away from the same area all débris. After lavage, the maximum capillary surface in proportion to the size of the drain is in action. When this type of tube is employed for blind wounds the provision of a central lumen allows the fluid to be syringed to the bottom of the track, whence it will return along the various gutters.

22. **Irrigation of Wounds with Therapeutic Solutions.**—Siphon drainage is the basis of the method advocated by Wright. The efficacy of bandage siphons depends on the volume of fluid delivered. This is determined (*a*) by the height to be climbed in the ascending limb; (*b*) by the length of, and weight of water in the descending limb; and (*c*) any obstacle to delivery encountered at the distal end of the descending limb. In addition to these the rate of delivery will be affected (*d*) by the nipping of the bandage when it rests on a knife edge, this factor coming seriously into account in experiments with a long length descending limb heavily weighted with water. Factors (*b*) and (*c*) have to be taken special note of in connection with the drainage of wounds. In cases in which other conditions are the same it is always the siphon with the longer descending limb which gives the more efficient drainage. Again, other conditions being the same, a larger volume of water is delivered from a bandage whose end is immersed in water than from a bandage suspended in the air. In case of water dripping off from a bandage into the air, consideration will show that the bandage will, just before the drop falls, be overfull of water, and that the inflow into it will for that moment be suspended, to be accelerated as soon as the drop has fallen off. As a result, we have in the bandage which is dripping off into air a cyclically interrupted flow. In contrast to this we have, in cases in which the descending limb of the bandage goes down into water, a continuous unobstructed delivery.

The practical application of this in connection with wounds is that the siphon bandages which carry off the washings from wounds ought to pass down from the patient's beds into water in vessels placed on the floor. And if any bandage happens to be too short to dip into the water the drip from it will be accelerated if it is torn into tails. In cases in which only little water is flowing off through bandages draining a wound, evaporation must be guarded against, for this will, by diminishing the load of water, retard the outflow into the descending limb. In cases in which an ampler outflow is desired, it can be obtained by packing the wound full of bandages. For details of the technic of this method of drainage the original article should be consulted.

Glasgow Medical Journal

October, LXXXIV, No. 4, pp. 241-319

23 *Cases Illustrating Some of Rarer Blood Diseases. J. S. McKendrick.
24 Hematuria, Symptom. D. Newman.

23. **Some of the Rarer Blood Diseases.**—Two cases of splenic anemia in which a splenectomy was done, followed by apparent cure, are cited by McKendrick. In the first case, that of a boy 15 years of age, there was a diminished fragility of the red blood corpuscles; urobilin was present in the urine, but there was no bilirubin in the blood serum; there was a normal number of white blood corpuscles instead of a leukopenia. The anemia was of the chlorotic type, the color index being 0.35. The patient suffered from perisplenitis and the results of anemia, but otherwise he had the appearance of health. There was no evidence of tuberculosis, and the Wassermann test was negative. There were no signs of rickets or worms. There had been considerable epistaxis and hemorrhages into the skin, but no pigmentation. There was no enlargement of the lymphatic glands. The liver was enlarged, but there was no ascites. On the day after the splenectomy the blood was examined, when there was an increase in the red and white cells, but no visible normoblasts. The white cells were chiefly polymorphonuclears. Eleven months after the operation the boy looked well and had no anemia from his appearance. The chief point of interest in the second case, that of a boy 8 years of age, was the immediate effect of splenectomy. On the day after operation the red cells had increased from 2,550,000 to 4,650,000; the white cells from 7,800 to 34,800; an occasional normoblast had given place to a rush of these, averaging 1,800 per cm. The increase in the white cells was due to a great preponderance of polymorphonuclears, the increase after the operation being 40 per cent. Another point in the case was that the bone-marrow was tapped before the operation and found to be hyperplastic. The patient made an uninterrupted recovery, and is still in the best of health.

Lyon Médical, Lyons

CXXIV, No. 6, pp. 181-216

25 Temporary Substitutes for Foreign-Made Proprietaries. (Comment le médecin peut-il provisoirement remplacer par des produits français les produits pharmaceutiques allemands les plus importants?) B. Lyonnet and R. Boulud.
26 Brief Inhalation of Ether Relieves Gallstone Colic. (Colique hépatique. Traitement systématique par les inhalations d'éther.) P. Aubert.
27 Favorable Influence of Jaundice on Tendency to Mild Pulmonary Edema. (Influence de l'ictère sur l'état cardio-pulmonaire.) P. Aubert.

No. 7, pp. 217-248

28 *Pulmonary Complications of Typhoid and Paratyphoid Fever. G. Mouriquand.
29 *Compression of Vagus Nerves in the Neck Restores Man After Knock-Out Blow on Solar Plexus. Molle.

No. 9, pp. 281-312

30 Impressions of a Surgeon at the Front. (Sept mois de chirurgie dans un hôpital du front.) A. Rendu. Commenced in No. 7.
31 *Treatment of Erysipelas with a Silver Nitrate Solution. H. Rondet.

28. **Pulmonary Complications in Typhoid.**—Mouriquand's experience with large numbers of typhoid and paratyphoid cases at Nancy suggests that much can be done to ward off bronchitis and pneumonia in such cases. The main thing is to prevent contagion from case to case. In one ward five typhoid patients in adjoining beds were doing well when one after another they developed pneumonia and three died. The epidemic of pulmonary complications died out at once as soon as each typhoid patient showing such symptoms was isolated. One patient developed a pure streptococcus purulent pleurisy and five days later the neighboring patient developed the same. Crowding a ward is particularly dangerous in case of contagious diseases of any kind. When the space between beds can be increased, the danger of pulmonary complications grows constantly less. The more serious cases should be separated as widely as possible, and if any septic complication develops strict isolation should be enforced and the bed and bedding disinfected with special care.

29. **Treatment of Knock-Out Blow.**—Molle has been making a special study of the therapeutic effects that can be realized by compression of the nerves and vessels in the neck. A recent thesis on the subject was published by one of his students this year. He here reports the surprising success of the measure in a young man who had received a blow in the epigastrium from the butt of a gun and dropped unconscious at once. Molle reached him in half an hour and found him still absolutely unconscious and racked by efforts to vomit, pulse 140, but there was no hematemesis and but little muscular defense. Molle pressed on the nerves and vessels at each side of the neck, applying the thumb pressure again and again, briefly, repeatedly and forcibly, hoping to act thus on the nerves rather than on the vessels in the neck. The latter are affected more by slow, progressive and prolonged pressure. Five or six seconds after he had begun this staccato pressure, just inside the inner margin of the sternocleidomastoid muscle, the young man opened his eyes, sat up and looking in surprise at the group around him asked what had happened. In an hour he felt quite himself but had some nausea and no appetite for the following three days.

31. **Silver Nitrate Solution in Treatment of Erysipelas.**—Rondet calls attention to his successful use for thirty years of a 1 : 40 solution of silver nitrate applied to the erysipelatous area every three hours, day and night, for seven days at least, never more than nine days. The skin is first cleansed with hot soapy water. The beneficial action is so pronounced in twelve or twenty-four hours that one is tempted to sus-

pend the treatment. But any cessation of the applications is followed by exacerbation of the erysipelas; to avoid surprises of this kind the treatment must be kept up systematically for the nine days. This is the regular duration of erysipelas, he remarks; even the recurrences run a nine-day course. The fluid should be swabbed all over the area and for two fingerbreadths beyond. He remarks in conclusion that, naturally, the benefit is most marked the earlier the treatment is begun.

Paris Médical

V, No. 6, pp. 109-124

32 The Work of the Field Hospital. (L'ambulance chirurgicale immobilisée près du front.) A. Latarjet.
33 Board Method of Immobilization for Compound Fracture of the Femur. L. Duvernay.

Nos. 7-8, pp. 125-161. Electrotherapy Number

34 What One Must Know About Electrotherapy to Apply It to the Wounded. (Ce que l'on ne doit pas ignorer en électrothérapie de guerre.) A. Weil.
35 Direct Electric Tests During Operations on Wounded Nerves. A. Léri.
36 Neuritis After Wounds and the Therapeutic Physical Measures. Delherm and Dausset.
37 Electrodiagnosis and Treatment of Wounded Nerves. J. Larat and P. Lehmann.
38 Improvised Electrotherapeutic Appliances. (Installation économique d'électrothérapie avec des moyens de fortune.) P. Bonvoisin and L. Palfray.
39 Localization and Extraction of Projectiles by Aid of Electricity. A. Weil.

Presse Médicale, Paris

October 7, XXIII, No. 47, pp. 385-392

40 *Treatment of Suppurating Gunshot and Shell Wounds of the Knee. (Traitement des arthrites suppurées du genou par plaies de guerre.) L. Bérard and Barjavel.
41 Induced Formication as a Sign of Lesions of Peripheral Nerves. (Le signe du fourmillement.) J. Tinel.
42 Simplified Technic for Circular Amputation. H. Chaput.
43 Simple Apparatus for Continuous Aspiration of Wounds, with or Without Continuous or Intermittent Irrigation. Saissi.

40. **Wounds of the Knee Joint.**—Bérard and Barjavel emphasize that a bullet or fragment of shell wounding the knee almost always causes more destruction than is apparent from the outside. Armed expectant treatment is justified even when the indispensable radiography shows a bullet still in the tissues. They saw four cases of this kind, the projectile still in the synovialis after two or three weeks, and perfectly tolerated. In five cases they succeeded in saving the functioning of the knee by Carrel's method of aspirating the secretions. In three others it failed and secondary amputation became necessary. They review the technic for arthrotomy and resection, emphasizing in conclusion the necessity for close and continued supervision of the case by the same surgeon from the earliest possible moment. He is thus able to guide the treatment according to indications as they arise day by day.

Berliner klinische Wochenschrift

October 4, LII, No. 40, pp. 1033-1056

44 *Substitutes for Glycerin. (Kriegsaphorismen eines Dermatologen. XIX. Glycerinersatz.) P. G. Unna. Concluded in No. 41.
45 *Treatment of Congenital Syphilis. E. Müller.
46 *Influence of Muscular Work on Sugar Content of the Blood. (Einfluss der Muskelarbeit auf den Blutzucker.) W. von Moraczewski.
47 *Technic That Shows Membrane-Like Formation in Human Tissues. (Darstellung membranartiger Bildungen im menschlichen Gewebe.) K. Herxheimer.
48 *Radiotherapy of Cancer of the Mouth. (15 Fälle von Mundhöhlenkrebs mit Radium günstig behandelt.) A. Sticker.
49 Unknown Factors in Transmission of Typhus. (Auftreten von Flecktyphusepidemien in Truppen- und Gefangenenlagern.) F. Wolter.

October 11, No. 41, pp. 1057-1080

50 *Obscurities and Defects in Present Methods of Treating Syphilis; Suggestions for Improvement. C. Bruhns.
51 *"Aplastic Anemia" Developing from Benzol or Roentgen Exposures. (Aleukia haemorrhagica.) E. Frank.
52 Treatment of Whooping-Cough Should be Addressed to the Nervous System. (Ueber den Keuchhusten.) V. Lange.

44. **Substitutes for Glycerin.**—Unna remarks that the demand for glycerin during the war, for production of nitroglycerin, threatens to deplete the small stocks of glycerin still left in the pharmacies. Consequently it is well to be on the lookout for effectual substitutes. Aside from its value as a lubricant and its keeping properties, glycerin is prized mainly for its power to attract water. Merely as a lubricant, it is easy to find good substitutes for it among hydrocarbons of all kinds. There are also two cheap and abundant substances which can take its place as far as its water-attracting power is concerned. These two substances are syrup (from sugar) and calcium chlorid. Sugar, we know, attracts water; it increases the amount of saliva in the mouth, and this assuages thirst (sweetened water); keeps the dry mucosa in the upper air passages moist, and, in rectal enemas, induces defecation with an overdry rectum. Sugar has, besides, in contrast to glycerin, a reducing power which we utilize when we use syrup as a vehicle for readily oxidized drugs (such as ferrous iodid), or when we strew sugar on aphthous ulcerations or caro luxurians. Equally familiar, but less heeded, is the water-attracting power of calcium chlorid. Not only in solution but also in the form of a salve, it exerts this healing influence on callous and pruriginous eczema. By introducing a deposit of calcium chlorid into the skin, the layers below and above it soften up under the influence of the water attracted by the calcium chlorid. Rademacher has recommended a 4 per cent. solution of calcium chlorid for softening furuncles. Both the chlorid and the syrup have the further advantage that, as they liquefy, they bind considerable water and thus have a cooling action. For a field of furuncles, to take the place of the excellent combination of 60 parts kaolin, 30 parts glycerin and 10 parts ichthyol, Unna recommends as a substitute formula a mixture of 40 parts kaolin, 30 parts syrup, 10 parts ichthyol and 20 parts aqueous solution of calcium chlorid (1:2).

45. **Treatment of Congenital Syphilis.**—Müller advocates intensive courses of treatment in a special department in general hospitals rather than separate institutions for syphilitic children. He has been applying treatment more energetically of late under the influence of the new régime in regard to syphilis in adults. For infants he prefers intramuscular injection of a suspension of calomel in olive oil, and gives no mercury by the mouth or inhalation, but alternates with neosalvarsan. For children over 2, he gives inunctions alternating with neosalvarsan injections. Some of the infants treated as above died suddenly, as in collapse. Probably the system was overwhelmed too suddenly with the toxins liberated by the destruction of such quantities of spirochetes. Since these experiences he has reduced the dosage somewhat for infants. Once past this first course of treatment, however, the children thrive well under the succeeding courses.

He has been impressed with the improvement in intelligence of many of the children during the courses of treatment. Among the cases related is that of a bright child with adenoid vegetations. As they were excised their extraordinary hardness was noted, and the diagnosis wavered between syphilis and sarcoma. The child seemed healthy and bright, and there was nothing to suggest syphilis, but the Wassermann test gave a pronounced reaction. The aim should be with congenital syphilis to eradicate it entirely. Hence efforts are justified to make the first course of treatment thorough and decisive. The Wassermann reaction is his guide. This test is applied before each course of treatment and again eight or ten days after its close. After the Wassermann has become negative, two courses are given in prophylaxis. If the reaction is positive, treatment is continued until the desired aim is reached. In the most favorable case, therefore, three courses are required and otherwise four or five.

46. **Influence of Muscular Work on the Sugar Content of the Blood.**—Moraczewski noticed that in persons inclined to glucosuria, the sugar content of the blood displayed a tendency to increase under conditions in which there was no increase in the healthy. This occurred even on a fat diet. This fact enables detection of a latent tendency to glycemia; after a given exercise the sugar content in the blood rises when it remains stationary in the healthy. The findings in some healthy and diabetic persons are tabulated for comparison. After ingestion, fasting, of 200 gm. sugar, the

healthy assimilated it completely while the diabetic showed an increased proportion of sugar in the blood. This alimentary glycemia is due to defective utilization of the sugar, that is, to defective synthesis of glycogen, while exercise glycemia is due to absorption of sugar from its deposits, whether in muscle or elsewhere. The diabetic mobilizes his sugar reserves more promptly and completely than the healthy. Normally, in repose, the sugar content of the blood declines and it rises during and after exercise. Exercise also increases the output of uric acid in the urine; it parallels the blood sugar content, increasing under exercise and declining during repose regardless of the amount of urine voided. Even when sweating freely, the output of urine much reduced, the uric acid in the urine corresponded to the sugar content of the blood, both increasing during exercise, and declining in repose, in the healthy.

After vigorous exercise, ingestion of 200 gm. of sugar, to test the tolerance, induces no increase in the sugar content of the urine and very little if any in the blood. During repose, on the other hand, it is much easier to induce glycemia and glucosuria. Hence "exercise glycemia" cannot be compared with alimentary glycemia, as the latter leads to glucosuria while the former augments the tolerance and counteracts glucosuria. Diabetics excrete less sugar in the urine during fever and eliminate more during repose than when exercising. Exercise glycemia is thus associated with absorption of sugar and increased power of oxidation. The above facts may have to be considered in treatment of diabetes, if confirmed by others.

47. **Membrane-Like Contours to Human Tissues.**—Herxheimer has found that staining organs with azure-eosin and decoloring with a tanning technic shows up a specific membrane-like contour of the connective-tissue fibers, etc. This technic shows up further delicate fibers on the sebaceous and sweat glands, intima of the blood vessels, etc.

48. **Cancer of the Mouth and Radium Treatment.**—Sticker reports fifteen cases in most of which malignant disease of the mouth retrogressed under radium treatment without scars or mutilation. The list includes some cases of recurrence after operations. He declares further that radiotherapy is preferable to surgical treatment in many cases for technical reasons and also from the standpoint of immunity. This statement is based on experimental research which demonstrated that it is possible to induce an implantation tumor on laboratory animals in various different organs and points, inoculated all at the same time, but that, after having been once successfully inoculated, it is impossible to induce further growths by later implantation of tumor cells at any point. After complete excision of the implantation tumor, however, a new implant "takes" at any and every point inoculated all at the same time. On the other hand, if the implantation tumor was only partly excised and it continued to grow, subsequent implantations gave constantly negative results. These experimental data correspond to what is observed in the clinic during the period preceding metastasis. The cancer long remains solitary, and, especially with cancer in mucous membranes, notwithstanding the constant opportunities for implantation of tumor cells farther along, the mucosa beyond is generally free from metastases, even with extensive ulceration. After vaginal hysterectomy for cancer of the uterus, he continues, recurrence in the vagina is not uncommon, while metastases in the vagina, with the uterine cancer still present, are extremely rare.

These and similar data cited are alleged to explain why radiotherapy is more promising in certain cases than surgical removal of the focus. Under the radiotherapy, the cancer cells being gradually destroyed and passing into the circulation, cause a lively production of antibodies, and these protecting substances combat the growth of any new cancer cells. The antibodies thus generated are similar in nature to the autolysates of cancer cells which some are using now in treatment of cancer. None of the experiences in this line reported to date, however, make the distinction which he emphasizes between the periods before and during metastasis. The nonheeding of this fundamental distinction readily explains the unsatisfactory results to date. It is by no means immaterial whether the tumor autolysates are taken from the body while it is still engaged in producing antibodies, that is, during the premetastasis stage, or whether the material is not taken until after the body has lost its capacity for antibody production.

He describes his fifteen cases in detail; in three the cancer was on the tongue and the radium induced a clinical cure. In one case, only seven twelve-hour exposures, all at night, accomplished the purpose, the cancerous crater healing completely in a few weeks. In seven cases the cancer was in the lower jaw and in five others in the upper jaw. The radium was fastened in a plate made to fit over the upper or lower teeth. One patient wore this for thirty nights' exposures, and it did not interfere with his sleep. In two other cases the cancer was a recurrence after one or several operations. By modifying the tooth-plate-holder it was possible to apply the rays in various directions · thus facilitating the cure.

50. **Defects in Present Methods of Treating Syphilis.**—Bruhns insists that actual progress in the treatment of syphilis will have to be based on prolonged supervision of cases carried on and recorded systematically. This is scarcely possible except with private patients, and with repeated collective inquiries. He presents evidence to sustain his contention that medical supervision is required for many more years than is now considered necessary. An isolated negative Wassermann is no criterion that the disease is extinct. Only when the clinical and serologic findings are constantly negative, on repeated examinations, for many years, can we regard the cure as probable. He lists the outcome of the Wassermann test repeated about yearly from 1908 to date in 100 private patients infected with syphilis ten or more years ago. In forty-two the test was constantly negative; in 32, positive at first but negative later; in seven, constantly positive, notwithstanding repeated courses of treatment; in three, positive at first, then long negative, but finally veering to positive again; in eight, negative at first, then positive and finally negative, and in eight, negative at first but finally positive. The last three groups are particularly suggestive; in some the long negative reaction for five or six years suddenly veered to a pronounced positive reaction without any clinical manifestations becoming evident at the time or later. After renewed courses of treatment in the two following years the response became negative again. Among the cases with constantly negative reaction were some in which brain trouble or tabes developed, demonstrating anew that the clinical manifestations and the serologic findings do not always run parallel.

We appreciate better now the dire consequences of syphilis; insurance statistics have shown that 15 or 25 per cent. die from the results and that from 6 to 10 per cent. develop disease of the central nervous system while even more suffer from arterial disease. Lenz estimates that 25 per cent. of all syphilitics have aortitis. Paralysis develops on the average ten or fifteen years after infection and manifest aorta trouble, eighteen or twenty years. By treatment in time, gummatous lesions retrogress, and hence specific treatment repeated often enough may ward off arterial and cerebral trouble later. Syphilitics should have impressed on them the necessity for keeping under medical supervision. Some central system might be devised to remind all syphilitics at regular intervals of the necessity for returning to be examined.

Some recent research has demonstrated that in from 60 to 75 per cent. of all the cases of tabes or paresis other members of the family had been infected. This proportion is far larger than is found in the families of syphilitics who do not develop tabes or paresis. These and other facts seem to indicate that the form of syphilis which develops tabes and paresis later is infectious over a longer period than is the case with syphilis under other conditions. Raven reported last year investigation of ninety families in which a case of metalues had developed. The interval between date of infection and the marriage was known in about half of them and it had been four years in two families, five years in one, and from six to twenty-one years in ten. It seems as if in syphilogenous nervous affections the individuals are liable to infect others over a longer period than other syphilitics. If further research confirms this, we will have to modify our views as to when we can consent to marriage, for we have no means of knowing which of our syphilitic patients are going to develop nervous or brain affections. Only by prolonged supervision over individual cases and correlation of uniformly classified data can we hope for light on the various phases of the syphilis question.

51. **Hemorrhagic Aleukia.**—The first installment of Frank's article on the so-called "aplastic anemia" was summarized in these columns October 30, p. 1590. He refers to Selling's "model report" of a case of fatal industrial poisoning from inhaling the fumes of benzol. In this and in two similar cases, the red blood cells were comparatively little affected; the white cells bore the brunt of the attack. The result is a leuko-anemia, not an erythro-anemia, and myelophthisis is the source of the trouble. Frank reports a case of myeloid leukemia in a woman of 39 given a brief and mild course of Roentgen treatment under which the blood count returned practically to normal. The changes thus started in the blood kept on, however, until the count reached the absolute opposite of what it had been, the leukemia being superseded by aleukia. Decastello has recently reported a similar case. In both, the complete transformation occurred under Roentgen exposures of the spleen. This suggests that the spleen may have a special function in some circumstances, manifested by an inhibiting and impairing of the functioning of the bone marrow. This special function seems to be set in action by the influence of Roentgen exposures, and also by the influence of certain morbid processes in the spleen itself. Frank declares that this syndrome of morbid conditions in the spleen accompanied by subnormal numbers of leukocytes and blood platelets, brings us to the cause of toxin production in hemorrhagic aleukia. Too long it has been mistakenly included in the group of "aplastic anemias."

Deutsche medizinische Wochenschrift, Berlin

October 7, XLI, No. 41, pp. 1205-1236

53 *Medicomechanical Treatment. G. Ledderhose.
54 The Vitamins in the Diet. (Ueber Vitamine und akzessorische Nährstoffe.) H. Boruttau.
55 *Concordance Between Urochromogen and Diazo Tests in Typhoid and Typhus. M. Levy.
56 Selenium Compounds in Treatment of Cancers. (Zur Therapie maligner Tumoren der Tiere und des Menschen mit Selenverbindungen.) H. Coenen and W. Schulemann.
57 The Lime Content of Bile and Its Import in Production of Gallstones. (Der Kalkgehalt der Galle.) L. Lichtwitz and F. Bock.
58 Nystagmus After Injury of Foot of Second Frontal Convolution; Nine Cases. Noehte.
59 Gunshot and Shell Wounds of the Jaws and Their Treatment. (Die Kieferverletzungen im Kriege.) A. Stein.
60 Technic for Making Plaster Casts in Field Hospital. S. Peltesohn.

53. **Medicomechanical Treatment.**—Ledderhose discusses the indications and technic for application of medical-mechanical treatment, especially for men recovering from gunshot and shell wounds. He emphasizes, however, that improvised apparatus generally answer as well as more complicated and expensive contrivances. With them all, careful supervision is necessary to prevent harm from misdirected or excessive exercises. The main features in the whole system of medicomechanical treatment are the physician's influence on the patient's mind and spirits, and the benefit from the skilful application of water, steam and superheated air, massage and electricity.

55. **The Urochromogen Reaction in Diagnosis of Typhoid.**—Levy applied the diazo and Weiss' and Rhein's potassium permanganate test for urochromogen in the urine in 122 cases of typhoid and the Weiss and diazo tests in twenty-four of typhus. The findings were so concordant with the various tests that it is evident the simple urochromogen test can take the place of the diazo when desired. The discrepancies were found so slight and so few that they are practically negligible. The urochromogen test was especially pronounced in all the cases of typhus giving a diazo reaction; both tests were negative in three of the twenty-four cases.

(The Weiss technic was described in The Journal, June 13, 1914, p. 1886.)

Medizinische Klinik, Berlin

October 3, XI, No. 40, pp. 1093-1118

61 *Clinical Manifestations, Genesis and Etiology of Purulent Meningitis During War Time. A. Ghon and B. Roman.
62 Present Status of Psoriasis and Allied Affections. J. Jadassohn. Commenced in No. 39.
63 *Gas Gangrene and Gaseous Phlegmons. W. Pfanner.
64 *Arrest of Hemorrhage with Muscle Tissue. (Blutstillung durch thrombokinetische Muskelwirkung.) R. Pamperl.
65 Experiences in a Field Hospital. (Erfahrungen allgemeiner Art aus einem Feldlazarett des westlichen Kriegsschauplatzes.) W. Wolf.
66 Suture of the Heart Six Hours After a 3-cm. Stab Wound; Too Late for Heart to Rally. J. Frist.

61. **Purulent Meningitis.**—Ghon and Roman state that purulent meningitis with an exanthem, true Weichselbaum meningitis, has been observed at numerous points in Germany, Austria and Hungary since the war began, while before it was rare. They examined five such cases postmortem, two in adults. The meningitis that develops after a gunshot or shell wound of the head always proved a mixed infection in the sixteen cases they had occasion to examine postmortem. In two cases the proteus and the gas gangrene bacillus were involved.

63. **Gas Gangrene and Gas Phlegmon.**—Pfanner insists that true gas gangrene requires the most vigorous treatment, early amputation, or the patient is doomed. On the other hand, phlegmons with gas production are usually mild processes that heal under simple conservative measures. This distinction has not been made clearly by writers on the subject, and those who have reported "recovery from gas gangrene under conservative measures," merely mistook a phlegmon with gas for the true gas gangrene. Differentiation is often difficult, but one sign he has never known to fail. This is a suddenly developing intense pain in the limb below the wound, at a time when there is little or no production of gas and no signs to warn of the impending catastrophe. The pain is so intense that the patient clamors for the doctor. Testing the sensibility during this attack of pain shows paresthesias. The pain keeps up agonizing for an hour or two, and then stops abruptly. The limb in this area is then found completely anesthetic, pale, cold and dead. While these changes are occurring below, the discoloration of the skin and the emphysema spread and involve extensive regions.

Pfanner had studied these phenomena in three cases of true gas gangrene before the war and saved the patients by prompt amputation. Armed with this experience, he was able to differentiate true gas gangrene in the early stages in wounded soldiers and bring them through by immediate amputation. On the other hand, he was able to save the limbs of others who had phlegmons with gas, simulating true gas gangrene, but terminating favorably under conservative measures.

64. **Arrest of Hemorrhage with a Scrap of Muscle.**—Pamperl relates remarkable success in promptly arresting hemorrhage by pressing on the bleeding spot a piece of muscle tissue, taken from the vicinity, crushed a little first in a clamp, to make it stick better and bring the blood platelets more to the surface. The scrap need be only from 1 to 3 mm. thick; it sticks of itself after it has been pressed on the bleeding spot for a few seconds to two minutes. He avoids having any fascia tissue on the side turned to the bleeding spot. The history of means to arrest hemorrhage is reviewed and this muscle method is ascribed to Horsley who found it effectual on animals, hemorrhage from arteries and veins being arrested by the application of the scrap of muscle when the blood pressure did not exceed 60 or 80 mm. mercury. Horsley is said never to have published his experiences. Pamperl found it always effectual in his sixteen cases, including a number of operations on the brain.

Münchener medizinische Wochenschrift, Munich

October 5, LXII, No. 40, pp. 1345-1380

67 Number and Shape of Leukocytes in Typhus. (Zahl und Formen der weissen Blutkörper beim Fleckfieber.) M. Matthes.
68 Relapsing Diseases and Their Treatment with Salvarsan. (Rekurrenserkrankungen und ihre Behandlung mit Salvarsan.) F. Reiche.

69 Modified Technic for Electrocardiography. (Modifikation in der Aufnahme der Elektrokardiogramme von pathologischen Herzen zur Erleichterung der klinischen Diagnose.) Jaworski.
70 *Boeck's Sarcoid with Participation of Internal Organs. E. Kuznitzky and A. Bittorf.
71 *Steam Sterilization Practicable for Large Rooms. (Dampdesinfektion grosser Räume.) G. Seiffert.
72 *Artificial Pneumothorax Under Adverse Conditions. J. Gwerder.
73 Technic for Determination of Protective Ferments in Tuberculous Spinal Fluid. (Untersuchung tuberkulös-meningitischer Punktionsflüssigkeiten mit Hilfe der Ninhydrinreaktion.) V. Kafka.
74 Case for Office Wassermann Test. (Neues Besteck zur Ausführung der Wassermannreaktion im Sprechzimmer des Arztes.) R. Weiss.
75 Warning Against Training Blinded Soldiers to be Masseurs. (Die Blindenmassage.) F. Kirchberg.
76 Accidental Heart Murmurs in Soldiers. (Zur Kenntnis der akzidentellen Herzgeräusche bei Kriegsteilnehmern.) H. Ehret.
77 Differential Diagnosis of Relapsing Fever. (Rückfallfieber.) R. Cayet.
78 Afebrile Typhoid. (Fieberloser Typhus.) F. Meyer.
79 Immobilization of Fractured Femur Leaving the Knee Movable. (Oberschenkelschussfrakturen.) H. v. Baeyer.
80 Treatment of Severe Fractures and of Joint Injuries in Field Hospital. A. Heddaeus.
81 Diagnosis and Treatment of Wounds of Skull and Brain. (Schädel- und Gehirnschüsse. Unterscheidung der Tangentialschüsse.) P. Sick.
82 Arc Light Exposures and Galvanic Foot Baths Promptly Relieve Pain in Feet after Freezing. (Schnelle Heilung schwerer Hyperästhesie an erfrorenen Füssen.) K. Hasebrock.
83 Efficacy of Charcoal in Treatment of Gastro-Intestinal Catarrhal Troubles. (Ueber Tierkohlebehandlung bei Truppen in der Front.) G. Kelemen.

70. **Boeck's Sarcoid.**—This affection has hitherto been classed with the skin diseases, but a case is here reported in a man of 27 in which the lungs, spleen, liver, lymph glands and kidneys were also involved. Kuznitzky knows of only one case on record (Terebinsky) of Boeck's sarcoid with enlargement of the spleen. The nodules on the upper arm were small and exclusively in the subcutis, rolling under the finger, and no connection with the tissues above could be detected even with the microscope. The nodules were scattered over the limbs and the face was spared, contrary to the usual mode of distribution. Kuznitzky thinks that there is much to sustain the assumption that the disease is a general one at first, and that the skin is affected secondarily, the skin lesions developing symmetrically, without much difference in size. Seven other cases of Boeck's sarcoid were then examined more closely for internal manifestations, and the same lesions were evident in the lungs in all, roentgenoscopy revealing the peculiar marbling effect, while the spleen was enlarged in four, and three presented the same characteristic catarrhal aspect in the mucosa of the nose, epiglottis, pharynx and larynx. He emphasizes that none of them reacted positively to tuberculin tests, even carried to the extreme limit. The Roentgen pictures of the case described in detail show the pathologic infiltrations in the lungs, amply explaining the symptoms, and show the improvement parallel to the improvement noted in the nodules of the skin.

The young man had been supposedly healthy except for measles in childhood and gonorrhea at 21. Symptoms of difficulty in breathing and in the heart action after exertion developed about eighteen months ago, and nephritis was diagnosed after a few months. Then came gastric catarrh, vomiting, diarrhea, and extreme weakness. Red spots appeared on the legs with the earliest symptoms and have persisted unmodified to date. The leukocytes numbered 5,600; hemoglobin, 87 per cent. After a two months' course of arsenic the hemoglobin percentage was 92, the red count 5,100,000, but the whites were still only 5,100. The arsenic was not borne well and a febrile herpes zoster developed with severe neuralgia, but the general condition improved and the man gained nearly seven pounds in weight. He had lost 34 pounds during the preceding year.

71. **Steam Sterilization of Large Rooms.**—Seiffert experimented with double-walled wooden barracks, turning the steam from two traction engines (*Lokomobilen*) into a room of 1,000 cubic meters' air space. The sterilization was satisfactory in four hours. It became complete when formaldehyd was used with it, all pathogenic germs and vermin being promptly destroyed.

72. **Artificial Pneumothorax Under Adverse Conditions.**—The adhesions, etc., apparently rendered pneumothorax impracticable in the case described, but as a last resort Gwerder injected the nitrogen in the desperate hope that it might help somehow. To his surprise it remained localized directly over the cavity and compressed it in the most ideal manner, thus inducing the collapse of the lung exactly where it was needed and nowhere else, and the patient began to improve at once.

Therapie der Gegenwart, Berlin

October, LVI, No. 10, pp. 361-400

84 Chronic Septic Conditions in Tonsils, Teeth, Jaws and Nasal Sinuses, from Standpoint of Military Efficiency and Pensions. (Die chronischen Infektionen im Bereiche der Mundhöhle und der Krieg.) H. Pässler. Concluded in No. 11.
85 *Advantages of Isotonic Sugar Infusions in Cholera and other Acute Diseases Impairing the Kidneys. H. Strauss.
86 *Systematic Exercises in Treatment of Tabes. (Alte und neue Uebungsbehandlung der Tabes.) L. Jacobsohn.
87 Subjective Factors Regulating What and How Much We Eat. (Das Nahrungsbedürfnis.) W. Sternberg.

85. **Sugar Instead of Saline Infusions.**—Strauss warns that salt is directly injurious to the abnormally sensitive epithelium in the kidney. He has long preached that when there is reason to suspect that the kidneys are below par, when infusion is indicated, an isotonic sugar solution should be used instead of the ordinary saline. He now urges this as the routine procedure in cholera, as in this disease the epithelium apparatus of the kidneys is almost invariably seriously impaired. The lesions in cholera resemble those with mercuric chlorid poisoning. Rumpf has stated that in his 3,000 cases of cholera anuria was the rule in all but 698, and that 57.3 per cent. of the cases with complete anuria terminated fatally. Saline infusion tends to aggravate the kidney lesions while a 4.5 per cent. solution of grape sugar answers the therapeutic purpose without damaging the kidneys and at the same time supplies in the most harmless way a certain amount of nourishment; 2 liters of the 4.5 per cent. solution represent 360 calories. It is possible that infusion of sugar solution will prove to have superior advantages over salt solution in other severe infections and intoxications with damaged kidneys.

86. **Exercise Treatment of Tabes.**—Jacobsohn emphasizes that no specialist skill is required to train tabetics to overcome their ataxia. Any physician can do it, and the mechanical aids can be improvised or dispensed with entirely in the mild cases. As the tabetic does not feel fatigue readily, he must be watched to stop short of fatigue as this would weaken the muscles. The exercises benefit even in the severest cases, as a rule, and decided improvement can be counted on in 50 per cent. of all cases. The exercises can be done in bed or on the sofa at first. Five to fifteen minutes is usually long enough for the sitting, but it should be repeated two or three times a day. It may be necessary to support the limb at first or suspend it in a sling to permit the patient to make the volitional movements. A straight, zigzag or spiral chalk mark on the floor to follow, or a book or cigar box to step over may prove useful exercises. The aim should be to train the patient in the movements needed in daily life, walking, climbing stairs, knocking, writing and buttoning garments. A typical feature of the third stage of tabes is the inability to extend the leg at the knee. The knees thus give way when the tabetic tries to stand up. The patient strives to compensate this by innervation of the extensors of the knee, and this generally results in an overcorrection. The knee is extended too far and held in this overtension. The same occurs with the hip joint, shoulder and elbow. The tendency is to overcorrection.

By thus analyzing the elements of the movements, we can see the way in which they share in the general disturbance, and the patient can thus be shown and taught how to correct it by voluntary innervation and utilization of the remnants of sensibility. The volitional muscular correction is very apt to be excessive, and this in turn requires compensation. Foerster has made a special study of this analytic method, and Jacobsohn endorses this method as great progress. He emphasizes, however, that the psychic element in the ataxia must not be overlooked. Some patients have been frightened by what they hear and read about tabes; others have had a fall or other accident. Cautious suggestion renders good service in such cases.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 33, pp. 881-908

88 Experiences in a Field Hospital. M. Hirsch and T. Meissl.
89 Typhus in Prisoners' Camp at Marchtrenk. A. Skutetzky.
90 Single Bent Wire as Splint in Dressings. (Drahtschienenverbände.) G. Engelmann.
91 Serodiagnosis of Glanders in Man. (Zur Malleindiagnostik des menschlichen Rotzes.) F. Berka.
92 Emotional Heart Disturbances in Soldiers. H. Fried.

No. 34, pp. 909-936

93 Disturbances in Micturition from Chilling. (Störung der Harnentleerung infolge Erkältung.) G. Stiefler and R. Volk.
94 Functionally Capable Artificial Arms. (Neue Prothesen.) G. Engelmann.
95 Measures to Get Rid of Lice. E. Eckert.
96 Measures to Get Rid of Lice. N. Swoboda.
97 *Sodium Sulphate in Dysentery and Cholera. (Behandlung der Dysenterie und Cholera mit Natrium sulfuricum.) B. Ghigoff.

No. 35, pp. 937-964

98 Possible Connection between Goiter, Cretinism and Chagas' Disease. R. Kraus and Others (Buenos Aires).
99 Talipes Equinus after Wound of the Leg. (Spitzfuss nach Schussverletzung im Bereiche des Unterschenkels.) O. v. Frisch.
100 Enuresis in Soldiers on Active Service. ("Blasenschwäche" bei Soldaten.) B. Lipschütz.
101 Aluminum Plate to Protect Painful Cicatrix in Hand or Foot. (Zirkumskripte Narbenschmerzen bei Durchschüssen von Hand und Fuss.) A. Deutsch.
102 Care of Tuberculous Soldiers. C. Feistmantel and J. Kentzler.
103 Six Months in a Field Hospital. W. Pick. Commenced in No. 34.

97. **Sodium Sulphate in Treatment of Dysentery and Cholera.**—Ghigoff has treated by this means 286 patients with dysentery or cholera, including 128 quite severe cases. Only thirty-eight died, and he regards this as evidence that many were saved by this remedy. The sodium sulphate is given in a 20 per cent. aqueous solution, with a little opium. A tablespoonful of this is taken every two hours. Sometimes he gives a calomel purge first and then the sodium sulphate. With incessant vomiting, the sulphate is given in a dose of 30 c.c. dissolved in a glass of tepid water, taken all at once.

Zentralblatt für Chirurgie, Leipzig

October 9, XLII, No. 41, pp. 737-752

104 *Bloodless Radical Operation for Hemorrhoids. (Eine unblutige Radikaloperation der Hämorrhoiden durch einfache Naht.) G. Tillmann.

October 16, No. 42, pp. 753-768

105 *Embolus in Abdominal Aorta Removed by Operation. G. E. Konjetzny.

104. **Bloodless Operation for Hemorrhoids.**—No assistant is required and the operation is done under local anesthesia. Tillmann seizes the well everted nodule with a long clamp and takes a mattress suture back and forth in the tissues just below the clamp. Then the nodule is cut off close to the clamp and the raw edges are sutured together. The ends of the threads must be left long till the suturing is all done. The patient need not be kept in bed for more than eight or ten days as a rule. He has done this operation on forty soldiers and the men were ready for duty again in two weeks. In twenty-six cases the nodules were multiple.

105. **Aortotomy for Embolism.**—The operation was successfully performed. The embolus was 5 cm. long, lodged at the bifurcation of the abdominal aorta. At once afterward pulsation could be felt in both femoral arteries. The operation had been done as a last resort, the patient not being seen until thirty-six hours after the symptoms of obstruction of the aorta had developed. Necropsy revealed severe and chronic myocarditis, although the man had supposed he was in robust health.

Zentralblatt für Gynäkologie, Leipzig

October 9, XXXIX, No. 41, pp. 715-730

106 Retro-Uterine Fixation of Round Ligaments to Correct Retrodisplacement. (Retrouterine Doppelung und Befestigung der runden Mutterbänder zur Heilung der Rückwärtslagerung und Senkung.) M. Grechen.

October 16, No. 42, pp. 731-746

107 *Fourteen Years of Extended Vaginal Hysterectomy for Cancer. (Zur erweiterten vaginalen Karzinomoperation.) H. Thaler.
108 Suggestion for Uniform Cancer Statistics. (Zur Technik der zukünftigen Karzinomstatistik.) H. Thaler.

107. **Schauta's Extensive Vaginal Operation for Uterine Cancer.**—Thaler here brings the record down to date, the total number of cases of uterine cancer at Schauta's clinic, between 1901 and 1914 inclusive being 1,305. In 654 an operation was done by Schauta's "extended" technic and 133 of the women have been cured with no signs of recurrence for five years at least. This is a total proportion of 38 per cent. permanent cures. Computed according to Winter's scheme, this is an absolute cure of 17.4 per cent. of all the cases seen, and, restricting the figures to 1905-1909, we have 20 per cent. absolute cures.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 13, XXXVI, No. 70, pp. 1089-1104

109 *Stained Gauze Strips for Testing Gastric Acidity. (Circa un nuovo metodo di saggio dell' acidita gastrica senza l'uso della sonda.) F. A. Galmozzi.
110 *Hemiplegia from Spontaneous Hematomyelia. (Ematomielia spontanea in amenorroica.) G. Jona.

October 16, No. 71, pp. 1105-1120

111 Vaccine Treatment of Pyelitis. (La terapia delle pieliti.) A. Fantoni.

109. **Simple and Practical Test for Gastric Acidity Without the Stomach Tube.**—Galmozzi has been testing the method recently introduced by Quadrone and Dematteis and has found it practicable and reliable, although it is an index merely of the acidity in the stomach. A strip of gauze about 4 or 5 cm. long by 1 cm. wide is dipped in a 0.5 per cent. solution of congo red, and another similar strip in a 0.5 per cent. solution of dimethylamidoazobenzol. A long thread is fastened to the two strips and both of the strips are squeezed into a capsule which the patient swallows after a test meal. When the capsule has dissolved, the strips of gauze are drawn out and the tint of the gauze strips indicates conditions as to the acid in the stomach content.

110. **Spontaneous Hematomyelia in Amenorrhea.**—Jona's patient was a young woman previously healthy except for menstrual anomalies. There was no menstruation until the age of 19, and after 20 menstruation ceased for a year, then returned twice. He assumes that a vicarious hemorrhage in the spine was the cause of the hemiplegia. It came on twenty days after the last menstruation and afterward there was complete amenorrhea for another year. There was sudden, intense pain in the spine, followed immediately by the hemiplegia. The paralysis in the arm was of the flaccid type, with atrophy, while the leg showed spastic paralysis, with no tendency to atrophy.

Hygiea, Stockholm

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112 *Syphilitic Abscess of the Lung; Improvement under Artificial Pneumothorax and Mercurial Treatment. H. Lindvall.

112. **Pulmonary Syphilis.**—Lindvall had opportunity in 1913 to watch the clinical course and examine postmortem two cases of syphilitic processes in the lungs. He recently encountered a third case, and was able to arrest the progress of the affection with specific treatment. The patient was a woman of 33, previously healthy, with no known venereal disease. Early in 1913 she developed sciatica and began to feel weak and in two months to cough incessantly. There was but little expectoration and the sputum never was hemorrhagic. The symptoms indicating a lesion in the lung developed very gradually and nothing could be found to explain it except possibly syphilis. It seemed to be restricted to the central part of the right lung; there was evidently destruction of lung tissue with formation of a cavity, but no tubercle bacilli could be detected in the sputum and inoculation of guinea-pigs was also negative. The most convincing proof of the syphilitic nature of the process was the brilliant success of specific treatment aided by artificial pneumothorax.

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ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS

RESULTS OBTAINED BY TWENTY-FOUR AMERICAN OBSERVERS

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American experience with the artificial pneumothorax treatment of pulmonary tuberculosis dates from 1898, when Dr. John B. Murphy[1] of Chicago described the new method and reported five cases in his oration on "Surgery of the Lung" before the Forty-Ninth Annual Session of the American Medical Association in Denver.

Previous to that, in 1882, unknown to Dr. Murphy, Dr. Carlo Forlanini of Pavia, Italy, suggested the method, following this by years of experimental work, and reported his first case of cure of an advanced unilateral case in 1895. During the last twenty years, Forlanini applied the method in a large number of cases.

The popularization of the method followed the publication, beginning in 1906, of an immense amount of experimental and clinical work by L. Brauer of Marburg, and his associates, L. Spengler and others. The introduction, in 1907, by C. Saugman[2] of Christiania, of the water manometer, for determination of the pleural space, rendered the method safer, and greatly stimulated its rapid adoption in Europe, the United States and other countries.

Following Dr. Murphy's brilliant exposition of the subject in 1898, his associate, Dr. A. F. Lemke,[3] continued the work under his direction, reporting, in 1899, fifty-three cases.

In studying these cases, I find that two were apparently in the first stage, twenty-five (or 47 per cent.) in the second, and twenty-six (or 49 per cent.) in the third. In forty-three cases (or 81 per cent.), the involvement was apparently unilateral; in ten cases (or 19 per cent. of the total), bilateral. Presence of cavities is indicated in only four cases; twenty-two, or 41.5 per cent. were febrile cases; hemorrhage was indicated in four cases. From one to five injections were given in fifty-one cases, a larger number in one case. The amount of nitrogen gas used was from 100 to 125 cubic inches in one third of the injections; from 110 to 148 cubic inches in half of the number. The shortest interval between injections was sixteen days; in 37 per cent. from three to four weeks, and in another 37 per cent. from four to five weeks. No manometer was in use at that time. The immediate results of treatment are given in fifty cases, after a period of observation from four to six months. Ten patients were sent west. Pleural effusion occurred in three cases; gas embolism with permanent hemiplegia in one case, and spontaneous pneumothorax with death in another.

Translating carefully the results given by Dr. Lemke, in fifty cases, into terms in use at present by the National Association for the Study and Prevention of Tuberculosis, we get the following figures: quiescent, four cases, or 7.5 per cent.; unimproved or worse, eight; improved, twenty-six cases, or 49 per cent.; deaths, two; sent to other climates, ten.

The untimely death of Dr. Lemke prevented the continuance of his work and publication of the subsequent results.

Following the introduction of the method by Dr. Murphy and his associate, the use of nitrogen gas compression was tried by several men in this country, notably at the Loomis Sanatorium, Liberty, N. Y., and other places. Various considerations, particularly the complications occurring in the course of treatment, led soon to the discontinuance of the work for a number of years.

Since the publication of the report of Dr. Brauer's work, the method was reintroduced in this country in 1910, among the pioneers being Robinson, Floyd and Balboni of Boston, Hamman and Sloan[4] of Baltimore, Mary Lapham of North Carolina and others. The method has grown in favor, particularly in the last three years, this paper presenting an analysis of the results of work, in this period of time, by twenty-four American observers. The results reported by them furnish a sufficient basis for the estimate of the efficacy of the method.

In many of the papers which I have studied, certain data are missing, and there is a variation in nomenclature, this rendering absolute exactitude of comparison impossible and necessitating conservative personal interpretation. I made a careful effort, by thorough study of reports of individual cases, to bring uniformity, in the designation of the results of treatment, in accordance with the scheme used by the National Association for the Study and Prevention of Tuberculosis.

The work analyzed in this paper represents the collective experience of a large number of hospital and sanatorium men all over the country, who during the last several years have given considerable study to the subject.

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[1] Murphy, J. B.: Surgery of the Lung, THE JOURNAL A. M. A., July 23, 1898, p. 151; July 30, p. 208; August 6, p. 281; August 13, p. 341.

[2] Saugman, Christian: Internat. Centralbl., January, 1914.

[3] Lemke, A. F.: Report of Cases of Pulmonary Tuberculosis, Treated with Intrapleural Injections of Nitrogen, with a Consideration of the Pathology of Compression of a Tuberculous Lung, THE JOURNAL A. M. A., Oct. 14, 1899, p. 959; October 21, p. 1023; October 28, p. 1077.

[4] Hamman, L., and Sloan, M. F.: Bull. Johns Hopkins Hosp., February, 1913.

CLASS OF CASES TREATED

Of 1,145 cases reported, the stage of disease is given in 1,028. Of this number 912, or 88.7 per cent., were in the far advanced stage; 109, or 10.6 per cent., moderately advanced; seven, or 0.7 per cent., incipient; five were cases of bronchiectasis; five pulmonary abscess; one tumor.

As shown in Table 1, the side involved is designated in 897 cases out of 1,145, or 78 per cent. of the total; bilateral involvement was present in 691 cases, or 77 per cent.; unilateral, in 206 cases, or 23 per cent. Presence or absence of cavities is given in 606 cases, or 53

TABLE 1.—RESULTS OF TREATMENT OF 1,145 CASES OF PULMONARY TUBERCULOSIS BY TWENTY-FOUR AMERICAN OBSERVERS

Name	Number	Stage	Bilateral Involvement	Unilateral Involvement	Number Cases with Cavities	Number with Tuberculous Complications	Satisfactory Compression	Partial Compression	Results of Treatment						
									Failure (Adhesions)	Unimproved	Improved	Quiescent	App. Arrested or Arrested	Cured	Dead
1. Von Adelung[5]....	42	42, III......	41	1	..	....	..	..	5	10	26	..	1 (or "cure")	..	..
2. Balboni[6].........	70	Most, III...	..	..	..	....	21	31	10	14	16	6	6	..	18
3. Barnes and Fulton[7]............	17	17, III......	17	..	7	....	10	6	..	5	5	1	..	..	6
4. Burns[8]...........	26	1, II; 18, III; 1, bronchiectasis	1	19	7	4 larynx...........	15	5	6	3	7	6	..	..	4
5. Chadwick[9].......	43	3, II; 31, III	25	9	..	....	..	..	..	10	22	..	..	..	2
6. Dunham and Rockhill[10]	20	Most, III...	19	1	10	....	..	..	4	..	14	2	..	..	..
7. Fehleisen and Rothschild[11]	44	....	..	..	..	....	..	..	3	7	33 "good results"	..	..	..	1
8. Floyd[12]..........	28	3, II; 25, III	..	..	..	....	..	..	..	1	20	..	6	..	1
9. Gray[13]...........	145	11, II; 134, III	90	55	136	19 larynx, 14 bowel	97	48	..	40	37	..	22 (or quiescent) ("working")	..	46
10. Harris[14]..........	34	....	20	14	..	....	19	12	3	1	9	..	17	..	4
11. Kessel and Taschmann[15]	29	2, II; 27, III	23	5	13	2 larynx, 1 bowel..	17	9	3	6	9	10	..	..	1
12. King and Mills[16].	16	15, III; 1, abscess	15	1	6	6 larynx..........	..	..	6	3	2	2	..	..	3
13. Kingsley[17]........	8	8, III.......	8	..	..	....	..	..	..	..	..	1	..	..	2
14. Lapham[18]........	67	17, II; 48, III	49	16	48	5 larynx, 5 bowel, 1 gangrenous lung, 3 effusion, 9 empyema	41	17	5	2	1	1	18	11	29
15. Lyon[19]...........	74	4, I; 38, II; 32, III	62	12	..	....	..	..	18	31	22	..	..	..	3
16. Matson[20].........	41	1, I; 2, II; 34, III; 3 bronchiectasis; 1 abscess	33	8	14	1 gangrenous lung, 5 larynx, 1 bowel, 3 effusion	18	11	4	5	9	13	3 ("apparently well")	..	7
17. Montgomery and Speese[21]	12	1, I; 1, II; 10, III	8	4	..	2 larynx..........	..	..	..	5	2	1	..	1 "well"	3
18. Mace[22]...........	34	6, II; 28, III;	34	..	24	....	..	..	4	4	7	..	7	3	9
19. Sachs.............	74	20, II; 53, III; 1 abscess	30	44	33	4 larynx..........	42	17	11	11	27	20	..	..	5
20. Schwatt[23]........	69	67, III; 1 abscess; 1 bronchiectasis	63	6	55	19 larynx, 1 middle ear, 1 bladder, 1 spine	18	22	21	21	8	5	10	..	4
21. Schaye[24].........	45	Most, III...	..	..	..	....	21	18	6	..	..	8	..	..	9
22. Shortle and Peters[25]	110	1, I; 5, II; 104, III	99	11	..	In 37 cases: 2 bowel, 2 larynx, 1 pericardium	71	9	30	14	19	17	12	..	18
23. Voorsanger[26]....	14	3, III.......	..	..	..	....	..	..	2	..	5	..	3	..	3
24. Webb, Gilbert, James and Havens[27]	83	81, (?) III; 1 abscess; 1 tumor	54+	..	25	....	..	..	21	10	23	26 "remarkable improvement"	..	1 (abscess)	2

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5. Von Adelung, Edward: Induced Pneumothorax, The Journal A. M. A., June 20, 1914, p. 1944.

6. Balboni, G. M.: Boston Med. and Surg. Jour., Nov. 5 and Dec. 24, 1914.

7. Barnes, H. L., and Fulton, F. T.: Boston Med. and Surg. Jour., June 12, 1913.

8. Burns, E. H.: New Mexico Med. Jour., January, 1915.

9. Chadwick, H. D.: Boston Med. and Surg. Jour., Sept. 17, 1914.

10. Dunham, Kennon, and Rockhill, C. S.: Therapeutic Pneumothorax as a Palliative Measure, Safeguarded by Stereoroentgenograms, The Journal A. M. A., Sept. 13, 1913, p. 826.

11. Fehleisen, F., and Rothschild, M.: Experience with Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, California State Jour. Med., September, 1913, xi, 343.

12. Floyd, C.: Some Results of Dispensary Work in the Control of Tuberculosis, Boston Med. and Surg. Jour., 1913, clxviii, 43.

13. Gray, E. A.: Illinois Med. Jour., October, 1913, supplemented by personal communication.

14. Harris, S. T.: Jour. Med. Assn. Georgia, August, 1912.

15. Kessel, Leo, and Taschmann, Max: A Study of Twenty-Nine Cases of Advanced Pulmonary Tuberculosis Treated by Artificial Pneumothorax, Arch. Int. Med., August, 1914, p. 210.

16. King, H. M., and Mills, C. W.: Am. Jour. Med. Sc., September, 1913.

17 Kingsley, C. R., Jr.: New York Med. Jour., Sept. 26, 1914.

18. Lapham, M. E.: Am. Jour. Med. Sc., April, 1912, supplemented by personal communication.

19. Lyon, J. A.: Boston Med. and Surg. Jour., Sept. 17, 1914.

20. Matson, R. C.: Northwest Med., January and August, 1914.

21. Montgomery, C. M., and Speese, J. F.: Pennsylvania Med. Jour., February, 1914.

22. Mace, L. S.: Report of Thirty-Four Cases of Artificial Pneumothorax, The Journal A. M. A., March 13, 1915, p. 897.

23. Schwatt, H.: Tr. Eleventh Annual Meeting, National Association for the Study and Prevention of Tuberculosis.

24. Schaye, Milton: Artificial Pneumothorax, The Journal A. M. A., March 21, 1914, p. 900.

25. Shortle, A. G., and Peters: New Mexico Med. Jour., January, 1915, supplemented by personal communication.

26. Voorsanger, W. C.: Palliative Effect of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis, The Journal A. M. A., May 9, 1914, p. 1450.

27. Webb, G. B.; Gilbert, G. B.; James, T. L., and Havens, L. C.: Tr. Tenth Annual Meeting, National Association for the Study and Prevention of Tuberculosis.

per cent. of the total. Of the 606 cases, cavities were present in 378, or 62 per cent. The presence of tuberculous complications is given in 489 cases, or 43 per cent. of the total. The number of tuberculous complications was 112, or 23 per cent. of the 489 cases in which complications were recorded. Of the 112 complications, sixty-eight involved the larynx, twenty-three the bowel, and fifteen were either empyemas or pleural effusions.

It is apparent from the large proportion of far-advanced cases, 88.7 per cent. (with bilateral involvement present in 77 per cent., cavities in 62 per cent., and serious tuberculous complications in 23 per cent.), that artificial pneumothorax is being tried at present in this country chiefly in very advanced cases unimprovable under ordinary sanatorium regimen. This must be taken into consideration in judging the "immediate" and "subsequent" results obtained in 1,145 cases analyzed in this paper.

The degree of compression obtained in individual cases, as judged by physical signs and subsidence of constitutional disturbance (in some by Roentgen-ray plate and fluoroscope), is given in 757 cases, or 66 per cent. of the total number reported. Of this number, satisfactory compression was obtained in 390 cases, or 51.5 per cent.; partial, in 205, or 27 per cent.; failure, in 162, or 21.5 per cent.

IMMEDIATE RESULTS

The results of treatment, as given in 1,108 cases (out of 1,145), can be designated as in Table 2.

TABLE 2.—SUMMARY OF RESULTS OF TREATMENT IN 1,108 CASES REPORTED BY TWENTY-FOUR AMERICAN OBSERVERS

	No.	Per cent.			No.	Per cent.	
Failure (failure 152, very small amounts 10)	162	14.6	49.1%	Improved	323	29.2	21.7%
Unimproved	203	18.3		Quiescent	119	10.8	
Dead	180	16.2		App. arrested (or arrested)	105	9.5	
				Cured	16	1.4	

Sixty-nine, or 6.2 per cent., were working.

As in over 90 per cent. of these cases the result was recorded either during the course of treatment or a few months after its discontinuance, and in only 10 per cent. from a few months to three years after discontinuance, the results should be designated as "immediate."

The method was unproductive of *any* beneficial effect in almost half of the cases (failures, unimprovements and deaths amounting to 49.1 per cent.); 29.2 per cent. were "improved," the improvement being, probably, of limited duration in the majority of these cases; 21.7 per cent. is the total of the "quiescent," "arrested" and "cured" cases.

Thus the *immediate* beneficial result of artificial pneumothorax treatment of these 1,108 cases was mostly palliative in 29.2 per cent. and *apparently* durable in 21.7 per cent.

A comparison of the results obtained by the American observers with the results recorded in 224 cases by Brauer, Spengler and Zink,[28] after a period of observation extending from six months to five years, is given in Table 3.

The total percentage of failures, unimprovements and deaths in the American cases was 49.1, as compared with 42.9 in the cases reported by Brauer, Spengler and Zink. It is apparent that with the class of cases selected at present for artificial pneumothorax, the method is either inapplicable or is unproductive of *any* beneficial effect in almost half of the cases.

Most of the "improvements" (American 29.2 per cent.; Brauer, Spengler and Zink, 31.2 per cent.) can be classed under the head of "palliative effect."

The group of "quiescent" cases (American 10.8 per cent.; Brauer, Spengler and Zink, 9.8 per cent.) includes, in all probability, a proportion of "durable results," a term which can be unequivocally applied only to almost all the "arrested" or "cured" cases (American 10.9 per cent.; Brauer, Spengler and Zink, 16.1 per cent.).

SUBSEQUENT COURSE OF ARTIFICIAL PNEUMOTHORAX CASES

The efficacy of artificial pneumothorax treatment can be judged only by the subsequent course, through a long period of years, of a large number of cases. In studying the American literature and some of the European, I was unable to gather any voluminous data bearing on this important question. Some figures of interest are given in Tables 4 and 5.

It may be a conservative estimate to say that, with the present technic and the class of cases treated, the percentage of durable results ("arrests" or "cures") is about 12 per cent., while in more than double this number (29.2 per cent. of 1,108 cases analyzed in this paper), a palliative effect is produced, which is of variable duration. The sum total is a distinct increase of the chances of the advanced case which does not respond to the usual methods of treatment.

TABLE 3.—COMPARISON OF RESULTS OBTAINED BY AMERICAN AND SOME EUROPEAN OBSERVERS

	American Observers			European				
	No.	Per cent.		Zink (Observed Six Months to Two Years) No.	Brauer and Spengler (Six Mos. to Five Yrs.) No.	Total No.	Per Cent.	
Cases	1,108			110	114	224		
Failure	.....	14.6	49.1	29	26	55	24.6	42.9
Unimproved	.....	18.3		16	6	22	9.8	
Dead	.....	16.2		("worse") (number dead?)	19	19	8.5	
Improved	.....	29.2		34	36	70	31.2	
Quiescent	.....	10.8	21.7	22 ("working")	...	22	9.8	25.9
Arrest or cure	.....	10.9		9 (cured or working)	27	36	16.1	

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[28] Zink: Internat. Centralbl. f. d. ges. Tuberk.-Forsch., January, 1914.

SELECTION OF CASES FOR ARTIFICIAL PNEUMOTHORAX

Various problems enter into the consideration in the selection of cases for artificial pneumothorax.

1. In less than one third of far-advanced cases (29.2 per cent. of "improvements" in the 1,108 cases reported by American observers), the effect is chiefly palliative, slightly or markedly, lasting a variable period of time.

In the same class of cases, only slightly more than half of the immediate "apparently" durable results (21.7 per cent. of quiescent, arrested or cured cases out of a total of 1,108 analyzed in this paper) stand the test of time as shown by the smaller percentage of 12.3 in cases under observation from a few months to seven years after "reexpansion" (Table 5).

2. A free pleural space is essential in the attainment of "satisfactory compression" (effective pneumothorax). In far-advanced cases, similar to the 1,108 analyzed in this paper, the pleural space is usually completely obliterated in about 20 per cent. and partially in more than 30 per cent.

TABLE 4.—SUBSEQUENT COURSE OF CASES OBSERVED FROM ONE-HALF TO SEVEN YEARS

	No. Cases	Failure	Unimproved	Dead	Improved	Quiescent	Arrest or Cure
Balboni (a few months to 3½ years)	70	10	14	18	16	6	6
			60%			17.1%	
Brauer and Spengler (½ to 5 years)	114	26	6	19	36		27
			44.7%			23.7%	
Saugman (½ to 7 years)...........	200	....	....	....	5		15
Total	384					Average 14%	

TABLE 5.—SUBSEQUENT COURSE OF "REEXPANSION" CASES (OBSERVED FROM THREE MONTHS TO SEVEN YEARS)

	Total No. Cases	Treatment			Present Condition of Reexpansion Cases			
		Reexpansion	Suspended	Active	Improved	Quiescent	Arrest	Cure
Balboni	70	17	8 months to 3½ years	3	3	5	6	..
Saugman	200	30	½ to 7 years	..	5	..	..	15
Lapham	67	14	A few mos. to 4 years	..	..	14 ("excellent condition")		..
Shortle	110	15	A few mos. to 2½ years	..	..	15 ("working")		..
Total	447	76		3	8	55 or 12.3 per cent. of the total		

A comparison of sixty-six "partial compression" cases, with 153 cases in which satisfactory compression was obtained (out of the American series, Table 1), gives, in the "immediate" results, 18.2 per cent. of quiescent and arrested cases for the "partial compression" group, and 47 per cent. of same results in cases with satisfactory compression.

3. The condition of the opposite lung is of vast importance in the attainment of durable results. Comparing the "immediate" results of artificial pneumothorax treatment in ninety-one unilateral cases and 162 bilateral, out of the series of cases by American observers, we find that the percentage of unimprovements and deaths in unilateral cases was twelve, in bilateral cases forty-three; the percentage of quiescent and arrested cases was 50.5 in unilateral and 24.7 in bilateral.

4. Failure of progressive cases of pulmonary tuberculosis to respond to sanatorium methods of treatment (absolute rest, open air, etc.), after a sufficient period of trial, should be the basis, regardless of stage, for consideration of lung compression. Numerous factors will determine the decision, such as rapid extension of the process, marked constitutional disturbance and rapid impairment of the general condition, etc. The preliminary observation of the cases should be thorough, by the use of all the clinical and laboratory methods and with the aid of Roentgen examinations.

It is the gradually forming consensus of opinion among the majority of observers that the best results can be obtained before the occurrence of extensive adhesions, marked involvement of the opposite lung and the irreparable deterioration of the general resistance.

DANGERS AND COMPLICATIONS INCIDENT TO THE PRODUCTION OF ARTIFICIAL PNEUMOTHORAX

With the gradual perfection of technic and a more careful selection of cases, accidents occurring in the course of pneumothorax treatment are gradually diminishing in number. Nitrogen gas should never be permitted to enter until the manometer establishes the connection with the free pleural space, by sustained negative pressure and free oscillations. Asepsis is another important factor. Local anesthesia of the entire needle track is insisted on by many observers for the prevention of pleural shock. Excessive pressure within the pleural cavity should always be avoided. Even positive pressure is not entirely necessary for the production of effective compression. An important exception should be made in cases of severe hemorrhage, in which bleeding persists until a marked positive pressure is established. The method should never be employed in the presence of severe cardiac complications.

Saugman reports fourteen serious mishaps and one death in a series of ninety-eight cases and 2,000 punctures, in his early experience, in the period from 1906 to 1910. From 1910 to 1912, he had two mishaps and one death in sixty-three cases and 1,200 punctures. Since 1912, with more careful technic, he reports no mishaps, in forty-nine cases and 2,000 punctures. This has reference chiefly to pleural shock and air embolism.

Pleural effusion, the most frequent complication in the course of artificial pneumothorax, is variously ascribed to infection, to progressive irritability of the pleura, caused by trauma, to slowing of lymphatic circulation in the compressed lung, to the breaking of tubercle through the pleural surface, etc. The frequency of its occurrence, in the experience of some observers, is dependent on the extent of the process and duration of treatment. Strict asepsis and careful technic may be a considerable factor in its prevention. At present, its incidence is estimated at from 30 to 50 per cent.

Of 784 cases, reported by fifteen American observers, who recorded in their reports the frequency of this complication, pleural effusion occurred in 113, or 14.4 per cent., of the total number of cases. The small percentage may be due to the inclusion of a large number of cases reported in the early period of treatment and omission of small effusions, the presence of which can be ascertained only by frequent physical and Roentgen examinations.

There is considerable difference of opinion as to the effect of effusion on the further progress of a case treated by gas compression. While improvement does occur in a certain percentage of cases, occurrence of effusion is regarded by most experienced observers as a complication affecting the future outlook of a case. This is borne out by the frequent occurrence of adhesions preventing future compression and frequent extension of the process in the opposite lung. We are in need of more comprehensive data on this subject.

Gas embolism is a rare incident in pneumothorax therapy. Its onset is sudden. The manifestations vary from temporary unconsciousness, convulsions, temporary hemiplegia and gradual recovery, or fatal termination in a few hours to two or three days, to the gravest form, in which a severe coma without any preliminaries results in almost instant death.

The air or gas may come through the needle, from the lung (cavity) or pleural space. The pulmonary veins, because of the negative pressure in these vessels, present the most favorable condition for the entrance of gas. The incident is more frequent when pleural adhesions are penetrated by the needle, the gas being introduced through one of the veins into the circulation (Brauer). Fatal termination results from the final lodgment of air or gas in the coronary arteries or vessels of the brain (Saugman). According to Wolff-Eisner, thrombi are responsible for some of the incidents described under the head of air or gas embolism.

It is agreed that this grave incident is almost impossible with intelligent interpretation of manometer findings (sustained negative pressure and wide oscillations).

According to Matson, "this accident should belong to the first historic period of pneumothorax therapy."

In Saugman's experience, one death occurred between the years 1906 and 1910 (with ninety-eight patients and 2,000 punctures); between 1910 and 1912, one death (sixty-three patients and 1,200 punctures); between 1912 and 1914, with more careful technic (forty-nine patients, 2,000 punctures), no mishaps.

Reports of this rare but grave incident are scattered over the European literature (Brauer, four cases; Saugman, 2; Zink, 1, etc.). Forlanini encountered the accident four times in 10,000 operations (two fatal).

Of 1,058 cases treated by twenty-two American authors, three incidents of gas embolism occurred in a group of 191 cases reported by three authors, while 867 cases, treated by nineteen authors, were free from the incident. The latter group includes seventy-four cases treated by the author (700 injections).

The incidents described, in the American and European literature, under the name of *pleural shock* (pleural reflex or eclampsia) vary from slight manifestations of faintness to disturbances of various degrees of the circulatory, respiratory and nervous motor and sensory systems. With few exceptions, the manifestations, as given, are mild, of passing nature and with no after-effects. A few fatal terminations were recorded by European observers.

The present tendency (particularly Brauer) is to ascribe many of the grave manifestations included under "pleural reflex or shock" to "gas embolism."

The mechanism of production of pleural reflex is given by Russell[29] as follows: "afferent impulses conveyed to medulla along vagus, whose terminal fibers rendered unduly sensitive by compression, or inflammation are irritated by the needle." Death is generally ascribed to spasm of cerebral or cardiac vessels.

Anesthesia of the needle track (novocain from 0.5 to 1 per cent., epinephrin 1 : 10,000) through the skin, the underlying tissues and pleura, is urged by most observers as a preventive of this complication, and yet the incident was absent in groups of cases treated without any anesthesia (E. A. Gray, 145 cases, 1,200 injections; myself, seventy-four cases, 700 injections, and others).

Saugman reports one case of pleural shock in 104 cases (paralysis of heart; death); Forlanini, twelve occurrences in 134 patients, 10,000 injections.

Of the 1,058 cases in the American literature, analyzed in this paper, pleural shock occurred twenty-six times, or in 2.5 per cent. of cases. There were no fatalities.

Of the 1,122 cases reported by twenty-four American observers in the last two years or more, the incidence of various complications, occurring in the course of treatment, was as given in Table 6.

TABLE 6.—COMPLICATIONS REPORTED BY AMERICAN OBSERVERS

Complications	No.
Pleural effusion	113
Extension of process in opposite lung	58
Bleeding of other lung	7
Pleural shock	26
Gas embolism	3
Spontaneous pneumothorax	10
Bilateral pneumothorax	2
Pyopneumothorax	13
Cardiac dilatation and heart failure	4
Torsion of heart and blood vessels	1
Total	237*

* Twenty-one per cent. of the total number of cases.

CONCLUSION

Experience with artificial pneumothorax in the treatment of pulmonary tuberculosis is gradually modifying the sphere of its application. The trend is toward its use, regardless of stage, in all progressive cases (particularly with unilateral involvement) which fail, after sufficient trial, to respond to strict sanatorium regimen.

Complications incident to the employment of this method, the great importance of continuous strict observation and thorough clinical, laboratory and Roentgen study of each individual case, the rest periods essential after each reinflation, the inability of outlining in advance the time of reinflations, in short, the close dependence of each successive step in pneumothorax therapy on the varying condition of the patient, are all factors which call, in the majority of cases, in the interest of safety and best results, for hospital or sanatorium supervision, at least for a few months, of each individual case in which the method is being applied. Close attention to every important detail of technic, as well as strict asepsis, is also less of a problem, under such conditions, regardless of the excellent results obtained by some observers, in dispensary and office practice.

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[29] Russell, quoted by Fishberg, M.: Med. Rec., New York, Jan. 2, 1915.

The present tendency, grown out of experience, is toward greater conservatism in the selection of cases, a selection based on thorough preliminary study and full consideration of the possible effect of compression in the individual case. Conservatism needs to characterize each successive step in the gradual attainment and subsequent maintenance of a satisfactory compression, with avoidance of too frequent reinflations and excessive intrapleural pressure. This attitude is very important, with a method the application of which cannot be subject to rule but is dependent on the condition of each individual case.

Through improvement of various details of technic and greater conservatism of action, pneumothorax therapy is gradually finding its defined place in the treatment of cases of pulmonary tuberculosis which do not yield to other methods.

25 East Washington Street.

LESIONS OF THE LUMBOSACRO-ILIAC REGION

A STUDY IN THE VARIOUS TYPES *

HARRY LESLIE LANGNECKER, M.D.
SAN FRANCISCO

In asking your indulgence for a few minutes in the consideration of lesions involving the lumbosacral and the sacro-iliac articulation, I do so because of the importance of recognizing the underlying conditions as early as possible.

In an endeavor to understand the mechanism of the lumbosacral joint, with its many peculiarities, and the too frequently resulting strains to the sacro-iliac joints, it must be remembered that the lumbosacral joint is intimately associated with the sacro-iliac joint function.

Statistics, which I have gathered from my study of occupational or industrial diseases, show lesions of the lower back to be one of the most frequently occurring conditions.

Anatomic variations from the normal structure of the bones of this region are very common. Very often these anomalies do not become evident until excessive or repeated joint strain bring them under observation.

In the study of cases representing the various types, it is impossible to isolate a type as belonging to only one group. For a traumatized joint may later become the seat of an inflammatory process. An abnormal bone formation does cause a lateral curvature. Relaxed ligaments have produced a defective balance of the whole body. With this point in mind, however, namely, the interrelation of the different types, I have grouped these lesions into, first, traumatic, with or without anatomic variations; second, static; and third, toxic.

In the traumatic group are included cases in which injury is the principal factor. These lesions are further classified into, first, acute types, in which the trauma is recent and primary, and second, chronic, in which the trauma is recurrent and of longer duration.

In the acute types the lesion is unilateral, with or without bone displacement. It is the result of direct strain or indirectly through muscular action. In these cases, the sacro-iliac joint receives the entire force of the effort and the bony surfaces of the sacrum or the ilia may slip, or a rupture of the ligaments may occur.

These conditions are demonstrated when bending forward in the act of lifting a heavy object; or in jumping and giving the trunk a sudden twist on the pelvis; or when in swimming and diving, quick hyperextension of the lumbar spine occurs; or during childbirth, when instrumental interference is necessary; or during or following surgical operations with a general anesthesia.

The symptoms depend on the amount of injury rather than on the severity of the cause producing it. Pain usually accompanies the injury. It is sharp and lancinating in character and is increased by all motions. It is present about the affected joint or is referred up the back, over the buttocks, or down the leg. Deformity shows as a forward stoop, a list to one side or flexed leg at hip. Regular tests demonstrate all motions limited. The local signs are obliteration of the lumbar curve, tenderness, or very often, a slight bony prominence over the injured area. The Roentgen ray may show an anatomic variation or a displacement of one of the bones of the lumbosacro-iliac articulations.

In the chronic types, because of repeated strains, there is relaxation with occasional displacement. Adhesions are present. The lesion is unilateral although later involvement of the other sacro-iliac joint does take place. Cases vary considerably in character. For example, lesions may result from repeated movement of a broad transverse process of the fifth lumbar vertebra pressing on the ilium until a backward displacement of the sacrum on the opposite side is produced, as in wood chopping; or continual slipping of the flattened articulating processes of the fifth lumbar vertebra, as in automobile repairing; or too often sliding of articulating surfaces of sacrum and ilia on each other, as in marked relaxation of the joint; or subluxation of an intervertebral cartilage, as in repeated displacements of the lumbosacral joint.

The symptoms are intensified with each new strain. Pain may be slight or severe. Irritation of the lumbosacral nerves, after their emanation from the vertebral foramina, gives pain over buttocks, hip and down the leg. This is increased by standing or walking and is less severe after lying down. Deformity may show as a decided forward bending or list to one side with prominence of the hip on the opposite side. The lumbar spine is flattened. In many of these cases the deformity can be corrected, but relapse occurs if sufficient support is not used. Regular tests elicit limitation of motion only in certain directions. Locally, there is considerable tenderness over the affected joint. Referred pain can be started by pressure in this

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

region. There is spasm of the muscles; movement of the joint is guarded and painful. The Roentgen ray usually demonstrates separation or displacement of bones of the joint. Bony anomalies likewise are thus discovered.

In the static group, faulty posture is the most striking feature presented. The muscles and ligaments and therefore the joints of the lumbosacro-iliac region are relaxed. The continual strain on these joints increases the lumbar curve and tilts the top of the pelvis forward. In the variation from the proper poise, the mechanics are disarranged and the physiologic functions of the body are disturbed. This type of lesion is usually bilateral.

A defective posture may result from general debility, which reduces the quality of the muscles and ligaments; or anatomic variations, which may cause a lateral curvature and later a scoliosis; or incorrect clothing, which may compress the trunk or give inadequate support; or lipomatosis or general increase in weight, which increases the strain on the muscles and ligaments of the pelvic girdle; or faulty foot or leg conditions which give unequal base of support; or pregnancy when relaxations of the pelvic joints are very marked; or certain occupations which require fixed positions; or sagging abdominal walls with the accompanying visceroptosis. The long, slender, loose-jointed type of individual, with few exceptions, makes up the greatest number of cases in this group.

The symptoms of the static type are easily recognized. The onset is gradual. The slumped or relaxed attitude in standing is marked. There is a general weakness in walking and standing rapidly causes fatigue. Patients cannot lie comfortably on the back, are restless at night, usually sleep on the side with the thighs flexed. Backache is most constant. Locally, tenderness over all the joints is found. There is always a lordosis, while the posterior back muscles are in a state of spasm. The regular tests show unusual mobility and relaxation of the joint. The Roentgen ray is useful in this group as a method of eliminating the other group types.

In the toxic group are found those types of cases in which the inflammatory element predominates. Continual irritation of the lumbosacral and the sacro-iliac articulation, usually with relaxation, produces a chronic congestion in this region and thus infection is easily started.

While tuberculous, syphilitic, typhoid and gonorrheal lesions frequently occur in this region, still infection, or toxins, primarily involving the nasal, oral, pharyngeal and gastro-intestinal tracts, produce a pathologic process — an osteo-arthritis — which demands much attention in diagnosis and prognosis. Extension of disease from the pelvis, or following gynecologic procedure, or obscure toxemias resulting from improper metabolism, gradually settle in this region and cause an arthritis.

The symptoms show the onset to be gradual, and secondary to inflammation or toxemia, present elsewhere in the body. When acute, the joints are swollen, the soft tissues are thickened and very tender. The condition is aggravated by standing, sitting or walking. The joints are extremely sensitive to any motion which will induce strain on the pelvic girdle. In the chronic cases, a burning, aching pain is experienced over the sacro-iliac area. Pain, usually dull in character but with sharp paroxysms, may be referred up the back, over the buttocks and hips, and down the posterior aspect of the leg to the heel. Frequently there is disturbance of sensation in the lower extremities. Posture does not relieve the pain. It is in this group of cases that narcotics are resorted to most often to overcome the pain. The deformity causes the patient to hold the lower back stiffly. A marked forward bending or a list to one side is present. There is no lumbar curve, but a prominence of the dorsal spine. The regular tests are usually restricted in every direction. Locally, the flat, rigid lumbar spine, the muscular spasm, the limited area of tenderness and the impossibility of attempted motion are observed. The Roentgen ray usually shows a pathologic process involving some part of the lumbo-sacro-iliac articulation.

In conclusion, I wish to state that differentiation of the various types is not difficult if one bears in mind the fact that in the traumatic group, injury with the sudden onset of symptoms is most important; in the static group, the defective posture with marked relaxation of the joints is present; and in the toxic group, the history of an inflammatory process with the tendency to fixation of the joints is found.

Surgical Division, Leland Stanford Junior University, School of Medicine.

ABSTRACT OF DISCUSSION

Dr. C. C. Crane, San Francisco: While I wish to elaborate somewhat on the anatomic variations to which Dr. Langnecker referred, I also wish to challenge his statement that "Posture does not relieve pain." Radiograms which I have show various mechanical faults which are productive of pain, deformity and disability. I have divided them into three classes: potential trouble makers, actual trouble makers and proximal trouble makers. The symptoms presented by the patients were various and numerous but all of them were relieved by conservative measures.

Dr. Fred. J. Fassett, Seattle: I think it would not be out of the way to have some one who has the facilities and the clinical material make a routine examination of a large number of normal adults, so that we may form some sort of an estimate as to how many people are going about with large transverse processes and other anatomic variations without any symptoms at all. Of course, it is only the ones with symptoms that come to the physician, and it seems to me that we have a very one-sided view of the subject thus far.

Dr. Leonard W. Ely, San Francisco: In the orthopedic department of Stanford University with a complete outfit and all the facilities to work with, we are entirely at sea on this subject of lumbo-sacro-iliac lesions. I have become discouraged trying to replace these so-called slipped joints —in trying to get the painful ones relieved—and we are ready and eager to put all the facilities that we have at the disposal of anybody who will undertake to help us clear this matter up. I have become discouraged, but a ray of hope, I may say, has broken on me from what Dr. Langnecker has said.

Dr. J. T. Rugh, Philadelphia: In regard to Dr. Fassett's request, I had one of the leading roentgenologists in Philadelphia for the past six months make a study of the cases which came under his care for all abdominal conditions. He has told me, after looking over a series of probably four or five hundred of these cases, that he finds some anomalies in this part of the spine in a very large percentage of the cases. In fact he is coming to look on it as rather unusual to find the normal.

Dr. John Ridlon, Chicago: I should like to ask that in closing, Dr. Langnecker say whether in any of these strained or slipped joints—sacro-iliac or lumbosacral region—he has had anything in the nature of atrophy of the limb develop on the painful side.

Dr. C. R. McClure, Portland, Ore.: At present through the courtesy of Dr. Coffey's office in Portland we are having observations made on this region of the lower back, and I hope at some future meeting to make some reports concerning our study of this region. We see a great many of these cases, and, like many of the men here, I sometimes doubt the value of the Roentgen ray in a diagnostic way because of the frequency with which these anomalies are found in people who have no symptoms one way or the other.

Dr. Roland Meisenbach, Buffalo, N. Y.: That the pelvic joints, especially the sacro-iliac and sacrolumbar, are so frequently involved in the sciaticas and the backaches which are met with, can no longer be doubted. The results of the treatment for these conditions, with the relief given the patient, have spoken for themselves. I believe that the most important matter for our consideration in diagnosis is to differentiate between the sacro-iliac and the sacrolumbar lesions. It is true that in some we have both these joints involved; it must also be remembered that occasionally we may have backache due to the strain or injury to the sacrolumbar joint in a person who may have other conditions present; as, for instance, a very heavy person with leukemia may sustain an injury to the sacrolumbar joint due to the actual weight of the abdomen, and in relieving the strain we are naturally relieving but one of the symptoms. Another type of sacro-iliac and sacrolumbar lesion which is more frequently met with is one of trauma, in which there also exists pelvic inflammation, or glandular inflammation, which has attacked the pelvic joints or has weakened them so that they are subject to trauma. One has only to remember his anatomy and note the variations in the sacrolumbar joint, both as regards the articular processes and also the variations in the transverse process in different individuals. I have met many times a type of sacrolumbar lesion in which the patient has had recurrent backache, which I am sure has been due to a very shallow sacrolumbar articulation. In this type it has been sometimes difficult to illustrate the condition by means of a roentgenogram. In regard to the roentgenogram, I cannot agree with Dr. Langnecker. If he had used the word "occasionally" instead of "usually," I think it would have been more to the point. In cases with a long or thickened transverse process of the fifth lumbar vertebra, which may or may not articulate with the sacrum or ilium, or in cases in which the sacro-iliac joint has opened and the sacrum has dropped or tilted, it is not very difficult to illustrate by means of the roentgenogram; but those cases (and they are frequently met with) in which the sudden movement of the body may quickly incapacitate the individual, causing such a severe pain that the person is unable to take another step, are rather difficult to illustrate by means of the roentgenogram. I believe this type of case to be that of the shallow sacrolumbar joint, in which the joint articulations are of such construction that they easily become dislodged. Many of these do not seek relief at the first attack, but usually after having rested or having had several attacks. Also in the type of loose sacrum it is difficult to demonstrate by means of the roentgenogram; that is, the single flat plate will show nothing, but the stereoscopic roentgenogram will often show the sacrum slightly tilted. Dr. Langnecker has covered the ground of symptoms very well. One of the best illustrations of the severe sciatica which was caused by motion in the sacro-iliac joint is that of metastatic carcinoma of the sacrum following, as in the case I have presented, a removal of the breast for carcinoma. In this case, the slightest motion of the ilium on the side in which the sacro-iliac joint is involved causes a severe sciatica.

Dr. C. L. Lowman, Los Angeles: We have a skeleton which shows an anomaly of the first sacral—just a small lateral process on one side, like a lumbar vertebra, the full length and width of ala on the opposite side, with a joint between it and the second sacral; an absolutely flat articular process on the right side, and a vertical process on the other. This allowed a great deal of rotation of the sacrolumbar segment forward around this vertical process as an axis, with a narrowing of the posterior foramina. Another similar case was presented to me by my radiographer. This case was treated by a chiropractor as a tuberculous spine. The roentgenogram showed an assimilation of the first sacral, which tried to be a lumbar on one side.

Dr. H. L. Langnecker, San Francisco: In reply to Dr. Ridlon's question, I would say that in a great number of cases, especially those of the lumbosacral region, there seems to be an atrophy of the muscles of the anterior part of the thigh, the atrophy of the other muscles having been consistently noted.

Dr. John Ridlon, Chicago: By measurement?

Dr. H. L. Langnecker: Yes, by measurement. It is one of the signs. These conditions are usually studied by stereoscopic roentgenograms; all the important ones were in my cases. I found that the study of this class of cases was extremely interesting. There is much, as yet, to be said about them. I can only repeat what one of the orthopedic surgeons—a man who has done more, probably, on lesions in the sacro-iliac region than anybody else in the country—told me. He said that there was a great deal yet to be known about lesions in this part of the body, and that he thought when the final verdict was given it would be an anatomic one.

LYMPHOID MARROW AND TUBERCULOSIS

AN EXPERIMENTAL STUDY *

LEONARD W. ELY, M.D.
SAN FRANCISCO

In a paper read before this section at its meeting in 1914, Mr. John Fraser made the statement that red marrow was immune or practically immune to tuberculosis. This statement was based on the results of attempted inoculation of the long bones of laboratory animals, whose marrow is of the red or lymphoid variety. The question is of great importance, and we have been conducting a series of experiments in the laboratories of the Stanford School of Medicine to test the accuracy of Mr. Fraser's conclusions.

Dr. John F. Cowan and I conducted one series, on which we shall report later. Dr. Jean Oliver and I conducted another series which I shall report here.[1]

The animals used were rabbits and guinea-pigs. With the former, bovine tubercle bacilli were employed (Cutter Laboratory bovine strain, K 9), with the latter, human bacilli from a virulent strain supplied by Dr. Hirschfelder. The animals were anesthetized with ether, and the limb to be operated was shaved. Strict asepsis was observed, a small incision was made in the leg, a trephine opening was made into the tibia, and with a hypodermic needle a few drops of a suspension of bacilli in normal salt solution were injected directly into the marrow. The wound was then sewed up with catgut and was painted with collodion.

At varying intervals before the operation and sometimes after it, a 1 per cent. solution of trypan blue was injected into the animals, 20 c.c. into the ear vein of the rabbits, and 2 c.c. subcutaneously into the

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* From the Leland Stanford Jr. University Laboratory of Surgical Pathology.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* Owing to lack of space, this article is abbreviated in The Journal by omission of protocols of animal experiments. The article appears in full in the Transactions of the section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] After the main question of the vulnerability of the marrow had been determined, the work was divided. Dr. Oliver continued his investigation on the histologic features of the tubercle.

guinea-pigs. The animals were killed at varying intervals after the operation.

Our intention was usually to inject into the metaphysis of one tibia and into the central canal of the other, but in point of fact the canal extends so high in the tibia that practically all injections were into it.

The specimens were hardened in 10 per cent. formaldehyd solution or in alcohol, dehydrated in alcohol, mounted in paraffin, and stained with hematoxylin and eosin, with the Van Gieson stain, and for tubercle bacilli with the Ziehl stain.

A complete description of the findings is appended. The results will be summed up here.

EXPERIMENTS ON RABBITS

Rabbit 41 0: Killed fifty-one days after injection. Right tibia, tuberculosis present macroscopically and microscopically. No tubercle bacilli found. Left tibia kept for gross demonstration. Tuberculosis demonstrated macroscopically in it.

Rabbit 42 0: Killed forty days after injection. Both right and left tibias showed tuberculosis and tubercle bacilli present.

Rabbit 43 0: Killed fifty-four days after injection; blocks lost.

Rabbit 44: Killed on day of operation. Right and left tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 45: Killed thirty-three days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically, but no tubercle bacilli in either.

Rabbit 46: Killed thirty-two days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically; tubercle bacilli in neither.

Rabbit 47: Killed thirty days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically; tubercle bacilli were found in the right, none in the left.

Rabbit 49: Killed one day after operation. Right and left tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 75: Killed two days after operation. Right and left tibias showed no sign of tuberculosis or tubercle bacilli.

Rabbit 76: Killed seven days after operation. Both tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 77: Died fifteen days after operation. Both tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 78: Killed twelve days after operation. Right tibia showed tuberculosis microscopically and a few tubercle bacilli.

Omitting Rabbit 43 0 whose marrow specimens were lost, we have here 11 rabbits. In 6 tuberculosis was demonstrated, in 5 it was not. The 5 in which it was absent were killed respectively the day of operation, and one, two, seven, and fifteen days after operation. All animals killed after a greater interval than fifteen days, and one after an interval of twelve days showed distinct marrow tuberculosis. In other words, in every animal allowed to live over one week, save one, tuberculosis was demonstrated.

Tubercle bacilli were recovered from both tibias of Rabbit 42 0 (forty days), from the right tibia of Rabbit 47 (thirty days), and from the only operated tibia in Rabbit 78 (twelve days).

Others have noted the difficulty of recovering bovine tubercle bacilli from the marrow. In two tibias of our series they could be found only by diligent search. Typical giant cells are rare. Friedrich[2] made this observation.

The "fibromyxomatous" marrow described by Fraser is a practically constant phenomenon in the neighborhood of the tuberculous marrow, but is not peculiar to tuberculosis. It is probably present in most slow marrow inflammations, and we regard it as Nature's protective reaction against the spread of infection, not as a mysterious change which the marrow undergoes before it can be invaded, and when tuberculosis is in the neighborhood.

Another very suggestive fact that we (Dr. Cowan and I) have observed in another series of experiments (not tuberculosis experiments) on rabbits' cartilages, is the presence of a thin strip of fatty marrow which frequently is present near the circumference of the end of the femur (that is, close to the attachment of the capsule). We believe this band of yellow marrow is responsible for Fraser's contention that the lymphoid marrow of the bone end must change to fatty marrow before it can be invaded by tuberculosis from the synovial membrane.

Conclusion: The lymphoid marrow of rabbits' bones is a good field for the growth of bovine tubercle bacilli.

EXPERIMENTS ON GUINEA-PIGS

Six guinea-pigs were employed, and were killed or died, respectively, four, six, six, nine, ten and fifteen days after operation. All showed tuberculosis of the marrow, and in all tubercle bacilli were demonstrated.

Conclusion: The lymphoid marrow of guinea-pigs' bones is a good field for the growth of human tubercle bacilli.

It is now five years since the theory was first published that the location of tuberculosis in bone was determined by the presence of red or lymphoid marrow. I should like at this time to sum up the evidence to date:

1. Tuberculosis is found only in those bones or regions of bone where lymphoid marrow is present.
2. Marrow tuberculosis is more common in children, whose bones contain more red marrow. As age advances, marrow tuberculosis becomes rarer and less destructive.
3. After resections in adults, if secondary infection be avoided, the disease disappears. The best authority available says that after resections the lymphoid marrow disappears.
4. Experiments show that lymphoid marrow is an excellent field for the growth of tuberculosis.

Two links are missing in the chain of evidence; that is, the demonstration of the particular cells in the lymphoid marrow which are responsible for the disease there, and the proof that tubercle bacilli will not grow in yellow or fatty marrow. It will be instructive also to learn the exact morphologic changes which take place in the marrow after a resection.

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ABSTRACT OF DISCUSSION

Dr. John F. Cowan, San Francisco: What Dr. Ely has said on the question of marrow tuberculosis is exceedingly interesting, in view of the paper which was presented to this section at its meeting in Atlantic City last year by Mr. John Fraser of Edinburgh. It is said that it is very difficult, and in many cases, impossible to infect healthy marrow with tubercle bacilli; that in order for the marrow to become a fertile field for the growth and development of tubercle bacilli, it is necessary for it to undergo certain changes, which he describes as a colloid degeneration, or a fibromyxomatous change; that these changes in the marrow are due to an obliterating endarteritis, resulting from a tuberculous toxemia arising from a tuberculous process in some other portion of the body. Now we do not find in uncomplicated cases of tuberculosis much toxemia. Tuberculous toxins cause lesions locally; that is, in their immediate presence; not at a distance by diffusion of the toxins. At least, the kidneys never show any effect which could be ascribed to the elimination of a tuberculous toxin through them. In these experimental animals we do not find evidence of tuberculosis in other parts of the body. Postmortem examination shows tuberculosis of the marrow, but no tuberculous lesions in the lungs, lymph nodes, etc., so that it is difficult to ascribe the local vascular changes to a general toxemia. Arterial degeneration is not found as a frequent condition in tuberculosis. In fact, in advanced cases of tuberculosis, instead of finding arteriosclerosis, there is an atrophy of the vessels, as there is an atrophy of the other tissues of the body. However, there are changes in the vessels in the immediate vicinity of the tuberculous process, but these are not due to a general toxemia, but rather to the local chronic inflammation. In tuberculosis we do not find necrosis as an early factor. One may see endothelial leukocytes filled with tubercle bacilli and yet one may not find any degenerative changes in these cells. I have had the privilege of examining Dr. Ely's specimens. In some of them characteristic tubercles are seen, but with slight or no evidence of changes in the blood vessels; and this absence of an obliterating endarteritis is probably due to the fact that these animals were killed at short periods after inoculation. It seems highly probable that the bone marrow of the experimental animals may be primarily infected by tubercle bacilli.

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[2] Friedrich: Deutsch. Ztschr. f. Chir., 1899, liii, 532.

REVIEW OF RECENT STUDIES IN TRICHINIASIS

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Trichiniasis is not a mere medical curiosity; it is a common and important disease and one all too seldom recognized. A disease having an average mortality about half that of typhoid fever, and in some epidemics a mortality rising to 16 or even 30 per cent., as in the Hedersleben epidemic[1] in 1865, is serious. Proof that it is a common disease may be had from studies such as that of Williams,[2] who in 105 unselected necropsies in the state of New York found trichinella embryos in 5.4 per cent. In other civilized communities, this parasite is found in from 0.5 to 2 per cent. of necropsy subjects. About 6 per cent. of American swine, and a larger percentage of American rats are infected.

Recent years have added much to our knowledge of trichiniasis. The life history of the parasite and its methods of migration and distribution in the body of its host have been quite conclusively worked out. The symptoms have been adequately described and new methods of diagnosis brought into use. It remains to study more extensively certain symptoms of the disease, with a view to a more complete understanding of some as yet unsolved problems.

One of these symptoms is fever. It is interesting that the *Trichinella spiralis* is the only metazoic parasite that, infesting man, causes fever with constancy. Filariasis, hydatid disease, bilharziasis may give rise to fever, but exceptionally. In trichiniasis alone, of the parasitic disease of this class, is fever almost always present. Such fever may be due to secondary bacterial infection, to the toxic products elaborated by the trichinella, or may be a true protein fever from the parenteral introduction of alien material, either in the form of the embryo of the trichinella itself, or a devitalized body protein formed as a result of the activities of the parasite.

Evidence in favor of the first hypothesis is contradictory. The female trichinella within a week of infection burrows beneath the submucosa of the duodenum, often destroying two or three villi, and deposits embryos in the lymph spaces of the submucosa, thus giving opportunity for micro-organisms to gain entrance to the lymph channels and blood stream (Frothingham[3]). In this way a bacteremia may arise. Bacteremia in trichiniasis in man is rare. Staübli[4] mentions a severe case in which there was very high fever, and in which streptococci in pure culture were found in the blood and urine. In the second case, deep intramuscular abscesses containing numberless staphylococci were found. Friedreich[5] mentions the frequency of furunculosis as a complication of trichiniasis. In one of his cases the embryo was found in the midst of one of the furuncles along with staphylococci.

That meat containing bacteria and trichinella can give rise to a double infection seems fairly well established by a report of Chiari and Zorkendorfer[6] of an epidemic in which sixty-eight persons were made ill by eating sausage. Twenty-one of these patients showed severe symptoms with notable enlargement of the spleen. Four of the patients died and came to necropsy. The muscles of all these showed trichinella embryos, and the spleen and blood, anthrax bacilli. The *mettwurst* causing this epidemic was made from pork and a variety of other meat some of which was, in this instance, thought to be from an animal infected with anthrax. Staübli[4] examined the peritoneal exudate and blood from the hearts of two guinea-pigs dying from trichiniasis, and in one found a diplococcus, in the second, streptococcus in both regions. Romanovitch[7] could find no bacteria in infected tissue on section. However, on examination of the blood of thirty-six trichinous rats, twenty-six showed bacteremia. Of fourteen such guinea-pigs eleven showed bacteremia. The bacteria were of various kinds, streptococci, staphylococci, etc. Gruber[8] made cultures from the heart blood of fifteen guinea-pigs infected with the trichinella; only three were positive. These were in such small numbers that Gruber thought them probably contamination.

In the search for clinical data on the question of bacteremia in trichiniasis I have reviewed the cases in the Roosevelt and St. Luke's Hospitals of New York observed during the past five years, and have found that of ten cases with blood culture in none were bacteria demonstrated.

The weight of evidence is against the bacterial origin of the fever of trichiniasis. Additional argument is the conclusion of McNeal and Chace,[9] who found that in the normal duodenum bacteria are few.

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[1] Cited by Staübli: Trichinosis, Wiesbaden, 1909, p. 16.

[2] Williams: The Frequency of Trichiniasis in the United States, Jour. Med. Research, 1901, vi, 64.

[3] Frothingham, C. Jr.: A Contribution to the Knowledge of the Lesions Caused by Trichinella Spiralis in Man, Jour. Med. Research, 1906, x, 483; The Intestinal Lesions Caused by Trichinella Spiralis in Rats, Arch. Int. Med., January, 1909, p. 505.

[4] Staübli: Trichinosis, Wiesbaden, 1909, p. 141.

[5] Freidreich: Beobachtungen über Trichinosis, Deutsch. Arch. f. klin. Med., ix, 459.

[6] Chiari and Zorkendorfer: Ueber die Aetiologie einer Massenerkrankung in Teplitz Schönau nach dem Genusses von Fleisch und Wurstwaren (Trichinose und Milzbrand), Ztschr. f. Heilk., 1894, xv, 435.

[7] Romanovitch: Recherches sur la trichinose, Ann. de l'Inst. Pasteur, 1912, xxvi, 351.

[8] Gruber: Neue Studien über die Pathologie der Trichinose, München. med. Wchnschr., 1914, lxi, 645.

[9] McNeal, Ward J., and Chace, Arthur F.: A Contribution to the Bacteriology of the Duodenum, Arch. Int. Med., August, 1913, p. 178.

It seems more probable that the fever of trichiniasis is a true protein fever in the sense of Vaughn;[10] that it is due to the parenteral introduction of alien protein material. It has been estimated[11] that in a severe case of trichiniasis as many as 50,000,000 embryos escape into the circulation during the acute stages of the disease. Virchow[12] and later, Leuckart,[13] found numbers of embryos in the serous cavities. It is believed many perish here and doubtless in other tissue spaces. This process insures the absorption of no small amount of foreign protein. The matter, however, does not rest here. The question is carried much further by the work of Flury,[14] and of Flury and Groll.[15]

These observers, in a study of the chemistry and toxicology of the disease, brought out several important points. They found trichiniasis in animals accompanied by definite changes in muscle metabolism. While the embryos became rich in glycogen during their intramuscular development, the invaded muscles became relatively or absolutely glycogen-free. Liver glycogen was also reduced. The muscles contained increased amounts of water, also of creatin and purins in general, ammonia, lactic acid and volatile acids, while the total acidity was heightened. Corresponding with these alterations in the chemistry of muscle tissue the urine during the first five to seven days of the infection gave indication of a retention of the nitrogenous products of muscle catabolism which was followed after five or seven days by an abnormally high excretion of creatin, purin bases, lactic acid, ammonia, indican, and fatty acids. The strongly positive diazo reaction is doubtless related to this factor. Flury found also a poison in the invaded muscle resembling curare in its effect on the neuromuscular mechanism of the frog, an observation of clinical interest as partly explaining the extreme muscular weakness of the disease. This poison belongs to the caffein group of purin bases, and bodies of allied chemical and pharmocologic properties. The blood showed hydremia, a lower specific gravity of the serum, increased fragility of the erythrocytes, high content of nucleoprotein and strong albumose reaction.

Flury and Groll attribute the symptoms of the disease to poisons that are both exogenous—developed from the trichinellae themselves, and endogenous—formed by the destruction of muscle tissue. These consist chiefly of purin bases, adenin, guanin, hypoxanthin, xanthin, and other split products of muscle protein which act on the muscles themselves, on the nervous system and the blood vessels. The extravasations of blood in the lungs, connective tissue, meninges and other tissues are, in Flury's opinion, brought about by capillary poisons elaborated in the trichinous muscle probably by the trichinellae themselves. There is, therefore, both a quantitative and qualitative alteration in muscle catabolism with production of protein split products apparently peculiarly toxic.

Devitalization of such large amounts of muscle tissue by the activity of the trichinella gives rise to proteins which have an action similar to alien proteins, since *körpereigend* protein devitalized becomes physiologically *körperfremd*.

It seems quite clear that with the invasion of the blood stream and tissue spaces by millions of embryos and with the breaking down of large amounts of muscle tissue we have in effect, the constant inoculation of the patient with alien protein material, a condition which, as is well known, gives rise to fever.

The most striking and constant symptom of trichiniasis is the increase in eosinophils in the blood. This is not a relative increase alone; it is also absolute. A high total leukocyte count is quite as constant as the high eosinophil percentage. This eosinophilia arises during the migration of the embryos, from five to seven days after infection, and may persist years after the symptoms have subsided, or may disappear within a few weeks. As an instance of the persistence of this feature, I mention a case under my own observation. The patient, a woman of 24, ate *lachschinken*, Christmas day, 1911. She became ill Jan. 1, 1912, and was confined in bed for seven weeks with very severe trichiniasis, complicated by femoral phlebitis. In December, 1914, almost three years after the onset of the illness, the leukocytes were 9,000, the eosinophils 9 per cent.

From complete obscurity the question of the cause of this cellular reaction has become at least partially clear. That the eosinophilia of the helminthides is a reaction to the invasion of the body by alien protein is a fact apparently well established by the work of a number of observers. Ahl and Schittenhelm,[16] Schittenhelm, Weichardt and Grisshammer,[17] Schlecht,[18] Schlecht and Schwenker[19] have by a variety of experiments shown conclusively that the parenteral introduction of alien protein and of many of its split products into guinea-pigs, dogs and rabbits is followed by notable eosinophilia. Herrick,[20] working with an extract of the *Ascaris lumbricoides*, found a similar increase of cells resulted from injection of such extract at intervals of five days or more, but that repeated injections at shorter intervals did not bring about such a result. It was found, further, that the substance in the extract of the ascaris giving rise to the cellular reaction was a protein. By this observation the eosinophilia of ascaris infestation and therefore presumably of other helminthides may be linked with the work of the German observers cited above. The mechanism of this reaction is obscure. The interpretation most in accord with experimental and clinical facts seems to be that proteins of *körperfremd* nature or their split products bring about the formation of proteolytic enzymes which have a chemotactic influence on the eosinophils as shown by local or general eosinophilia. This theory has been expressed by a number of workers—most recently by Schwartz[21] whose monograph with its 2,758 references is a remarkably complete catalogue of facts about the eosinophils.

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[10] Vaughn: Protein Split Products, Philadelphia, Lea and Febiger, 1913, p. 373.

[11] Heubner: Beobachtungen über Trichinosis, Jahrb., Jena, 1911, xxv, 569.

[12] Virchow: Ueber Trichina spiralis, Virchows Arch. f. path. Anat., 1860, xviii, 535.

[13] Leuckart: Die menschlichen Parasiten, Leipzig, 1876.

[14] Flury: Trichinosis, Deutsch. med. Wchnschr., 1913, xxxix, 1388. Beiträge zur Chemie und Toxikologie der Trichinen, Arch. f. exper. Path. u. Pharmakol., 1913, lxxiii, 164.

[15] Flury and Groll: Stoffwechseluntersuchungen an trichinosen Tieren, Arch. f. exper. Path. u. Pharmakol., 1913, lxxxiii, 214.

[16] Ahl and Schittenhelm: Ueber experimentelle Eosinophilie nach parenteraler Zufuhr verschiedener Eiweisstoffe, Ztschr. f. d. ges. exper. Med., 1913, i, 3.

[17] Schittenhelm, Weichardt and Grisshammer: Eiweissumsatz und Ueberemfindlichkeit, Ztschr. f. exper. Path. u. Therap., 1912, x, 412.

[18] Schlecht: Ueber experimentelle Eosinophilie nach parenteraler Zufuhr artfremden Eiweisses und über Beziehungen der Eosinophilie zur Anaphylaxie, Arch. f. exp. Path., 1912, lxvii, 137.

[19] Schlecht and Schwenker: Ueber die Beziehungen der Eosinophilie zur Anaphylaxie, Deutsch. Arch. f. klin. Med., 1912, cviii, 405.

[20] Herrick, W. W.: Experimental Eosinophilia with an Extract of an Animal Parasite, Arch. Int. Med., February, 1913, p. 165.

[21] Schwartz: Die Lehre von der allgemeinen und artlichen Eosinophile, Ergebn. d. allgemein. Path., 1914, xvii, 136.

A further point of interest in the development of knowledge of this disease is the observation of Van Cott and Lintz,[22] who for the first time described the finding of trichinella embryos in the spinal fluid. The embryos, obtained by ordinary lumbar puncture, were present in large numbers, and retained motility after five days in the ice chest. Thus far this finding has not been confirmed by further similar reports. In performing such puncture the greatest caution should be taken against introduction of trichinella embryos into the needle from tissue surrounding the spinal canal, or from punctured blood vessels. If the embryo can penetrate the sarcolemma of the primitive muscle fiber, it is not at all improbable that it can traverse the two layers of endothelium separating the blood stream of the choroid plexus from the cerebrospinal spaces.

For the future study of trichiniasis the points of greatest interest beyond the seemingly hopeless problem of therapy are the relation of bacteremia and the question of the presence of embryos in the spinal fluid. Blood cultures and lumbar puncture with examination for embryos are suggested as routine procedures in the clinical study of this disease.

49 East Fifty-Third Street.

REPORT OF CASES POINTING TO PURULENT INFECTION AS A CAUSATIVE FACTOR IN MUCOUS COLITIS

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In view of the multiplicity of causes to which mucous colitis is ascribed, and the lack of proof adduced in substantiating any of them, it may be questioned whether the chaotic mass of literature should be added to. Since, however, it is a condition so intimately associated with the abnormal functioning of the autonomic nervous system, of which so little is known, and which from its very nature must be investigated largely from a clinical standpoint, I have thought it worth while to report the following cases, which seem to have a direct bearing:

REPORT OF CASES

Case 1.—Mrs. A. S. C., aged 50, came under observation complaining of general debility, tenderness over the abdomen, bloating, palpitation, persistent constipation, with the passage of scybala and characteristic mucus, all together presenting a definite picture of mucous colitis. In addition she suffered from a pain of a neuralgic character through the distribution of the cervical nerves, and in the left frontal region. Her history was unimportant, except a nervous breakdown at the age of 30, and severe neuralgic pains of the face and neck four years prior to being seen, which subsided until November, 1914, when they recurred, together with the foregoing symptoms, and had continued in varying degrees since. Nothing could be elicited pointing to inflammation of any of the sinuses other than the pain complained of, she having no recollection of any discharge of pus or blood from the nose. Having in mind a paper by Dr. Starr,[1] in which he details his observations to the effect that many cases of neuralgia, neurasthenia and allied nervous diseases are due to the absorption of poisons from the intestinal tract, the head pains were at first supposed to result from this source, and she was temporarily put on a treatment of laxatives and intestinal antiseptics, with no beneficial results. In a search for a more direct cause of the neuritis, following the negative report of a competent dentist as to the source of infection existing among her teeth, she was referred to an oculist, who reported the occlusion of the left frontal sinus, as shown by transillumination. He removed the left middle turbinate and released a quantity of foul-smelling pus, which not only resulted in the almost immediate improvement of the neuritis, which would of course have been expected, but also of the abdominal symptoms, as evidenced not only by the prompt diminution of the palpitation, bloating and mucus, but also the constipation. She reported six weeks later that while there was still some discharge from the head, the bowel symptoms were practically cured, there was no mucus, and what was more surprising, that she had not found it necessary to take medicines for constipation for the past month.

Case 2.—J. L. B., aged 40, foreman in a bridge works, requested treatment in April, 1915, on account of digestive disturbances and headaches. He stated that two years previously, he had nasal polypi removed, and his health had since been good until October, 1914, when he first noticed mucus in his bowel movements, and about the same time began to suffer from bloating of the abdomen, and headaches. These symptoms gradually grew worse; he became constipated, and unless he took laxatives regularly, his feces, which had previously been normal, were dry and lumpy, and always contained mucus. His appetite was poor, and his food disagreed; he became nervous and irritable, and was unable to take an interest in his work. He developed soreness and pain over his abdomen, and on account of bloating was compelled, much of the time, to wear his clothes unfastened. These symptoms continued in varying degrees over a period of about three months, when the severe headaches, together with the findings as previously detailed, focused attention on his sinuses, and on referring him to a nose and throat man, it was found that there was a necrotic condition at the point from which the polypi had been removed, and further search disclosed inflammation of the ethmoid. This was drained, and while the operation was complicated by a severe secondary hemorrhage, and healing was slow, without further medication all of the symptoms have gradually cleared up. His digestive and nervous symptoms have disappeared, and he has not for some time required medicine for the relief of constipation. He again takes a lively interest in his work and plans.

Case 3.—A. C. T., aged 33, traveling salesman, was first seen Jan. 13, 1914. He gave a history of fair general health, previous to four months before, when he began to suffer with vague pains throughout the abdomen, sleeplessness, a tendency to looseness of the bowels, alternating with constipation, and the passing of tenacious mucus, which was worse on dieting, soreness in the right iliac region, and over the splenic and hepatic flexures of the colon. He had drifted from one physician to another, and a difference of opinion had existed among those consulted as to the advisability of an operation for appendicitis. No organic disease could be made out, but it was noted that his teeth had been badly neglected, and that some of them showed abscesses. As there was but little benefit from a month's treatment of the colitis, he was prevailed on to have the offending teeth extracted, which he had done in March. He reported at the end of the second month that all of his symptoms were markedly improved, in spite of the fact that he had for a time experienced difficulty in masticating his food on account of soreness of the gums. Later inquiry elicited the fact that his bowel movements were regular, without medicine, no bloating, discomfort, or mucus, his sleep good, and his general health normal.

Craig[2] reports a case of arrhythmia associated with angina, cured by draining abscesses of the teeth, and also in the same article one of dizziness, cardiac symptoms, mental depression, and incidentally "slight evidence of catarrhal colitis," all of which cleared up promptly on the removal of a bridge and drainage of abscesses.

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[22] Van Cott, J. M., and Lintz, William: Trichinosis, The Journal A. M. A., Feb. 28, 1914, p. 680.

[1] Starr: The Toxic Origin of Neurasthenia and Melancholia, Med. Rec., New York, May 11, 1910.

[2] Craig, C. Burns: Peridental Infection as a Causative Factor in Nervous Diseases, The Journal A. M. A., Dec. 5, 1914, p. 2027.

Since the causative relation of an infection to the syndrome of mucous colitis has suggested itself to me, I have been interested in reviewing my notes of cases treated previously to find that among them were two of fistula in ano, one of a purulent infection of the fallopian tubes, and one of a severe pyorrhea. Surgical and dental treatment was suggested in each of these, but not insisted on, as would have been done had it then occurred to me that the foci might be of etiologic importance. Each passed from observation but slightly improved. These cases, of course, prove nothing, but I believe are worthy of mention.

Rather than speculate as to what products may be absorbed from a purulent focus, or how they may throw the autonomic nervous system out of balance, one may with propriety call attention to some similar well-known, but little understood, conditions, notably the urticaria, with its complex of symptoms, observed in susceptible individuals on eating shellfish; the symptoms of anaphylaxis resulting in others from the ingestion of the albumin of an egg; the systemic effect of the presence of certain pollens in the hay-fever subject, and finally the effect of the subcutaneous introduction of even a minute quantity of a protein into the circulation.

Bearing in mind the intimate relation and influence of the secretions of the adrenal, thyroid, and pituitary glands on the functioning of the system under consideration, the findings of Rosenow[3] tending to show that goiter, particularly exophthalmic, with its kindred symptoms, is due to a direct infection, are worthy of note in this connection; but after all a sensitization resulting from the more or less constant absorption of toxins or other products would seem more probable.

215 South Jefferson Street.

THE EFFECT OF TYPHOID VACCINATION ON THE WIDAL REACTION

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In 1896 Widal and Grünbaum, each working independently of the other, applied the principle of agglutination, as previously recognized by Gruber and Berdet, to the diagnosis of typhoid fever. Since then the Widal reaction, when present, has been considered by most clinicians as the last word in the diagnosis of this disease.

In 1908, however, when Major Frederick F. Russell first began using antityphoid vaccine in the United States Army, and the practitioners over this country gradually followed his lead, a new phase in the diagnosis of typhoid occurred. It was soon recognized by observers that a positive Widal reaction always followed a prophylactic dose of typhoid vaccine. The vaccine, however, had not been in use a sufficient time to ascertain the length of time this reaction persisted. While we now believe the presence of a positive Widal reaction is not necessary for immunity, but that the patient may still be immune after the reaction has ceased to exist, it is not our purpose to discuss this phase of the question here. However, the presence of the reaction is of the greatest importance if typhoid fever is suspected.

Since 1910, at the Springfield State Hospital, there have been 2,766 prophylactic doses of typhoid vaccine given and at intervals specimens of blood have been taken to ascertain the presence or absence of the Widal reaction. During the first eighteen months after the typhoid vaccination was adopted at this hospital each patient received three doses of the vaccine at intervals of one week. The first dose consisted of 125 million killed bacteria, in salt solution. The second dose consisted of 250 million and the third dose consisted of 500 million killed bacteria. At the end of eighteen months we adopted the dosage which we now use; namely, 250 million, 500 million and one billion killed bacteria, given at intervals of one week. The patients, however, who received the original smaller doses were not reinoculated, but their blood was examined with the rest. All of the specimens of forty-eight and fifty months belong to patients who received this smaller dose of the vaccine.

In making the Widal test we use an old strain of bacteria which are known to be easily agglutinable. These are transferred from the agar slants to bouillon and are used when from eighteen to twenty-four hours old. The blood of the patient is collected in capillary beads, allowed to stand for a few hours until the serum separates. This serum is then diluted 1:25 and an equal portion of it and the bouillon culture are mixed, thus making a dilution of 1:50. A hanging drop is then made in the usual manner and allowed to stand one hour, when it is examined and the result read. A control in which salt solution instead of serum is used is similarly prepared to guard against artificial clumping. Only the blood of patients who could give a clear history of never having had typhoid fever was examined. Blood was taken from patients at the end of one month, six months, twelve months, twenty-four months, thirty-six months and forty-eight months, respectively, with the following results:

One month: Ten specimens of blood all gave positive Widal reactions.

Six months: Ten specimens of blood all gave positive Widal reactions.

Twelve months: Ten specimens of blood all gave positive Widal reactions.

Twenty-four months: Ten specimens of blood gave seven positive and three negative Widal reactions.

Thirty-six months: Ten specimens of blood gave six positive and four negative Widal reactions.

Forty-eight months: Ten specimens of blood gave three positive and seven negative Widal reactions.

One patient inoculated fifty months ago still had a positive Widal reaction.

From the foregoing we would emphasize the fact, as already stated by Hirschbruch,[1] that a positive Widal reaction in any person who has ever been inoculated with the antityphoid vaccine is of no value in diagnosing typhoid fever. The only reliable way of ascertaining the cause of continued fever when typhoid is suspected is by the blood culture and a total and differential leukocyte count.

Springfield State Hospital.

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[3] Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, The Journal A. M. A., Sept. 12, 1914, p. 906.

[1] Hirschbruch, A.: Agglutination After Vaccination Against Typhoid, Deutsch. med. Wchnschr., April 29, 1915.

RADIUM IN THE TREATMENT OF CARCINOMAS OF THE CERVIX UTERI AND VAGINA*

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The scope of this paper has been intentionally limited to a consideration of the value of radium in treating the malignant epithelial new growths of the vagina and cervix uteri. Equally interesting technical problems and clinical phenomena are met when radium is used in treating other kinds of malignant tumors, for example, the sarcomas and carcinomas, and tumors in other organs, as the bladder, breast, tongue, etc. The technic, the indications for treatment and results obtained vary with the type of tumor and its location so greatly that each demands separate consideration. It is especially difficult to have to exclude the adenocarcinoma of the fundus uteri, as it is quite radiosensitive and as we have of it the most excellent material, both clinical and anatomic. The problems connected with its surgical as well as radium treatment, however, differ widely from those of the cervical—uterine and vaginal — cancers.

Absolute valuation of a therapeutic agent is obtainable only after all methods of using it have been tried out on carefully selected and classified cases over a period of years. Our knowledge of the curative action of radium on cancers of the uterine cervix and vagina is as yet in its infancy; nevertheless, its ultimate possibilities, viewed in the light of present experience, seem very great. That it does greatly increase the percentage of the curable cases of these cancers and correspondingly diminishes the percentage of the incurable is already evident and demonstrable.

So far as is known, untreated cancers of the cervix uteri and vagina do not heal spontaneously and do inevitably lead to painful death after a period of suffering varying from a few months to several years.

The continuous and painstaking work and investigations of many surgeons and pathologists through a period of more than two decades have firmly established the accepted surgical technics with their proved five year cures. During this time there has been accumulated an immense store of information regarding the occurrence, the etiologic importance of trauma, the histopathology, the avenues of extension, the rate of growth and the complications of these malignant, epithelial new growths.

The Wertheim radical hysterectomy, in our opinion, yields a higher percentage of permanent cure in cancer of the uterine cervix than does any other operative procedure. It affords, however, much less help in the treatment of primary cancer of the vagina.

Nothing is more misleading than a gross statistical statement of so many patients operated on, such a primary mortality and so many permanent cures. The operator who takes only the early and moderately advanced cases has a lower primary mortality and a higher permanent cure rate than does the one who treats many of the border-line operable type. Where a professional and public educational campaign against the disease has been carried out, as in Vienna, the proportion of easily operable cases is much larger than where such advanced methods have not been followed. Great need exists for reports on carefully classified groups of cases, and not only the extent of the growth but also its histologic type should be taken into account in the group separations.

A statistical report by Howard A. Kelly and J. Craig Neel of the cases of uterine cervix cancer seen at the Johns Hopkins Hospital up to August, 1913, shows 57 per cent. operable, 11 per cent. primary mortality and 25 per cent. permanent cure. It is of interest that only one case of adenocarcinoma remained free from recurrence for two years after the operation. Wertheim[1] states that 50 per cent. of his cases are operable, and that 50 per cent. of those patients operated on remain well. Krönig[2] states that not more than 20 per cent. of the cervix cancers are permanently cured by operation and less than 5 per cent. of the primary vaginal cancers.

The present report is based on a series of 213 cases of cancer of the uterine cervix and vagina treated with radium at the Howard A. Kelly Hospital, between Jan. 1, 1909, and Jan. 1, 1915. Although one of the cures dates from 1909, it was not until December, 1912, that we secured sufficient radium and developed sufficient enthusiasm to employ it systematically, and indeed only in the last eighteen months have the patients in the operable class been invariably radiated as well as operated on. Of the 213 cases, fourteen were operable and 199 inoperable or inoperable recurrent cancers. We have refused treatment to no inoperable case that has come to the hospital, although we have discouraged the coming of patients with evident general carcinomatosis. Before passing to a detailed analysis of these cases and the results obtained by treatment, it seems necessary to discuss very briefly some questions of technic, of histologic change (in radiated tissue) and of theory as to the mechanism of the action of the rays on tissues both normal and pathologic.

It would be most profitable here to digress into a most fascinating field of human knowledge, but time does not permit even a bare outlining of the physical properties of radium. Suffice it to say that radium is obtainable in stable form as a bromid, chlorid or sulphate, and that by appropriate means radium emanation, a gas, can be separated from the radium salts.

In order to carry out such a radium radiation, as the cases under consideration require, it is necessary to have applicators which hold either dry radium salts or the emanation of radium. The emanation has a great advantage in that it is possible to vary the size, shape and strength of the applicator at will and for each case; it requires, however, considerable skill in glass blowing and in mercury vacuum-pump manipulation.

Figure 1 shows a few applicators; the millimeter rule permits an easy estimation of size. The small tube between the needles is a glass capillary in which any amount of emanation between a fraction of a millicurie and a curie (equal to a gram of radium) can be placed. This can be inclosed in a metal container of its own shape and length, or it may be placed in the outer end of one of the record syringe hypodermic needles, shown on either side of it. Immediately to the right of the needle is an applicator containing 100 mg. of pure radium chlorid in a glass tube encased in a thin platinum envelope 0.4 mm. thick, and all covered by a small rubber cot about 3 mm. thick. Still further to the right is shown the platinum envelope necessary to hold 100 mg. of pure radium chlorid. The last figure to the right shows a small flat applicator. These can readily be made an inch or two in diameter, and will hold immense or small amounts of emanation as desired. Through the glass container are emitted from the radium two kinds of rays: the beta and the gamma.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Wertheim: Strahlentherap., iii, 537.

[2] Krönig: Strahlentherap., iii, 28.

The beta ray is particulate matter, a negatively charged ion, deflectable by an electromagnet, entirely absorbed by 3 mm. of lead, or 2 cm. of tissue. Occurring in ten times the quantity of the gamma rays, it produces much more marked destructive biologic effects.

The gamma ray is a vibration of ether of extremely short wave length. It is comparable to ordinary light and the Roentgen ray. It is extremely penetrating, passing through inches of lead or feet of tissue.

When tested by the heavy metals, such as lead, platinum, etc., both the beta and the gamma rays vary as to penetration. There are soft, medium and hard rays of each class; however, according to Keetman and Mayer, the absorption of these rays in tissue is as if they were uniform, that is, for a given thickness of tissue there is an equal percentage of absorption of the rays going through it. The work of Keetman and Mayer carried out with mesothorium is being repeated with radium in our physical laboratory, but is not yet finished. According to them, 8 per cent. of the beta rays are absorbed by each one-tenth millimeter of tissue and 5 per cent. of the gamma rays by each centimeter of tissue. Beta and gamma rays can be used together or the gamma ray can be used alone by placing a 2 cm. lead screen or a 1 mm. platinum screen between the radium and the part treated.

Thickness of Tissue Traversed, cm.	Absorption of Tissue, per Cent.	Radiation Transmitted, per Cent.	Dispersion Correction	Intensity of Radiation per sq. mm.	Amount of Radium Unit to Give One mg.
0	0	100	0	1	2,500
1	5	95	0.695	0.66	3.788
2	9.75	90.25	0.51	0.464	5,410
3	14.3	85.7	0.39	0.335	7,465
4	18.6	81.4	0.31	0.251	9,950
5	22.17	77.83	0.25	0.194	12,880
6	26.06	73.94	0.207	0.153	16.310
7	29.76	70.24	0.174	0.122	20.480
8	33.3	66.7	0.147	0.098	25.500
9	36.7	63.3	0.128	0.081	30.870
10	40	60	0.11	0.066	37,500

In addition to absorption in tissue, another most important factor in determining the intensity of radiation, on any surface, from a uniform source, is the distance from the source; for the intensity as in all spherical dispersion varies inversely with the square of the distance. If, for example, we place 1 mg. of radium 1 mm. distant from a 1 mm. square surface and then extend the distance to an inch or 25 mm., the intensity at 1 mm. distance is 625 times that at the distance of 1 inch, as can be readily calculated.

Taking the 1 mg. at 1 mm. in one second on 1 square mm. of surface, as the unit of dosage, and taking in the factors of spherical dispersion and tissue absorption, the table inserted above shows the effects at various depths and the quantity of radium which is necessary to produce a unit dose in one second when the applicator is placed 5 cm. away from the surface.

A factor not considered in the table but of the highest importance, is that, within certain limits, increasing the duration of the application correspondingly diminishes the amount of radium required to produce the unit energy: for example, a unit dose at a depth of 5 cm. can be secured with 1 gm. radium in 12.88 seconds, or with 200 mg. of radium in a little more than a minute.

Figure 2 shows graphically the changes in intensity of gamma radiation at different depths in the tissue.

It is evident that when beta radiation is needed in the depths, it can be secured by placing the emanation-containing needles at equal distances, never greater than 1 cm. from each other, throughout the entire area to be radiated. When gamma radiation alone is used, it should be borne in mind that the greater the distance the radium is placed from the surface, the greater the relative penetration secured in the depths. The ideal radiation is a homogeneous and equal one throughout the entire affected volume.

Consideration of the above facts makes it clear why to do extensive work adequate amounts of radium are necessary, and why the statements of so many milligram hours with such and such filters mean little or nothing unless the distance worked at is clearly stated. It is also, we think, evident that each case must be individualized and appropriate radiation given. In cancers along the vaginal wall, especially on the rectal side, it is of advantage to have flat applicators and to get within a few millimeters of the vaginal surface, as in this way the infected vagina gets a maximum and the rectum a minimum radiation. In radiating the regional lymphatic glands or upper parametrium, a number of portals should be used from the abdomen, back, vagina and perineum, at distances varying from 2 to 5 inches from the surface. Figures 3 and 4 show schematically the common locations and distances of the cervical and vaginal cancers from the body surface. We propose in a separate communication to deal exhaustively with the technic of radiation and will not go into further detail here.

Excellent descriptions of the histopathologic changes found in the cancerous uterine cervix after intense radium radiation can be found in the reports of Hansemann[3] and Haendly.[4]

Beginning a week after radiation there is swelling of the cell protoplasm, hyperchromatosis and pyknosis of the nuclei. After five or six weeks, the cancer cells are entirely gone, the connective tissue and blood vessels show hyaline changes. There may be a marked infiltration with polymorphonuclear leukocytes, and often giant cells are present. At a later stage this necrotic and inflammatory tissue is replaced by ordinary connective tissue. When radium is placed directly within the cervix and left sufficiently long, changes of this type invariably occur.

We have eight uteri removed a sufficient time after radiation to study the changes in the tissues. Vestiges of cancer have been demonstrated in only three of these. All will be serially sectioned and reported on in detail in a later communication. All were from patients with cancers originally inoperable.

It should be borne in mind that the intense inflammatory changes described above follow overradiation and are due to imperfect technic. The action of the rays is not in a true sense specific; normal tissues as well as pathologic are injured and can be easily destroyed. There are wide variations in the resistance to radiation in different normal tissues. The vaginal wall and cervix are very resistant, enormously more so than skin. Bumm of Berlin gave currency to a widely accepted dictum that the limit of the gamma-ray efficiency (in tissue) was 4 cm. It is probably true that it is not possible to place radium directly in the cervix and radiate sufficiently to destroy the cancer cells beyond 4 cm. without causing severe local destruction of normal tissues; but it is possible to radiate from almost any distance by proper disposal of the applicators. In one case we cleared up an extensive vaginal cancer by radiation through the vulva, the radium being placed 10 cm. from the surface of the vulva. In another patient who did not recover, but died of general cancer, we saw large metastatic deposits disappear from the iliac lymphatic glands—the patient was thin and the masses easily outlined.

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[3] Hansemann: Berl. klin. Wchnschr., 1914, No. 23, p. 1064.
[4] Haendly: Berl. klin. Wchnschr., 1914, No. 2, p. 86.

Our view of the action of radium is that, to markedly varying degrees, it injures all tissues, and that the injury is some kind of intracellular chemical change. It seems to us improbable, however, that the disappearance of cancer cells without any demonstrable effect on normal cells can be due solely to a difference in resistance of the cells to radiation. The common observation that in two cases with the same type of growth, subjected to the same radiation, different results are obtained; that in one the cancer disappears promptly and in the other is not affected at all, suggests the importance of resistance in the patient. It also opens up a wide field for speculation and experimental investigation as to what this resistance may be, where it is located, how it may be artificially produced, etc.

Radiation carried to the extent of severe injury of normal tissue may defeat its own ends. We have observed in one specimen of uterine cancer and several specimens from other parts of the body a condition which needs interpretation. In the cervix cancer the facts are as follows: The patient came in with solidly fixed parametria; intense intracervical radiation was given with the result that the uterus became freely movable; after six weeks hysterectomy was performed. Microscopic study showed from within outward, (1) a zone of necrosis; (2) a zone of greatly modified connective tissue, blood vessels and altered cancer cells; (3) a zone of normal connective tissue and no cancer cells.

In every patient treated, a radiation up to but not beyond this toleration of the normal tissues should be given so as to take in all the infected area, including the parametria and regional lymphatic territory. This radiation should be made as homogeneous as possible, bearing in mind the underlying physical principles already mentioned.

The most easily injured normal tissue in connection with cervical and vaginal cancer radiation is the rectum. In our earlier cases, when we were less familiar with our agent and totally unacquainted with the tissue reactions, this complication was not uncommon and in some cases led to such serious results as ulceration, fistula formation and even death from infection. Such a complication manifests itself first in from ten days to two weeks after the application, by diarrhea and tenesmus. In the mild types this may disappear in two weeks and no further trouble develop. In the severer grades the proctitis lasts two months or more, then disappears to recur about the beginning of the sixth or seventh month, with ulceration in the anterior rectal wall. This condition is very painful and takes from three to five months to heal. In the worst cases actual fistula formation takes place before healing. *We are happy to state that this complication can be avoided in every case.* We have not seen it for months.

The first radiation should be given in a single dose, following which a pause of at least five or six weeks is necessary before a second treatment is given. During this time the patient should be examined once a week. Some carcinomas, especially the basal celled of the vaginal wall, begin diminishing in a few days and disappear in as short a period as two weeks after the treatment. Most of them begin the decrease at the end of two weeks and continue diminishing for five or six weeks. If at the end of six weeks the growth has disappeared, another four weeks should pass before a second treatment is given. After the second treatment practically all cases in which there will be recovery will show complete disappearance of the growth. In view of the fact that we have seen a number of recurrences developing several months after apparent complete disappearance of the growth, we believe that the radiation should be repeated every few months for a year or two. Some of our permanent successes have been, however, secured from a single radiation.

As a rule, the general symptoms which follow a radiation are mild nausea for twenty-four hours and a sense of weakness for four or five days. Sometimes there are no disagreeable symptoms at all, and in no case has there been any alarming developments. The patients are rarely kept in the hospital longer than the day of treatment.

Every patient before treatment is most thoroughly investigated both from the local and general standpoints, and invariably tissue is secured for microscopic study. The application of the radium sometimes made under nitrous oxid is more frequently made without anesthesia.

Up to the present time we have not found means of determining prior to radiation what its effect will be. The general strength of the patient is not of prime importance. We have seen local disappearances in patients in the last stages of general carcinomatosis. Nor is the extent of local involvement of importance; large growths may disappear and small ones fail to do so. The histologic type is likewise relatively unimportant in this connection; in the cured list are twenty-nine squamous-celled epitheliomas, seventeen basal-celled epitheliomas and seven adenocarcinomas. In passing, we desire to state that squamous-celled epitheliomas may long remain local, and that some basal-celled epitheliomas rapidly metastasize. Among the recurrent cases, it has been noted that those which develop late, two years or more after operation, almost always do well; the cause most likely is connected with immunity factors in the patient.

CLASSIFICATION AND DEFINITION

We have divided our cases into three groups: 1, operable; 2, inoperable; 3, recurrent inoperable. The results obtained have also been placed in three classes: *1a,* clinically cured; *2a,* improved; *3a,* unimproved.

1. By operable cancers are meant those still confined to the cervix or only moderately involving the parametria and vaginal walls. They are not fixed to

the pelvic wall on either side and have not caused hydronephrosis and are not associated with pelvic pain.

2. By inoperable cancers are meant those associated with general metastasis, those firmly fixed to one or both pelvic walls; those extensively involving the bladder, vagina or rectum. In short, cases in which we have never cured the patients by operation.

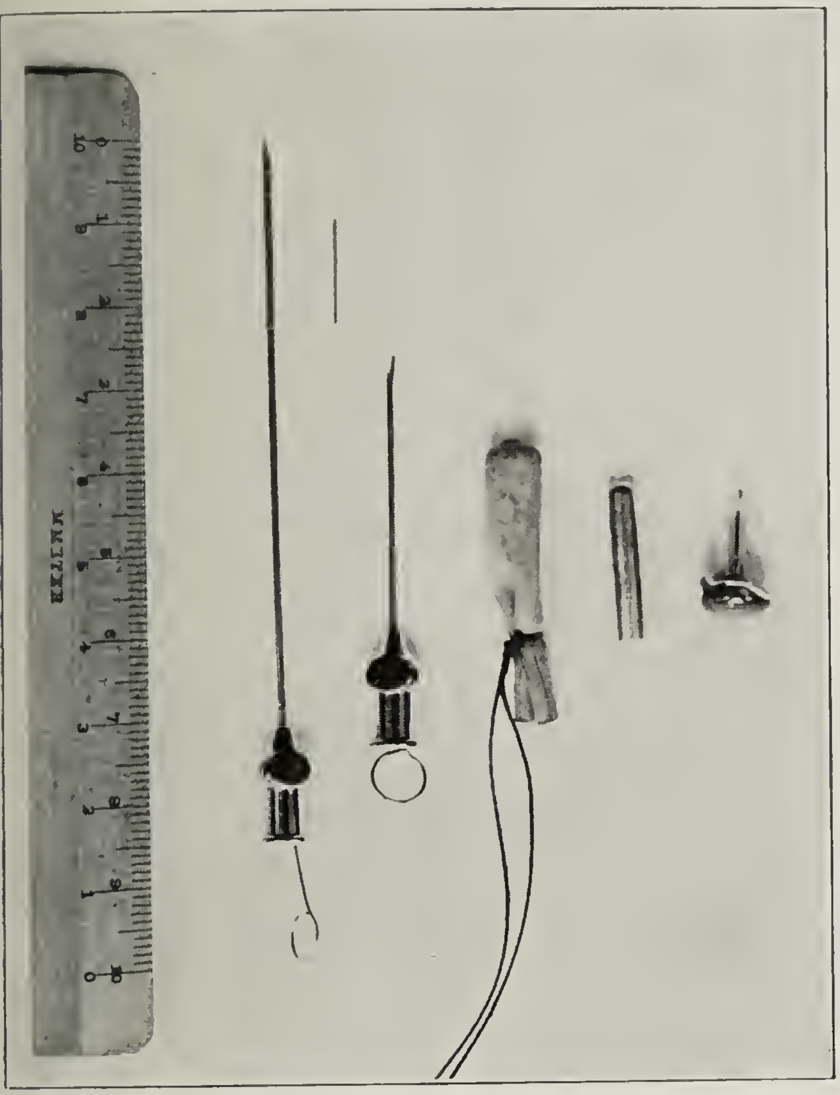

Fig. 1.—Radium applicators and scale indicating size.

3. By recurrent inoperable cancers are meant such recurrences following operation as we have never cured except by radium.

1*a*. By clinically cured is meant the complete disappearance of the cancer so far as palpation, curettage or other method may disclose associated with the apparent perfect general health of the patient.

2*a*. By improved is meant a definite betterment of the patient's condition. In the lesser degrees this may consist of a cessation of hemorrhage and discharge, or a disappearance of pain which has resisted all the drugs, including morphin. Among these, too, are placed twelve cases in which all local trouble disappeared, but the patient showed metastasis at the time of treatment or developed it subsequently. Two of these patients were found locally free of cancer at necropsy, and in two, in whom hysterectomy was carried out after apparent clinical cure, the uteri are clear of the disease, in spite of the fact that both patients are now dead from general metastasis. In most of the cases of this group the reduction in the size of the tumor was marked. It also includes some early cases in which the treatment was very imperfect.

3*a*. By unimproved is meant no material benefit having been produced. Most of these showed histologic improvement on microscopic examination of curettings. In more than two thirds of them the disease was immense and the general condition of patients bad.

All of the patients included in this report were treated prior to January, 1915, and the cured ones were apparently cured at that time. All of the cured have been investigated by one or both of us personally, with a few exceptions in which the examinations were made by competent men. The last report on each case was obtained in May, 1915.

RESULTS

The results obtained by the treatments may be summarized as follows:

Out of the 213 cases treated, 14 were operable and 199 inoperable.

Operable Cases.—Of the 14 operable cases, 10 patients were operated on and treated prophylactically with radium. Of these, 2 have been well for more than three years, 1 for more than two years, 4 for more than a year, and 3 for more than six months. The number is too small to draw conclusions from, and yet is suggestive, when we consider that in 75 per cent. of all cases with operation there is recurrence and that 60 per cent. of these recurrences take place within one year following the operation.

In four cases of the operable group, on account of some general contraindication to operation, radium alone was used. All of this group are living and well; 2 for over three years and 2 for over one year.

Inoperable Cases.—The total number of inoperable and inoperable recurrent cases is 199, of which 53 patients have been clinically cured, 109 markedly improved and 37 not improved.

Our series includes 35 cases of originally inoperable cancer of the cervix uteri or vagina in which the patients are clinically cured; in 2 cases for over four years; in 2 cases for over three years; in 4 cases for over two years; in 17 cases for over one year; in 10 cases for over six months. It also includes 18 cases of originally inoperable recurrent cancers in which the patients are now clinically cured; in 1 case for over six years; in 1 case for over four years; in 11 cases for over two years; in 10 cases for over one year; in 5 cases for over six months.

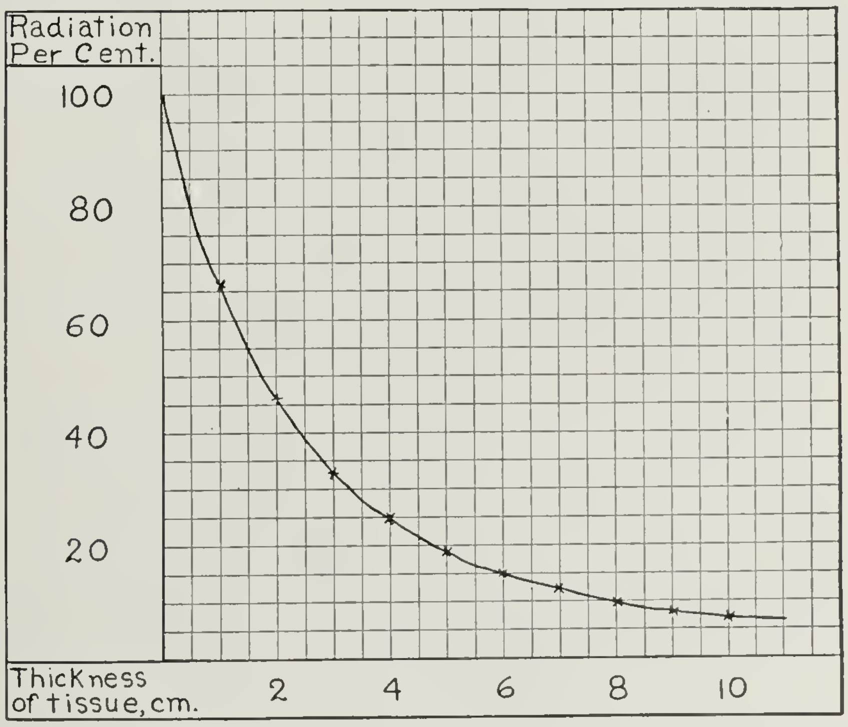

Fig. 2.—Curve showing the variation of the intensity of gamma radiation with the thickness of tissue.

Excluding the operable cases, in which we have both operated and used radium, there are 203 cases left; in

57 of these 203 cases the patients are clinically cured. We employ the word clinically cured and will reserve the word cured for later reports, to apply to cases beyond the five-year limit, which has been conventionally adopted by surgeons as a time limit for estimating the permanency of cures of malignant disease.

Of the 57 clinical cures, 1 has lasted for six years; 3 for over four years; 4 for over three years; 5 for over two years; 29 for over one year, and 15 for over six months.

CONCLUSIONS

We are convinced that radium is of exceedingly great value in the treatment of cancers of the cervix uteri and vagina.

We expect with all confidence that the results in the next 200 cases will far surpass those reported here.

We again emphasize that the betterment in the improved but not cured cases is so marked that it alone makes radium a great addition to existing methods and would justify its use.

We believe that every inoperable cancer of the cervix uteri or vagina, provided general metastasis is not evident, stands a chance of at least 1 in 4 of cure by radium treatment.

There is a marked reason to believe not only that a large number of inoperable cases are curable, but that by the joint use of radium and operation that the 1 in 4 cure rate of operation in operable cases may be raised to 3 in 4 or better.

We have seen that some cervical cancers do not respond to radium treatment. This same variation in reaction occurs in many other types of neoplasm. It is apparently due to a lack in the patient of resistance to the specific growth. Work should be directed toward determining where the body products which attack a radiated cancer arise and what they are. On account of the certainty that some of the operable cancers of the cervix would not be cured by radium and also on account of the necessity of having many patients over five years cured in order to be sure of the permanency of the results, we advise, in operable cases, hysterectomy and radiation. This is the rule in clearly operable conditions. In border-line cases, we advise the use of radium, as the permanent cures from operation are not numerous in this group. If the growth does disappear, it can only be determined whether or not hysterectomy is advisable by trying out both methods; this as yet has not been done in a sufficient number of cases to arrive at any definite conclusions. We do feel, however, that when clinical cures have occurred in inoperable cases, operations are probably best not carried out. Manifestly an inoperable case which becomes operable but does not entirely heal should be treated by operation.

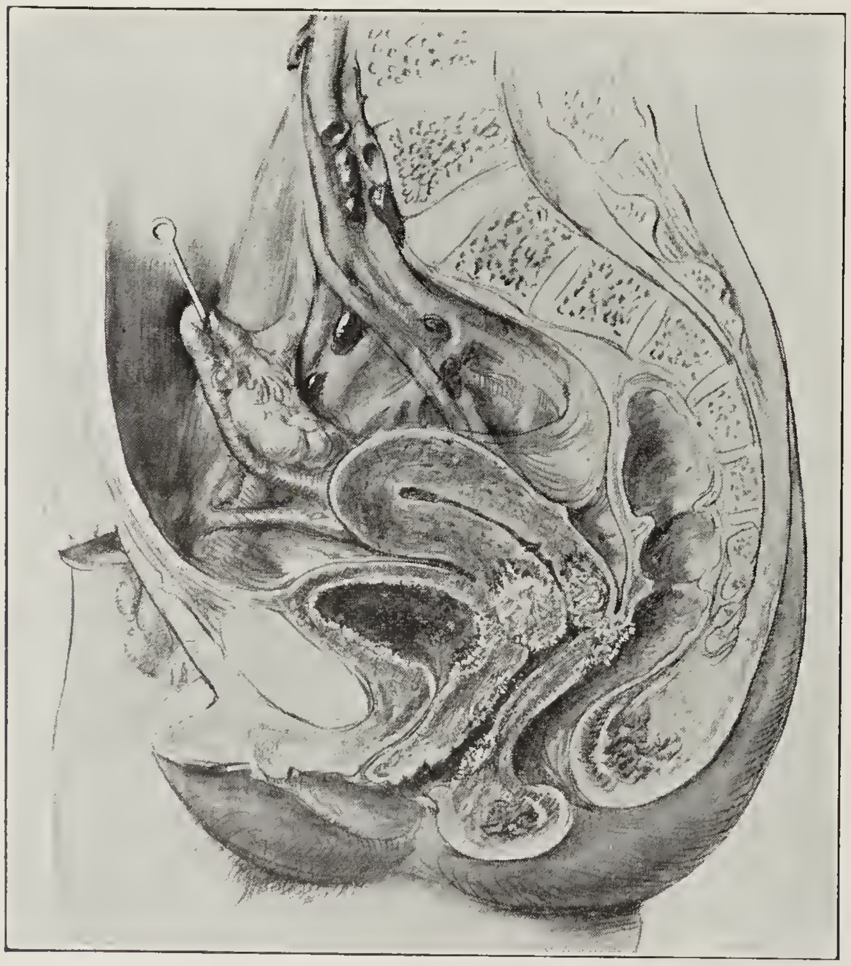

Fig. 3.—Common locations and distances of the cervical and vaginal cancers from the body surface as seen from the side.

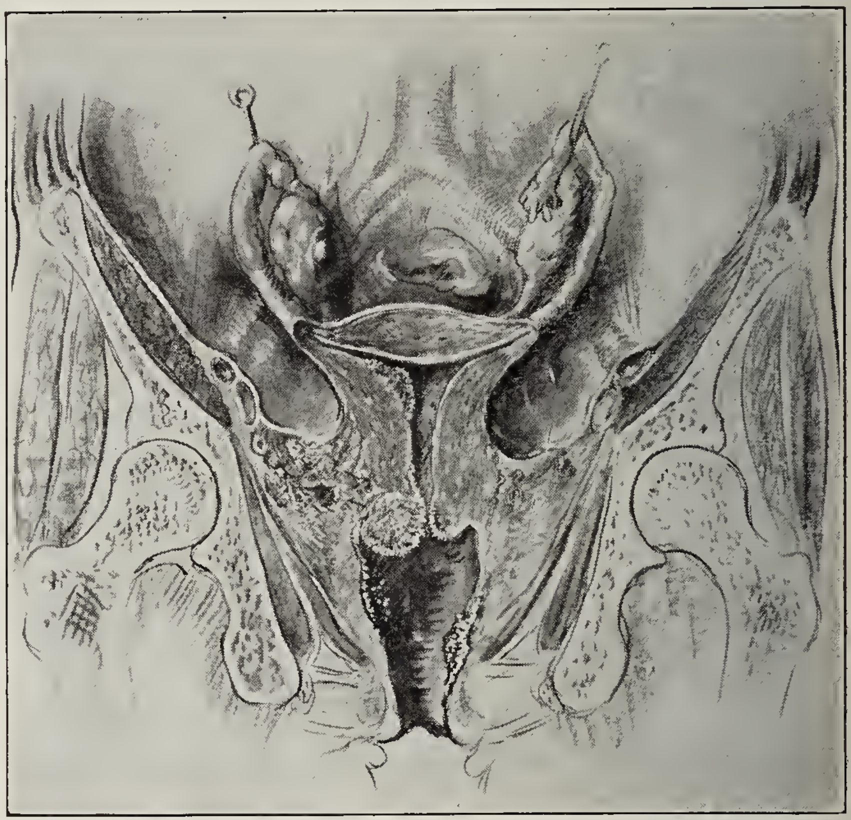

Fig. 4.—Common locations and distances of the cervical and vaginal cancers from the body surface as seen from the front.

Finally we desire to restate most emphatically that radium can and should be used in these cases without any local or general injury to the patient treated.

1418 Eutaw Place.

Mental Workers and the Heart.—Mental workers do not appreciate at all that they are prone to sudden death from heart failure, particularly after the forty-fifth year of life. Illustrations of this are disclosed all around us every day. Strain and poisoning of intrinsic origin are unquestionably the factors that work with these also. There is a continual upkeep of an increased circulation to the brain, associated with what we believe to be a retarded or sluggish circulation through the eliminative organs. As is well known, this type of worker is also particularly prone to overindulgences in food and drink. There is the same inclination to seek stimulants (coffee and tea must be included here also) as we find among any class of workers who are subject to exhaustion. This particular class, because of the unusual sedentary character of the occupation followed, is least able to digest and eliminate such forms or degrees of food consumption. A peculiar thing, however, is that the appetite of the mental worker appears out of proportion to his caloric or intrinsic requirements.—E. R. Hayhurst, M.D., on Occupational Heart Disease.

THE ACTION OF RADIUM ON CANCERS OF THE PELVIC ORGANS

A CLINICAL AND HISTOLOGIC STUDY *

HENRY SCHMITZ, M.D.
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Since April, 1914, I have treated 112 cases of malignant growths of various regions of the body with radium. Forty-eight of these occurred in pelvic organs. Forty-one of these pelvic cancers are considered in this paper. Thirty-six were in the uterus, five in the rectum and three in the bladder. The tumors were inoperable, recurrent or operable carcinomas. Twenty-four were inoperable, nine recurrent and eight operable.

Ten of the inoperable and three of the recurrent carcinomas were thoroughly cauterized or excochleated and then cauterized preceding the application of radium. Broken-down tissue and débris were thereby as completely removed as possible, and the extent of the intensity of the gamma rays into the depths of the tissues correspondingly increased. The operable cases were subjected to an extensive vaginal cauterization and an abdominal panhysterectomy. As soon as the patient recovered from the operation, radium was inserted into the crater of the broad ligament. The rays were used as a prophylactic to recurrence.

I wish to draw attention to the remarkable deodorizing and purifying action of radium. Those who have attended patients after such abdominal panhysterectomies well remember the sloughing of tissues in the crater of the broad ligament, which gives rise to a terrific putrid odor and discharge and an irregular temperature. One, or at the most two applications of radium stop these distressing complications. The cauterizations always were performed with ordinary soldering irons at red heat.

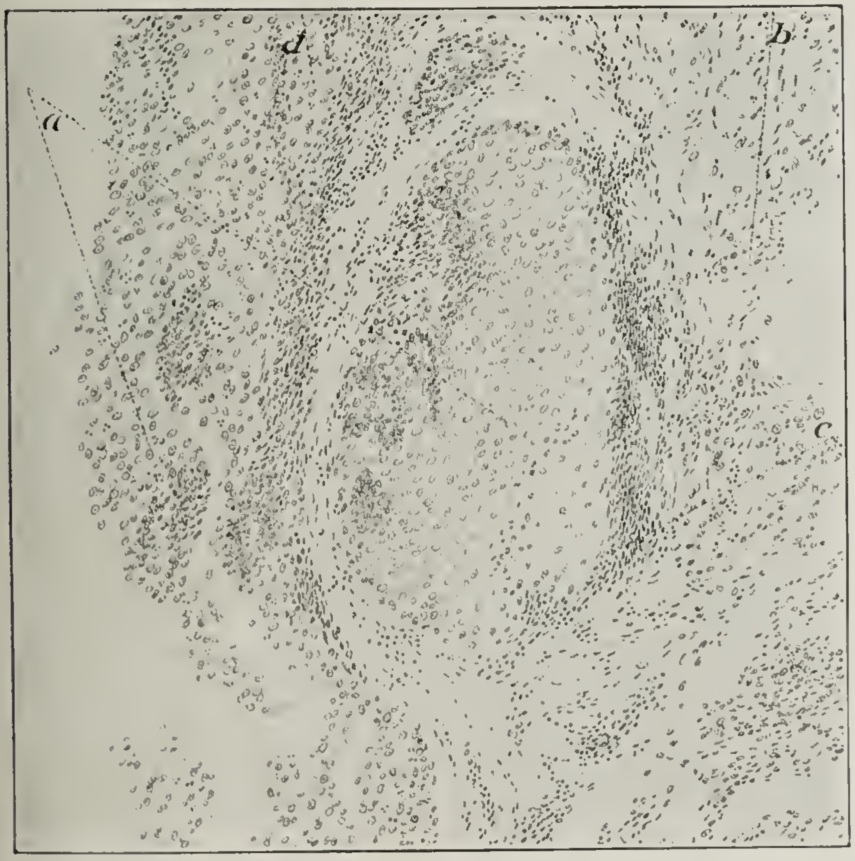

Fig. 1 (Case 33).—Carcinoma, portio vaginalis, cervix uteri. Low power reproduction of tissue removed Feb. 6, 1915, at beginning of treatment: *a*, squamous cell carcinoma; *b*, connective tissue; *c*, lymphocytic infiltration; *d*, area reproduced in Figure 2.

THE TECHNIC

The technic of applying the radium varied as to the limiting of time of the applications and the kind of metal filters used, but not in the amount of milligrams of radium element applied (uniformly 50 mg.).

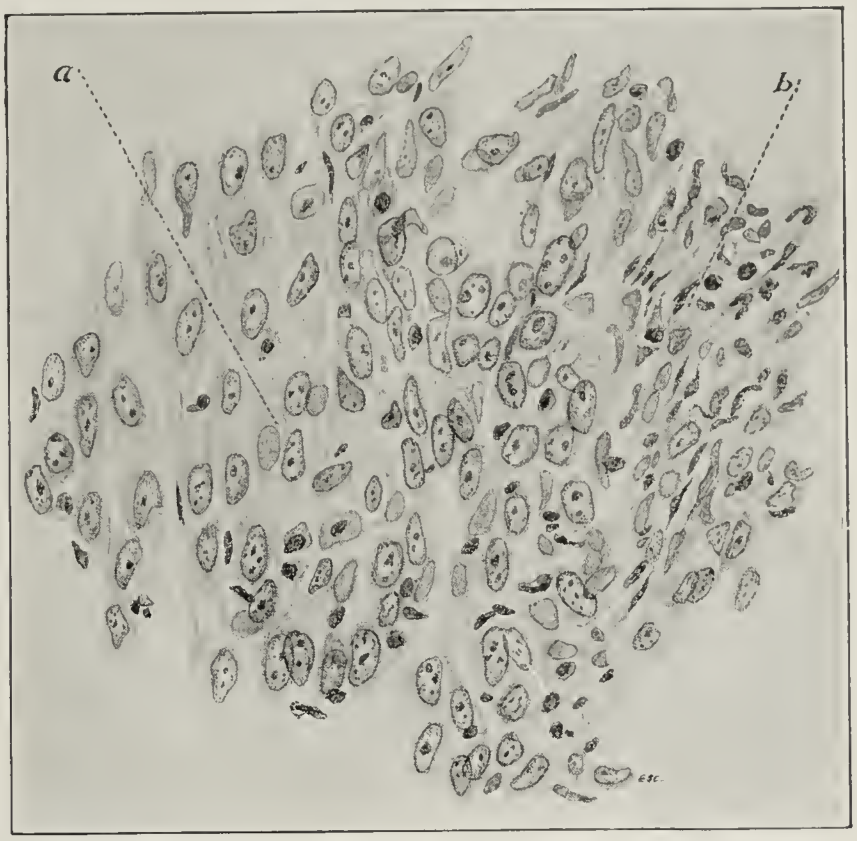

Fig. 2 (Case 33).—High power magnification of Area *d* in Figure 1: *a*, carcinoma cells; *b*, connective tissue.

In the beginning of my radium work, the duration of each application was from ten to twelve hours, occasionally twenty-four hours. The interval between the treatments varied from seventy-two to ninety-six hours. These applications were continued until a decided improvement occurred in the subjective as well as the objective condition of the patient. This usually took place after a dosage of from 3,000 to 4,000 milligram hours had been reached. The treatments were then given weekly and finally biweekly, until the condition of the patient warranted a cessation of the treatments. Frequent examinations were insisted on to keep the patient under control. A total dosage of from 8,000 to 10,000 or more milligram hours was thus recorded.

Fourteen patients were treated in this manner (Cases 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18). A subjective improvement was usually noticed after the third application. The pain decreased, the profuse purulent, creamy discharge became scanty and serous, and the hemorrhage ceased. The general state of health improved correspondingly. After about 3,000 milligram hours of radium element had been given (that is, after from about twenty-one to twenty-four days, the bimanual findings became usually normal. In a few cases such a state was not reached until about 6,000 milligram hours had been applied. The uteri which were firmly fixed at the first examination became freely movable and could be plainly outlined. The adnexa were palpable and the crater in the cervix was covered with healthy granulations, being protected by a grayish or whitish membrane. The parametriums also were free of any indurating bands. In other words, by cautious procedures and careful observation, we established the fact that on an average from 3,000 to 4,000 milligram hours of radium element were necessary to attain an apparently objective cure.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

This knowledge led to the second mode of treatment, which I may term the "intensive method." Just as maximum dosage of Roentgen rays may be concentrated into the possibly shortest space of time, so the milligrammage of radium element might be given within the shortest limit of time, and from 3,000 to 4,000 milligram hours of radium element were applied within from sixty to eighty consecutive hours.

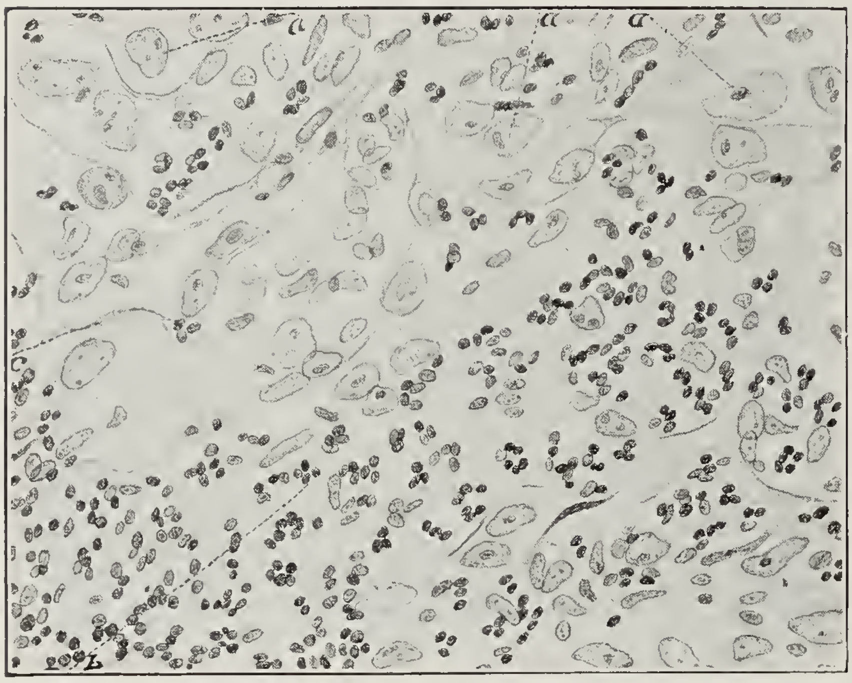

Fig. 3 (Case 33).—High power magnification of tissue removed Feb. 18, 1915, after 2,400 milligram hours of radium element had been applied from Feb. 6 to 8, 1915: *a*, enlarged carcinoma cells; *b*, lymphocytic infiltration; *c*, note connective tissue fibers surrounding groups of carcinoma cells.

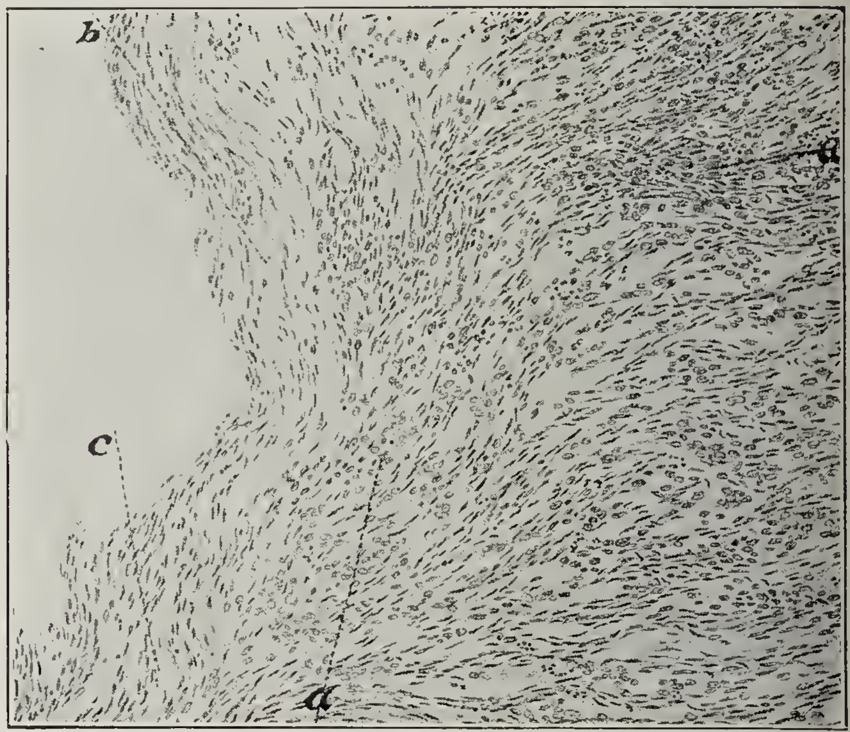

Fig. 4 (Case 33).—Low power magnification of a section of tissue removed Feb. 28, 1915, after 4,800 milligram hours of radium element had been applied from Feb. 6 to 8 and Feb. 18 to 20, 1915: *a*, carcinoma cells; *b*, connective tissue cells; *c*, area reproduced in Figure 5 under high power.

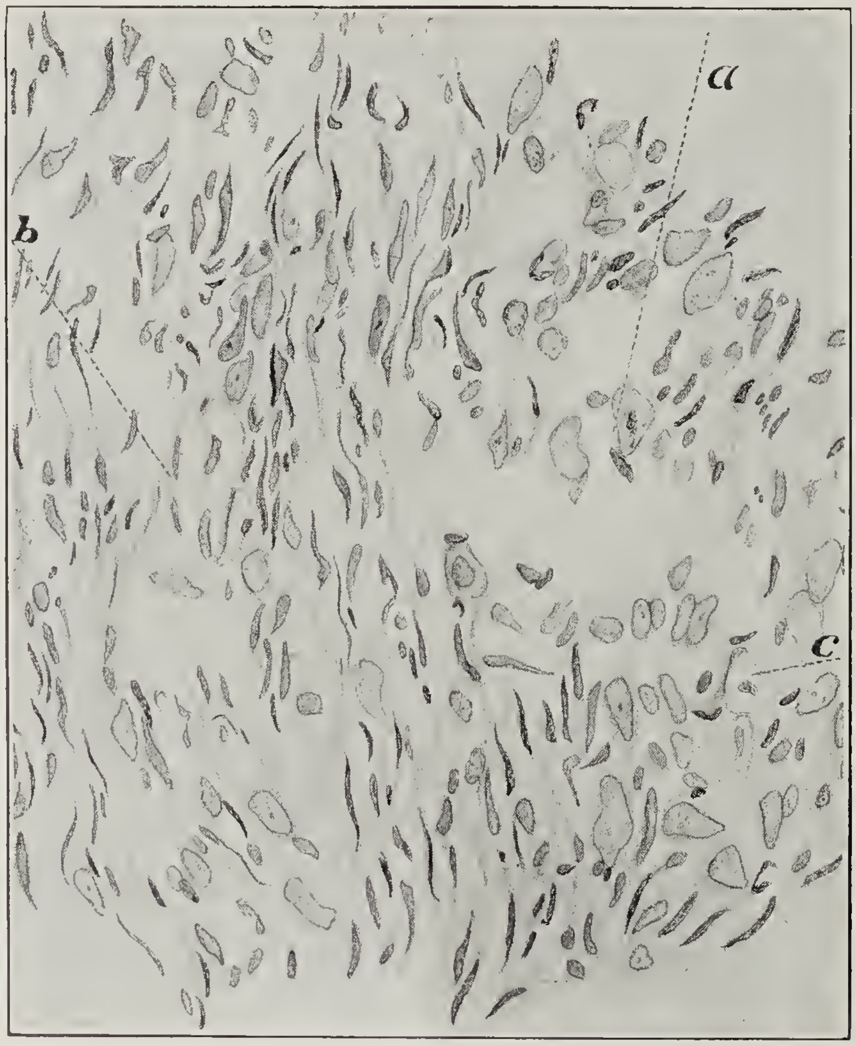

Fig. 5 (Case 33).—High power magnification of area marked *c* in Figure 4: *a*, area of necrobiotic tissue; *b*, area of connective tissue; *c*, cytolytic carcinoma cell.

Ten cases in particular (Cases 1, 3, 4, 14, 20, 23, 25, 26, 27 and 28) were thus treated. Although we obtained the same primary results as with the first method, we, however, noted the following points:

1. The apparently objective cure was not reached any sooner than with the first method.

2. The associated symptoms were exceedingly stormy and much severer. They consisted, chiefly, in a marked loss of weight, strength and appetite, with hyperpyrexia, obstinate vomiting, profuse diarrheal stools and obstinate dysuria. Although these symptoms were only transitory, lasting from eight to ten days, the patient suffered much, a condition which we rarely observed in the cases treated by the first or "intermittent method." If such manifestations did occur in this method, they were very mild and of very short duration, lasting usually a day or two.

3. Destruction, ulceration or necrosis of the tissues was of regular occurrence. Repair of these defects was slow. Fistula formation, vesicovaginal, rectovaginal or even intestinovaginal, occurred in ten cases. However, I wish to state that fistula formation existing at the time of the beginning or taking place during the first few days of the course of the treatment must be ascribed to the extensive cauterization. The damaging action of the radium rays is a contributing cause (Cases 1, 4, 6, 15, 20, 26, 29 and 46), while fistula formation occurring from three to four weeks after the beginning of the radium applications must be directly attributable to the destructive action of radium, and extensive invasion of the bladder or bowel with cancer forms the predisposing cause (Cases 2, 8 and 33).

Finally, the following plan of treatment was adopted and carried out in the rest of the cases: A course consists of from six to eight séances of from ten to twelve hours each, with an interval of from thirty-six to sixty hours. This course is followed by an intermission of three weeks. If a bimanual examination made at this time reveals an apparent cure, two or three applications of from 500 to 600 milligram hours of radium element are given every second or third day. Another interval of three weeks is allowed, and if the examination then reveals a normal condition, the treatment is considered terminated. Negative findings, of course, are followed by another course of from 3,000 to 4,000 milligram hours. This "interval method" gave the best subjective and objective results with a minimum of concomitant symptoms, so that I consider it the method of choice.

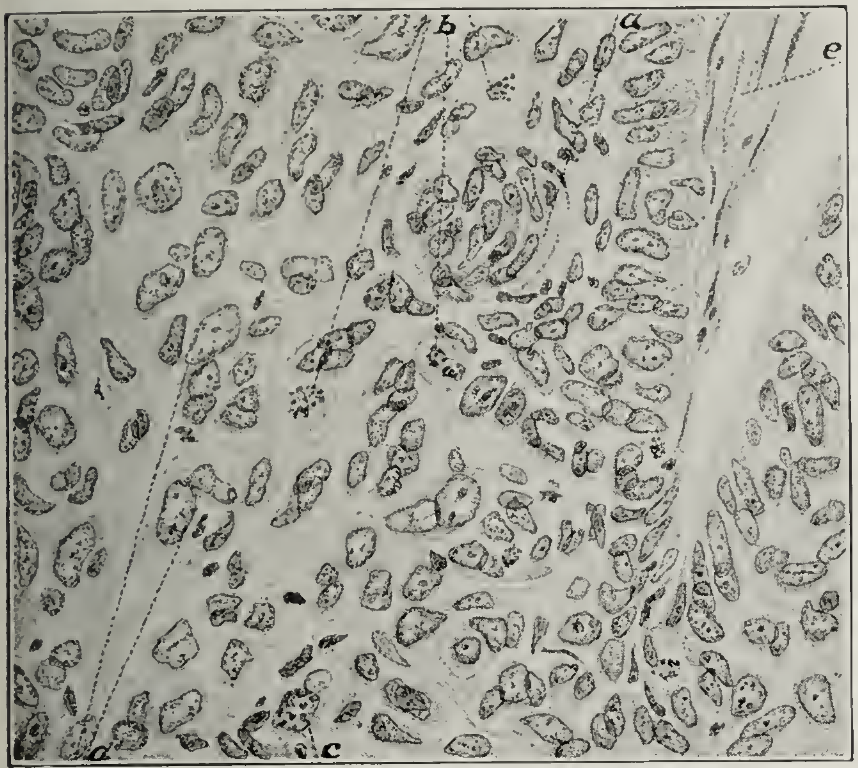

Fig. 6 (Case 39).—High power reproduction of cervical tissue removed March 16, 1915: *a*, nest of carcinoma cells; *b*, karyolysis of nuclei; *c*, granulation of protoplasm; *d*, vacuolation of protoplasm; *e*, connective tissue.

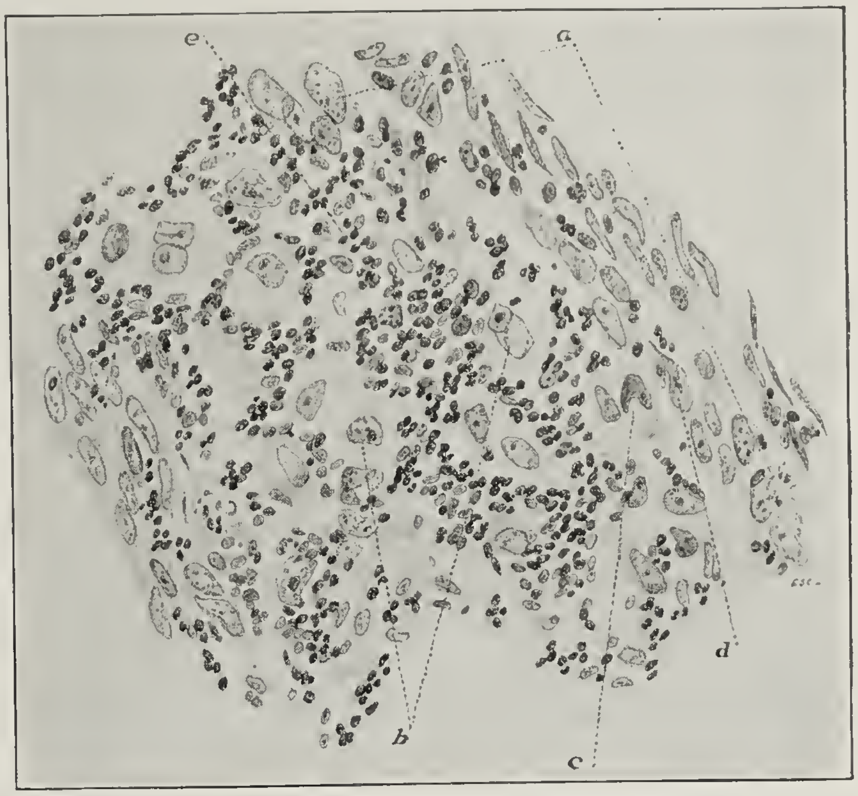

Fig. 7 (Case 39).—High power magnification of tissue removed from center of cervix, March 28, 1915, after 1,600 milligram hours of radium element had been applied from March 20 to 26, 1915: *a*, degeneration of nuclei; *b*, granulation of protoplasm; *c*, degenerating carcinoma cell; *d*, mitosis of cell; *e*, lymphocytes.

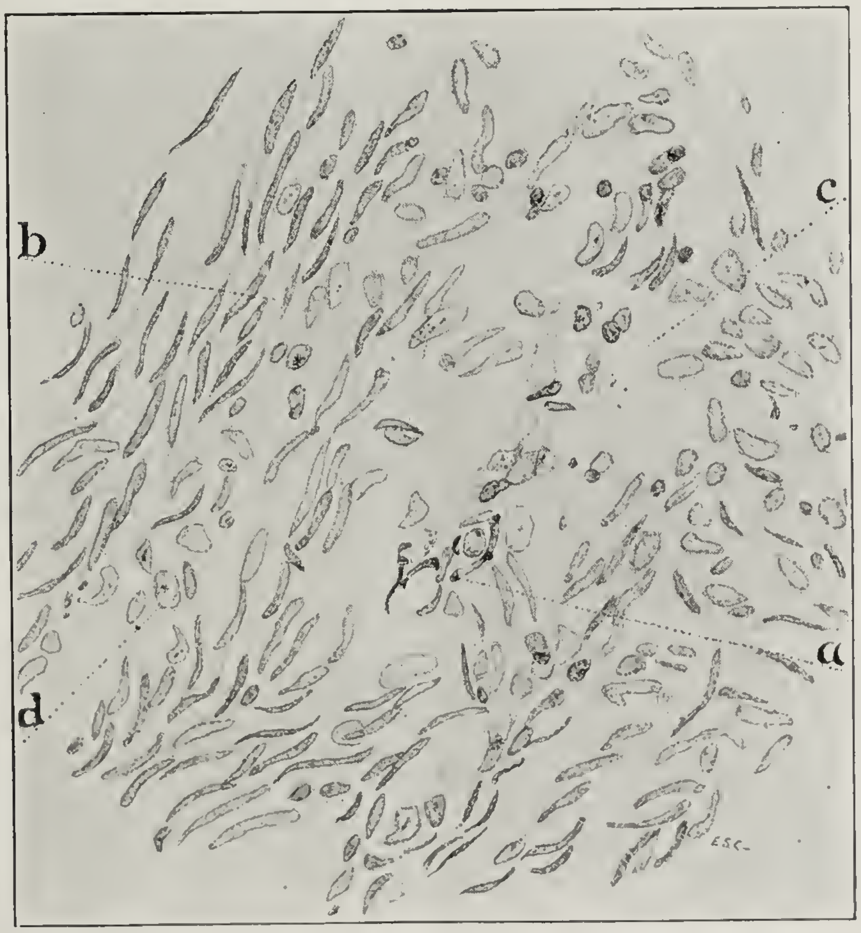

Fig. 8 (Case 39).—High power magnification of tissue removed April 7, 1915, after 3,700 milligram hours of radium element had been applied from March 26 to April 4, 1914: *a*, macrophagia-connective tissue cells; *b*, connective tissue cells; *c*, necrobiotic carcinoma cell; *d*, vacuolation of protoplasm.

Lead filters of 1, 2 and 3 mm. thickness were used in my first work. A 1 mm. filter was deemed sufficient for intra-uterine applications, while the heavier filters were employed in vaginal, rectal and vesical cases. Following the advice of Adler, Werner and others, I soon replaced the lead with brass filters of from 1 to 1.5 mm. thickness. Whether or not the lead filters cause severer latent destructions of tissue than brass filters I am unable to prove. Such disturbances occurred either in very advanced cases of carcinoma, with breaking down uterine or vaginal walls, or in extensively cauterized tumors, as mentioned before. The secondary rays produced in the metal fibers were arrested by surrounding the filter with a cot made of pure Para rubber of a thickness of from 1 to 3 mm. The healthy vaginal walls were protected by snugly packing the vaginal canal with gauze, Para rubber or lead plates surrounded by rubber and gauze.

CLINICAL RESULTS

Tables 2 to 5 show at a glance the results of the radium treatment. The amount of the milligram hours of radium element used, and beginning and duration of the treatment and the present condition are enumerated for each case. Of the ten cases of Table 2, one case was refractory, and nine cases evidenced a subjective and an objective improvement. Objective improvement indicates negative findings on bimanual palpation. Five of this group have succumbed to the disease. One has remained well since April, 1914, one since October, 1914, and one since January, 1915. Two cases, 39 and 40, are of too recent date to permit an expression as to the remote results. The primary results in these cases, however, are very good. Three of these patients (Cases 12, 16 and 18) were subsequently subjected to an abdominal panhysterectomy.

Fourteen inoperable cases, enumerated in Table 3, were treated only with radium. They were far advanced or extremely cachectic cases or had constitutional manifestations contraindicating even a cauterization. Ten have died or are slowly succumbing to the disease. Four are free of all objective and subjective symptoms. They, and three cases not yet listed, were treated only recently; and considering the poor results obtained in the other ten cases, I must withhold a final opinion. One case (Case 14) had, after the completion of radium treatment, a panhysterectomy.

Of the nine recurrent carcinomas, listed in Table 4, five show an entirely refractory behavior toward the radium rays. Four revealed a subjective and three also an objective improvement. One of the latter patients died eight months after the beginning of the treatment from an intercurrent disease. She had had a recurrence the size of a pea, which disappeared after

TABLE 1.—CANCERS OF PELVIC ORGANS TREATED WITH RADIUM

Case No.	Name of Patients	Hospital Number	Age, Yrs.	Date of Adm.	Uterine	Rectal	Vesical	Milligram Hours Radium Element	Operable	Recurrent	Inoperable		Remarks
											Cauterized	Not Cauterized	
1	Mrs. B.	Augustana....... 41218	51	9/24/14	+	..	..	4,200	+				
2	Mrs. H.	Augustana....... 40098	49	5/22/14	+	..	..	9,525	..	..	..	+	Cauterization 11/3/14.
3	Mrs. H.	Augustana....... 40717	61	7/23/14	+	..	..	10,350	..	+	..	..	Op. four years ago.
4	Mrs. R.	Augustana....... 40944	39	8/25/14	+	..	..	6,775	+				
5	Mrs. D.	Augustana....... 39516	32	3/23/14	..	+	..	9,900	..	..	..	+	
6	Mr. E.	Augustana....... 40405	74	6/29/14	..	..	+	3,150	+				
7	Mr. J.	St. Mary's....... 25176	57	6/30/14	..	+	..	2,175	+				
8	Mrs. K.	St. Mary's....... 24058	38	3/13/14	+	..	..	5,700	..	+	..	..	Cauterization 9/16/13.
9	Mrs. K.	Augustana....... 39778	66	4/22/14	+	..	..	6,320	..	..	+		
10	Mrs. McQu.	Augustana....... 39516	29	3/23/14	+	..	..	3,375	..	+			
11	Mrs. McC..	St. Mary's....... 24096	47	3/17/14	+	..	..	7,500	..	..	+		
12	Mrs. M.	St. Mary's....... 23957	52	3/ 7/14	+	..	..	7,875	..	..	+	..	Became operable.
13	Mrs. P.	Augustana....... 40270	63	6/11/14	+	..	..	2,575	..	+			
14	Mrs. R	Augustana....... 40202	43	6/ 4/14	+	..	..	9,250	..	..	..	+	Became operable.
15	Mrs. C. S. .	Willard Hosp.	52	4/ 4/14	+	..	..	8,312	..	..	..	+	Carc. corp. uteri.
16	Mrs. Th. ...	Augustana....... 39321	53	3/ 4/14	+	..	..	9,043	..	..	+	..	Became operable.
17	Mrs. V.	Augustana....... 39755	64	4/19/14	+	..	..	3,525	+	..	..	..	Also cauterization.
18	Mrs. W. ...	Augustana....... 39469	35	3/19/14	+	..	..	8,700	..	..	+	..	Became operable.
19	Mrs. W. ...	Augustana....... 40568	48	7/14/14	+	..	..	3,750	..	..	..	+	
20	Mrs. P.	Augustana....... 40456	45	7/ 4/14	+	..	..	3.500	..	+			
21	Mrs. J	Augustana....... 40349	26	6/22/14	..	+	..	1,125	..	..	..	+	
22	Mrs. R.	Augustana....... 41305	32	10/ 7/14	+	..	..	4,000	..	..	+		
23	Mrs. Sk. ...	Augustana....... 41221	53	9/25/14	+	..	..	6,800	..	..	+		
24	Mrs. B.	Washington Bvd. 8968	52	10/17/14	+	..	..	4,150	+	..	..	..	Carc. corp. uteri.
25	Miss Ro. ...	Washington Bvd. 8902	53	10/ 1/14	+	..	..	8,875	..	..	..	+	
26	Mrs. H.	Augustana....... 41612	52	11/21/14	+	..	..	2,300	..	+	..	..	Cauterized 11/22/14.
27	Mrs. M.	West Side........ 28985	48	11/27/14	+	..	..	4,150	..	..	..	+	Sarcomatous myoma ?
28	Mr. St.	St. Mary's....... 26857	52	12/29/14	..	..	+	3,600	..	..	..	+	
29	Mrs. T.	Augustana....... 41944	49	1/ 5/15	+	..	..	3,500	..	..	+		
30	Mr. To.	St. Mary's....... 27096	58	1/23/15	..	..	+	2,400	..	..	..	+	
31	Mr. A. M. ..	Willard..........	52	2/10/15	..	+	..	4,500	..	..	..	+	
32	Mrs. M.	Augustana....... 42319	42	2/15/15	+	..	..	5,175	..	+			
33	Mrs. H.	Post-Graduate...	43	2/ 6/15	+	..	..	4,800	..	..	..	+	Colored.
34	Mrs. H.	St. Mary's....... 27533	33	3/ 3/15	+	..	..	2,800	..	+			
35	Mrs. C.	St. Mary's....... 27590	52	3/ 9/15	+	..	..	3,900	..	+			
36	Mrs. L.	Augustana....... 42538	60	3/ 9/15	+	..	..	2,925	..	..	+		
37	Mrs. W. ...	Norwegian Deaconess..	63	3/ 7/15	+	..	..	1,700	..	..	..	+	
38	Mrs. J.	St. Mary's....... 27560	36	3/ 5/15	+	..	..	2,550	+				
39	Mrs. Sl.	St. Mary's....... 27649	65	3/15/15	+	..	..	3,700	..	..	+		
40	Mrs. DeR. .	St. Mary's....... 27978	56	4/14/15	+	..	..	5,650	..	..	+		
41	Mrs. St. A.	St. Mary's....... 27982	49	4/15/15	+	..	..	3,950	+				

TABLE 2.—INOPERABLE CANCERS TREATED WITH CAUTERIZATION AND RADIUM

Case Number	Cause of Inoperability	Date of Cauterization	Total Mg. Hrs. of Radium Element Applied	Duration of Treatment	Primary Results			Further Treatment	Results and Present Condition
					Refractory	Subjective Improvement	Objective Improvement		
9	Involvement of bladder and parametrium	4/23/14	6,320	5/12/14 to 7/ 5/14	....	Yes	....	None.............	Died from bladder and vulva invasion.
11	Involvement of bladder and rectum	3/18/14	1,750 3,200 2,550	4/14/14 to 4/23/14 6/17/14 to 7/23/14 8/12/14 to 8/23/14	....	.... Yes	....	.... None.	Died. Patient after remarkable primary result neglected to return until June. Radium now refractory.
12	Extensive involvement of parametrium and rectum	3/ 8/14	7,875	4/ 2/14 to 6/11/14	....	Yes	Yes	July 14, 1914. Abdominal panhysterectomy	Died Dec. 20, 1914 from invasion of rectum.
16	Involvement of parametrium	3/ 5/14	9,043	4/ 1/14 to 9/ 9/14	....	Yes	Yes	April 24, 1914. Abdominal panhysterectomy	Well. Pelvis normal.
18	Marked cachexia...	3/20/14	8,700	4/ 1/14 to 7/31/14	....	Yes	Yes	....	Died August, 1914 from invasion of bladder and exhaustion.
22	Extensive involvement of vaginal vault	10/ 8/14	4,000	10/17/14 to 10/22/14	Yes	....	....	....	Died December, 1914 from exhaustion.
23	Extensive involvement of vagina and parametrium	9/26/14	6,800 1,200	10/19/14 to 11/ 1/14 2/ 9/15 to 2/11/15	....	.... Yes	.... Yes	....	Well. Pelvis normal.
29	Involvement of anterior vaginal wall	1/ 6/15	3,500	1/21/14 to 1/24/15	....	Yes	Yes	Repair of vesicovaginal fistula March, 1915	Well except fistula.
39	Involvement of parametrium	3/16/15	3,700 850	3/20/15 to 4/ 4/15 4/26/15	...	Yes	Yes		
40	Involvement of bladder and parametrium	4/ 7/15	5,650	4/15/15 to 5/ 6/15	....	Yes	....	....	June 11, 1915; metastasis of right inguinal glands.
36	Pyometra; involvement of parametrium	3/10/15	2,925	3/12/15 to 3/23/15	....	Yes	Yes	....	Panhysterectomy could not be completed. Supravaginal amputation.

radium treatment and cauterization. Another patient after a successful primary result did not return for a reexamination, and has not been heard from. The third one has again a healthy vagina, and the pelvis is free from indurating masses, though the entire vaginal canal was a mass of carcinomatous growths extending up into the base of the right broad ligament and down into the fourchet.

Of the eight operable cases (Table 5) treated by surgery and radium, one patient died nine months afterward from a metastasis of the liver, another one two months later from a severe hemorrhage from the vagina. The others are at this time in a normal condition and do not show a recurrence. The average time which has elapsed since the operation is eight months.

TABLE 3.—INOPERABLE CANCERS TREATED ONLY WITH RADIUM

Case Number	Cause of Inoperability	Total Mg. Hrs. of Radium Element Applied	Duration of Treatment	Primary Results			Further Treatment	Result and Present Condition
				Refractory	Subjective Improvement	Objective Improvement		
2	Extensive involvement of vagina	9,525	5/30/14 to 9/24/14	....	Yes	....	....	Cauterization Nov. 3, 1913. Has vesicovaginal fistula; cachectic.
5	Involvement of entire vagina, rectum, vulva	9,900	6/ 1/14 to 8/19/14	Yes	....	....	....	Had colostomy. Died from exhaustion.
14	Involvement of right ureter and sigmoid	9,250	6/ 7/14 to 8/ 5/14	....	Yes	Yes	....	Aug. 5, 1914, abd. panhysterectomy; resection of sigmoid. Died Nov. 20, 1914, from carcinomatosis.
15	Involvement of parametrium and rectum	8,312	4/ 4/14 to 6/17/14	....	Yes	....	....	Oct. 10, 1913, colostomy. Died Jan., 1915; cancer of liver.
19	Chronic endocarditis with decompensation	3,750	7/19/14 to 8/ 9/14	Yes	....	....	....	Died, August, 1914, from endocarditis
21	Extensive involvement of rectum	1,125	7/29/14 to 8/ 8/14	Yes	....	....	....	Patient refused further treatment on account of rectal tenesmus caused by radium; had colostomy; died.
25	Cachexia and local extension of tumor	8,875	11/ 6/14 to 12/ 5/14	Yes	....	....	....	Died.
27	Pyosalpinx and involvement of abdominal organs	4,150	11/27/14 to 12/ 3/14	Yes	....	....	....	Died.
28	Extensive involvement of bladder	3,600	12/31/14 to 1/25/15	....	Yes	Yes	Dec. 31, 1914, cystotomy for insertion of radium	Died January, 1915, from exhaustion after hip amputation for path. fracture of femur due to metastasis.
30	Extensive involvement of bladder	2,400	1/31/14 to 2/ 2/15	....	Yes	Yes	Jan. 25, 1915, exploratory cystotomy	Bladder free from tumor mass; gained in weight and strength.
33	Cachexia; vagina and bladder invaded	4,800	2/ 6/15 to 2/22/15	Yes	....	....	....	Developed vesicovaginal fistula; refused to continue treatment. Died.
36	Pyometra...........	2,925	3/12-23/15 to 3/22/15	....	Yes	Yes	....	Cervix now normal.
37	Involvement of bladder	1,700	3/15/14 to 3/20/15	Yes	....	....	March 8, 1915, exploratory laparotomy	Had a thrombophlebitis. Exacerbation. Died from septicemia.
31	Extensive involvement of rectum	4,800	2/12 to 4/ 2	....	Yes	Yes	....	Rectum normal and freely movable. Returned to work.

TABLE 4.—RECURRENT CANCERS

Case Number	Date of Primary Operation	Character of Operation	Date of Recurrence	Condition of Pelvic Organs	Total Mg. H. of Radium Element Applied	Duration of Treatment	Primary Results			Remarks and Results
							Refractory	Subjective Improvement	Objective Improvement	
3	July, 1910	Vaginal panhysterectomy	June, 1914	Nodule and ulcer size of bean in vaginal vault	10,350	7/27/14 to 11/30/14	....	Yes	Yes	Patient succumbed to an intercurrent disease, March, 1915; cauterization 7/31/14.
8	Jan. 9, 1913 Sept. 16, 1913	Abd. hysterectomy Vag. cauterization	Sept. 1913	Involvement of entire vagina	5,700	4/ 6/14 to 5/28/14	....	Yes	....	Vesicovaginal fistula. Died Sept. 21, 1914, from exhaustion.
10	Oct. 1913	Vag. hysterectomy	Oct. 1913	Involvement of vagina, vulva and perineum	3,375	4/25/14 to 5/13/14	Yes	....	....	Septicemia after third radium treatment. Died May, 1914.
13	May	Vag. hysterectomy	Apr. 1914	Involvement of entire vagina	2,275	6/13/14 to 6/15/14	....	Yes	Yes	Vagina healed immediately; did not return for treatment.
20	Aug. 12, 1912	Vag. hysterectomy, salpingo-oophorectomy sinistra	Mar. 1914	Mass involving right adnexa	3,500	7/10/14 to 7/13/14	Yes	....	....	Developed vesicovaginal intestinovaginal fistula; succumbed to exhaustion August, 1914.
26	Sept. 2, 1914	Abd. panhysterectomy	Nov. 1914	Ulcer in vaginal vault	2,300	11/23/14 to 11/25/14	Yes	....	....	Nov. 23, 1914, cauterization of vag. vault; developed intestinal fistula; died Dec. 27, 1914; exhaustion.
32	Oct. 1913	Vaginal hysterectomy	Apr. 1914	Ulcer in vaginal vault involving right parametrium and bladder	5,175	2/15/15 to 3/23/15	Yes	....	....	April 20, 1915, tumor increasing in size; patient loses weight and strength; has much pain.
34	Fall, 1914	Abd. panhysterectomy	....	Mass involving vag. vault extending to right up to brim	2,800	3/ 9/15 to 3/20/15	Yes	....	....	Losing weight and strength.
35	March, 1914	Vag. and abd. panhysterectomy	Aug. 1914	Ulcer involving entire vagina and right parametrium	3,900	3/10/15 to 4/ 6/15	....	Yes	Yes	April 30, 1915, vagina and vulva normal and free of any nodular masses.
45	4/25/15 6/19/15	Percy cautery Abd. hysterectomy	Never; compl. recovery	Crater involving parametriums	3,950	6/ 1/15 to 6/12/15	....	Yes		

HISTOLOGIC FINDINGS

The action of the gamma rays on carcinoma tissue has been studied in eight cases, namely, six uterine (Cases 12, 14, 16, 24, 29 and 39); one rectal (Case 31), and one skin cancer (Case 85). The latter has been added, as it affords a particularly favorable instance for the study of the changes occurring in carcinoma cells by the action of radium. The reproductions of the first microscopic sections (Figs. 1 and 6) were made from tissues removed from the tumor before the beginning of the radium treatment. The time of removal of the other sections is stated beneath each illustration; also the amount of radium element applied preceding the removal of the sections, and the time duration of the application of each course.

The histologic changes may be divided into four stages:

The first stage is characterized by an enlargement of the carcinoma cells, a hyperchromatosis and a pyknosis of the nuclei. They are evident in all the cases examined. These changes usually occur within about ten days after the first application of radium (Figs. 3 and 7).

TABLE 5.—CANCERS TREATED BY SURGERY AND RADIUM

Case Number	Date of Operation	Character of Operation	Complications of Convalescence	Mg. Hrs. of Radium Element Applied	Duration of Radium Treatment	Result	Remarks and Present Condition
1	9/25/14	Abd. panhysterectomy; vag. cauterization	Vesico-abd. and vesicovag. fistula	4,400	10/10/14 to 10/26/11	Perfect recovery	Died two months afterward from a vaginal hemorrhage.
4	8/26/14	Vag. cauterization; abd. panhysterectomy	Vesicovaginal fistula	6,775	9/ 6/14 to 10/13/14	Recovery, but fistula	Well, April, 1915; fistula closed.
6	7/17/14	Perineal cystotomy and cauterization	None	3,150	8/ 3/14 to 9/ 1/14	Recovered.	
7	7/ 2/14	Resection of 8″ of rectum; perineal operation	None	2,175	7/16/14 to 8/ 1/14 and 10/30-31/14	Recovered....	Dying from metastatic cancer of liver.
17	4/20-24/14	Vag. cauterization; abd. panhysterectomy	None	3,525	5/15/14 to 5/30/14	Recovered.	
24	10/29/14	Abd. panhysterectomy...	None	4,150	10/21-23 and 11/11-13/14	Recovered....	Oct. 21, 1914, diagnostic curettage; well.
38	3/16/15	Abrasion of mucosa; amputation of cervix.....					
	3/16/15	Abdominal hysterectomy	None	2,550	3/21 to 3/28/15	Recovered.	
41	4/16/15	Vag. cauterization; abd. panhysterectomy	None	3,950	4/19 to 5/4	....	Extensive involvement of anterior vaginal wall. Really an inoperable case; impossible to remove entire growth.
44	5/20/15	Abd. panhysterectomy; cauterization	None	4,000	5/23-31/15	....	Extensive involvement of right parametrium; impossible to remove entire tumor mass.

In the second stage we observe karyolysis, karyorrhexis, cytolysis and cell detritus. Figure 3 shows many evidences of such changes. They are observed as early as from the first to the third week of the treatment.

The third stage shows an absorption of the cellular and nuclear débris by phagocytes. Macrophages and microphages are concerned in this step. Microphagic activity is highly evident in Figure 3, while macrophages are seen to be active in Figure 8.

The fourth stage is the stage of connective tissue proliferation and scar formation. It completes the histologic cure of cancer. The places left vacant by the dead carcinoma cells are immediately filled by young fibroblasts derived from the connective tissue stroma of the tumor. The fibroblasts become differentiated. Figure 4 shows the connective tissue regeneration. The fourth stage appears usually after from the first to the third month, but may occur much sooner.

A difference frequently exists between the clinical results and the histologic findings. For instance, in Case 12 there was evidence of a completely destroyed cancer tumor, yet the patient succumbed to a bowel invasion, proving that some cancer cells either remained uninfluenced by the radium or regenerated after the subsidence of the action of the rays. Therefore, certain questions arise which call for definite answers before we can positively state that radium rays cause a degeneration and ultimate death of cancer tissue and a simultaneous regeneration of connective tissue.

1. Are we able by histologic examination to differentiate the necrobiotic changes in the carcinoma cells brought about by natural and artificial conditions from those caused by the influence of radium rays? It is evident that we cannot do so. Cells undergo necrobiotic changes in the course of their existence. Heat, caustics and alcohol, brought in contact with the tissues, may produce the same changes, as is well known. However, such general and extensive changes as seen in these specimens, the absence of cell degeneration as evidenced in the first sections, and, finally, the regularity of their occurrence in all the tissues investigated, even in those not previously cauterized, permit us to state that they must be caused by the action of the gamma rays.

2. Can we, by examination of small pieces of tissue removed from the growth, determine the extent and intensity of the action of radium rays? We cannot from such an examination, but could do so from serial sections of all the organs removed either intra vitam during operations, or, preferably, postmortem.

I have, fortunately, four cases in which an abdominal panhysterectomy was performed after a clinical cure of the cancer by the use of radium rays was obtained (Cases 12, 14, 16 and 24). Serial sections were made from the tissues removed. A microscopic examination revealed that the cytolytic changes were generally present throughout the organs removed. This does not prove that distantly located foci were not left behind. As a matter of fact, Patients 12 and 14 died subsequently from cancer. This shows that viable cancer cells were left behind somewhere in the pelvis. Bumm examined tissues acted on by gamma rays and removed afterward during postmortem examinations. He estimated that the intensity of the gamma rays sufficient to destroy carcinoma tissue extended into a radius of 4 cm. Within this area of intensity, carcinoma cells were not found present; beyond it, however, typical unchanged cancer cell nests were still found to exist. In other words, extensive carcinoma growths are only partially destroyed by gamma rays. This area of destruction, however, has a diameter of 8 cm., and enables us to reach tissues which a knife could never remove.

3. Is it possible by such microscopic examinations to state whether a carcinoma cell has perished or whether it might not regenerate after the action of the radium rays ceases? The following citation will illustrate the answer to this question: Chéron and Rubens-Duval treated a patient suffering from an inoperable carcinoma of the cervix with radium during November, 1910, and January, 1911. The patient was apparently clinically cured. She died from an intercurrent disease (a cerebral softening) during April, 1912, fifteen months after the beginning of the radium treatment. All the internal organs and tissues were removed postmortem, and a careful serial histologic examination of all the tissues did not reveal a single carcinoma cell at any place of the organism. A complete anatomic cure by radium rays has thus been demonstrated.

My investigations demonstrate the uniformity and general extent of the necrobiotic changes brought about in the carcinoma cells by the action of the gamma rays. Bumm's researches fix the extent of the area of intensity of the rays within which a carcinoma will become destroyed, and Chéron and Rubens-Duval's case proves the capability or efficiency of the radium rays to bring about an anatomic cure of cancer.

CONCLUSIONS

1. The best method of applying radium is the interval method by which from 3,000 to 4,000 milligram hours of radium element are applied within from about fourteen to twenty-one days.
2. The alpha and beta rays must be arrested by a brass filter of from 1 to 1.5 mm. thickness.
3. The secondary rays, forming in the metal filter, are rendered inert by a rubber cot of from 1 to 3 mm. thickness.
4. Inoperable cancers that are not far advanced so that cauterization is not contraindicated yield satisfactorily to radium therapy.
5. Advanced inoperable and recurrent cancers are ordinarily refractory toward the radium rays. Any improvement is at least very temporary.
6. The patients treated with the rays after surgical removal of the organs have done well, although the time elapsed since the treatment averages eight months.
7. Patients suffering from cancer should be treated surgically and then radiologically, and if surgery is contraindicated they should receive radium treatment, which at least relieves the subjective symptoms and often the objective ones.
8. The time elapsed since the commencement of the radium treatment in all the cases enumerated is too short to permit definite opinion as to the remote results of radium treatment.
9. Clinical and histologic studies enable us to pronounce the radium rays a valuable addition to the therapy of cancer.
10. It will require years of constant observation to demonstrate such results as anatomic cures.
11. The same measure that is applied to establish the efficacy of surgical procedures in cancer treatment must certainly be employed in radiotherapy.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BURNAM AND KELLY, AND SCHMITZ

Dr. J. F. Percy, Galesburg, Ill.: Ewing of New York said a few years ago that the balance in cancer is easily upset; and this must be true, because there are a number of methods of destroying or inhibiting cancer that have a certain number of clinical cures to their credit. It would be interesting if we could go back in a historical way to these various methods and determine just how much they have accomplished. One thing has been brought out by both of these papers, and that is the totally inexplicable way some cases are clinically cured and other cases apparently of the same type are either made worse or not affected by the same treatment. The problem of the treatment of inoperable cancer of the uterus has always been of the gross mass, and it is a question whether or not radium, in the great mass of cancer usually seen in the cervix, is as valuable as some other method that will at once, or in a comparatively few minutes, get rid of this gross mass. Another problem is the metastasis, and I am glad that both the essayists have mentioned an immunity, or, at least, suggested it. This immunity is undoubtedly developed in greater or less degree, and without doubt takes care, in many cases, of the metastases after the destruction of the gross mass. At least I am convinced of this from my own experience. I am especially interested in the destruction of the gross mass by heat. I am convinced that this method is the most certain of any of the methods that have been brought to our attention. In addition, it does not require specialized judgment and the apparatus required is comparatively inexpensive. One of the difficulties of radium and the Roentgen ray in attacking the gross mass of cancer is that they break down a lot of cancer cells, and if drainage is not provided, an overdose of the broken-down cancer cells may be absorbed and kill the patient. In other words, even with radium or the Roentgen ray, if one attacks the gross mass he must provide for some form of drainage. This is easily done with the heat technic. It is not easily done with either radium or the Roentgen ray.

Dr. S. M. D. Clark, New Orleans: The two papers show definitely that we are not marking time in the warfare on cancer. We are beginning to see rays of light, and I feel confident that if the present pressure is kept up, our results will progressively improve. I am sorry that I cannot discuss the subject from the radium point of view, but since I note that the best results obtained by one of the essayists was when using the radical operation after the growth had been transformed by using radium, it seems appropriate to consider cancer of the uterus from another angle.

Though the Percy heat method has great merit, still when viewed in the light of a cure, it falls short and is to be looked on more as an adjunct or link in the chain of treatment. Time is too short to go into the detail of my combination method, but its chief point rests in being able to transform inoperable into operable cases by performing the work as a two-stage operation. At the first sitting the abdomen is opened and both internal iliacs and one ovarian artery are tied, primarily for the purpose of starving the growth, as well as to control secondary hemorrhage. Heat is applied at the same time. After three to five weeks' interval the patient is transformed constitutionally and locally, when the radical removal is done. This method increases operability and decreases the primary mortality. If we keep accurate records of our work, in ten years stock can be taken of our results, and the best method adopted.

Dr. Henry Schmitz, Chicago: It is a question of developing first the therapy, and second the technic of the application of radium. If we do know the amount and the manner in which we should use it, our results will improve. My first cases treated were not so successful as at present. I feel that radium will do more in the eradication of cancer than any other means. I have applied surgery, heat and everything I possibly could use, but since I have been using radium I feel more confident of benefiting my patients.

Dr. Curtis F. Burnam, Baltimore: I omitted one thing that I intended to say, that in the beginning we catheterized and curetted our big masses. More recently we are not doing that. So far as I know, there is no general upset in the treatment. We give a single treatment, and repeat it in six weeks if the growth is still there. If it has gone, we wait three months; but if it has not gone we repeat; and the patient rarely stays in the hospital longer than the day of treatment.

THE ROENTGEN-RAY TREATMENT OF SKIN DISEASES *

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NEW YORK

THE DERMATOLOGIST AND THE RADIOLOGIST

Now that Roentgen-ray work is becoming highly specialized, there seems to be a tendency to separate dermatology from roentgenotherapy. This is both desirable and undesirable. So far as concerns the Roentgen-ray treatment of skin diseases, two general attributes are essential — a knowledge of dermatology and skill in modern Roentgen-ray technic. The dermatologist possesses the former and he can easily acquire the latter, for the difficulties are more imaginary than real. The pure roentgenologist, while being expert in Roentgen-ray technic, lacks a dermatologic training, as also do many of the physicians who refer patients to him for treatment. To avoid errors in diagnosis and the obvious consequences, it would seem advisable to adhere to one of three schemes: for the dermatologist to employ the Roentgen ray; for the roentgenologist to have at least a clinical knowledge of dermatology; or for both to combine their skill in behalf of the patient.

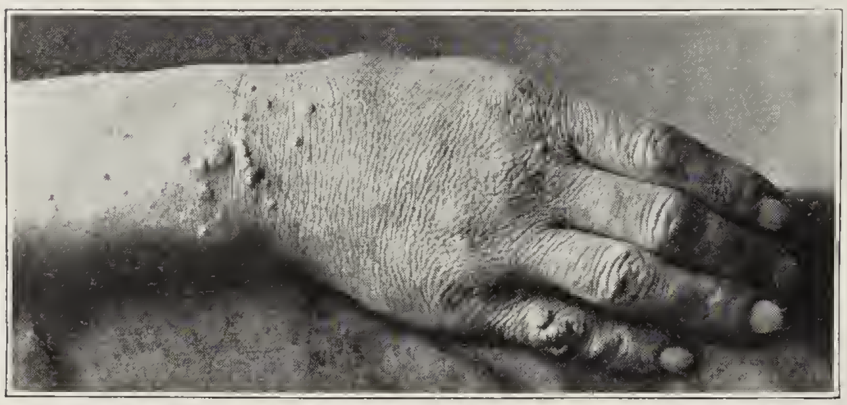

Fig. 3.—A group of hypertrophic lichen planus papules on the wrist. Also two common warts, one on the little finger and one at the base of the index finger.

TECHNIC

In a short, practical paper of this kind it is not possible actually to describe a technic. A general outline of modern methods may, however, be of interest. Two methods are in vogue at the present moment, namely, intensive and divided doses.

Intensive Method.—Here the quality of the ray used is ascertained by direct measurement (Benoist, Walter or Wehnelt instruments), while it is maintained by means of indirect measurement (milliamperemeter, spark-gap, etc.). The quantity is measured directly, through the employment of reliable radiometers such as those originated by Holzknecht and Corbett. In this way every dose is estimated as accurately as modern science will allow. An intensive treatment may consist of enough rays to produce a second degree Roentgen dermatitis, a simple erythema, a loss of hair without erythema, or a dose that is too small to produce a visible effect on the normal skin, but yet too large to allow of its repetition within three or four weeks. The method is thoroughly established and is sufficiently accurate for all practical purposes. No better example of its accuracy can be demanded than the excellent results associated with the intensive Roentgen-ray treatment of ringworm and favus of the scalp.

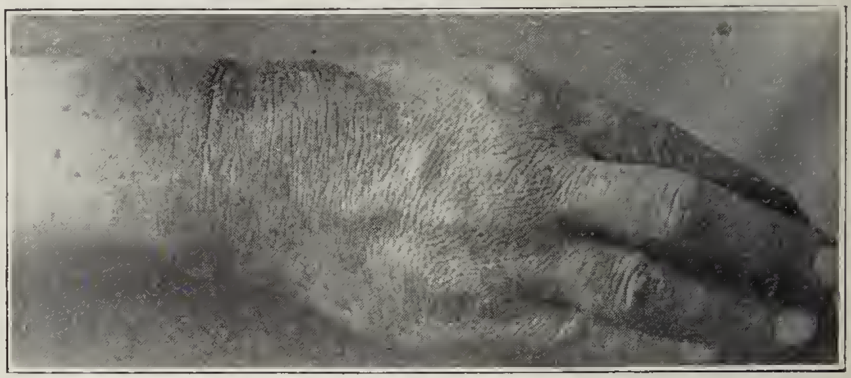

Fig. 4.—Same as Figure 3 after one dose of H 4, B 9 was applied to the lichen lesions. Note the area of temporary pigmentation at the wrist. Note also that the warts have disappeared without having been exposed to the ray.

There is a difference of opinion regarding the quality of ray to be employed in different cutaneous diseases. Contrary to the general consensus, I have found a "hard" ray (B 8 to 10) preferable for routine work and seldom use a ray of lower penetration.

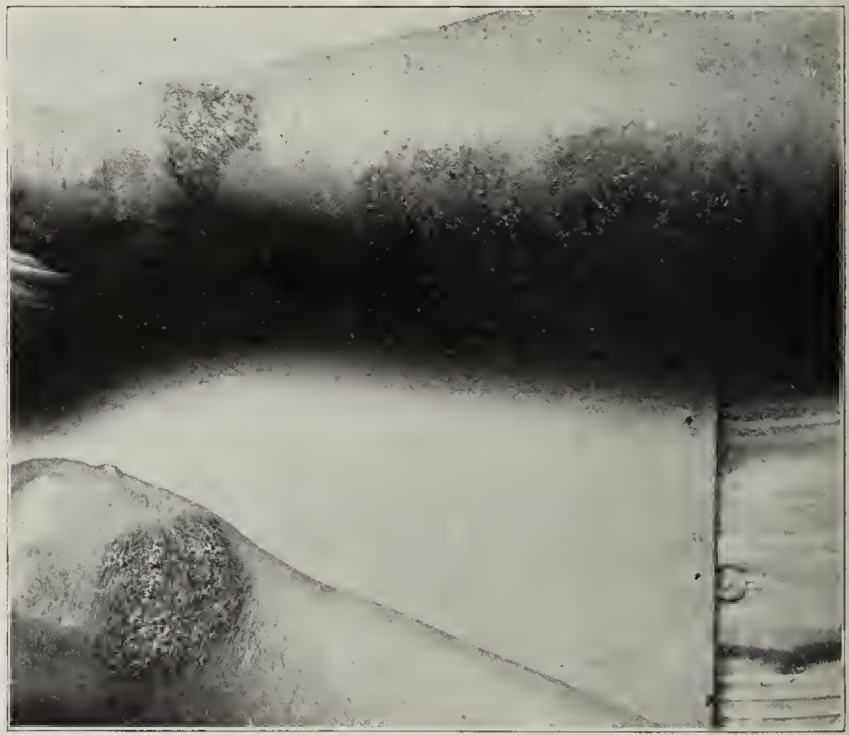

Fig. 5.—Chronic eczema with acute exacerbations.

In considering the quantity, the question of idiosyncrasy and susceptibility should be discussed. True idiosyncrasy must be a very rare phenomenon. Again I direct attention to thousands of cases of tinea tonsurans that have been treated with intensive Roentgen radiation without a single example of idiosyncrasy having been encountered. As a matter of fact, as an operator becomes more expert and experienced he employs the term less frequently. I do not deny the possibility of true idiosyncrasy—it undoubtedly does exist—but it is extremely uncommon. Hypersusceptibility, on the other hand, is very common. Some parts of the body are more sensitive than others. The skin of aged individuals will tolerate larger doses than will the integument of children. Chemicals, such as iodin, tar, mercury, chrysarobin, salicylic acid, etc., will markedly enhance the action of the ray. The skin of individuals suffering from certain diseases—mycosis fungoides, goiter, eczema, psoriasis—may be hypersensitive. The intensive dose will vary in amount according to the effect desired and the disease treated. In epithelioma, it will be in the neighborhood of 8 or 10 Holzknecht units; in keloid, from 4 to 6 units; tinea tonsurans, 4 to 5 units; eczema and psoriasis, 2 to 3 units, etc.

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* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

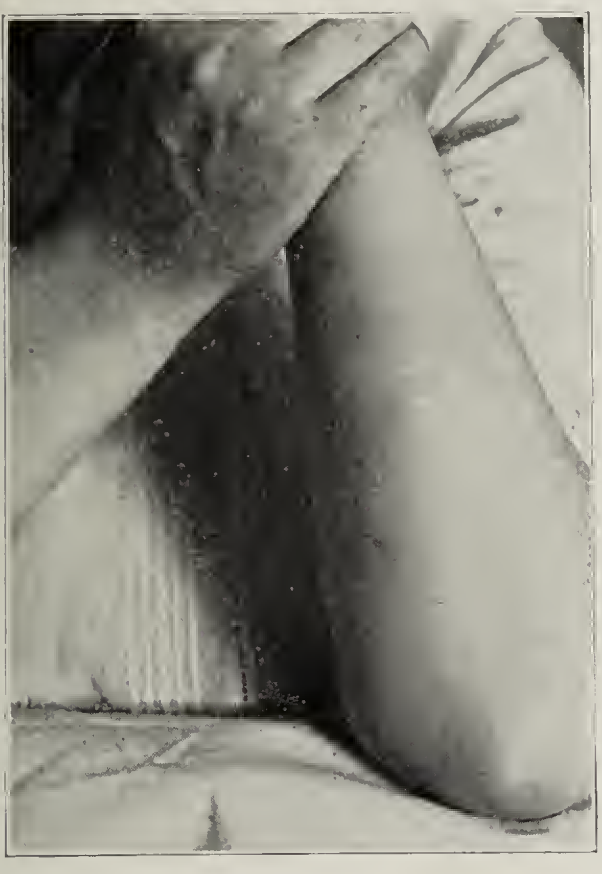

Fig. 6.—Same as Figure 5 after three treatments at weekly intervals, totaling about H 6, B 9.

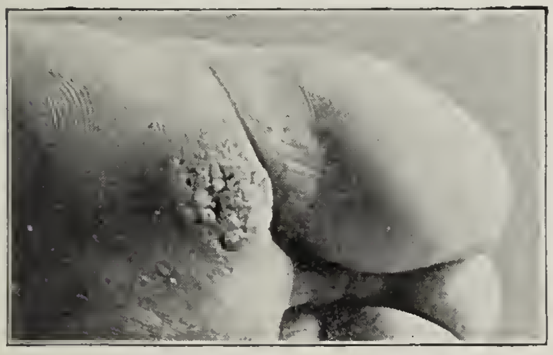

Fig. 11.—Painful plantar wart of 4 years' duration.

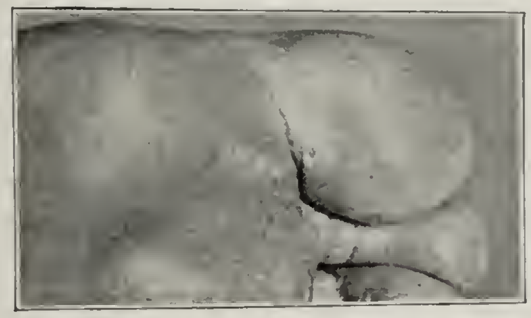

Fig. 12.—Same as Figure 11 after two intensive treatments, each of which consisted of H 6, B 9.

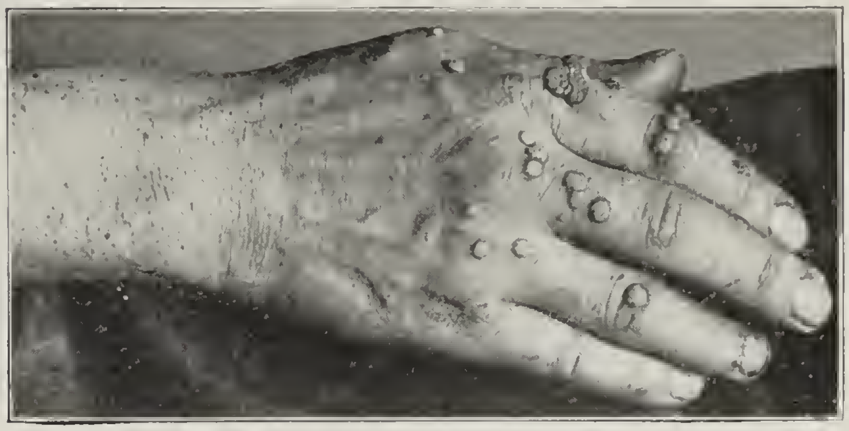

Fig. 13.—Multiple common warts.

Divided Method.—The divided technic is not as accurate and in some diseases it is not nearly as efficacious as is the intensive method. In fact, there are diseases, such as epithelioma and tinea tonsurans, in which the divided method may even prove injurious. On the other hand, in diseases in which stimulation is beneficial (eczema, psoriasis, etc.) it is as good if not actually superior to intensive treatment. In speaking of the divided method it must be recognized that we are dealing with a modernized technic and not with former obsolete methods in which from 50 to 200 exposures were administered in the treatment of an epithelioma. As a matter of fact, the divided method of today, when compared with older technics, is decidedly intensive.

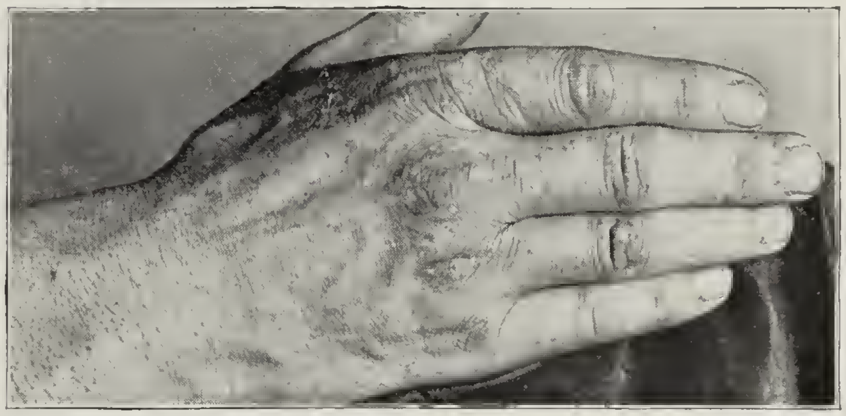

Fig. 14.—Same as Figure 13 after one treatment consisting of H 4, B 9.

Briefly the technic is as follows: Certain fixed indirect factors are established and used as "constants." That is to say, the anode of the tube is always at the same distance from the skin; the milliamperage, the spark-gap distance, the length of the conducting wires, the speed of the motor, the transformer cycle, the rheostats, and, in fact, all adjustable

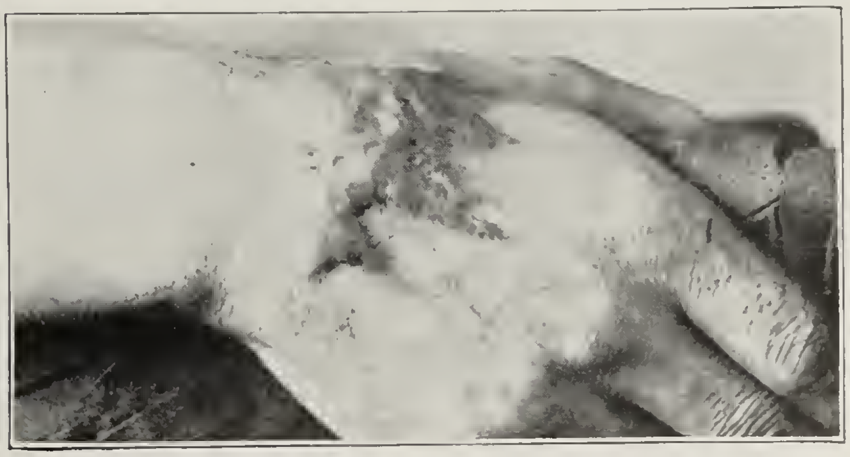

Fig. 17.—An exceedingly hard keloid following an electric burn.

parts are always employed in exactly the same manner for every treatment. Now, with all these "constants" established the time necessary to produce the so-called pastille or erythema dose (about 5 H) is ascertained. Let us assume that the required time is twenty minutes. This may be divided into four treatments of five minutes each or eight treatments of 2½ minutes each, and administered at intervals of from three to seven days, so that the full erythema dose is given in the course of one month.

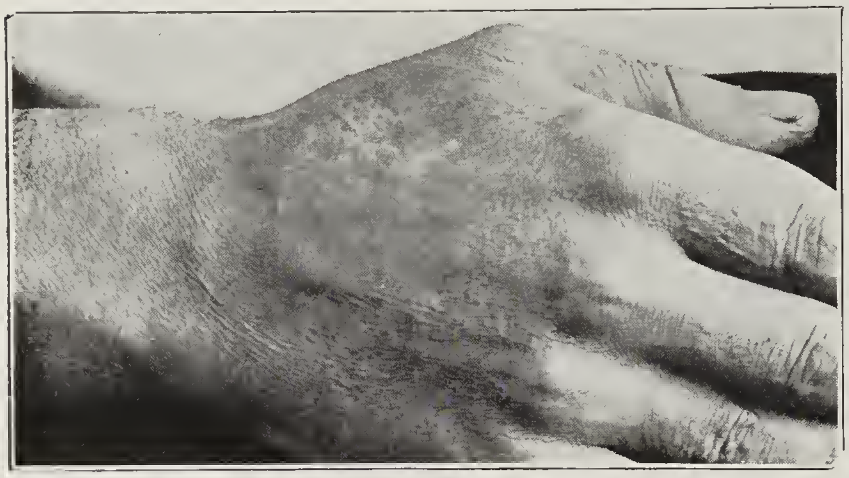

Fig. 18.—Same as Figure 17 after five intensive treatments totaling H 40, B 9, filtered through 3 mm. of aluminum.

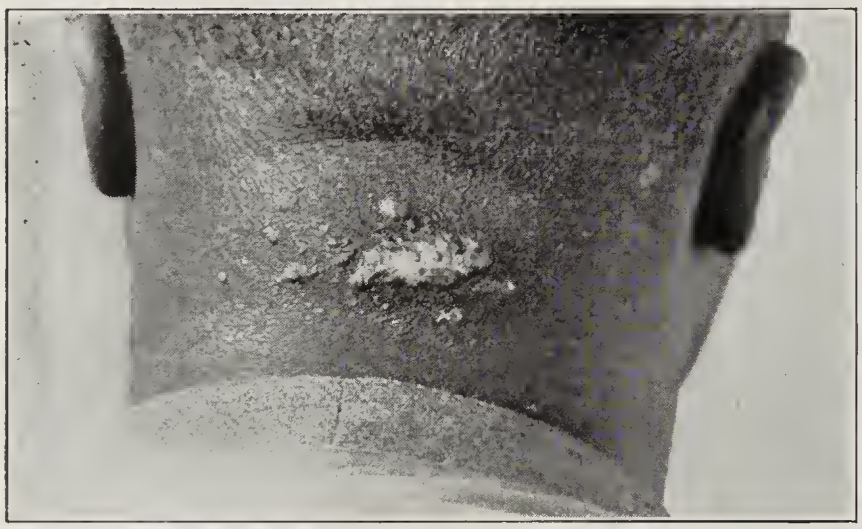

Fig. 21.—Dermatitis papillaris capillitii (acne keloid) in a negro.

There are several technics for the divided method; it will vary according to the apparatus employed, and, also, in accordance with the training, skill and experience of the operator. Personal equation is an important factor.

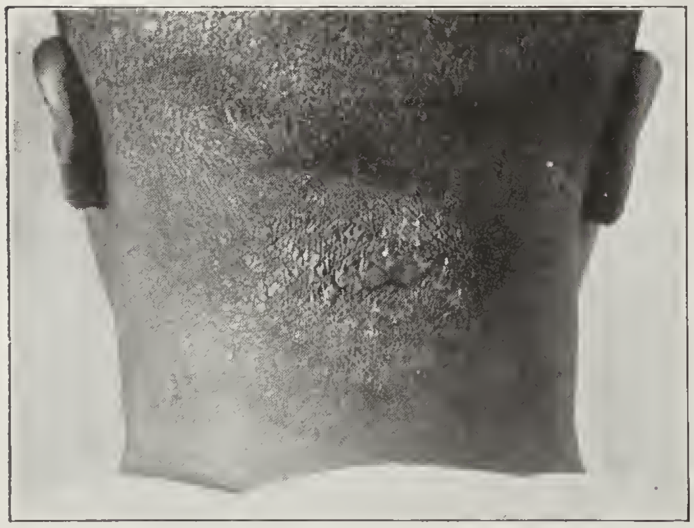

Fig. 22.—Same as Figure 21 after treatment. The lesions were unusually obstinate, and required ten intensive treatments totaling H 50, B 9. The treated skin was depigmented, a defect corrected by using a cutaneous stain.

DISEASES AMENABLE TO ROENTGEN-RAY TREATMENT

INFLAMMATIONS

Erythema Induratum (Bazin's Disease). — This affection, now known to be a true but benign type of cutaneous tuberculosis, yields readily, as a rule, to the Roentgen ray. One intensive (suberythema) dose will usually suffice to produce a cure in the ulcerative type of the disease. The subcutaneous nodules are more rebellious. Rest, hygiene, tonics, etc., will usually suffice to cure this disease in a few months, but in stubborn cases the Roentgen ray is of considerable service.

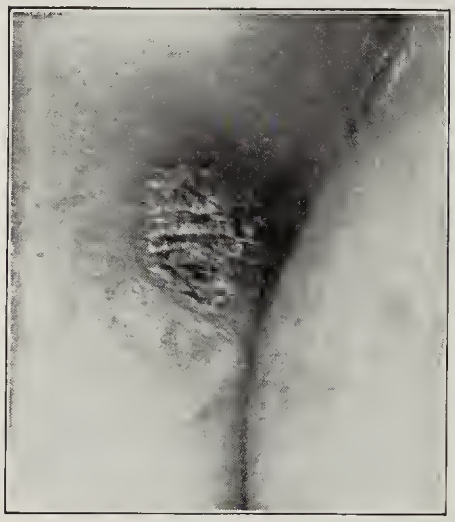

Fig. 25.—Hypertrophic lupus vulgaris returning after operation.

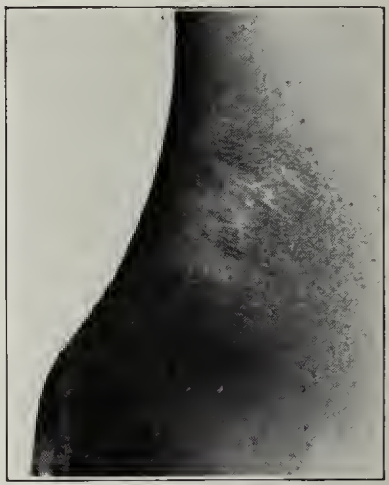

Fig. 26.—Same as Figure 25 after one intensive Roentgen-ray treatment.

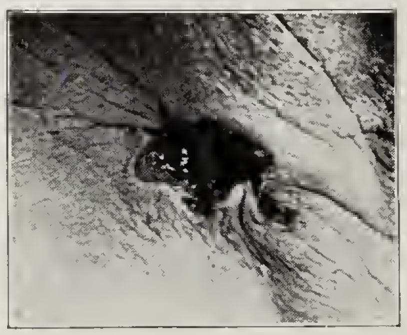

Fig. 32.—Ulcerating basal-cell epithelioma with considerable induration of margin.

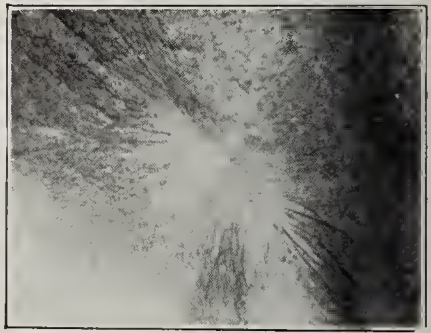

Fig. 33.—Same as Figure 32 after one intensive treatment consisting of H 8, B 9. Treated three years ago—no relapse.

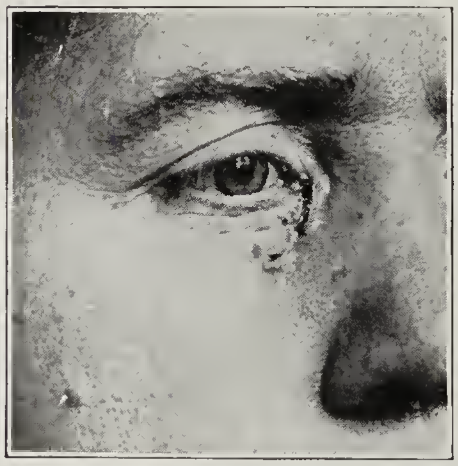

Fig. 34.—Ulceronodular epithelioma of inner canthus—a favorite situation and a difficult position for operation.

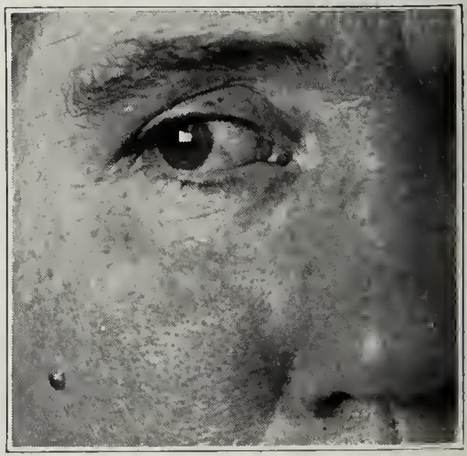

Fig. 35.—Same as Figure 34 after one intensive treatment of H 8, B 9. Treated three years ago—no relapse.

Granuloma Annulare.—I have treated only one case of this disease. The patient presented numerous tumors on the hands, arms and ears. Each lesion disappeared under the influence of a single treatment of 4 H units of a B 9 ray — in other words, a suberythema dose. The Roentgen ray, of course, will have very little if any influence on the future course of the disease.

Prurigo.—Small doses of the Roentgen ray produce favorable effects in this recalcitrant juvenile affection, chiefly through its antipruritic powers. It does not materially alter the course of the disease. The divided-dose technic is indicated here and after one course of treatment an interval of several months should elapse before another course is given in order to avoid possible injury to the epiphyses.

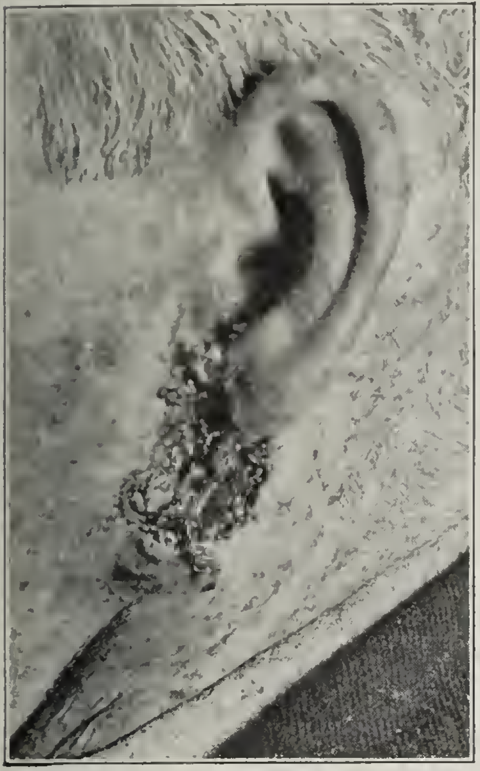

Fig. 38. — Squamous-cell (malignant) epithelioma — hard and deep seated.

Lichen Planus.—From a practical point of view the Roentgen ray is of service only in the hypertrophic type of the disease, when there are a few isolated, resistant patches. Here it is extremely efficacious. A few days after a single suberythema dose the itching ceases and in two or three weeks the lesions disappear.

Psoriasis. — Ordinarily, psoriasis is easily controlled by the proper use of dermatologic remedies, so that the use of the Roentgen ray is limited to resistant lesions or to the so-called inveterate patches of the disease. The psoriatic skin is hypersensitive to Roentgen radiation, possibly on account of the previous use of chrysarobin or other irritating chemicals. For this reason, and also because, as a rule, very little ray is required, it is preferable to employ the divided - dose technic. In stubborn cases the Roentgen ray will be found of real value.

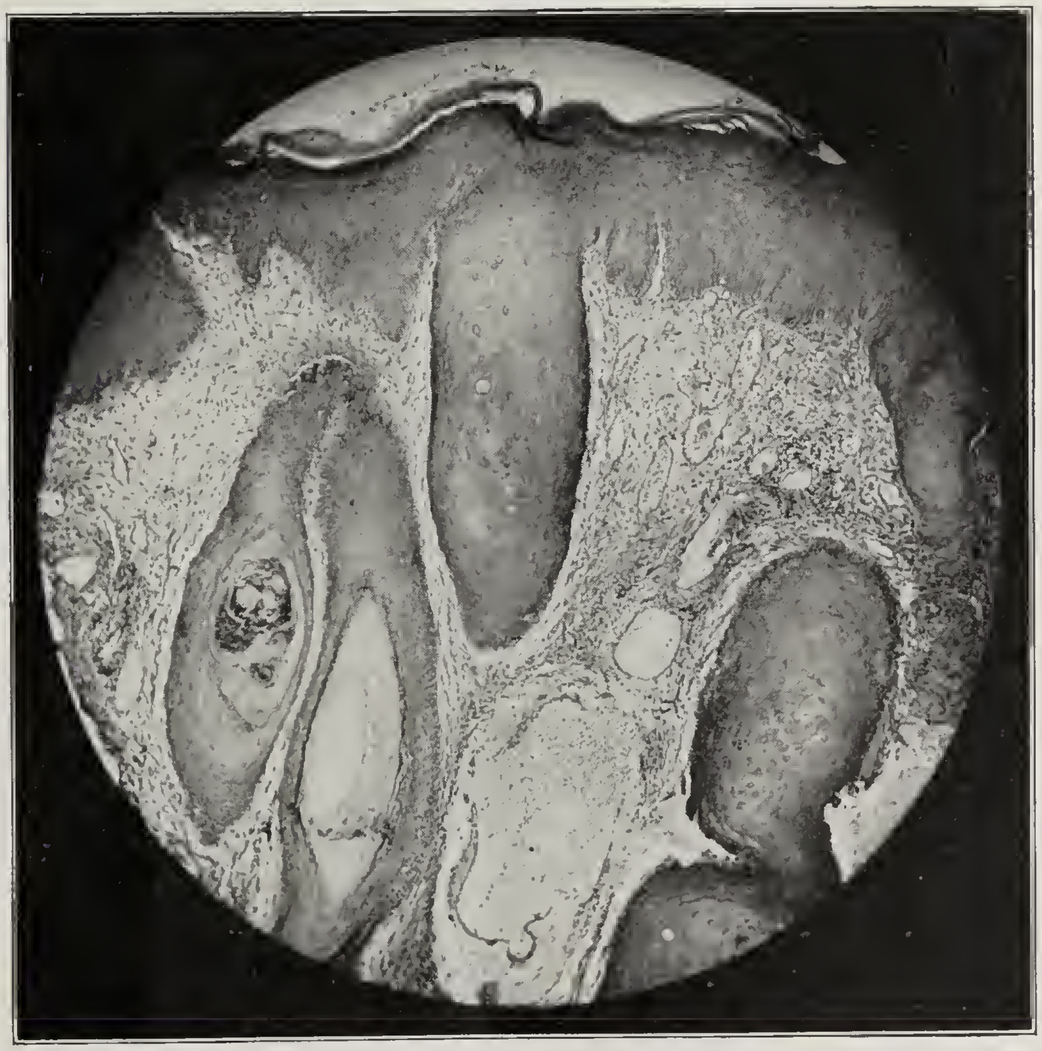

Fig. 39.—Photomicrograph of small piece of tissue removed from lesion shown in Figure 38.

Eczema. — In eczema the Roentgen ray is of service only in the subacute, chronic and rebellious types of the disease, especially where there are a few isolated, thickened, pruritic patches that have resisted ordinary measures. There is, however, one exception, namely, the acute or subacute vesiculosquamous eczema occurring in patches on the dorsal surfaces of the hands and fingers. Here the Roentgen ray is exceedingly efficacious, and is specifically indicated, because this clinical type of the disease is notoriously rebellious to all other therapeutic measures.

The obstinate keratotic eczema of the palms and the soles will usually yield rather promptly to the Roentgen ray after they have refused to respond to other forms of treatment. In most types of eczema, as in psoriasis, the Roentgen ray is not indicated until regular dermatologic remedies have been tried, for, as a rule, the simpler measures will suffice. Again, as in psoriasis, and for the same reasons, the divided-dose technic should be employed.

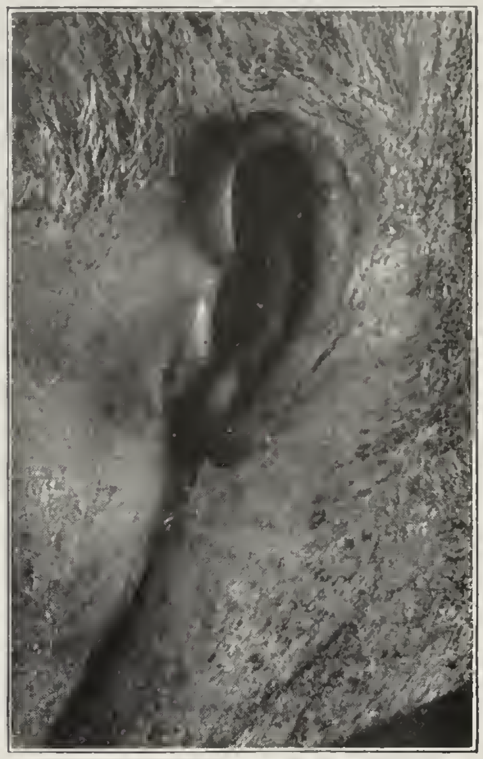

Fig. 40.—Case in Fig. 38 after two filtered, intensive doses of H 16; no relapse for one year.

Lichenification and Lichen Circumscriptus.—In these affections, a single small dose of the Roentgen ray will usually suffice to overcome the itching at once and cause the eruption to disappear in a few weeks, especially if the treatment is reinforced by ordinary dermatologic remedies.

The divided technic gives equally good results.

Pompholyx (Dyshydrosis). — Fractional doses of the Roentgen ray are a help in combating this affection, which not infrequently is stubborn.

Hypertrophies

Clavus, Callositas and Verrucae. — Corns will usually respond to one or two intensive doses. It is necessary, however, in order to avoid recurrences, to ascertain and overcome the cause, such as pressure from tight or improper shoes. Some of my most brilliant therapeutic results have been obtained in the Roentgen-ray treatment of callositas, or painful plantar warts; certainly the patients are very grateful for the relief. I know of no other treatment that can compare with the Roentgen ray in efficiency. The thickened horny layer should be removed with a razor and then an intensive dose of the Roentgen ray administered. The first treatment may consist of H 4, B 9. In some instances this one application will suffice. More often, however, a second treatment will be necessary, and this should not be given in less than four weeks from the first application, and the dose may be increased, unless contraindicated, to H 6, B 9. I have never been compelled to give more than three treatments to produce a complete cure, and as yet I have not had a single recurrence. My results with the intensive treatment have been far superior to those obtained before I developed the intensive technic. The common wart (verruca vulgaris) will usually disappear as a result of a single intensive treatment. Not infrequently the treatment of one wart will cause the disappearance of similar lesions in the same neighborhood. Various types of hyperkeratosis may be influenced by the Roentgen ray, such, for example, as senile keratosis, keratosis palmaris et plantaris, ichthyosis, keratodermia, etc.

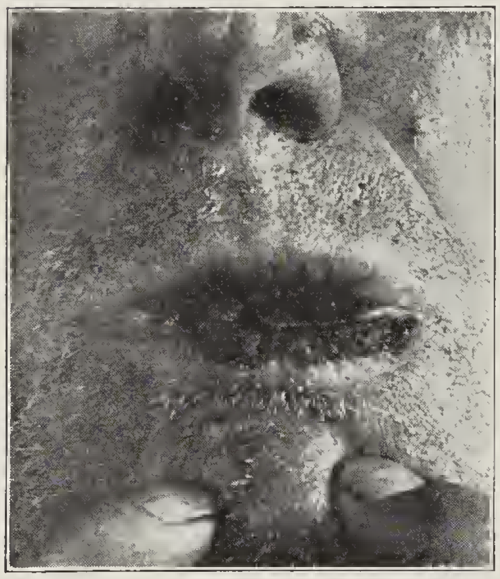

Fig. 45. — Epithelioma of lip without glandular involvement. The lesion consisted mostly of a keratosis, but there was some clinical infiltration. This should probably be considered a preepitheliomatous lesion, or a very early epithelioma.

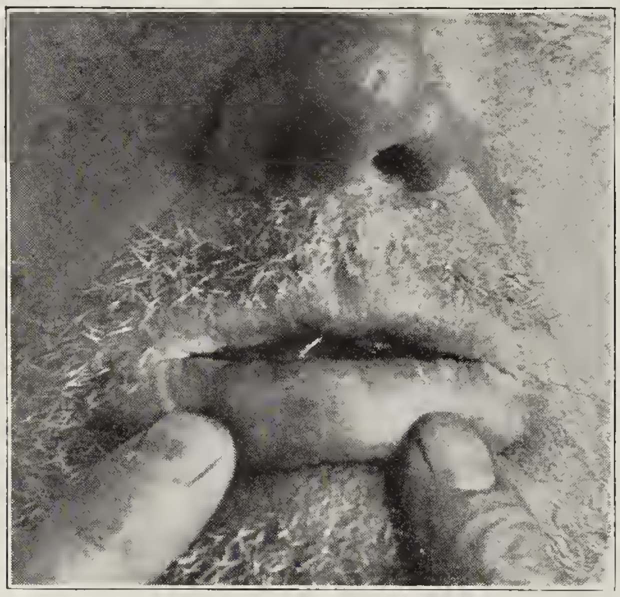

Fig. 46. — Same as Figure 45. The thickened horny layer was first removed, and then two intensive doses of H 8 each were administered. There has been no return over a period of two years. There was a little leukoplakia, which also disappeared.

New Growths

Keloid. — Excellent therapeutic and cosmetic results can be obtained in hypertrophic scars, traumatic and "spontaneous" keloids and acne keloid (dermatitis papillaris capillitii). The Roentgen ray is indicated in these affections not only because of its efficacy, but because there is no other reliable treatment. In very large keloids it is preferable to ablate and then apply the Roentgen ray as a prophylactic. This may be done, also, in small keloids, in order to obtain a perfect cosmetic result. I have never observed a recurrence after Roentgen-ray treatment. Unfortunately, keloid requires large quantities of Roentgen ray, and for this reason the intensive method is to be preferred. A well-developed keloid will necessitate from two to six intensive treatments. It is not safe to apply more than six or eight intensive doses at intervals of from four to six weeks, because of the danger of permanent injury to the skin. In very obstinate cases it is preferable to intervene surgically and employ Roentgen ray as a prophylactic, or to give the intensive doses in courses, each course consisting of three treatments at intervals of four to six weeks, with an interval of one year between courses.

Nevus Vasculosus.—The Roentgen ray is capable of producing good results in vascular nevi. The treatment is apparently more efficacious in deep-seated nevi (cavernous angioma) than in the superficial "portwine" marks. In the past, judging from the literature, radium has produced better results in this affection than has the Roentgen ray, but perhaps the future will see the two agents favorably compared in this respect. More experimental work is required, especially in regard to the quality of ray to be used. The few cases that I have treated have required several intensive doses of a "hard" ray before much effect was observed. It is possible that a "soft" or even an "oversoft" ray will prove more effective.

Rhinoscleroma.—The Roentgen ray is almost a specific in this rare, disfiguring and uncomfortable disease. It should be employed intensively, and on account of the fibrosis a well-filtered, "hard" ray is indicated.

Tuberculosis Cutis.—In the literature one finds reports of cures obtained with the Roentgen ray in tuberculous ulcers of the skin and mucous membranes, but I have found such lesions exceedingly stubborn unless of a benign type, such as lupus vulgaris or tuberculosis verrucosa cutis. The hypertrophic and ulcerative types of lupus vulgaris, even when involving the mucosa, usually yield to from one to three intensive doses. The atrophic type of disease, with deeply embedded (apple-jelly) nodules, resists the treatment; at least this has been the case in my hands. In the treatment of lupus vulgaris I have found the intensive technic superior to the divided dose method.

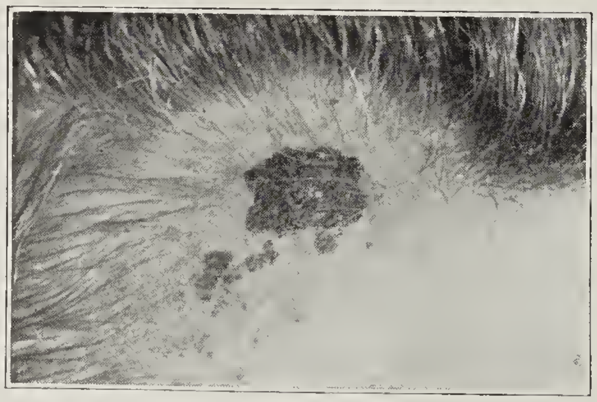

Fig. 47.—Melanoma.

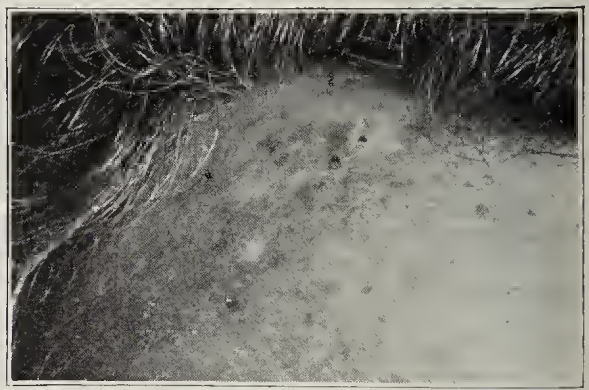

Fig. 48.—Same as Figure 47. Patient received three unfiltered, intensive treatments totaling H 14. A few months later there was a relapse. Two filtered treatments totaling H 24 were then given. No relapse since November, 1914.

Relapses may occur, but not as a rule. Personally I have not had a single recurrence where the patient remained under treatment until the lesion completely disappeared.

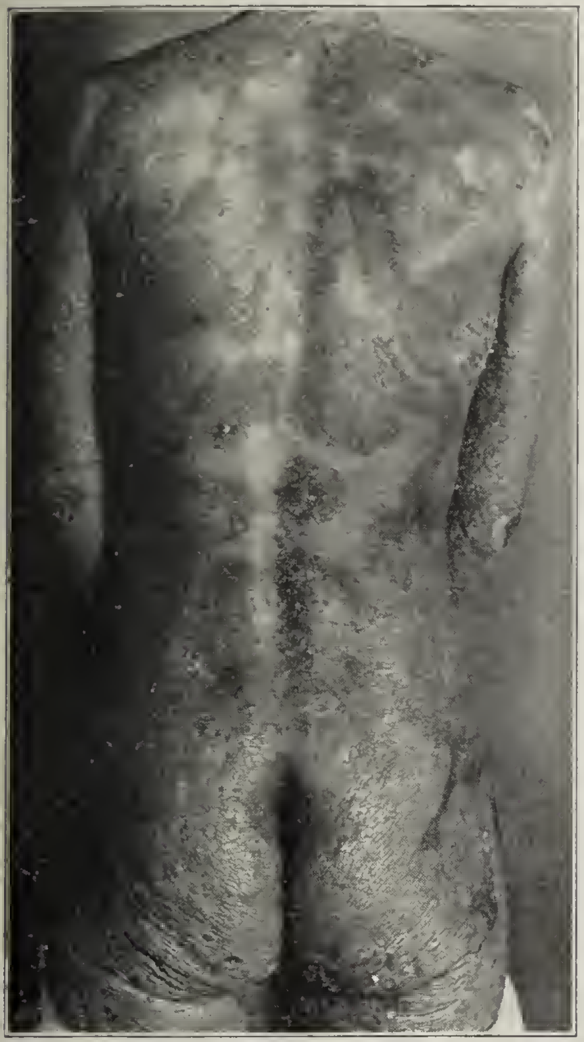

Fig. 53.—Mycosis fungoides.

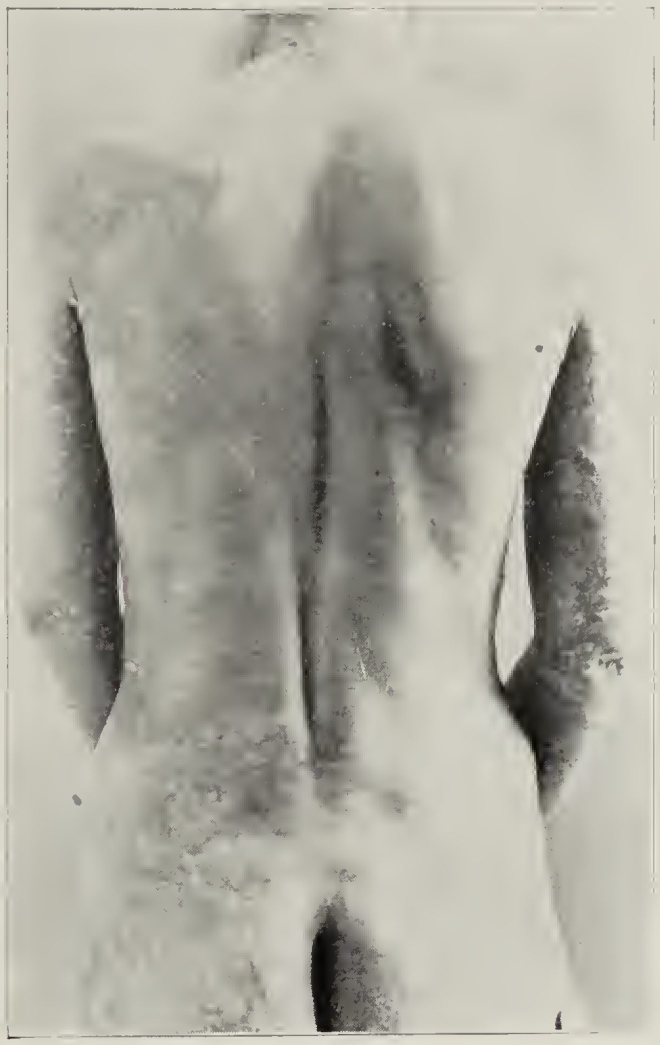

Fig. 54.—Same as Figure 53 after one mildly intensive treatment. The patient was first "immunized" by fractional doses applied to lesions on other parts of the body.

Tuberculous adenitis, with or without scrofuloderma, yields good results with the intensive treatment. Here my best results have been obtained by the use of a "hard" ray filtered through 3 mm. of aluminium, the dose ranging from 4 to 8 H; several treatments are necessary as a rule.

Tuberculosis verrucosa cutis, if the warty excrescence is first removed by the curet, will yield to a single intensive application. Otherwise several treatments may be necessary. The cure seems to be permanent.

Lupus Erythematosus.—Although records of cures of lupus erythematosus by means of Roentgen radiation are found in the literature, I have failed to cure a single instance of the disease by this method and therefore I prefer other measures, such as the solid carbon dioxid. It seems unwise, in lupus erythematosus and atrophic lupus vulgaris, to apply enough ray to permanently injure the skin, because these diseases seem to invite the development of malignant epithelioma and excessive Roentgen-ray dosage simply adds fuel to the fire.

Epithelioma. — The ulcerative type of basal-cell epithelioma (rodent ulcer) can be completely cured with one erythema dose. The nodular type may require two or three treatments unless the lesion is first curetted. Recurrences are uncommon, there is no pain, no scarring and no interference with business, so that it would seem that the Roentgen ray might be considered the method of election in the treatment of this affection. There are cases, however, that will not yield to the Roentgen ray, but, fortunately, such instances are extremely uncommon. The most rebellious examples that I have encountered are those in which the lesion had been treated by obsolete Roentgen-ray methods. A few years ago it was not uncommon to hear of an epithelioma receiving as many as 150 Roentgen-ray treatments—small, oft-repeated, stimulating doses. These lesions improved to a certain extent and then became very recalcitrant to all forms of treatment; or if they healed under the influence of the Roentgen ray they were very likely to recur. The explanation is possibly that so many stimulating doses taught the tissues to resist the beneficial action of the Roentgen ray; again, it is possible that so much ray produced an analogous effect to that seen on the hands of the pioneers in Roentgen-ray work. It would, therefore, seem advisable to employ intensive treatment and to obtain the maximum benefit with the minimum amount of ray.

I have had occasion to treat a number of benign epitheliomas that had been previously rayed by obsolete methods, and while most of them have responded to the intensive technic, some have remained unaffected and many of them have recurred within a year or

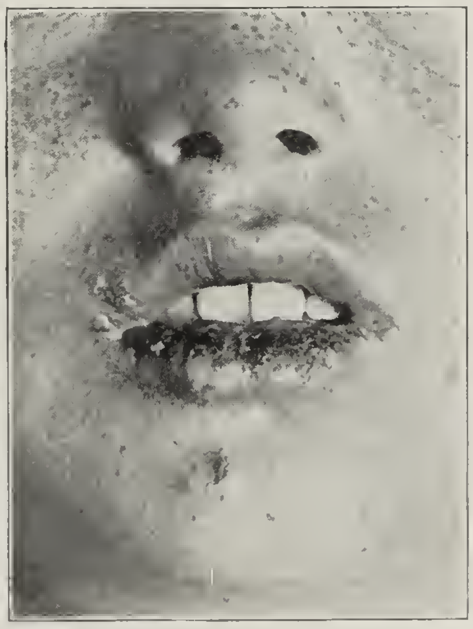

Fig. 61.—Chelitis glandularis of long standing, with a few herpetic vesicles on chin and right commissure.

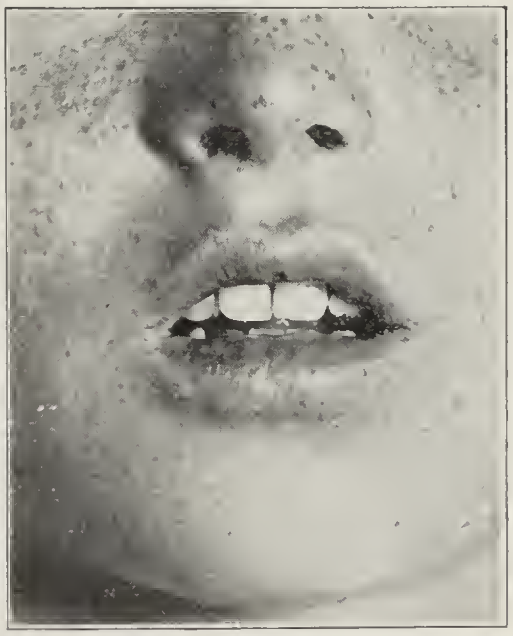

Fig. 62.—Same as Figure 61 after one intensive application (H 4, B 9).

two. In general it may be said that the longer the lapse of time subsequent to former Roentgen-ray treatment, the greater is the chance of recovery under the intensive technic.

In squamous-cell (malignant) epithelioma of the skin the Roentgen ray is uncertain, although very brilliant results are occasionally obtained. Personally I prefer to elicit surgical aid in these instances and employ the ray intensively as a prophylactic, unless, indeed, the case is inoperable. The fact that the Roentgen ray will occasionally cure malignant epithelioma warrants its use in inoperable cases, and as a prophylactic in postoperative cases. In such instances it is wise, also, intensively to treat the neighboring lymphatics, even when these are not palpable.

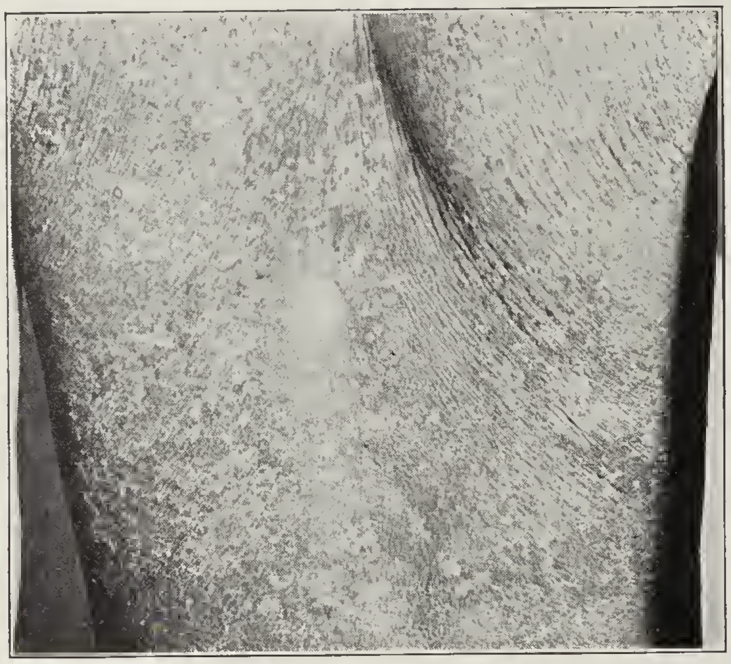

Fig. 63.—Ichthyotic skin.

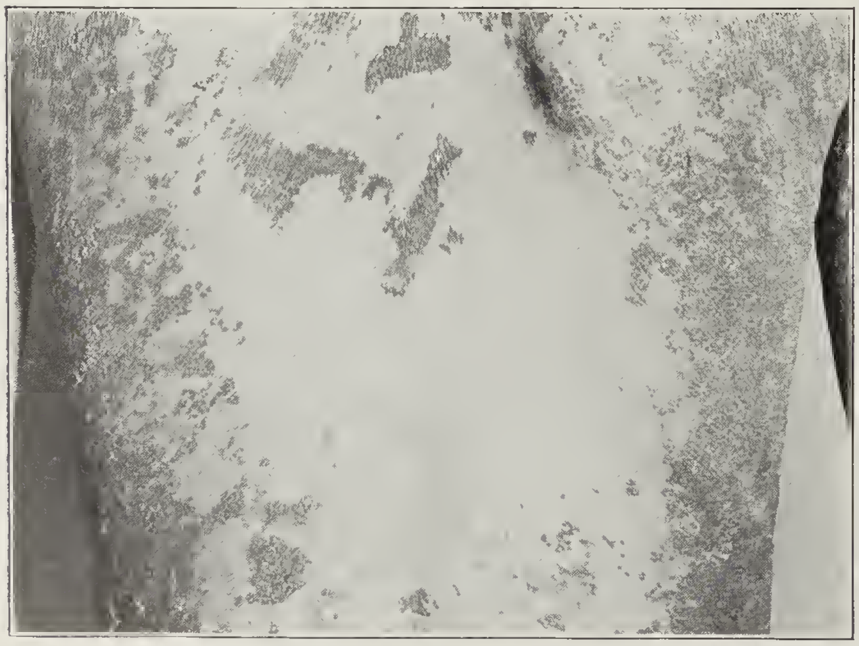

Fig. 64.—Same as Figure 63 after one intensive treatment.

The same remarks may be repeated in discussing epithelioma of the lips, tongue and other mucous surfaces. I have cured (temporarily at least) a number of epitheliomas of the lip, but they have been superficial and the glands were not involved. At the present moment it would seem advisable to refer lip cases to the surgeon and rely on the Roentgen ray as a prophylactic, unless the disease is detected in the earliest stages or unless the case is for any reason inoperable. In regard to epithelioma of the tongue, buccal mucosa and glans penis, I refer all such cases to the surgeon as soon as the diagnosis is established.

Paget's disease, especially if diagnosed early, will yield to a single erythema dose. The preepitheliomatous lesions (keratoses) occurring in xeroderma pigmentosum can be removed by intensive Roentgen-ray radiation. This is interesting, as such lesions are supposed to be caused by the action of direct or indirect sunlight on a peculiarly susceptible skin. In this connection, too, the keratoses produced by the Roentgen ray can be cured by this same agent, especially if employed intensively, and especially, also, if the parts have not been exposed to the Roentgen ray for several years. Senile keratoses (senile verruca, seborrheic warts), which are forerunners of epithelioma, readily respond to a single erythema or even a suberythema application of the Roentgen ray. If there is much thickening of the horny layer, it is advisable to use the curet in order to insure recovery with one application of the ray.

RADIANT ENERGY IN THE TREATMENT OF DISEASES OF THE SKIN *

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In the discussion of this subject, I am presuming that with the present-day knowledge of radiant energy and the physical laws which govern it, whether this energy emanates from the sun or an electrical source, no progressive medical man can longer deny that radiotherapy has come to stay. Even the shrewd merchant in the commercial field has perceived its popularity and has named his goods, "Radium Diamonds," "Violet-Ray Lotions," "X-Ray Corn Solvents," etc.

Radiotherapy is no longer an experiment, and the proved field is becoming more and more widened until all departments of medicine have had to give it consideration.

Surgical diagnosis without the aid of the Roentgen ray is an antiquated art. Medical diagnosis and treatment with some form of this energy has become a matter of daily routine, though perhaps to the dermatologist these agents lend their greatest therapeutic aid.

The forms and sources of radiant energies which are being used by dermatologists are so numerous that I shall be able, within one paper, to mention but few. Of these perhaps the most commonly used are the Finsen light, violet ray, high-tension current effluvia (commonly though incorrectly called the violet ray), radium, and the Roentgen or x-ray.

I have not had personal experience with the application of the Finsen ray or with a strong potency of radium; therefore I shall leave the discussion of these two agents to others who have had sufficient experience and await their tabulated results. So far, however, as I have been able to observe recorded cases, I am convinced that the physiologic and histologic effects of both of these agents are not unlike those of the Roentgen ray, except that each differs from the other in potency and in the periods of time required to produce like changes in cellular life. In fact, the effects of the Finsen ray, violet ray, high-tension effluvia,

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* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

radium, and Roentgen ray, when applied to the skin for different periods of time, give reactions which are so nearly alike that it has seemed convenient to divide these effects into the same divisions which have previously been applied to the effects of the Roentgen ray alone:

1. When one of these agents is applied directly or in near contact to the skin for a period, we note, when the reaction becomes visible, quoting from Tousey, "a stimulation of the sympathetic nerves, a pouring out of the blood plasma, increased oxidation, and metabolism."

2. When a greater degree or longer period of application has been given, we note an increase of each of the first-named changes, with the additional increase of hyperemia, elevation of temperature, and a beginning of cell degeneration with a slight exfoliation of the superficial layers of the skin.

3. If the application is continued longer or in a still more intense degree, we note an exaggeration of all the second-degree symptoms, with the beginning of an inflammation in the delicate lining membranes of both the blood and lymph channels, producing an obliterating endarteritis and lymph block throughout the area receiving the direct rays. This may be of such degree as to cause a complete death and slough of the tissue. These degrees of reaction more correctly describe those which are produced by radium, violet ray, and Roentgen ray.

The reactions, following the application of high-frequency effluvia (that is, the violet-colored light with its shower of sparks produced by the passing of a high-tension current through a glass vacuum electrode), of fulguration (the hot spark of the same current when allowed to leap from a pointed electrode), and of diathermy (the intense heat of the tissues which is produced by the double or bipolar high-tension current placed in contact with the surface of the lesion on opposite sides) are similar to the agents named above, though they produce their reactions *immediately* following their application.

It is a demonstrable fact that cellular life is stimulated and metabolism increased within the first degrees of reaction, while within the second and beginning third degrees cell life undergoes degenerative changes, the pathologic cells degenerating at an earlier period and with more rapidity than the normal cells. To this law we owe the successes accomplished in the treatment of malignant and other pathologic growths; also, may I suggest, in the first degree or its effects is found, no doubt, the secret of many of our failures.

Then, as already implied, I believe that whenever we have more carefully studied the histopathology of diseases to be treated, and acquired a more accurate technic of application, we shall more nearly agree as to the value of these energies and have our efforts more commonly crowned with success in the treatment of a certain class of superficial malignancies and diseases of the skin.

I have often longed for the time when skin diseases might possibly be classified with reference to their etiology, histopathology, etc., so that we might study these methods of treatment more systematically and be able to present them to medical students in a more intelligent manner. I have in recent months undertaken such a classification, and though as yet it is tentative, it coincides with my experience in the application of electrotherapeutic methods. These conclusions are based on an experience of nearly thirteen years with the use of one or more forms of these energies, the last seven years being devoted exclusively to dermatology and electrotherapy.

Under the first division or class of skin diseases, I have placed those which have not been favorably influenced by the application of radiotherapy, except in the region of its local application. These diseases constitute a class whose etiology is yet unknown, though they are supposed to have their origin in some toxic product which has been absorbed or has failed to be eliminated by the internal organs, whose function it is to act on them, such as dermatitis herpetiformis, the different varieties of erythemas, the lichens, psoriasis, etc. By way of parenthesis permit me to say that since hearing Dr. Rosenow's report on his discoveries in erythema nodosum, I have been making radiograms of the teeth of a number of these patients and have collected strong evidence tending toward a conclusion of focal infections as a possible etiology in many of this class of diseases; but I am not yet in a position to report on these cases.

Under a second division, I have named a class of diseases which appear to be an inexplicable derangement or condition of the superficial glands, nerves, or of metabolism within the cells, no doubt internal or central in origin, which are favorably influenced by some form of radiotherapy, though with few exceptions they are best relieved by medicinal means combined with some form of radiant energy. Among there are such as: hyperhidrosis, pompholyx, pruritus, prurigo, herpes zoster, most forms of eczema, etc.

In a third class I place most of those diseases which are superficial in origin and are due to local infection of a micro-organism of some variety, such as acne vulgaris, staphylococcic and streptococcic infections, erysipelas, and practically all the mycoid and fungoid infections of the skin, including the tineas, blastomycosis, sporotrichosis, etc. A large percentage of this class will yield nicely to one or more forms of the radiant energies without the use of medicinal applications, though in most of these cases I would prefer to use a combination of medicinal treatment and radiotherapy.

In a fourth class I shall place practically all lesions or diseases which are characterized by an increased development of pathologic cells, whether of a benign or a malignant nature, such as fibroma molluscum, rhinophyma, keloids, superficially located epitheliomas, etc.

I believe that most of the above-named classes of lesions are amenable to some form of radiotherapy alone, if this is applied with intelligent and cautious technic in the earliest stages of the development of the lesion.

Briefly reviewing, then, and speaking more specifically with reference to a few of the above-named classifications, I believe that an attempt to treat a class of skin diseases which are evidently systemic in origin, whether of a toxic or infectious nature, by radiotherapy locally applied, may give some temporary relief, though it is like an attempt to destroy the life of a serpent by beginning at its tail. These agents, therefore, can be recommended only as one of the aids of dermatologic therapy. I have found the Roentgen ray in the treatment of hyperhidrosis, dyshidrosis and several forms of eczema an almost indispensable aid if pushed to a point of first reaction in the first series of treatments, though without other or medicinal treatments these eruptions are prone to recur. The Roentgen ray has given me valuable aid in the treatment of all forms of pruritus and in one case of true prurigo I have been entirely successful.

Perhaps the most remarkable effect observed on any disease under the second classification is the almost certain relief from the lancinating and burning pains, so characteristic in herpes zoster, which occurs when the high-frequency effluvia is vigorously applied over the trunk and superficial nerve supply of the parts affected. This relief sometimes comes immediately following only one application.

In view of the clinical reports of the treatment of tineas with the Roentgen ray by Sabouraud several years past, it is unnecessary to comment on my own verifications of it, since most of you have doubtless experienced the same gratifying results.

Notwithstanding the fact that the treatment of acne vulgaris and acne rosacea by Roentgen ray has been disparaged by many dermatologists as dangerous, and giving unsatisfactory sequelae, etc., I have continued to use this most valuable aid as a routine for ten years in the treatment of these diseases and in not a single case as yet have I had cause for regrets.

Erysipelas has long been known as a local and superficial infection with systemic products. With this in mind I began, in 1910, to treat the early manifestations of this disease by a single series of Roentgen-ray exposures and after treating a number of cases, beginning at an early stage of the disease, I am fully convinced that it is a most valuable aid. Indeed, in some of these cases, I noted after either a single or a second exposure an immediate flushing of temperature, which, however, subsided within from two to six hours, with an abating of all symptoms and an uneventful recovery.

Of the fourth classification, perhaps the most uncertain results I have obtained have been in the treatment of the different varieties of sarcomas by radiotherapy. This class of malignant growths has not proved a very favorable one to treat by radiotherapy alone. No doubt this is due to their channels of absorption, the blood vessels, which are not rapidly and quickly blocked without an unusually strong treatment. With this exception, I have found the treating of this class of lesions by fulguration, diathermy, or Roentgen ray one of the most successful and satisfactory phases of all my work, and furnishing an unbounded field for dermatologic practice.

The treatment of superficial epitheliomas before the stage of well-developed metastasis has been a large part of my practice and I cannot refrain from reporting a few of the totals and percentages briefly gleaned from my records of the past few years.

For these cases and for most valuable assistance rendered in the treatment of them I am much indebted to my many professional friends of Oklahoma and other states, and to my associate in practice for the past six years, Dr. M. M. Roland. The length of this paper will not permit more than a statement of totals, without comment. A number of years have elapsed since treating my first case of epithelioma with the Roentgen ray, and it is therefore impossible at this time to trace the after-history of all of my early cases. Therefore, taking our records consecutively for the last seven years, we have been able to trace 177 cases of epitheliomas of different varieties and located superficially on various parts of the body. In a large number of these cases the diagnosis was verified both microscopically and clinically. From this number we have to deduct fifteen cases in which the patients have later died of the same disease or have had a recurrence, and we count them as Roentgen-ray failures. This leaves 162, or 91 per cent., in which the patients are now living with no evidences of return.

We have learned that epitheliomas located on the hands and on the alae of the nose, just at its fold on the cheek, perhaps owing to a greater mobility and irritation, are of an uncommonly stubborn nature, and five of our failures have been in such cases. If therefore, we had subtracted the cases at these particular locations, we should have 94 per cent. living instead of 91 per cent. of those treated by Roentgen ray alone on selected locations.

And now, you may say, what of the much-discussed location of epitheliomas on the lips? We have traced twenty-seven consecutive patients who were treated by the Roentgen ray alone during the past seven years. Of this number, twenty-two, or 81 per cent., are still living without recurrence. Some of these were treated five and some seven years ago, and we have no doubts that a majority of these are entirely well.

It may be said that no such record can be made except in select cases. This I admit, although in a number of these cases the lesions were well-developed indurated growths as large as a hazelnut or larger, and one of these cases had perceptible evidence of metastasis in the submaxillary region. Most of them, however, were those, as above mentioned, in which treatment was begun before evidence of metastasis, and had not more than one third of their surface covered by the mucous membrane.

In conclusion, then, I shall say that my experience with the use of radiotherapeutic agents in skin diseases has taught me:

1. It is necessary to look carefully into the pathology and etiology of a disease before attempting to treat by one of these methods.
2. These agents are valuable aids in the treating of a certain class of skin diseases when combined with medicinal and other methods.
3. There is a class of skin diseases, chiefly local in origin, which can be treated by radiotherapy more successfully than by any other method.
4. While the treatment of malignant lesions with these energies is much abused by the unskilled, yet we are coming to recognize that radium and the Roentgen ray, when properly administered in a selected class of cases, have proved themselves superior to all other methods which have been used to the present time.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAC KEE AND LAIN

Dr. Richard L. Sutton, Kansas City, Mo.: The results attained by these two speakers have done much to convince me of the value of the massive dosage method. In order to avoid disastrous results, however, great care and a considerable degree of skill are necessary. I well recall a recent instance in the practice of a colleague in which this method was employed in the treatment of a case of ringworm of the scalp. A severe burn resulted, and extensive skin grafting was required to correct the ensuing deformity. With regard to the prognosis in cancer of the skin, I have found carcinomas involving the mucous membranes, the lower lip, the cartilage of the ear, the parotid region, and the backs of the hands to be the most dangerous.

Dr. Ernest Dwight Chipman, San Francisco: I remember reading the discussion of Roentgen-ray treatment at a meeting in New York in which some one expressed the view that in New York the Roentgen ray was no longer seriously regarded as a therapeutic agent in dermatology. It seemed to imply that we poor souls in the provinces who still use it are hopelessly behind the times. I am glad Dr. MacKee's paper does not confirm this notion. Dr. MacKee expresses dissatisfaction with small doses and we all must have corroborated that idea in our own experiences. I have noted not only in epitheliomas but also, and particularly, in psoriasis, that while one gets a temporary recovery, recurrence takes place, and the recurrence is more difficult to get rid of than the original trouble. I may have misunderstood Dr. Lain in his reference to erysipelas; I gathered from his paper that the Roentgen ray was a parasiticide, which I have never believed and which I would be glad to hear him explain.

Dr. Douglass W. Montgomery, San Francisco: In epithelioma I like to curet out the neoplasm to get down to the base; and I do that because I believe the Roentgen rays do not act very deeply. Furthermore, there is no object in sparing the diseased tissue. After scraping away the diseased tissue I burn the base with a good penetrating caustic. This serves two purposes; it eliminates any cancerous tissue that may still remain, and it seals the wound against infection. This gives a cleared base on which the Roentgen rays can best act effectively. Dr. MacKee mentioned that in the previous discussion.

Dr. MacKee mentioned a most interesting and difficult matter when he spoke of warts under the nails. We have had now for a long time a girl under our charge with sweating palms and with most persistently recurring warts of the volar surfaces of the fingers. The sweating persisted and the warts recurred even after the employment of Roentgen rays. Some assert that flat warts, verrucae planae, may be removed by Roentgen rays, but I do not see why Roentgen rays should be used on flat warts, and I think it is better to treat them with the curet and strong acetic acid.

Dr. H. H. Hazen, Washington, D. C.: During the past winter I have been doing Roentgen-ray work as done by Dr. MacKee, and I want to say it has been the biggest gain in therapy that I know. There is no more comparison between the old and the new methods of using the Roentgen ray than between any other widely separated things.

It seems to me it might be theoretically dangerous to curet a cancer before using the Roentgen ray. I think the best thing to do when you want to get rid of the surface is to use the electric cautery. That opens up no channels.

I was interested in Dr. Lain's statement that he cured 90 or 91 per cent. in a group of epithelioma. Were those cases followed up by Dr. Lain for a period of five years? We had no statistics over this five-year period in Roentgen-ray work; but I hope that Dr. MacKee and Dr. Lain and others using the Roentgen ray will publish their results. We need in the worst way those results, in order to compare them with results obtained by surgical procedures.

Dr. Harry E. Alderson, San Francisco: The reason we hear of different results from the use of Roentgen rays in the hands of different men is that there is no common standard of measurement of the dosage in use. I think very often great chances are taken by individuals in attempting to apply the Roentgen ray without using any of the known means of measuring the doses. Should burns result from such unmeasured doses there is no doubt in my mind that legal action could be successfully conducted against the operator. The fact that half-way measures in the treatment of epitheliomas are extremely dangerous cannot be too strongly emphasized. Either the knife should be used thoroughly or the ray intensively, or both should be used. We prefer the knife and afterward the ray. Most of the cases of extensive epitheliomas that we see are in patients who have had the early lesions treated with the various "half-way measures" advocated from time to time.

Dr. George M. MacKee, New York: I prefer to curet the nodular type of basal cell epithelioma. If this is done a cure can usually be effected as a result of a single erythematous dose of the Roentgen ray. I do not curet the squamous cell type of epithelioma.

Regarding the parasitic or germicidal action of the Roentgen ray, it is the general consensus of opinion that it has none. We know, for instance, that a very small amount of Roentgen ray will sometimes cure sycosis vulgaris, but this prompt action is probably due to a modification of the soil rather than to direct action on the bacteria.

Dr. Everett S. Lain, Oklahoma City: Dr. MacKee answered Dr. Chipman's question, only I wish to add that by blood count following the Roentgen-ray treatment, that is, a count within from thirty minutes to two hours, you will note in most treatments, quite remarkable changes in the count of the red and white corpuscles. You usually have an increase in the leukocytes. There is no doubt to one who has made the test, that indirectly the Roentgen ray does serve as a parasiticide. Dr. Hazen asked how long we followed these cases. I said in my paper that they covered seven years. I might have included in that nearly 200 cases that antedated that period. These cases I did not have time to trace after I decided to write this paper. About 20 per cent. of the reported cases have been treated in the past two years. About 60 per cent. prior to that time. According to former statements of surgeons, that is a good test of a cure. We believe these patients are well. However, we can allow a reduction of the percentages and yet have a fair percentage of recovery.

Dr. H. H. Hazen: What percentage of five-year cures have you had?

Dr. Everett S. Lain: I cannot give the figures without looking up my records, but making a guess, I should say not less than 35 per cent., excepting those on the hands, which as I said have been uncertain.

MODERN TREATMENT OF FRACTURES OF THE LONG BONES FROM THE ORTHOPEDIC POINT OF VIEW

WITH CLINICAL OBSERVATIONS AND CONCLUSIONS *

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The treatment of fractures of the long bones has been given much attention during the past few years, by the general and orthopedic surgeon, relative to the closed and open methods and the use of nails, wire, plates and bone grafts. No matter how scientific and modern the work, and how successful the results obtained, it is absolutely necessary that the bones be immobilized and held in position by some kind of mechanical appliance whether the treatment be open or closed, or both. As orthopedic surgeons give more attention to the latter than surgeons do, it would be but natural to conclude they were as able, if not more so, to do such work with better clinical functional results.

The direct fixation of compound fractures, when the bones are exposed and cannot be held in position by splints, has come into general use by surgeons of large experience, but when the matter of simple fractures is presented for consideration, there is a lack of uniform opinion, whether the fixation shall be by open or closed method.

The difficulty of the open method in many cases, the unsatisfactory adjustment of fractured bones by manipulation and the uncertainty of fixing and maintaining the broken ends in perfect alignment, prompts one to decide in favor of the open method, augmented by such orthopedic mechanical devices as will positively hold in perfect position the fractured bones.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

That this is the best treatment no one will doubt, when done by a good surgeon with operative and mechanical skill backed up by perfect asepsis, and any lack of the latter is more fatal to perfect union than a similar error in technic in abdominal surgery; for in this the lymphatics are less able to cope with ordinary infections, than in the peritoneal cavity, and in no other domain in surgery are aseptic errors so often punished by failure.

It is necessary to divide our simple fracture cases into two groups: those that can be treated in a hospital and those that can not. The greater number of cases have always been treated by the general practitioner, and his functional results are usually good and satisfactory to the patient, even though a roentgenogram may show an imperfect alignment and defective judgment, hence, the general or orthopedic surgeon can never hope to control the exclusive management of fractures and the open treatment can never become universal.

It would not be advisable to do an open operation in all simple fractures because many of them can be perfectly adjusted by manipulation, under anesthesia, and accurately held in position by proper retentive dressings. A Colles' fracture of the wrist can nearly always be reduced if the fragments, which are often impacted, are unlocked by increasing the deformity before attempting reduction. A Pott's fracture of the ankle joint will often be set with a snap if traction is made in the line of the deformity, and many transverse fractures of the femur show little tendency to displacement when proper mechanical appliances are used.

Therefore the most enterprising surgeon would hardly be justified in stating that all simple fractures should be treated by the open method, even in the face of Sir Arbuthnot Lane's statements that they should, and he uses in all his open operations the same external retentive and fixation appliances to reinforce the strength of his plates, screws and clips, that are used in the nonopen treatment.

The fixation appliances used in the open method can be depended on only for a few days, because of the pathologic softening of bony structure surrounding the peg, screw or wire, and the bones become loose unless augmented by a carefully applied external splint. This fact of softening has been found in cases in which the open method has been resorted to in from ten days to six weeks after the fracture and the ends of the bones were too soft to hold the pegs or screws. This softening, on investigation by the Roentgen ray, at different times proved to be a pathologic one, which accounts for the many cases of nonunion of bones that had been accurately adjusted and properly retained.

Hence, if it should be found that reduction cannot be accomplished in the usual way, or that coaptation cannot be maintained, the open or operative method should at once be resorted to before the bones have undergone reparative softening.

The fact that screws and wires do not maintain and hold until bony union is complete has been shown in all cases in which it became necessary, early or late, to remove them, either from infection or because of detachment because of softening bony structure.

I have used the bone-graft treatment of Drs. Murphy and Albee and obtained good results in all cases of nonunion wherein such treatment has been used, especially when the inlay of grafts is cut and inlaid in such a manner that each stratum of periosteum and bone of the fracture meet and approximate a like stratum of the graft introduced. This can usually be done, after which not only will union occur, but the individual cells of both graft and bone will be stimulated, and overgrowth and callus formed with strength equal to, or exceeding that normal to the part.

It has been found that when an open operation was attempted in from two to four weeks after injury, in cases of oblique and in some cases of transverse fracture of the femur, leg, arm and forearm, with tendency to overlapping, that it was difficult and sometimes impossible to overcome the muscular contraction. When this occurs an open operation should be done, as soon as the patient can be brought into favorable environment, because this is the class of cases that give most trouble and this condition is the cause of nonunion.

It has been my custom to give an anesthetic in all cases in which manipulation is too painful or muscular rigidity is marked and endeavor to secure crepitus, if possible, that I may be more certain that no muscle, fascia, or loose fragment of bone is interposed between the fractured ends of the bone. While it may be true that nonunion is often due to defective innervation, diseases of the bone, syphilis, or excessive rarefaction, we must admit that a defective relation of the fragments is the prime factor to be considered. However, an entirely different condition may produce nonunion because of a lack of proliferation of soft and bony cell tissue.

I have seen several cases in healthy and vigorous young persons in which there existed little or no displacement, and in which immobilization was easy and complete, that ended in nonunion, due, no doubt, to a restricted local reaction and defective hyperemia with insufficient nutritive and reparative local reaction, which easily yielded to vigorous friction of the ends of the bones.

The fear of converting a simple and noninfected fracture into an open and possibly an infected one was so great that, rather than take the chance of creating an infected compound fracture, one was willing to take some chance of obtaining a fairly good functional result, even though the Roentgen ray might show imperfect apposition. Hence, we are no longer able to cover up our mistakes because the Roentgen ray will show them. My experience has been that when the Roentgen ray shows that the bones were in proper apposition in the beginning and union complete in the end of treatment, and that no mistake has been made, no matter how seemingly unsatisfactory the results were before this knowledge was obtained, the psychologic as well as the physiologic functions always improved afterward.

I have used the two extremes in the open and closed methods of treating fractures, but my functional results were not always satisfactory, which prompted me to use the medium and extremes conservatively. Since doing this not only were my functional results more satisfactory, but the general contour, in the normal axis of the limb, was better, which prompted the following conclusions:

1. All fractures that can be adjusted manually and can be fixed in a position that will insure a good functional result, even though the Roentgen ray shows a lack of perfect end-to-end approximation, are to be treated by the closed method.

2. In all fractures with marked deformity, such as overlapping, angulation, lack of contact of fractured surfaces, evidence of soft or detached osseous tissue between the ends of the bones, and especially compound fractures when it is apparent that union will not take place, the open method is invariably used.

3. The open method being used, I prefer the Lane plates, when sufficient smooth bone surface for their attachment can be obtained. When this cannot be done, prepare the ends of the bones for good and satisfactory apposition. If not sufficiently jagged make at least one lateral and one anteroposterior dovetail in the ends of the bones to prevent them from displacement, after which wire, and if proper retentive appliances be used good results should be expected.

4. The bone-graft inlay should always be used in nonunion, especially when the pathologic softening of the ends of the bones exists augmented by infection or misplacement of the ends, including soft tissue between them, but not in simple fresh fracture or fractures, to which the Lane plate will be better adapted.

5. The mechanical immobilizing support must be satisfactory, otherwise previous preparation, no matter how good, will be a failure. No rule can be made for the use of plaster of Paris and splints, except that the former should not be used when any swelling is present and should never be left on too long, because atrophy of the soft tissue may do the immobilization harm; but splints, when properly made and adjusted, are always satisfactory.

6. The Roentgen ray should be employed early whenever possible, to aid in a proper estimation of the extent and location of the fracture, to determine whether the open or closed method should be used, and if the former, it should be done promptly. The Roentgen ray should again be used, when the patient is discharged, for anatomic and functional reasons.

Utica Block.

ABSTRACT OF DISCUSSION

Dr. Roland Hammond, Providence, R. I.: I agree with most of what Dr. Cokenower said. I believe that as orthopedic surgeons we have a great opportunity in the treatment of fractures. The orthopedic mind naturally inclines to the solution of mechanical problems such as are involved in the treatment of a fracture. There are three requisites necessary in the treatment of a fracture: (1) a complete Roentgen-ray study of the fracture before and after reduction; (2) the use of anesthesia in practically every case, and (3) at times a consultation. We can no longer treat a fracture according to textbook methods. Every case is a separate study, according to the conditions as shown by the Roentgen ray. In treating a fracture I always make a roentgenogram so as to show what the condition is. Then under ether I reduce the fracture. Take a plate while the patient is still under ether, and if it shows proper reduction, put the fracture up. If not, I keep on until I have proved that the fracture can be reduced by further manipulation, or that it cannot be reduced and may require an open operation. I think a good many of the fractures of the long bones, especially of the femur, are not properly reduced, because countertraction is overlooked. Traction is employed, but countertraction is not, and in setting a fracture of the leg, especially of the femur or of both bones, if the limb is put on to a frame where traction can be applied with a windlass, with counterpull in the perineum, you can put on the plaster or whatever apparatus you choose to employ, without depending on an assistant to hold the leg. The windlass will hold the part firmly so that the plaster can be properly applied. I disagree with Dr. Cokenower as to the use of Lane plates. I believe in most cases they can be dispensed with, and if any form of fixation is to be used, it is much better to employ the bone graft. I think with proper external fixation most fractures can be held, but the metallic internal splint has already given too much trouble in this country to warrant its further use, except in very exceptional circumstances.

Dr. Roland Meisenbach, Buffalo: I wish to bring before the section's notice a point which I have observed in connection with fresh fractures and anesthetics, namely, the fact that with nitrous oxid and oxygen as an anesthetic, one does not get complete relaxation; that is, the muscular tone remains fairly tense. This is of great value in setting a fresh fracture, either with or without incision; namely, the semicontracted muscles tend to hold the fragments in place and act as a lock, as it were; whereas, if an ether anesthetic is given, complete relaxation will often tend to a flail-like condition at the point of fracture. If you can reduce your fracture without complete relaxation, in many places you can approximate it and it will hold. I think this also accounts for the fact that many fractures, especially of the wrists, are successfully reduced without an anesthetic.

Dr. J. W. Cokenower, Des Moines, Iowa: I cannot agree with Dr. Hammond that it is necessary to cut down and use a bone graft in a healthy bone or fresh fracture and one that can be put in apposition. It certainly ought to be held in position by the proper mechanical appliances; so that bone grafts as well as Lane splints are the proper things only in properly selected cases. With the attention that orthopedic surgeons of this country have given to bone surgery, they are absolutely and justly entitled to treat fresh fractures, and in doing so there will be less trouble afterward and much less litigation. I believe that the time will come when a majority of fresh fractures will be referred to orthopedic surgeons, because in the end, results are to be considered and the public is the umpire of our work. I think they will decide in our favor, because we are able to do the work and do it right.

PAINFUL FEET

CAUSES AND TREATMENT *

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In discussing the causes of painful feet, I have selected those forms which numerically are most common. As, in the majority of joint conditions, the advice of the orthopedist is sought after the condition becomes chronic, so, too, in painful conditions of the foot, we are not applied to for advice until the condition has gone on for some time and becomes so painful that locomotion is too difficult to be tolerated.

I wish to call attention to the great frequency of foot infections secondary to focal infections in other parts of the body, as in the teeth, gums, mouth, throat and nose; also after grip, pneumonia, typhoid fever, etc., as I have found these to be the cause of the largest percentage of painful feet in adults and children, in the cases examined at the Hospital for Deformities and Joint Diseases during the past two years.

This idea can best be presented by quoting from the recent article by Dr. Lovett[1] of Boston. In his report of 800 nurses with painful and flat feet in the Massachusetts General Hospital, Dr. Lovett states that "the onset was frequently after grippe, tonsillitis, or acute illness of one sort or another." Now, when infection of the feet which involves all the soft tissues, muscles, tendons, bursa, ligaments, etc., results the ligaments sustaining the arch become relaxed, and unless some fixation support is used, there will be a stretching of the ligaments and breaking down of the arch of the foot, which may or may not continue to be painful.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Lovett, R. W.: The Superstition of Flat Foot, The Journal A. M. A., April 10, 1915, p. 1208.

A similar process is overlooked in children after tonsillitis, measles, scarlet fever, etc. I hope that in the future, when secondary results are looked for in the heart, physicians will investigate the muscles supporting the foot, and when children complain of later rheumatic pains in the foot and legs, proper preventive measures can be used to avoid the later chronic foot trouble.

Our present efforts must be to seek the primary focus of infection and aim at its eradication, after measures for the fixation of the foot and temporary support of the arch have relieved the symptoms and been productive of partial cure.

To treat this condition properly, a plaster cast supporting the arch and retaining the foot in a fixed position is the most perfect splint.

The strapping after the method of Ochsner[2] is also an efficient means of fixing the foot and sustaining the arch.

The Whitman[3] plate, as a support and fixation, has its value. This is also true of other arch supporters. But the too long continued fixation by metal arch supporters results in atrophy of the interosseous muscles, fat, etc., owing to their nonuse. The hardness of the metal is objectionable, as it develops callus of the skin and periostitis of the bones.

When the inflamed foot is neglected or not properly treated, the inflamed agglutinated surfaces fuse together, and we have the fixed or static foot, in which there is no motion between the small bones. This type of foot is most unsatisfactory to treat. I have obtained the best results by heating them in dry air from 250 to 400 F. by means of a Tyrnauer electric baker, and then manipulating and massaging them. I will cite a few cases showing types of focal infections:

Case 1.—*Infectious arthritis from infection of gums.*—Mr. F. H., a detective, referred by Dr. Austin Holles, New York, applied at the Hospital for Deformities and Joint Diseases complaining of flat and painful feet. For two years previous, he had been treated for his painful feet by various types of foot plates given him at the advice of different physicians. In the past three months, his pain had become so acute that it was impossible for him to get about with the aid of a cane, and he was incapacitated from attending to his work. The appearance of his feet made one suspicious of an infectious arthritis. The Wassermann test for syphilis was negative; the agglutination test for gonorrhea was also negative. An attempt to determine the focus of infection revealed infectious pyorrhea of a number of the roots of the teeth. As this resembled the type of case in which symptoms have been benefited and relieved by sterilization of the gums and cleaning up of the deposits in the roots of the teeth, this method of treatment was pursued in this case.

Although the arch of the foot had decidedly broken down, and the Roentgen ray showed evidence of the infectious process, after two weeks' treatment the patient's symptoms of pain had all disappeared, and for the past four months he has been able to attend to his business, and is free from pain; he has also discarded his arch supporters and his cane.

This is an illustrative case of many which have been relieved of all the painful symptoms after the sterilization of pyorrhea infection. I hope that infections of the teeth will be given consideration in future examinations of painful feet.

Case 2.—*Infectious arthritis of the feet from infection of tonsils.*—Mr. M. S., aged 28, bookkeeper, with no venereal history, does not drink spirituous liquors; smokes one dozen cigarettes daily. About six weeks previously, patient had an attack of acute tonsillitis; about two weeks following, the feet were painful and swollen; a few days later, the swelling subsided but the pain continued and grew worse. Owing to the pain and difficulty in walking, he was referred to the Hospital for Deformitics and Joint Diseases by his family physician. Examination revealed the tonsils inflamed and enlarged, and the patient was referred to Dr. Julius Auerbach, the throat specialist of the institution, who coincided in the opinion that the throat was undoubtedly one of the sources of infection. The patient was then referred back to his family physician with our opinion and the advice that the tonsils be removed. This was done at the hospital by Dr. Anerbach, March 4, 1915. For the next two days, there was increased pain and tenderness in the feet which gradually subsided, and for the past three months the patient has remained well and is free from all pain. The microscopic examination of the tonsil shows streptococci.

INFECTIOUS ARTHRITIS OF THE FEET FROM NONGONORRHEAL LEUKORRHEA

There is a special class of infectious feet found in married women between the ages of 20 and 40 that are of great interest. Patients are negative to Wassermann and Noguchi tests and also negative for the agglutination fixation test. There is a vaginal discharge and often laceration of the cervix for lymphatic absorbtion. We fail to find gonococci in repeated smears.

The feet are slightly swollen, tender and painful to walk on. I have been able to cure a number of these cases by antiseptic douches of mercuric chlorid and iodin solutions.

The following case is illustrative:

Case 3.—Mrs. B., aged 32, married at the age of 22, had three children and no miscarriages. She had some vaginal discharge following birth of second child five years ago, continued after birth of last child two and a half years ago; no increased temperature or illness after any of her confinements. For the past two years she has worn arch supporters for painful feet, with little relief of symptoms. When patient was first examined by me, Nov. 18, 1914, her feet were somewhat swollen and very tender when walking. There was a suspicion of neisserian infection from their appearance; several examinations were made of the discharge, but no gonococci found. Her husband denied venereal history; an examination of his urine and prostatic secretion was also negative. Patient received vaginal irrigation with 1:5,000 mercuric chlorid solution three times a day. In five days the symptoms in the feet began to improve and in two weeks had all disappeared. The patient has gone about with ordinary shoes without arch supporters and has remained well ever since.

This is one of a class of cases of nongonorrheal vaginal infection.

OVERTAXATION AND NONUSE OF MUSCLES

In addition to the class of feet that are weakened by infectious process, we have a second class that occurs in policemen, motormen, salesmen, pedlers, etc., who, owing to their standing for long hours, overtax the muscles that support their arches.

A similar condition is often brought about by the sedentary occupation of men and women, and by the nonuse of the muscles, an atrophy taking place in the anterior and posterior tibial muscles, resulting in a letting down of the arch of the foot, together with pain in the arch of the foot about the external malleolus, the pain often extending to the insertion of the internal lateral ligaments of the knee; we also have pain in the hip joint, occasionally in the small of the back and often between the shoulder blades.

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[2] Ochsner, E. H.: Potential and Acquired Static Flat Foot, The Journal A. M. A., Nov. 23, 1907, p. 1742.

[3] Whitman: Med. Rec., New York, Aug. 13, 1907.

In the latter class of cases, much benefit can be obtained by having the patient go through muscle exercises and the use of the Zander apparatus, which develop the muscles that hold up the arch of the foot, and by having the patient bear the weight of the body on the outer side of the foot; this can be aided by building up the inner border of the shoe from one-eighth to one-fourth inch and attaching a Thomas projecting heel, and the patient walking so that the inner borders of the feet are parallel.

In this class of cases, if arch supports are needed, I use felt pads shaped to conform to the arch of the foot, with sufficient thickening to give proper support and elevation until the muscles are developed to support the arch of the foot properly.

GONORRHEAL INFECTIONS OF THE FEET

In considering the various causes of painful feet, I do not think that a proper amount of consideration has been given to the neisserian infection, when we consider that about 60 per cent. of the male population acquire the infection. The trouble in the feet may occur in the first week of the infection. It may appear years after the original attack from a focus in the prostate and seminal vesicles of the male, or from the tube and ovaries in the female, producing periostitis, bursitis and spurs. I have experienced some unlooked for surprise from making a uniform agglutination fixation test in acutely inflamed feet. Roentgenoscopy reveals the rarefaction of the bones and spurs.

Cases 4 and 5 are striking illustrations:

Case 4.—Mr. M., the proprietor of a drug store, had feet which were painful on walking and on pressure, tender and swollen. He had been treated by various consultants in the past two years with all forms of antirheumatic treatment, without any benefit. In my judgment, his feet had the appearance of neisserian infection. When I made this suggestion to the doctor, both the doctor and patient became very indignant, as the patient had been married eight years with two healthy children. At first, the patient objected to examination, but later consented. A large inflamed right lobe of the prostate was found, and from the secretion expressed and sent to the laboratory, active virulent gonococci were found. Under appropriate treatment, massaging of the prostate and protargol irrigation, the pain in the feet entirely disappeared and the patient made a perfect recovery and is able to go about in ordinary shoes.

Case 5.—Man, aged 23, chauffeur, had gonorrhea at the age of 14. Owing to a painful heel at the age of 18, a roentgenogram was taken which showed spurs; he was operated on and the spurs removed; pain was not completely arrested and a second operation was performed, when the pain disappeared for four years, but reappeared. He applied at the Hospital for Deformities and Joint Diseases. History of last atack of pain in the heel dates back to two months, when he began to suffer pain in both heels extending over the malleoli; arches weakened, movements limited, especially dorsal flexion and adduction. He still had a morning drop; urine shows presence of gonococci. Roentgenoscopy reveals a new outgrowth of bone over the area previously operated on; also spurs. Patient is now under treatment by massage of the prostate, irrigation with protargol and autogenous vaccines; later an operation will be performed.

TUBERCULOUS INFECTIONS OF THE FOOT

This is found most often in children, appearing gradually with some swelling and pain, local tenderness on pressure, and the child shows a slight limp. Later the swelling increases and there is a breaking down of the infected area. The Roentgen ray shows rarefaction and breaking down of the small bones; the von Pirquet is generally positive, and an excess of acid-fast bacillus is found in the feces.

I have been successful in curing a number of such cases by the building up of the general health of the patient, and soaking the affected foot in hot water for one hour three times a day; we thus obtain a primary hyperemia from the hot water, and a secondary one when we replace the water pressure of 62½ pounds to the square inch by the atmospheric pressure of 16 pounds, thus keeping up the hyperemia for some hours.

SYPHILITIC CONDITIONS OF THE FOOT

The periostitis and osteitis of the bones of the foot and gumma of the soft parts are found in congenital and later acquired syphilis, in which we have pain and great local tenderness, which, if promptly treated by our syphilitic remedies, does not break down; but on delay, we may have to resort to surgical procedure.

As aids to diagnosis, we have (1) patient's history; (2) finding the *Spirochaeta pallida;* (3) Wassermann test; (4) Noguchi test; (5) the Roentgen ray, showing (*a*) periosteal thickening, and (*b*) a uniform bone shadow of compact and cancellous tissue (first report by the author, 1906), on which a diagnosis should be made without a blood test.

For the treatment of syphilitic bone conditions, an intravenous injection of salvarsan is given and repeated every seventh day, from three to six injections being given, after which inunctions of unguentum hydrargyri, 50 per cent., are applied daily. If evidence of salivation appears, the mercury is discontinued for a time.

Case 6.—Mr. N. H., aged 36, was referred to me by Dr. Fishberg, examining physician for all medical cases applying at the United Hebrew Charities, City of New York. Patient had complained of pain in both feet and had been advised to wear foot plates. Not having the means to purchase these, he was referred by the doctor to the Hospital for Deformities and Joint Diseases, without his making a personal examination. The following history was obtained, Sept. 22, 1913: Six months previous to onset the patient suffered with headaches, which were so severe at night that he was compelled to discontinue his occupation, which was that of a waiter. Oct. 23, 1913, he had fever and chills during the night; the following morning, he was unable to get up; the left knee was swollen and powerless; he complained of pain when attempting to bend it. He sent for Dr. A, who diagnosed the condition as rheumatism and applied black salve (ichthyol); the patient was under his care for four weeks, but the condition remained unchanged; Dr. A therefore referred the patient to Hospital 1 under care of Dr. B; here he received twenty-one treatments of baking apparatus at the rate of three treatments per week; but as he felt no better, Dr. B referred him to Hospital 2, where he came under the care of Dr. C in the orthopedic department; this doctor diagnosed the condition as loose cartilage and applied a plaster cast for two months, but no relief was obtained. Then the patient sent for his lodge physician, Dr. D, who diagnosed the trouble as synovitis and tried to tap the knee twice in two places, but did not succeed. Next the patient was referred to Dr. E at Hospital 3; but as Dr. E was not there at the time, he came under the care of Dr. F, who immediately removed the cast, believing that this would cause ankylosis. He cauterized the knee three times a week for several months, tapped it, and had a knee cap made which the patient was still wearing when he applied at this institution. As he still obtained no relief, Dr. D referred him to Hospital 4 under the care of Dr. G; a roentgenogram was taken which, the physician said showed tuberculous spots of the bone, and Nov. 19, 1912, an operation was performed in which a portion of the tibia was removed; the patient remained in the hospital four days, was discharged and instructed to return three days later, which he did; at this time he was examined by a dispensary physician and then advised to return three days later; meanwhile the patient became feverish and chilled and complained of sticking pain; he sent for Dr. D, who said he was too ill to be removed to Hospital 4, and was therefore transferred to Hospital 5, where he remained for eleven weeks; his knee was opened and cleansed thoroughly, then a cast was applied for eight weeks; in January, 1913, he was discharged; then Dr. F, in charge of the orthopedic department at Hospital 5, was sent for, and having recognized him, instructed him to return to the dispensary at Hospital 5; his knee was cauterized, baked and massaged for several months; following this treatment, he was able to bend the knee; the swelling decreased considerably and the pain was somewhat relieved.

In February he complained of severe pain and cramps in the left ankle during the night; the following morning, he noticed swelling present; he went to Dr. F and a roentgenogram was taken which showed some injury to the bone. June 14 the patient was sent to Hospital 5 and an operation was performed in which the bone was scraped. Dr. H diagnosed it as synovitis and applied a cast for four weeks, but the condition remained the same. Finally the patient applied at this institution for treatment, Sept. 22, 1913. He was referred by Dr. Fishberg for foot plates.

Objective evidence of the knee joint: 1½ inches larger than the opposite knee; has a synovitis in which motion produces scarcely any pain and the limitation of the motion is only by the restriction fluid in the joint. Ankle 2 inches larger than the opposite ankle; no pain or tenderness on pressure with limitation of motion.

The swollen appearance of the patient's feet and ankles led me to suspect syphilis. The roentgenongram of his foot showed syphilitic periostitis. The Wassermann determination was 4+ positive. The point of interest in this case is that after passing through five different institutions and medical examinations by eight physicians, in no case had the Roentgen ray excited suspicion as to the patient's trouble being syphilitic, and in no institution was a Wassermann or Noguchi test made. The patient, under salvarsan, mercury and iodid, made a perfect recovery, wearing a Frauenthal knee splint for a short time, owing to the relaxed condition of his knee joint. The swelling and discomfort in his feet were completely relieved after two weeks of antisyphilitic treatment. He has remained well for the past two years.

GOUT

The causes of gout have not yet been positively ascertained, for there is still a doubt as to whether it is due to the defective elimination of the urates themselves, or, on the other hand, whether it is a disturbance of the purin bodies, which will later result in the formation of combinations of urates. The clinical entity called gout is brought about by the sodium biurate and other imperfect combinations of uric acid deposited in the tissues.

There is no doubt that all the large joints are affected with gout, but the most frequent affection is in the big toe. Pain, swelling, redness of the toe and an inclination to keep the foot elevated are the characteristic symptoms.

The internal administration of colchicum does not change the quantity of urea eliminated, and there is a decrease in the excretion of uric acid.

This in no way explains the relief of pain and the subsidence of symptoms when colchicum is administered; neither can I add any light on the rapid relief of the symptoms, when we carry in our mind the joint pathology.

For a period of twenty years I have given to patients in an acute attack of gout, involving the smaller joints or the knee, treatment which consists of applying sponge electrode saturated with the fluidextract colchicum attached to a galvanic current, reversing the current every two minutes, using the current of a strength up to the patient's point of tolerance of pain. Three treatments in thirty-six hours relieved all the acute symptoms of pain, swelling, etc.

Case 7.—Mr. F. V. W., manager of a hotel, whom I first saw in consultation, April 16, 1909, was confined to bed after an acute attack of gout involving the right big toe. In all previous attacks he had been in bed from two to three weeks, and reconciled himself to remain that time. When I saw him I informed him that if he would come down on crutches to my office in a cab, I would give him relief in less than three days. He regarded this prognosis as ridiculous, but said that sooner than remain in bed and suffer the agonies of the disease, he would take a chance. After the second treatment, he was able to put his foot on the ground, and on the third day, discarded his crutches and walked about, since which time (1909) he has been treated for seven attacks by the same method.

OBLITERATING ENDARTERITIS

This is a common disease among Russians, Poles and Galicians, characterized by the following symptoms:

The subjective symptoms differ only in the intensity. The patient complains of intense pain in the toes and feet extending up the leg, increasing at night.

The objective symptoms are:

1. The patient walks with a distressed gait, resembling painful flatfoot, for which he is often treated.
2. The feet appear blue, congested and cyanotic, but the pressure of the hand and manipulation of the foot elicit little pain.
3. The sensitiveness to heat and cold is diminished.
4. The skin has the clammy feeling of death. Nothing that I have felt has this cold uncanny feeling, except a cadaver.
5. The pulsation of the plantar arteries is either unrecognized or decidedly enfeebled.

The pain is so intense at night as to cause the patient to lose his sleep. In severe cases the patient remains in a chair to sleep for a short period, and then has to walk about. The pressure of the shoes adds to the pain, so some form of felt shoe, or similar material, is adopted, or in some cases a flannel cloth is wrapped around the foot and a large rubber or slipper is worn.

The pain is not so great in warm weather, but the symptoms, although growing more severe, gradually extend over many months and in some cases over years of time.

In some cases there is a type of atrophy of the toe, a darkening of the skin with a dry gangrene appearance, in which the progress of destruction differs materially in its rate of progress to that found in other forms of gangrene; in some cases the destruction of the toe occupies a period of years and only then are the toes partly destroyed.

Several of the patients applying for treatment were wearing arch supports, put on at institutions, regarding the affection as a type of flatfoot. In some the gangrene process began after an injury in cutting the nail of the great toe; in other cases after paring the corn on the small toe too closely. (There is a case for $25,000 now pending in court [Hamburger *vs.* Levy] in which the gangrene extends from the cutting of a corn and amputation at the middle third of the tibia was performed.)

This sounds a warning to physicians as to the danger in this class of cases of any interference for ingrown toe nail, corns, etc., as the starting of a gangrene process.

The investigation of a number of similar cases shows that all local application and inward medication has afforded but little relief, and that a large number of amputations have been done to relieve the painful symptoms, in the hospitals of New York City.

In my own experiments, I found that the high frequency electric current, though it gave some relief, whitened the purple skin and seemed to cut off the circulation to such an extent and for so long a time that I feared an ulcer would develop at the spot.

Dry heat from 200 to 400 F. gave a relief of pain for a time, but no improvement to the gangrene; this was also true of hot water and normal salt solution carried to the patient's tolerance to this form of heat. Morphin or other anodynes fail to give relief of the pain.

Case 8.—S. L., man, aged 39, Russian, a cutter, with no history of syphilis or tuberculosis, uses alcohol and tobacco moderately. He has one brother who was similarly affected, who at the age of 19 had the right leg below the knee amputated, and two years later, had his left leg amputated above the knee, since which time the brother has remained in good health with no extension of the process. The patient consulted me at the hospital in November, 1907, for a pain in the left foot which extended up the posterior part of the leg to the knee, which had begun two years before. He had not been able to work for six month, nor had he worn a tight shoe on the left foot for six months. For five months he had not slept in a bed but in a chair, and only for a short period at a time. When he was compelled to walk about to relieve the pain, the foot had constant pain which was accompanied by lightning-like radiating pains up the leg from time to time, being more frequent at night. The foot was cold blue, with a beginning gangrene of the little toe; the arteries could scarcely be felt. The patient had already been given local heat to the feet by hot sand, salt and water, also with various local applications of salves and ointments together with internal medication, without permanent benefit or the arrest of symptoms. I determined to try the effect of the heat and light as obtained from a 500 candle power incandescent light. The heat was interrupted every few seconds, but only when he could no longer tolerate it; this was kept up for a period of fifteen minutes on his first visit. On his return the next day he declared he had slept during the night for a longer time than in months and without pain. I thought this was merely mental suggestion; I repeated the treatment daily for five days regularly, after which patient again wore shoes and continues to do so. The pain gradually disappeared, the gangrene in the little toe resolved and a new nail appeared, and the patient has been well without symptoms for the past six years. He has continued his treatment at home by means of a small lamp.

We have treated over 300 of these cases at the Hospital for Deformities and Joint Diseases, our present method of treatment consisting of the administering of one-fifth grain extract of thyroid three times a day, giving from 300 to 500 c.c. salt solution subcutaneously, and exposing the patient's foot for twenty minutes to white light to the point of tolerance of heat; I also advise exposure to sunlight when possible. This treatment arrests the process and stops the pain in a large number of these cases.

I have seen but two cases of obliterating endarteritis in American-born citizens.

Case 9.—One foot of the patient had been removed at the Presbyterian Hospital for a similar condition. When they advised the removal of his other foot two years ago, he came under my observation. The process has been arrested, the pain has all disappeared under only white light treatment, and he is now able to attend to his work.

CONCLUSIONS

We can regard feet as normal only when the foot in action moves through the normal plan of action in relation to the leg. To have feet perform their normal function, nothing is more important than proper shoes. In adapting treatment for painful feet, we must determine whether we are dealing with an infection of the foot or a relaxed condition of the supporting structures.

If the pain comes on acutely, we have infection (except with trauma); if the pain is developed gradually, we have relaxation of the supporting structures.

The promiscuous application of foot plates has been condemned by many of the leading orthopedic surgeons. There is no doubt that there are many cases of painful feet due to strain that require some support under the arch. This can best be done by some yielding, springy substance, such as felt, much better than metal arch supports, and the sooner they can be removed, the better for the patient. The foot should have freedom of action in locomotion, not fixation.

ABSTRACT OF DISCUSSION

Dr. Robert W. Lovett, Boston: I wish to mention some work that I did and recently reported in The Journal, that some of you may have seen, in which I tried to make the point that the word "flat" foot was used too extensively, and that in many cases such feet were not flat. I called attention also to the fact that I personally believe more people have trouble from high arches than from low arches, and that the element of pronation did not come in. Dr. Whitman complimented me by taking issue with me, and held that pronation was a necessary element in painful feet. In the eight hundred cases examined, the ones that were pronated were not any more prone to pain than the ones that were nonpronated, and I personally do not believe that any man living can go through a hundred feet and pick out with any degree of precision the feet that are likely to be enduring under strain and the feet that are likely to give out under strain. Since I have been specially interested in this subject, I have been taking note of the people who come to my office for treatment for static difficulties in the feet. Of course, the causes that Dr. Frauenthal speaks of we have got to recognize definitely, but in regard to static pronation, I personally believe more people have trouble with high arches than with low arches.

Dr. John Ridlon, Chicago: I should like to ask that Dr. Frauenthal in closing explain a little more fully just what this white light is.

Dr. Emil S. Geist, Minneapolis: I feel that a great many cases of so-called weak foot are erroneously diagnosed, and am of the opinion that these cases need as much care in examination and diagnosis as other human ailments receive in our offices. We are prone to dismiss these patients suffering from foot complaints without giving them sufficient thought and attention, prescribing merely an arch support, some exercises, and trusting to luck that they may get better. I believe if we look more at the matter of etiology, we will find that foot complaints can be divided into many classes, and that instead of the ordinary static problems, we will often have to consider many other etiologic factors in arriving at the best method of treatment in these cases of so-called weak foot. Of course, not all infectious arthritides are due to some focus situated in the mouth or its environs. However, we must frequently remove the possible focus, hoping that it may be the one which is giving the trouble. If we do not cause general improvement, we will always cause local improvement at any rate. Another important point to remember is that many of us expect too much from the removal of a possibly diseased focus. We cannot expect a joint which has been riddled by disease for years to recuperate and resume normal function, merely because we have removed an infected tooth, for instance. The fire is over and the damage has been done. We must get on the ground with our fire extinguisher at any early hour and not wait until the fire is over.

Dr. Roland Meisenbach, Buffalo: In considering painful feet, we must remember that there are many causes, whether they be due to anatomic variations, static errors, infections, a lack of tone of the tissues, or following fractures in or near the feet, or a combination of the above. Dr. Frauenthal has enumerated many of these in his paper. He has, indeed, covered a vast field, and I am sure he will agree with me that he has only briefly touched on many of them. The successful treatment of painful feet surely depends on our being able to attack the cause as well as the effect. I especially think of the cases in which there may be infection far remote from the feet, that develop painful feet after the severe infection has subsided. I am inclined to believe that some of the local infections of the feet occur through the skin, by absorption. I do not believe it is possible for one to say dogmatically that plates are of no value. I know that there are types of feet that require the proper plates, and that there are other types of painful feet that should not have plates. In considering the question of plates, one should remember that plates are applied to feet for two reasons: First, to support the feet properly and make them functionate correctly, and secondly, to strengthen the foot structures. In order to make the feet functionate properly, the plates must be cut according to the symptoms, as well as to the anatomy of the foot, which are only understood by the surgeon who has studied the case. The plate should be of such flexibility that it will bring into play the very muscles or tissues of the foot and leg which the surgeon believes will strengthen the foot. I find that so many are wearing plates of a rigid type, so as to splint all the joints of the foot as well as actually to prevent muscular action. This is the wrong type of plate, and is found frequently in the shoe stores. Although at first they may give temporary relief, the ultimate result is to weaken rather than strengthen the foot. It should be remembered that plates should be applied only as an adjunct to any other treatment which may be necessary, either general or local. Even in cases in which we have exostoses or faulty function after fracture, plates may be of great value in obtaining the results.

Dr. E. A. Rich, Tacoma, Wash.: I should like to ask Dr. Frauenthal to state in his conclusion the rôle that the ordinary plate plays in his work.

Dr. E. W. Ryerson, Chicago: I am anxious to be convinced of the value of these light treatments. It seems to me, considering the matter from the standpoint of an ordinary, plain thinker, that electric light treatment for these painful osteo-arthritis cases, of which we all see so many instances, is the purest kind of bunk; but if it is true, I want to be convinced, and the recital of a few cases which have been benefited has not particularly convinced me. I should be very glad if Dr. Frauenthal would at some future date—say next year—present to us some really convincing scientific evidence of the value of the light treatment. There are lights and lights, and a whole lot of people are using this light and that light—and a white light is better than a blue light and a blue light is better than a white light, and personally, I do not know where we get off. If there is anything in it, I want to use it, but I have got to be shown.

Dr. John Ridlon, Chicago: What is that lamp called?

Dr. Henry W. Frauenthal, New York: Answering Dr. Ridlon, the light I use in my office is what is known as a lucodescent lamp. What I have my patients use is a small lamp they buy from the Edison Electric Company, costing $8. I try to get the patients in some house wired for electric light. The size of the lamp is of no importance, because you heat the feet up to the highest point of tolerance. I think we have a record of over three hundred cases. As a question of diagnosis, a number of these cases I have from time to time shown to Dr. Willy Meyer, who was interested in this particular class of cases. One of the gentlemen asked me what plate we use at the hospital. We do not use any plates. We use firm felt cut out to conform to the foot and elevated to support the arch, because it holds up firmly and is springy. That does not do for static feet. You must manipulate them, and then if you bake them and keep up your massage, some of them get to be fairly good feet. The type of foot to which I want to call attention particularly is that in which the trouble is due to secondary infection. In the last year we have observed a great many of these feet, and our class of women with painful feet is almost as large as our class of men. They get some relief at first by wearing a plate obtained at a drug store or at a shoe store, and then as they do not get any better, they apply to an institution.

THE STABILITY OF THE INFUSION OF DIGITALIS *

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AND

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It is generally recognized that the infusion of digitalis deteriorates rapidly; in fact, it is often stated that digitalis and all of its preparations undergo rapid changes. Several pharmacopeias, notably the German, French and Swiss, direct that the leaf shall not be kept longer than one year despite the utmost care in its preservation.

We have shown[1] that when the leaves are kept with the least care for periods up to twenty-five years, they retain a degree of activity equal to that of fresh leaves of good quality, and that a fluidextract made thirty years previously was quite as active as one of good quality recently made.

Digitalis is not completely exhausted in making the infusion by the official process, in which the bruised leaf is directed; hence this process was modified slightly and the infusions used in the present investigation were made as follows: Powdered digitalis of good quality was infused on a water-bath for one hour at a temperature of about 95 C. This process results in exhausting the powder almost perfectly, as shown by a subsequent test of the marc. Incidentally, it may be remarked that three infusions made in this way from the same specimen of powdered leaf during a period of six months showed activities of 97.5, 100, and 102 per cent., respectively, the second serving as the standard.

The infusion for the first series of tests was filtered while hot and divided in equal portions. Alcohol and cinnamon water were added to one portion according to pharmacopeial directions, and water (in place of the alcohol) and cinnamon water were added to the other, the two representing similar proportions (1.5 per cent.) of digitalis.

The hot infusions were put in bottles which were then securely corked, the contents being nearly sterile but not absolutely so. Several of the bottles that con-

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* From the Laboratory of Pharmacology of Cornell University Medical College.

* The present investigation was undertaken at the request of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

[1] Hatcher, R. A., and Eggleston, Cary: Am. Jour. Pharm., 1913, lxxxv, 203.

tained infusion made with alcohol were labeled A, and placed in the ice-box, the others that contained the hydro-alcoholic infusion were labeled B, and placed in an incubator in which the temperature was maintained at 37 C. Similarly, half of the bottles that contained the infusion made without alcohol were labeled C, and placed in the ice-box; the remainder, labeled D, were placed in the incubator.

The activity of the fresh infusion was tested by the cat method after 0.85 per cent. of sodium chlorid had been added to it. The specimens kept in the ice-box and those in the incubator were tested in the same way after varying intervals of time.

The cat method, in brief, consists in injecting the test-preparation slowly and continuously into the vein of a cat until death results. The weight of digitalis represented in the fluid used is calculated and is expressed in terms of milligrams of the drug per kilogram of animal weight. An amount of the fresh infusion representing 120 mg. of the drug was required per kilogram of cat used in the test.

When precision in the results is demanded, as many as six animals may be required for each test, because some animals are more tolerant than the average, and a few are unusually susceptible; but since slight changes in the activity of these specimens were not considered important, we used from one to four animals for each test.

This explains why some specimens of the infusion actually appear to be more active after having stood for a time, but these discrepancies are slight, and the total number of experiments performed suffices to insure results that are sufficiently accurate for the purpose in view.

In a few cases it was necessary to reject the results of single experiments owing to evident gross abnormalities of the animals. The following example will serve as an illustration: Four animals were used in a test, the figures obtained being 103, 105, 111, and 173 mg. per kilogram. In this case the calculation was based on the figures of the first three experiments, which were nearly uniform, the fourth animal being obviously tolerant.

In a few cases we were also forced to reject experiments, even though their inclusion would have given our results the appearance of greater uniformity. Thus Specimen 3 (Table 3), tested after an interval of seven days, had an activity corresponding to 103 mg. per kilogram, which was evidently too high, when viewed in the light of subsequent tests; another test of this specimen made on the same day gave 113 mg. per kilogram (agreeing exactly with the results obtained in the last test of that specimen), but we were compelled to reject the higher figure because one of the animals used was subsequently found to be lactating, and experience has shown that many lactating cats are remarkably tolerant toward digitalis.

Such irregularities are the exception, however, and in some tests none of the figures varied by more than 2 or 3 per cent. from the average. In one of these tests the figures obtained were 108 and 109; in another 115, 116 and 119. A typical test, in which four animals were used, gave the figures 105, 116, 117 and 122 mg. per kilogram, the average of these four being 115.

Table 1 gives the results obtained with the infusions previously described. The interval during which the specimen used in a given case was kept in the ice-box or incubator before being tested is expressed in days. The amount of digitalis represented in the infusion required is expressed in milligrams of digitalis per kilogram of cat weight. The number of animals used in each test is shown by the bracketed figure.

TABLE 1.—MILLIGRAMS OF DIGITALIS PER KILOGRAM OF ANIMAL

Specimens	Intervals in Days				
Freshly made 120 (3)	3.	7.	14.	21.	28.
A (alc., ice-box)	......	115(2)	......	129(2)	125(1)
B (alc., incub.)	116(2)	128(2)	135(2)	117(2)	154(2)
C (aq., ice-box)	......	123(3)	113(2)	152(2)	149(2)
D (aq., incub.)	112(3)	155(2)	160(2)	153(2)	180(1)

Table 2 shows the activities of the infusions expressed in percentages, the initial activity of the fresh infusion being taken as 100 per cent. The figures showing the intervals in days correspond to those in Table 1.

TABLE 2.—ACTIVITIES OF INFUSIONS EXPRESSED IN PERCENTAGES

Specimens	Intervals in Days				
	3.	7.	14.	21.	28.
A (alc., ice-box)..................	...	104	...	93	96
B (alc., incub.)..................	103	94	89	102	78
C (aq., ice-box)..................	..	98	106	79	80
D (aq., incub.)....................	107	77	75	78	67

The results given in Tables 1 and 2 will be discussed later with those of other experiments.

It may be objected that infusion of digitalis is not commonly kept unopened, as our specimens were; hence we decided to subject the preparation to conditions more nearly simulating those found in practice, and also to extreme conditions such as could never obtain even with the greatest carelessness.

For this series of tests an infusion was prepared, June 24, 1915, essentially as previously described, except that distilled water was used in place of the alcohol and cinnamon water. The filtered infusion was then divided into several portions and placed in bottles while hot. These were labeled and kept for various periods of time under the following conditions:

1. Allowed to stand uncorked at room temperature.
2. Corked but opened three times daily and a small amount removed each time.
3. Securely corked and allowed to stand at room temperature during two and a half months of summer. The average temperature was 75.5 F.
4. About 10 gm. of floor sweepings were added to the contents of the bottle, which was then shaken thoroughly and allowed to stand at room temperature.
5. About 10 gm. of fecal matter from a cat's intestine was added to the contents of the bottle, which was then shaken thoroughly and allowed to stand at room temperature. This specimen developed an intensely disgusting odor, with the evident multiplication of micro-organisms.

The results of the several tests of these specimens are shown in Table 3. The intervals during which these specimens were allowed to stand were so variable that they are best given for each test; hence the figure under "age" indicates the number of days during which each specimen was kept before the tests. The figure under "dose" indicates the number of milligrams of digitalis in the infusion required per kilogram of animal. The bracketed figure shows the number of experiments in the test. The freshly prepared infusion represented 115 mg. of digitalis per kilogram of cat weight.

The following experiments, which cannot be tabulated conveniently, may be presented here:

An official infusion of digitalis that had been kept stoppered at room temperature (about 70 F.) for nineteen days was tested and found to be of exactly the same activity as when freshly prepared. After having been opened, it deteriorated slowly. A specimen of an infusion was allowed to stand open in an Erlenmeyer flask over a radiator for one month, water was then added to make up for the loss by evaporation, and when tested it was found to be about 50 per cent. less active than when freshly prepared. Another specimen of the infusion, to which chloroform was added, retained its full activity during a period of eighty days of summer, although the chloroform had completely disappeared when it was tested.

The rapid deterioration shown by the specimen which contained fecal matter (No. 5, Table 3) suggested the possibility that the colon bacillus might be concerned in the change. An infusion that had been prepared in the manner already described was therefore sown with a pure culture of the colon bacillus from the human intestine, 0.5 per cent. of Witte's peptone having been added to facilitate the growth of the organism, and the mixture was placed in the incubator for a period of nine days.

TABLE 3.—ACTIVITIES OF INFUSION OF DIGITALIS KEPT UNDER DIFFERENT CONDITIONS FOR VARYING INTERVALS OF TIME

Specimen. Fresh 115 (4)	Age, Days	Dose, mg.	Age, Days	Dose, mg.	Age, Days	Dose, mg.	Ultimate Loss in Percentage
1. Uncorked	6	122 (2)	13	114 (2)	20	115 (2)	26 per cent. in 20 days
2. Opened frequently	8	122 (2)	21	98 (2)	..	...	None in 21 days
3. Corked, summer temp.	7	103 (3)	20	117 (2)	79	113 (2)	None in 79 days
4. Sweepings added	6	104 (2)	13	116 (3)	19	101 (2)	None in 19 days
5. Fecal matter added	5	147 (2)	12	164 (3)	18	194 (3)	40 per cent. in 18 days

At the end of that time it was tested in the usual manner and the activity compared with that of the freshly made infusion. It was found to have lost about 10 per cent. of its activity. While this difference is slight, it is interesting to observe that the activity was determined with a considerable degree of precision both before and after the period of incubation.

The following experiment may be described here because it bears directly on the problem in hand, though it was made during the course of an investigation begun about a year previous to the time of undertaking the one described in this paper:

Powdered digitalis was mixed thoroughly with an equal weight of water, placed in a glass-stoppered bottle and allowed to stand at room temperature for about six months, at which time it was found to be nearly inert. A mold had developed within a few days after placing the moist powder in the bottle.

This experiment was repeated in part, the moistened powder having been set aside, Nov. 24, 1914. It became moldy within a few days, but when tested, March 20, 1915, having stood about four months, it had lost only about half of its activity, and it is interesting to note that an infusion prepared from this moldy digitalis gave a blood pressure tracing that was typical of digitalis action. This is of especial interest in view of the commonly accepted opinion that moldy digitalis, and old aqueous infusions of the drug, develop principles having picrotoxinlike actions.

COMMENT

The most striking facts shown by our experiments are that an infusion of digitalis made without alcohol and kept without the least care, in fact, under more unfavorable conditions than could obtain in practice, may retain its activity with little impairment for periods varying from six to nineteen days; and that when the hot infusion is bottled with reasonable care, it will often keep practically unchanged for many weeks even during the summer.

We do not maintain that the infusion of digitalis is a perfectly stable preparation. On the contrary, it is not. Practically all vegetable infusions undergo deterioration when kept standing; but the idea has prevailed that the infusion of digitalis is especially unstable. There does not appear to be any basis for this belief.

The specimen made by the official process and kept in the ice-box for a period of four weeks retained its activity practically unchanged. That made without alcohol and kept cold lost nothing in two weeks; but these results are overshadowed by those obtained in the second series of experiments.

The specimen that was opened frequently, and kept under conditions much like those which obtain in practice, lost nothing in three weeks, and that is longer than an infusion should be kept on hand by a patient. It is surprising that a specimen mixed with sweepings from the floor should have retained its activity unimpaired while standing at room temperature for nearly three weeks. The slow deterioration of the specimen that had been planted with a pure culture of the colon bacillus is also noteworthy. Rapid deterioration was to be expected after the addition of fecal matter, and it is only surprising that the rate of deterioration was not greater.

The results of our experiments may seem new and striking to the reader who is accustomed to hear much about the extreme instability of preparations of digitalis, and of the infusion especially, but thirty-seven years ago Prall[2] stated that the filtered infusion of digitalis will keep as long as it is ordinarily required by the patient. Two years later Binz[3] stated that the infusion decomposes owing to a mold, and that sometimes it keeps well and sometimes it does not. Certainly a moldy preparation should not be used therapeutically.

The question naturally arises why the infusion and other preparations of digitalis should be reputed to decompose so rapidly if they are actually as stable as we maintain.[1]

The chemistry of digitalis presents many difficulties to the investigator, and we do not know in what form the active constituents exist in the leaf, or what changes and transformations of one active constituent into another take place during extraction and on standing.

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[2] Prall: Am. Jour. Pharm., 1878, p. 424, quoted from Proc. Am. Pharm. Assn., 1879, p. 72.

[3] Binz, quoted from Proc. Am. Ph. Assn., 1880, p. 45.

The therapeutic use of this drug is also rendered difficult, partly by reason of the fact that it is necessary to use a dose that borders closely on the toxic in order to secure the full therapeutic effects, and partly because comparatively few physicians can become sufficiently expert in the treatment of cardiac disease to determine in difficult cases whether a given condition results from the progress of the disease, from insufficient dosage or from overdosage.

This difficulty is due to the fact that cardiac insufficiency and various types of irregularity are common in many forms of cardiac disease and digitalis overdosage even in the absence of cardiac disease, and, further, that the toxic actions of digitalis may be elicited without the appearance of any therapeutic effects.

The well-known disadvantages of digitalis have served as a constant stimulus to the exploitation of proprietary preparations of it, and many manufacturers have persistently exaggerated the disadvantages of the drug and its official preparations in order to magnify the advantages claimed for their specialties.

We would not be understood as advocating the general employment of the infusion of digitalis. It is necessarily of variable activity as obtained from different pharmacists, and it is probably also of varying degrees of stability as thus obtained. The actions of the infusion differ in no way qualitatively from those of the tincture or the leaf, and these can be obtained of more nearly uniform activity, and certainly of greater stability than the infusion. The dose of either is smaller, and we know of no indications whatever for the employment of the infusion in preference to these two.

CONCLUSIONS

1. The infusion of digitalis is fairly stable when prepared and kept with ordinary care, no important change then occurring within a week.

2. The addition of alcohol to the infusion is unnecessary.

3. Old, and even moldy, digitalis and its infusion may give the typical digitalis actions qualitatively so long as they retain any considerable degree of activity.

4. A properly made infusion of digitalis represents the leaf practically in its entirety, the action being qualitatively like that of the tincture.

5. Owing to the variability in activity of the infusion as it is commonly obtained, the tincture should be preferred to it in therapeutic practice.

414 East Twenty-Sixth Street.

The Migration of Flies.—Recently Mr. George B. Harrison, president of American Balloon Pilots, said that flies had been encountered in strong air currents at high altitudes. He declared that on a recent trip, from southern Texas traveling north, they encountered an air current at about 5,000 feet altitude, going at the rate of about 60 miles an hour, and that a considerable number of house flies came into the basket of the balloon, being swept along in this tornado-like current. This observation leads to the inevitable conclusion that flies may migrate very great distances, and that in this manner infected flies may be the means of transmitting certain infectious diseases over a wide range of country.—*Kansas State Board of Health Bulletin No. 9,* September, 1915.

THE USE OF MERCURY SALICYLATE IN SYPHILIS

A RECORD OF ITS INFLUENCE ON THE WASSERMANN REACTION IN FIFTY CASES *

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AND

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The hypodermic use of mercury salicylate in the treatment of syphilis[1] is very general at present. In line with the study of the treatment of this disease we turned to this drug and in December, 1914, began to record our results of its use in syphilis as expressed by its influence on the Wassermann reaction.

Each patient here recorded has had at least two double plus serum reactions on different dates before being placed on this list. As in our previous reports on neosalvarsan and salvarsan, all the serum tests have been made by Captain Charles F. Craig, M.C., U. S. A., thus securing uniformity of technic and interpretation of results obtained. We feel that this adds materially to the value of the work. All cases on this list are fresh cases; that is, cases without previous treatment of any nature. This latter requirement brings forty-three of the fifty cases under the "latent" heading. The remaining seven cases reported are all cases in the secondary stage of the disease. It may be well here to recall the fact that this institution is a military prison where all the inmates are under restraint and lead well-regulated lives, with an abundance of fresh air, good food, regular hours and exercise.

Influences unfavorable to treatment are completely absent and the serum reactions have been influenced solely by the treatment given. Again, in these cases no other drug has been given at any time, it being our desire to have a clear-cut record of the effect of the mercury salicylate when used absolutely by itself. Our dose of the mercury salicylate has been the same in all cases, 100 mg. or 1½ grains.

In the beginning of the treatment we repeated the dose every seventh day. We at once found this interval too short, and so next attempted to give the dose every fourteen days. Here again we found it necessary at times to allow a longer interval between doses, and so came to rely on frequent examinations, with the administration of the dose as often as possible. None of the patients has been salivated, but it has required much care to avoid this. We have kept each patient full to saturation of the drug at all times. Bowels have been kept open by the use of salines when needed. Without exception all of the patients have daily performed their full quota of work. Sore buttocks have been complained of at times following the injections, but in no case has an inflammation resulted and they have always yielded promptly to massage. No one has been excused from work on this account. The treatment has not been seriously objected to by the men, but the injections are not without certain unpleasant symptoms, and this form of treatment is not popular in this institution.

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* From the Prison Hospital, United States Disciplinary Barracks, Fort Leavenworth, Kan.

[1] Nelson, K., and Haines, E. F.: Observations of the Results of Nine Months' Experience with Neosalvarsan at the U. S. Military Prison Hospital, Fort Leavenworth, Kan., THE JOURNAL A. M. A., March 28, 1914, p. 989; Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis, THE JOURNAL A. M. A., Dec. 26, 1914, p. 2277.

Objective symptoms yield to this treatment, but such symptoms yield far more rapidly to the salvarsan treatment, and any belief that the effect of the salvarsan treatment is prolonged — aided or reenforced by the mercury salicylate — is certainly no longer tenable. In the light of our experience it seems improbable that the salicylate alone and unaided possesses any real curative value in this disease.

MONTHLY RESULT OF WASSERMANN REACTIONS

Case Number	Date of Beginning Treatment	Stage of Disease	No. Doses Hg Sal. 100 Mg. Each	No. of Wassermann Reactions	Monthly Result of Wassermann Reactions							
1	12/ 7/14	Lat.	18	8	++	++	++	++	++	++	++	++
2	12/ 7/14	Lat.	10	6	++	++	++	—	++	+	....	....
3	12/ 7/14	Lat.	20	8	++	++	++	+	+	—	++	++
4	12/ 7/14	Lat.	14	7	++	++	++	++	++	±	++	....
5	12/ 7/14	Lat.	16	8	++	++	++	++	++	++	++	++
6	12/ 7/14	Lat.	16	8	++	++	±	—	+	—	±	++
7	12/ 7/14	Lat.	18	8	++	++	++	+	++	++	++	++
8	12/ 7/14	Lat.	20	8	++	++	++	++	++	++	++	++
9	12/ 7/14	Lat.	20	8	++	++	++	++	++	±	—	++
10	12/ 7/14	Sec.	16	6	++	+	±	+	—	++	....	....
11	12/ 7/14	Lat.	13	6	++	++	++	++	++	++	....	....
12	12/ 7/14	Lat.	13	6	++	++	++	++	++	++	....	....
13	12/ 7/14	Sec.	11	6	++	++	++	±	++	±	....	....
14	12/ 7/14	Sec.	18	8	++	++	++	++	++	+	++	++
15	12/ 7/14	Sec.	23	8	++	++	+	+	++	++	—	++
16	12/ 8/14	Lat.	19	8	++	++	++	++	++	++	++	++
17	12/ 8/14	Lat.	16	7	++	++	++	++	++	—	—	....
18	12/ 8/14	Lat.	16	7	++	++	++	++	++	+	+	....
19	12/ 8/14	Lat.	14	6	++	++	+	+	++	+	....	....
20	12/ 8/14	Lat.	18	8	++	++	++	—	—	—	±	++
21	12/ 8/14	Lat.	15	8	++	++	+	++	++	++	++	++
22	12/ 8/14	Lat.	13	6	++	++	++	+	+	+	....	....
23	12/ 8/14	Lat.	17	8	++	++	++	++	++	++	++	++
24	12/ 8/14	Lat.	12	6	++	++	++	—	—	—	....	....
25	12/ 8/14	Lat.	18	8	++	++	++	++	+	—	±	++
26	12/ 8/14	Lat.	17	8	++	++	++	++	++	+	++	++
27	12/ 8/14	Lat.	20	8	++	++	++	+	+	+	±	++
28	12/ 8/14	Lat.	18	8	++	++	++	±	++	+	++	++
29	12/ 8/14	Sec.	19	8	++	++	++	++	++	++	++	++
30	12/ 8/14	Lat.	19	8	++	++	++	++	++	++	++	++
31	12/ 8/14	Lat.	11	6	++	++	++	+	+	±	....	....
32	12/ 8/14	Lat.	13	6	++	++	++	++	++	+	....	....
33	12/ 9/14	Lat.	19	8	++	++	++	++	++	++	++	++
34	12/ 9/14	Lat.	20	8	++	++	++	++	++	++	++	++
35	1/11/15	Lat.	13	6	++	++	++	++	++	++	....	....
36	1/11/15	Sec.	8	4	++	++	++	+	....	....	....	....
37	1/12/15	Lat.	15	6	++	++	++	+	—	++	....	....
38	1/12/15	Lat.	9	4	++	++	++	++	....	....	....	....
39	1/26/15	Lat.	15	6	++	++	++	—	++	++	....	....
40	3/21/15	Lat.	10	6	++	++	++	±	++	++	....	....
41	3/21/15	Lat.	7	5	++	++	++	++	++	....	....	....
42	3/21/15	Lat.	11	5	++	++	++	++	++	....	....	....
43	3/21/15	Lat.	11	6	++	++	+	++	++	++	....	....
44	3/21/15	Sec.	10	5	++	++	++	++	++	....	....	....
45	3/21/15	Lat.	12	5	++	++	++	±	++	....	....	....
46	3/21/15	Lat.	10	5	++	++	++	++	++	....	....	....
47	3/21/15	Lat.	12	5	++	++	++	++	++	....	....	....
48	3/21/15	Lat.	11	6	++	++	++	++	++	....	....	....
49	3/21/15	Lat.	11	5	++	++	+	++	++	....	....	....
50	3/21/15	Lat.	7	4	++	++	++	++	....	....	....	....

In this institution mercury salicylate is at present the only treatment used and we can quote double the number of cases here reported if we use cases of patients who have had treatment before coming to us. The salicylate does not influence the serum reaction in these cases any more than it does in the cases here reported. In the table it will be noted that the serum reactions of some cases have varied from the double plus to the plus minus or minus, and later returned to the double plus while the treatment was in progress. It is our opinion that these variations in the serum reactions are due to other causes than the treatment.[2] For if they were brought about by the treatment, then why should the double plus reaction again appear when the treatment was being vigorously carried on?

We hesitate to say that we consider the unaided mercury salicylate treatment of syphilis to be without value, but feel that its value is so slight as to make it unworthy of the time spent in its administration.

If we accept the Wassermann reaction as an indication of the presence of syphilis and of value as a guide in the control of the disease by treatment, then it is certainly fair to believe that mercury salicylate used hypodermically in full doses over many weeks of time has little if any real influence on the disease. In the table will be seen Cases 17 and 24, giving two and three negative serum reactions. In both cases the men obtained clemency and were discharged from the prison at this period of treatment and we were unable to follow them further. It is our belief that a continued record in these two cases would undoubtedly have shown a positive reaction later in the treatment. Had they failed to do so they would have been the first to so record this treatment, for just this thing did occur in Cases 2, 3, 6, 9, 10, 15, 20, 25, 37 and 39. This also clearly establishes the value of more than one serum reaction and the error that would arise from the acceptance of a single negative reaction as final.

CAUSE AND PREVENTION OF CONSTITUTIONAL SYMPTOMS FOLLOWING DEEP ROENTGEN THERAPY

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Since the introduction of the measured massive deep dose in Roentgen therapy, certain more or less unpleasant symptoms following the exposures have been observed. The symptoms are chiefly of a systemic nature. With the production and use of rays of greater penetration, these symptoms have been accentuated. These constitutional after-effects of the massive deep treatments are not merely annoying, but often become distressing and even dangerous. This is especially true when the patients are aged and debilitated or when the patient is cachectic, asthenic or toxic as a result of the presence of malignant, ulcerating or suppurating lesions about the body. The after-effect of the roentgenization is often especially marked in neurotic patients or in patients who have just been subjected to operative procedures. It is an old observation that patients suffering with alterations in the cellular content of the blood or with diseases of the blood-making organs are prone to develop unpleasant symptoms of a distinctly toxic nature after Roentgen-ray treatment.

The symptoms following deep Roentgen-ray therapy vary greatly with the general condition of the patient, with the nature and extent of his disease and with the amount of the Roentgen-ray dosage. The mildest type is an indefinite malaise felt for a day or two after the treatment. It may be so marked, however, as completely to prostrate the patient, necessitating rest in bed from one or two days to a week following each massive treatment. This malaise is often accompanied by marked nervousness and mental depression.

Nausea and lack of appetite are almost constant accompaniments of the malaise, and may result in vomiting. The patient may vomit but once (usually from two to six hours after the treatment), or the vomiting may persist for days. One robust female patient who had just been operated on for cancer of the breast was unable to retain any food, except water, for eight days after a single treatment. The treatment was quite severe, however, and consisted of eight full doses (200 X); 100 X were administered to the operated side, and 100 X to the unoperated and apparently normal side. (It may not be out of place to mention in this connection that postoperative Roentgen-ray treatment of the breast should never be confined to the operated side but should include the unoperated or apparently normal side. The reasons are obvious.)

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[2] Craig, Charles F.: Variations in the Strength of the Wassermann Reaction in Untreated Syphilitic Infections, The Journal A. M. A., April 18, 1914, p. 1232.

With the nausea the patients usually associate the odors of the ozone or other gases formed about the high vacuum tube excited by a high voltage current. Many of them report that the odor lingers with them, producing nausea, or that the sight or even the thought of the treatment, or of the apparatus, or of the operator recalls the mental impression of the odor and results in nausea. I have frequently encouraged patients to describe the unpleasant odor; but, as a rule, no adequate description could be obtained. One patient said that the odor suggested something "burnt;" another described it as resembling the odor experienced when emerging from an ether anesthesia.

The nausea and consequent loss of appetite frequently result in a loss in weight and strength, and may in this way be a factor in prognosis. One patient under treatment for an inoperable carcinoma of the colon lost from 2 to 3 pounds in the two or three days immediately following each treatment. In the intervals before the next treatment he gained from 3 to 5 pounds only to lose part of it again following each succeeding treatment. Another patient insisted on being treated on Mondays, as according to his statement he wanted to enjoy his Sundays.

While the malaise and nausea are the two most prominent symptoms following the massive deep treatments, a variety of other symptoms may appear. There may be rapid swelling of the lymphatic glands in the irradiated areas occurring from two to six hours after the treatment. This swelling of the lymphatic glands following the Roentgen-ray treatment was so marked in one goiter case that the condition was diagnosed mumps and the patient was isolated by the attending physician.

Patients frequently complain of a metallic taste in the mouth for some days after the Roentgen-ray treatment, and are unable to enjoy the flavor of their food. There may be also edema and congestion of the mucous membranes in the areas under treatment, resulting in dryness of the mouth and throat, pain in swallowing, soreness of the intestines, etc.

It should be understood that the foregoing syndrome occurs only when massive doses are employed, and may never appear if the dosage be mild or moderate. But such mild or moderate dosage is often futile in that it fails to accomplish the desired result. If the larger doses are employed, however, these unpleasant symptoms may decrease the weight and strength of the patient or may be so alarming to the patient that he will discontinue the treatment against advice. The practical importance of overcoming these constitutional after-effects is, therefore, evident.

In the search for the cause of these symptoms, the fact that the patient complained of the disagreeable odor in the treatment room directed attention to the gases formed about the tube. Therefore, I tried to overcome the possible effect of these gases by placing a jar of smelling salts near the patient or placing a small bottle in the patient's hand for inhalation during the treatment. This was without appreciable effect on the undesirable symptoms. I then observed that with the onset of warmer weather and the opening of the windows, the patients seemed to complain less of the nauseous odor. An electric fan was, therefore, placed in an open window and the air current was directed to the patient's face. This decreased the nausea, but did not entirely prevent it.

I found that it was always possible to limit or prevent these after-effects by decreasing the dosage, but more especially by decreasing the voltage at the tube terminals. When 9 milliamperes were passed through the tube and from 25 to 30 X delivered per area, the symptoms were very pronounced. When only 5 ma. were passed through the tube and from 15 to 20 X given per area, the symptoms were milder and often absent altogether.

It was further observed that the constitutional symptoms appeared not during or immediately after the treatment, but required from two to twelve hours to develop. Furthermore, the patients suffered most after being under treatment for some time, that is, after the thorough saturation of the tissues by the Roentgen ray and the development of the cumulative effect. It was also apparent that, although the odor in the treatment room produced a recurrence of the nausea, this was only a mental reflex and not the ultimate cause of the nausea. The first treatment produces no *immediate* nausea. At subsequent treatments, however, the odor recalls the nausea, since the patient associates the treatment and its accompanying odor with the nausea.

The effect of the Roentgen ray on living cells is to break them down or at least to increase the catabolic changes in the cells. The products of the metabolic activity in living cells or of the disintegration of protein material are largely acid in reaction. It seemed probable, therefore, that the unpleasant constitutional symptoms following deep Roentgen-ray therapy were the result of an acidosis either local or general. It is known that the reaction produced in the skin by the Roentgen ray is a local acidosis from cellular disintegration, and that it can best be avoided or abated by the local application of the alkalies (as, for instance, Dodd's lotion).[1]

A few clinical tests seemed to prove the correctness of this theory. The administration of sodium bicarbonate by mouth served to ameliorate or prevent the constitutional symptoms in a great many patients. The first patient on whom this medication was carried out was very anemic and weak from uterine hemorrhage due to the presence of a fibroid. Her general condition was such that the possible constitutional after-effects of the treatment were greatly feared. She was given sodium bicarbonate in 30-grain doses every three hours for twenty-four hours previous to the treatment, and this medication was continued for forty-eight hours after the treatment. None of the unpleasant symptoms developed in this case.

I am now prescribing as a routine 30 grains of sodium bicarbonate every three hours, to be continued forty-eight hours after each treatment. When the condition of the patient warrants, it is also given over

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1. Dodd's lotion consists of: zinc oxid, one-half ounce; glycerin, 1 dram; phenol (carbolic acid), one-half dram; lime water, 8 ounces.

twenty-four hours just previous to each treatment to increase the alkalinity of the blood and tissues. The patient is also encouraged to drink freely of alkaline waters, especially Vichy. I prescribe also in each case an alkaline lotion (Dodd's formula) to be applied twice daily to the skin areas under treatment as a prophylactic measure against the development of a reaction, and I feel that, as a result of the persistent use of this lotion from the beginning of the treatment to the end, I have been able to increase the skin tolerance and to deliver in this way a greater dose to the underlying tissues than would otherwise be possible.

The dose of alkali which I have been giving is perhaps in excess of what is required, and may be cut down to an amount sufficient to render the urine alkaline. If 5 grains of magnesium sulphate be added, the dose may be further diminished. A bottle of artificial Vichy per day is sometimes sufficient.

5 Garfield Place.

PYORRHEA DUE TO ORGANISMS OTHER THAN THE AMEBAS

GEORGE HOWARD HOXIE, A.M., M.D.
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Since the publication of the work of Bass and Johns on pyorrhea, there has seemed to be a tendency among dentists and many medical men to administer emetin in all cases of dental infections without establishing the presence of the endameba. That the endameba is not the cause of all cases diagnosed as pyorrhea by competent dentists is shown by the history of such cases as that outlined below. Its publication at this time seems, therefore, justified.

History.—A. L., man, aged 18, high school student, first seen Aug. 2, 1912, complained of attacks of sore mouth complicated by fever, earache and knee pains. The family history was negative except for tuberculosis in the second generation on the mother's side (no contact). The patient had been a healthy infant until 3 months of age, when he had otitis with a purulent discharge. The sore mouth began at the age of 3 years, when the attacks began suddenly and recurred every three weeks. He had the usual children's diseases, but was in spite of it all a healthy-appearing child.

Present Illness.—A febrile attack of stomatitis, glossitis or gingivitis (or all three) occurs every fourteen days and lasts from three to five days, ending with the removal of one or more necrotic nodules about one-eighth inch in diameter. His ears "break" and "run" at longer intervals (for example, four times in the last seven years). His left knee swells up and pains him about five days from every four to eight weeks.

The attack begins with a general malaise and fever, followed by a soreness of the mouth, gradually localizing into a swelling of the mucous membrane of the particular part affected. In the center of this area develops a raised nodule, red, hard, but not very tender. This can be seized with forceps and pulled out at the end of from three to five days without much discomfort to the patient, leaving a clean granulating surface. No distinct scar is left. The attacks recur without reference to habits, time of year or food. The knee attacks began last year.

Examination.—The patient is a sturdy young man, self-controlled and showing no neurotic stigmata. The weight varies from 142 to 150 pounds. Systolic blood pressure, from 150 to 138. Chest shows some roughened respiratory sounds. Heart sounds loud and sharp. Lymph glands palpable in neck, axilla and groin. (The cervical glands swell at the time of the attacks.) Spleen not palpable. Ears negative except for scars on membrane. Nasopharynx red and "sticky." Mouth shows about half of the teeth gone and some of the remainder loose. The inflammation about the teeth has gradually destroyed the alveolar processes of most of the teeth, so that the roots are exposed. In some cases pus exudes from the socket on pressure, but in most cases none appears because of the frequent cleanings at the hands of the dentist. Left knee shows now little or no inflammatory disturbance.

Aug. 12, 1912, the lower lip was swollen and red. Attack began two days ago. The right ear was discharging. Malaise was still increasing; pulse, 108; temperature, 101. Bad taste in mouth. Pain in right ear, lip, gums. Tongue flattened and coated with a glairy membrane that could be washed off with an astringent spray, leaving a reddened and glossy mucosa. Culture from ear showed a small diplococcus.

In the interval following this attack the patient was given a course of "rheumatism phylacogen." No result, beyond the temporary chills and malaise.

Following his next attack, a course of stock staphylo-streptococcic vaccine was given (a course of autogenous vaccine had been given eighteen months previously). The following attack (October 2) was almost free from the constitutional symptoms, and only one nodule appeared; the next attack, however, was about as usual (October 22). The vaccine treatment was continued, but without distinct effect. Attacks were at their height November 6, 13 and 27. The bacteriologic study of this last nodule showed long rods and various cocci. December 2, an autogenous vaccine (Hecker) was started. In spite of this an extraordinarily severe attack occurred from December 14 to 18.

Jan. 11, 1913, the patient was just over a week's attack; fever to 101; two ulcers on left side of tongue, one on lip, one on buccal-gingival fornix; all on left side of mouth. In this attack the invasion was slow and stopped for two days. Interval between attacks now sixteen days.

January 17, there was "rheumatism" of left knee and fingers of left hand. This cleared up in three days, but the knee was more or less sore in the evening for a month.

The last attack of otitis occurred January 25, and lasted only two days.

March 15, a culture made from the depths of a freshly pulled necrotic plug showed on potato in twenty hours a mold—a closely felted, adherent white growth with black spot in center; small branching colorless mycelia with conical spores. On blood serum, a looser growth, mycelia white, sporangia yellowish. On agar the growth was white with ovoid spores, but when transplanted to potato became black (*Aspergillus niger*). In glucose bouillon, filaments (leptothrix?) with vibriolike forms.

April 4, a culture from material from the depths of the ulcer immediately after the nodule had been pulled out in glucose bouillon showed chains of minute sporelike bodies and a few cocci.

April 17, the pseudomembrane on the tongue showed mycelia under the microscope.

May 31, the "rheumatism" that had been prevailing since May 23 stopped when the plug developed in mouth yesterday.

After attempting to eradicate the sores by curettage and caustics, it was found that the nodules appeared about the tooth sockets or on the parts of the tongue coming in contact with the bad teeth.

Oct. 29, 1913, culture from the bottom of a plug showed a rich growth of *Aspergillus fumigatus.* But a smear from the same plug showed masses of a minute diplococcus, and through them threads smaller than an ordinary mycelium, which stained blue with Wright's stain.

Jan. 2, 1914, a tooth was extracted. From the root a culture showed a diplococcus, a staphylococcus and a streptothrix, all decolorized by Gram.

February 24, ulcer in anal fold. Inguinal glands enlarged and tender. A sore in left buccal mucosa opposite last lower molar, and one on tongue. (Patient has had two or three of these anal ulcers before. They occur coincidently with the oral lesions.)

March 19, culture on blood serum from the depths of an oral ulcer grew at room temperature a rod that united in long myceliumlike branches, not decolorized by Gram.

March 21, 1914, a vaccine made from these cultures was started. This caused some systemic reaction, but seemed to bring on the knee inflammation.

May 22, 1914, neosalvarsan, 0.9, intramuscularly.

June 1, 1914, new attack, as before.

Aug. 31, 1914, withdrew 35 c.c. of clear fluid from left knee. Culture showed a diplococcus not decolorized by Gram and the branching sporulated organism already found in the mouth.

Dec. 15, 1914, all his teeth except the two last lower molars removed. This brought on a severe attack with much hemorrhage from the sockets, which continued intermittently until December 20.

Aug. 13, 1915, the patient has been much better and has lost very little time from his university work. But the attacks still recur at seventeen-day intervals. He is now suffering from another ulcer in the anal fold.

Summarizing the record, we have to do with a recurrent fever of about seventeen years' duration. The focus has been the alveolar processes and the mucosa of the mouth, from which the body has been invaded. The particular parts, aside from the mouth, which have shown evidences of infection, have been the left knee (bursitis) and the anal fold (abscesses). The length of the attacks has varied from three to ten days. The organisms most constantly found have been a diplostreptococcus and a mold. The disease has proved resistant to arsenic (salvarsan, arsacetin and the trioxid), the salicylates and other systemic and local germicides, as well as to vaccines, both autogenous and stock, single as well as mixed.

The question of great interest is whether we have to do with an organism showing a cycle of from fourteen to seventeen days, or whether it is a case of temporary immunity. Repeated examinations have failed to reveal any amebas. Animal inoculation was negative.

To me it would appear that the causative organism is one which is ordinarily nonpathogenic, but which has acquired parasitic power in the tissues of this patient.

It is perhaps needless to say that all the conventional drugs have been used at one time or another by the various physicians who have treated the patient. The dentists employed have been the best in the city. The case was worked up from the dermatologic standpoint by Dr. R. L. Sutton,[1] and published under the caption, "Periadenitis Mucosa Necrotica Recurrens." The diagnosis of pyorrhea was given by all the dental attendants, including Dr. Frederick Hecker, the author of a monograph on that subject.

1334 Rialto Building.

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[1] Sutton, R. L.: Jour. Cutan. Dis., 1911, xxix, 65.

Anthrax.—Anthrax was not a reportable disease in Pennsylvania prior to 1905 according to Dr. Andrew A. Cairns, chief medical inspector of the Philadelphia Bureau of Health. Previous to that time the death rate from anthrax was high. Since 1905 progress has been made in the treatment of the disease so that the death rate is now much less. In 1905 there were seven cases with one death; in 1906 nine cases with three deaths; in 1907 fifteen cases with four deaths; in 1908 four cases with three deaths; in 1909 nine cases with one death; in 1910 eight cases with two deaths; in 1911 two cases with one death; in 1912 ten cases with three deaths; in 1913 nine cases with three deaths; in 1914 nine cases with four deaths. For the first eight months of 1915 there were no deaths from anthrax in the city. In thirty-five cases recorded in the hospital for contagious diseases all the patients except five recovered.

THE TREATMENT OF CEREBROSPINAL SYPHILIS: THE OGILVIE TECHNIC

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The trail of pioneer students in the last decade has led us into a wilderness of speculation and argument concerning the pathology and treatment of syphilis, especially of the late forms. Whether our combined attack with the old remedy and the brilliant new therapeutic weapon destroys the enemy or wins a truce, whether persistently negative findings in both serum and arachnoid fluid ever guarantee the death of the ultimate spirochete—these questions may be answered after forty years of wandering. Meanwhile certain facts in the pathology are becoming clear, and quite definite ideals of treatment may be held.

The underlying pathology of parasyphilis does not differ essentially from that of primary syphilis; but while a scarred foreskin is of no physiologic moment, a scarred optic nerve is a tragedy. We must probably, however, recognize both spinal and cerebral syndromes resulting from processes degenerative in type from the time of the first diagnostic symptoms. These perhaps follow years of nutritional disturbance, from relatively symptomless vascular disease long since quiescent, and are analogous in development to similar degenerations observed in primary anemia, plumbism and other toxemias in which syphilis can be excluded; or figuratively, to the gradual yielding of an aortic scar under hydraulic stress. These cannot be much benefited by any known treatment. Furthermore, remembering the sensitiveness of the cerebral cortex to even small traumatic cicatrices, it is not surprising that in paresis great or lasting improvement is obtained only in patients treated intensively in the very earliest stages.

Syphilis is generalized, including the cerebrospinal localizations, at latest soon after the appearance of the chancre; more often without it, and without the secondary reaction, than is generally believed. Whether trauma, intoxications, allergy, or some unknown phenomenon in the life cycle of the parasite later kindles into activity these foci in the nervous system, we do not know. It is perhaps significant that central nerve syphilis in the secondary stage before the discovery of salvarsan, as well as syphilis neurorecidive, has been observed most often in people acquiring syphilis late in life, when it is reasonable to suppose the normal slight ependymal permeability to biologic antibodies and specific drugs is diminished by early senile change. Whether the process is disseminated by metastasis or by extension alone from the primary localizations, we cannot be sure; we are sure that every syphilitic is a possible candidate for tabes or paresis until his last spirochete is killed.

Therefore, and because most effective in the early stages, treatment of the late forms begins, paradoxically, with the microscopic diagnosis of the chancre. In justified enthusiasm for the specific drugs, we are prone to forget the value of psychotherapy, never more essential than in the treatment of syphilis. The drug treatment is mercury by injection or inunction, and salvarsan intravenously, as intensive and continuous as may be without disturbing the general health, until clinically, serologically, and in the cytology and biochemistry of the arachnoid lymph, there is no evidence of active disease. This means, for example, ten injections of mercury and six of salvarsan in about four months, followed, in the absence of symptoms, by two months' rest, when the tests should be made. If negative, and in the absence of symptoms, these should be repeated twice a year for several years. In tertiary syphilis moderate doses of iodids in addition are unquestionably of symptomatic benefit.

Since we failed of our hoped for *therapia magna sterilisans* with the single large dose of salvarsan, our careless and unscientific use of this drug, so potent for good or ill, is amazing. Evidence abounds that we achieve just as much with smaller and less frequent injections. The initial dose should not exceed 0.3 gm The interval should rarely be less than ten days.

Latent syphilis with laboratory findings in the cerebrospinal fluid remaining strongly positive after one repetition of the course outlined should be treated intrathecally. Of this I am firmly convinced. The occasional patient with sufficient intelligent appreciation of his danger to offer his apparently healthy body as vicar of a diseased test tube is exactly the one whose activities it is most worth while to conserve.

The Wassermann test, unreliable and unstandardized as it is, is probably our best guide, and cerebrospinal syphilis should be treated locally, intravenously, or both, according to findings in serum and arachnoid fluid.

The Ogilvie method of arachnoid salvarsanization, in spite of its obvious advantages and excellent results, seems not to have won so wide a recognition as it deserves. By this technic, patients for whom general salvarsanization is no longer indicated avoid the discomfort, the probable harm, of large intravenous doses, as well as the repeated venous puncture. Dosage is accurate, the method economical of a drug expensive and at present difficult to obtain. The Ogilvie injection in my hands proves less disturbing to the physiologic economy than the Swift-Ellis treatment. Finally, this technic offers the more than academic advantage of answering the critics who believe the supposed benefit of subdural injections to result from the accompanying intravenous administration.

I have treated a baker's dozen cases of tabes and meningitis by Ogilvie's technic with about the same results as others have reported. Two of these I submit, not because they show the most brilliant result, for they do not, but because they illustrate points of especial interest, or perhaps justify radical views.

Wassermann tests are by Dr. T. P. Tredway, attending pathologist to Hamot Hospital, and Dr. E. C. Jagle, in Dr. Fordyce's laboratory.

Case 1.—Tabes. A saloon keeper, aged 51, until four years prior to being seen was a hard drinker, had a chancre twenty years previously, followed by mucous patches, for which he received no specific treatment. Eight years previously he had lightning pains and ataxia. In 1912, when he first consulted me, a condition of blurring and dim vision was improved by eight intravenous injections of salvarsan. During the last two years he has had detrusor insufficiency, emptying his bladder only once in twenty-four hours; loss of sexual power, and increasing ataxia. His disease has been characterized throughout by agonizing pains in the legs and about the waist. Until March, 1914, he received from me twelve intravenous injections of salvarsan and six courses of mercury by injection and inunction. During March he had four Swift-Ellis treatments which he thought were of no benefit. In fairness to the method I must admit that neosalvarsan was the drug used for these treatments. I regret that at this time I was not familiar with the pathology of the spinal fluid. After this he consulted other physicians, receiving osteopathic treatment and mercury injections through the summer and fall of 1914.

In February, 1915, when he consulted me again, he was on the point of giving up all activity. He could scarcely get about with the help of a cane, suffered with severe gastric crises and lancinating pains, which he controlled with 4 or 5 grains of morphin hypodermically every day. He showed the classical signs. February 11 the serum Wassermann was negative, the arachnoid fluid showing cells 45; globulin + + + ; Wassermann + + + with 0.5 c.c.

On this date he was given 0.25 mg. salvarsan subdurally, while suffering a gastric crisis. This dose was, under the circumstances, twice too large, and the reaction was severe and alarming. Ten days later he felt better than at any time during the previous two years.

March 1, feeling perfectly well, he received 0.1 mg., followed by a very mild reaction. March 23, returning to the large dose, he had 0.25 mg., which he bore without much distress. April 16 this injection was repeated, and the fluid phases were found to be normal.

April 20 he spaded in his garden for two hours and danced a little in the evening without mishap. His morphin he had by this time reduced to ¾ grain daily.

In July he complained of pains again, I believe in the hope of a larger morphin allowance, and received 0.25 mg. of salvarsan intraspinously. The fluid showed no abnormalities.

September 23. He walks wherever he pleases by day or night without a cane, empties his bladder without difficulty several times daily. He has not vomited for seven months, and has had practically no pains. He takes up to 1 grain of morphin daily, "because he is nervous without it." He can stand with his eyes closed, which he could not do two years ago. The pupil and tendon reflexes have not returned, and his sexual power is gone.

This man's process advanced steadily and fairly rapidly during three years until he was almost a hopeless bedridden morphinomaniac, in spite of systemic treatment as strenuous as anyone could be asked to endure, besides four Swift-Ellis injections. Tests of his fluid were characteristic of active disease. For the past seven months he has enjoyed very fair health and an ordinarily active life. By his own effort he reduced his morphin by more than three quarters. He has received five intrathecal injections of salvarsan by the Ogilvie technic; no other treatment of any kind, medicinal, mechanical or educative. His cerebrospinal fluid is normal.

Case 2.—Latent syphilis. A lawyer of 35, single and of good habits, consulted me in 1912 with the history of a possibly specific sore without secondaries twelve years previously, and a positive serum Wassermann. During the next eighteen months he had nine intravenous injections of salvarsan and four courses of thirty mercury inunctions. The Wassermann remained triple plus, the patient "in smiling health, in spite of the disease and in spite of the treatment."

In February, 1914, the pupils became unequal. He received mercury injections until May, then two intravenous injections of salvarsan, no further treatment until July, when he had pains and tingles in hands and forearms and across the back, and the pupil responses to light became sluggish. Mercury injections were resumed until September, when he had one Swift-Ellis treatment, 20 c.c. serum with 10 c.c. saline. Meningism required rest in bed for ten days. At this time the serum Wassermann was doubtful, the fluid showed cells 35, globulin abundant, Wassermann complete with 0.2 c.c. A second Swift-Ellis treatment was followed by blurring vision (Herxheimer reaction, or temporary paresis from irritation?). Dr. I. J. Dunn reported normal fields and disks.

October 15, 1914, this patient was referred to Dr. J. A. Fordyce, who found the pupil changes and also noted exaggerated tendon reflexes in the left leg. He advised a series of eight intravenous injections, the patient to report to him after this course.

January 15, by Dr. Fordyce: Patient profoundly hypochondriac; serum Wassermann negative, cells 4, globulin excess very marked, inhibition complete with 0.4 c.c., the important phases thus slightly affected by two Swift-Ellis injections and eight intravenous. No change in the signs. Patient received 0.25 mg. intraspinally, by Dr. Fordyce, followed by a moderate reaction lasting four days. In February this injection was repeated by Dr. Fordyce, the phases in the fluid showing some improvement.

Since then this patient has been in vigorous mental and physical health. He has received at my hands three subdural injections of 0.25 mg. each, at eight-week intervals. The serum Wassermann remains negative; that in the fluid has become weaker by almost perfect arithmetical progression with each injection, to practically normal. The patient has no symptoms; the signs are perhaps slightly improved.

It is but fair to credit the clinical improvement under the Ogilvie injections to the psychic effect of kindly reassurance by a wise and recognized authority, for the real subjective symptoms cleared up under Swift-Ellis and intravenous injections at my hands, the signs remaining stationary. For the local treatment may justly be claimed the return to normal of the spinal fluid, for I do not believe psychotherapy ever rendered a Wassermann negative. From the complete arrest of the process in this case it seems reasonable to believe that if local treatment had been instituted before the appearance of clinical signs and symptoms, their onset might have been postponed, perhaps indefinitely, and the patient spared a psychical upset which made him useless for several months.

My field is too small to yield any large harvest of conclusions. Ogilvie's study seems to me the great advance in the therapy of syphilis since Ehrlich's discovery; his technic the method of choice in the local treatment of cerebrospinal forms of this disease.

SOME CLINICAL MANIFESTATIONS OF FOCAL INFECTIONS

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FARGO, N. D.

Focal infection as a definite factor in diagnosis and treatment has become well established, through the work of Rosenow, Billings, and others; it is no longer in the experimental stage. The clinical manifestations come under the eye of the observing practitioner almost daily. In our clinic at St. Luke's Hospital it has become a matter of routine to search carefully for foci of infection and to demonstrate their presence wherever possible. Some interesting observations have come to light which it seems might be worthy of publication. The following cases are cited, because each seems to illustrate a certain phase or phases of the subject:

CASE 1.—A. T., a boy of 12, came to my office in July, 1912. He had been suffering for several years with chorea, which, in spite of the usual treatment, rest in bed, Fowler's solution, etc., had been growing more and more severe. The eyes were continually rolling from side to side, the head was always changing position, and other muscles of the body were jerking constantly. General nutrition was poor; there was a slight mitral lesion, and a rather indefinite history of sore "throat." Tonsils were of the embedded variety and apparently not enlarged. Examination was otherwise negative. The tonsils were extirpated and the left was found to contain pus from which a streptococcus was isolated. The boy was put to bed, Fowler's solution being prescribed in increasing doses. In five weeks twitchings had all ceased, and patient seemed to have made a perfect recovery.

The supplementary treatment was given because it was deemed unjustifiable to withhold any measure that might contribute to the patient's recovery. Since this treatment had been given previously without effect, however, there seems to be little room for doubt that the real cause for recovery lay in the extirpation of the tonsils, the focus of infection.

CASE 2.—R. G., girl, aged 13, entered the hospital in August, 1915. She had been subject to attacks of tonsillitis for several years. About a year ago one of these attacks was associated with rheumatic pains and swelling of the joints, which, however, subsided, being followed by several other severer attacks at intervals until about seven weeks ago, when she entered the hospital. At that time the child was greatly emaciated, and had the typical appearance and symptoms of a severe endocarditis. The tonsils appeared to be innocent, being of apparently normal size and color. For several weeks the temperature ranged between 102 and 104 F., salicylates and other medication being given without any apparent effect. A bacteriologic examination was then made of the tonsils. From the crypts of the left tonsil was obtained a slight amount of pus, which yielded a pure culture of a green-producing streptococcus under anaerobic cultivation. It was decided that the tonsils must be removed, in spite of the poor condition of the patient. Under local anesthesia this was successfully accomplished. Both tonsils were of the size of a large hazelnut; the right was apparently normal in structure, but the left contained considerable quantities of pus. The left tonsil was emulsified under aseptic precautions and the emulsion suspended in salt solution, injected into three rabbits, varying quantities being injected intravenously. The first animal died of anaphylactic shock shortly after injection; the second died about eight hours after injection with every symptom of an overwhelming septicemia, streptococci being isolated from the blood in great numbers. The third rabbit had been given a very small dose and showed no noticeable symptoms until about two weeks later, when an inflammation of one of the joints developed. The following few days the animal grew gradually worse, and was chloroformed. There was considerable fluid in the pleural, peritoneal and pericardial cavities, the latter containing a flaky deposit. The heart was dilated and flabby, and the mitral valve showed retraction and a small hemorrhage. From the blood and serous fluids was isolated the *Streptococcus viridans.*

Meanwhile, the day following extirpation of the tonsils, the patient complained of a severe pain over the right kidney. The urine, which had hitherto been normal, showed the findings of an acute hemorrhagic nephritis. On cultivation, under great precautions, a pure culture (anaerobic) of a green-producing streptococcus was obtained, corresponding in every way to that obtained from the left tonsil. A vaccine was prepared and given at intervals of six days. After two injections the urine had again become normal, while the temperature gradually diminished.

This case is given in detail because it seems to demonstrate conclusively the source of the infection. These two cases also are illustrations of the so-called "embedded" tonsils whose innocent appearance will often deceive even the specialist.

CASE 3.—Mrs. M, aged 31, entered the hospital in June, 1915. About four weeks before, the patient was attacked with pain and swelling of certain joints, particularly of the fingers, wrists, ankles and toes. About a week later she observed a breaking out of the skin. She consulted a physician, who prescribed the usual treatment for rheumatism, but without much improvement. Patient finally entered the hospital, and was found to be suffering with acute articular rheumatism, associated with a rather severe erythema multiforme. A careful examination was made for a primary focus of infection. The only positive findings were two adjoining teeth (anterior molars) which had been carefully filled, but which were a little loose and slightly tender, yet had given no serious trouble to the patient. It was advised that these be extracted, but consent of the patient could not be obtained for a week, during which time large doses of salicylates were given, with no apparent effect whatever. The patient finally decided to part with the teeth, which were promptly extracted. That night the patient enjoyed a comfortable sleep for the first time since the illness began. In three weeks she left the hospital perfectly cured.

Cultures made from the alveolar abscess found at the root of one of the teeth yielded a pure culture of a streptococcus, having a slightly hemolyzing colony and growing in short chains.

Case 4.—Miss J. J., aged 18, came to the hospital in July, 1915, complaining of a severe headache, and pain in the left knee and over the heart. Patient had had attacks of pain over the heart previously, also headaches for some time, but had not before been troubled with "rheumatism." The knee was found to be slightly swollen and tender; there was a murmur over the apex; the pupils were considerably distended. Temperature 101. Examinations of teeth, tonsils and nose were negative. She was referred to a specialist for a careful examination of the sinuses, and these were found to be apparently normal. A daily inspection of the throat was made, with no results until one day when the patient said she felt somewhat better. A considerable quantity of a greenish, thick pus was found to be discharging down the posterior pharyngeal wall. Cultures were made and a streptococcus isolated, from which a vaccine was prepared. Patient began to improve after the first injection of the vaccine, and after five doses had been given she had apparently made a complete recovery.

This case emphasizes the fact that a focus of infection may often be overlooked, even by a competent specialist, when seated in the upper sinuses. A daily inspection for discharging pus seems to be the only recourse in such cases.

HEMATEMESIS FOLLOWING APPARENT ACUTE INDIGESTION

REPORT OF A CASE OCCURRING IN AN INFANT

George V. Duffy, M.D., Woodhaven, L. I.

J. F., a male child, aged 2 months, weighed at birth 6½ pounds. Though of small size he was apparently healthy. He was bottle fed from the beginning as the mother (quintipara), having secondary anemia from severe post-partum hemorrhage after each delivery, was never able to nurse.

The present illness began during the hot days of August, with vomiting, diarrhea, and fever. The abdomen was distended, the child was very restless and cried continually. After the second day the temperature became normal, vomiting ceased, the bowels were constipated; abdominal distention and pain alone remained. On the fourth day the child passed into a state of semiconsciousness (respirations were interrupted and of the Cheyne-Stokes type). On the fifth day he passed a large watery stool; the distention was much less, the respirations became quiet and regular, the condition of stupor disappeared, the eyes appeared bright, and a better color returned to his skin. About 3 p. m. on the fifth day the child became suddenly weak and pale but in a few minutes appeared much better. About 4:30 p. m. he vomited about a teaspoonful of dark brownish fluid. The child, however, continued apparently to gain strength until 6:30 p. m. when it suddenly vomited a very large amount of blood, dying while vomiting.

5 Forest Parkway.

Therapeutics

THE MORPHIN HABIT

(Concluded from page 1817)

OBJECTS OF TREATMENT

1. To stop the drug.
2. To prevent pain and cause sleep.
3. To increase all secretions.
4. To sustain the strength.
5. To support the heart.
6. To teach self-control.
7. To promote nutrition and general health.

These are the main objects that one must keep in mind, and they also represent some of the difficulties in the cure of the morphin habit.

DETAILS OF METHODS OF TREATMENT

Towns-Lambert Method.—The details, as described by Dr. Lambert, are as follows:

The morphin patient is given five compound cathartic pills and 5 grains of blue mass. If these have not acted in six hours, he is given a saline cathartic. After three or four free movements, he is then given in three divided doses at half-hour intervals, two-thirds or three-fourths of his total twenty-four hour morphin or opium dose. The drug is given in the way he usually takes it. After the second dose, Lambert cautions the physician to study the patient carefully, as a few patients cannot comfortably take more than this amount, and should not receive the third dose of morphin. Beginning at the same time that the first dose of morphin is given, 6 drops, from a medicine dropper, of the belladonna, xanthoxylum and hyoscyamus mixture above described are given, and this dose is repeated every hour for six hours. At the end of six hours the dose is increased by 2 drops. This belladonna mixture is then continued every hour, day and night, continuously throughout the treatment, increasing 2 drops every six hours until the dose has reached 16 drops; this 16-drop dosage is then continued. The belladonna drops are diminished, or discontinued, at any time that the patient shows symptoms of belladonna poisoning, which is evidenced by dilated pupils, flushed face, dry throat, or "a peculiar incisive and insistent voice and an insistence on one or two ideas." It would seem as though the dilated pupils and dry throat would be present early in almost every case. If the belladonna treatment has been stopped, it is again begun at a reduced dosage as soon as the symptoms have subsided. If there is idiosyncrasy against belladonna, it will be shown in the first six or eight hours, and the dose must then be diminished. If 16 drops, the full dose, given for twelve consecutive hours do not cause dryness of the throat, the dose should be increased to 18, and to 20 drops per hour, and when the throat is dry, the dose should be reduced.

Ten hours after the first dose of morphin, the patient is again given five compound cathartic pills and 5 grains of blue mass. If they do not act in eight hours, a saline cathartic should be given. When the bowels have acted thoroughly, one half of the dose of morphin given at first should be given. As just stated, the belladonna drops are still being continued, and ten hours after the second dose of morphin has been given, that is, about the twenty-eighth hour of treatment, five more compound cathartic pills are given and 5 grains of blue mass, followed again by a saline if the bowels do not act in eight hours. After the bowels have thoroughly acted from the last dose of cathartics, the third dose of morphin is given, which should be one sixth of the first dose. It is stated that usually this will be the last dose of morphin required.

Ten hours after the third dose of morphin, that is, at about the forty-sixth hour, five compound cathartic pills and 5 grains of blue mass are again given, followed by saline, if needed, and at this time, if not before, a bilious green stool should appear. When this appears, usually about eighteen hours after the third dose of morphin or about the fifty-sixth hour of treatment, 2 ounces of castor oil are given to clean out the intestine. Sometimes, Lambert states, it is necessary to continue the belladonna mixture over one or two more cathartic periods before giving the oil.

During the last bowel-moving period the patients are the most uncomfortable, and their excessive nervousness and discomfort may be controlled by codein, "which can be given hypodermically in 5-grain doses and repeated, if necessary; or some form of valerianates may help them." It would seem very doubtful if valerianates could be mentioned in the same category with a 5-grain dose of codein. The valerianates have never been shown to have any activity whatsoever.

At about the thirtieth hour of treatment, the patient should be stimulated with strychnin or digitalis, or both, every four to six hours. The amount of strychnin is not mentioned; neither is the amount nor the preparation of digitalis. Digitalis should rarely be given at four-hour intervals. This cardiac stimulation is left entirely to the judgment of the physician who is caring for the patient.

It is stated that some patients cannot tolerate the codein, as it causes poisoning, and urticarial rash, etc. Such patients may receive ethyl-morphin hydrochlorid, and Lambert thinks that the latter is twice as strong in its activity as codein, and he thinks the dose should be "2 or 3 grains, or less." The dosage of this drug, according to New and Nonofficial Remedies, is from one-quarter to 1 grain. The codein or dionin, whichever is given, should be stopped as soon as possible after the castor oil has acted, although it may be given during the succeeding twenty-four hours if necessary, but it should not be continued more than forty-eight hours, as they will acquire this habit, or return to the morphin habit.

Joint and other pains, and bone and muscle aches, Lambert says, "can sometimes be relieved by hypodermics of some form of ergot and strychnin, sometimes by massage, sometimes by sodium salicylate, sometimes by a salicylic compound combined with some of the coal-tar products, such as antipyrin or acetphenetidin; and they can always be eased by codein or dionin. The addition of codein to these coal-tar products increases their analgesic effect." Of course, it does, and it would seem almost inexcusable, if morphin is being withdrawn, to continue codein or ethyl-morphin hydrochlorid for more than one or two doses. The choice of these drugs is apparently left to the physician in charge of the patient. It would seem that the more drugs, the worse for the patient. All coal-tar products are depressant and are dangerous for a heart, especially after it has been through the trials it must go through in the two or three days of this treatment.

Insomnia, Lambert says, may be treated sometimes with bromids, sometimes with chloral or some other hypnotic. Veronal, he says, has caused much depression. Any of these hypnotics must cause some depression. He states that as soon as the patient is up and about, muscular fatigue caused by regular exercise makes him sleep, and usually such exercise can be taken at the end of a week.

The Pettey Method.—On the first day of the treatment the patient may take his usual dose of morphin, but he must go without his dinner and supper. Pettey's cathartic prescription, which contains atropin and strychnin as above described, is divided into four doses and placed in capsules. The patient takes one of these capsules every two hours, beginning at 4 p. m. The following morning he receives no nourishment and no morphin until his bowels have thoroughly moved. To insure that they do move, about 5 a. m. the next morning he is given one-twentieth grain of strychnin hypodermically (although he already has had one-fourth grain of strychnin since 4 p. m. the day before). Half an hour later he is given 2 ounces of castor oil or the contents of a bottle of magnesium citrate. Both the strychnin and the oil or saline should be repeated every two hours until the intestinal canal has been thoroughly emptied, and no morphin should be given during this time. It would certainly seem as though a morphin patient was very tolerant to strychnin, and it may be that he is sustained by this large dose of strychnin during the first period of going without his morphin.

After the bowels have freely moved, and the craving for morphin becomes insistent, the patient should be given from one half to two thirds of his usual dose of morphin at the same intervals at which he has been accustomed to take the drug. After this free purging he may have plenty of food regularly, provided he eats nothing for six hours before he begins his second purgative treatment, which should be at the end of forty-eight hours from the first. The cathartic capsule should be given in the same way as on the first day. The morphin may be continued in reduced dose, just sufficient to keep the patient comfortable, until the last dose of the cathartic capsule has been given, when it it is stopped, and no more opiate should be given. From six to eight hours after the second purgative course has been completed, strychnin hypodermically and the oil or saline should be repeated as before. As soon as the patient feels the need of the morphin after this second free purging, instead of morphin or an opiate, he is given $\frac{1}{200}$ grain of scopolamin hypodermically, and this is repeated in thirty minutes. If the patient does not sleep after the second dose, a third may be given in half an hour or an hour, which may be of the same amount, or double the amount, depending on the effect. This large dosage of scopolamin will cause either sleep or a mild intoxication. In either case the patient will not suffer. As soon as he wakes, he is given another $\frac{1}{200}$ grain of scopolamin, and this atropin intoxication should be repeated, if necessary, to keep the patient free from pain, for from thirty-six to forty-eight hours after it was begun. It should then be stopped. During the scopolamin period and for twenty-four hours afterward, Pettey gives 20-grain doses of sodium thiosulphate every two hours, which he thinks supplements the effect of the calomel purgative.

Convalescence is established on the fifth to the sixth day, when medication should cease, except treatment aimed at improving the general condition of the patient. During the treatment a weakened circulation is treated by Pettey by giving spartein sulphate in doses of 2 grains, every four to six hours.

Sceleth Method.—Patients treated by this method are first given a saline cathartic, and then the mixture of scopolamin, pilocarpin, ethyl-morphin hydrochlorid and cascara sagrada in the combination described previously. The dose varies according to the amount of morphin the patient is taking. When more than 10 grains of morphin per day are being taken, Sceleth gives 60 minims every three hours, day and night, for six days. On the seventh day the dose is reduced to 30 minims; on the eighth day to 15 minims, and on the ninth day 15 minims three times a day instead of every three hours day and night. On the tenth day this treatment is stopped, and strychnin nitrate, one-thirtieth grain, three times a day is substituted. On the eleventh day the strychnin is reduced to one-sixtieth grain three times a day, and this is continued for a week. During the first five days he gives a very light diet, but liquids freely.

Patients who are taking less than 10 grains of morphin a day start with a dose of 30 minims of the mixture; and if less than 5 grains, 15 minims.

This treatment represents the substitution of ethylmorphin hydrochlorid for morphin; the fighting of the morphin depression by scopolamin; the necessary promotion of secretions by pilocarpin, and the necessary laxative treatment by cascara. In other words, *this is apparently the simplest and most rational treatment of the three.*

During the first three days of the treatment the patients of course are sleepless, and they may vomit; but these symptoms occur with any treatment. If the pulse goes below 40 or above 120 per minute, the scopolamin mixture is stopped, and if there are any signs of collapse, one-half grain of ethyl-morphin hydrochlorid, or one-quarter grain of morphin is given hypodermically. The same is true of any treatment; if collapse is in evidence, morphin must almost invariably be given.

Sceleth says that in only about 4 per cent. of the cases is there scopolamin delirium, and when such a condition occurs the scopolamin may be omitted from the mixture for a few doses and then added in small doses. He further says what is very laudable, namely, to use no other drugs during the treatment. By the fifth day the patient generally has no further desire for his morphin and is ready for food, and may have a ravenous appetite and gain weight rapidly.

Sceleth very wisely says that if the cause that developed the morphin habit is still present, these patients are likely to relapse; if the cause that developed the habit has been removed, the patients are generally permanently cured. Consequently, if the cause that developed the habit has not been removed, it is a subject for the most careful therapeutic and, if necessary, surgical consideration. There certainly is little use in putting a patient through the serious ordeal for the cure of the morphin habit if recurrent severe pain is sure to occur.

The physician is urged to study the action of the drugs employed in the treatment of the morphin habit, and it is recommended that he first try the Sceleth method, which would seem to be the least dangerous, to cause the least hardship, and probably has as good a percentage of cures as any other treatment.

THE COCAIN HABIT

Often a patient who has the cocain habit also takes morphin; therefore frequently the two habits must be treated at once. In any case the cocain is stopped abruptly, the same elimination by free catharsis is necessary, and supporting treatment, especially with strychnin, is important. The combination of the cocain and morphin habits is perhaps the hardest one to cure, and Lambert says that as soon as the morphin is reduced the patients become delirious, and often almost unmanageable.

Any one of the methods described for the cure of the morphin habit may be used to cure the double habit, as just stated, the cocain being stopped immediately.

SYMPTOMS OF COCAIN POISONING

The local anesthetic symptoms need not be described. The symptoms after absorption, in a patient who is not used to the drug, vary greatly; many are excited mentally and are very loquacious, some may become slightly exalted or even delirious. The heart and respiration become more rapid, the pupils may dilate, and there may be some headache. The reflexes are likely to be exaggerated. There may be some slight trembling. Other patients are prostrated and become very faint, and even may become collapsed, if too much cocain has been absorbed. Vomiting may occur, but is perhaps rarely present unless the cocain is applied accidentally or intentionally to the pharynx, when the sensation of a foreign body in the pharynx, due to the anesthetized area, may cause reflex vomiting. The primary stimulation of cocain is not dissimilar to that of atropin.

Individuals who take the drug frequently, and become accustomed to it, receive mental stimulation from the cocain not dissimilar to that caused by caffein. They also, before they have been injured by the drug, may have more muscle endurance, and are fatigued less easily and can abstain longer from food without depression. Part of this action is doubtless due to the increased activity of the heart with some rise in blood pressure, and to the stimulation of the medulla oblongata and the spinal cord, all causing increased nervous tension. Sooner or later, depending on the particular individual, reaction sets in, the blood pressure falls, and the person becomes irritable, languid and weak.

In animals at least, and probably to a large extent in man, the cocain is almost entirely destroyed in the system, only a small amount being excreted by the kidneys.

Cocain is a poison. It more or less interferes with the secretions, digestion and finally nutrition. The cocain habitué becomes sleepless, nervous and tremulous, and may have hallucinations or become really insane. As stated, the main danger from the withdrawal of the drug is cerebral excitation and cardiac weakness.

(To be continued)

School Inspection.—In seventeen of the twenty-five states there is no organized health inspection of rural schools under competent authorities. In Idaho, Utah, Colorado, Pennsylvania, New Jersey and Virginia there is such an organized system, and the statistics for the rural schools are kept distinct from those of the city schools. In Maine and Rhode Island city and county records are listed together, a distinct disadvantage in determining the condition of the nation's schools. In no states other than these mentioned is there health inspection for the rural districts. In a commonwealth so advanced in educational matters as Massachusetts there is no health inspection of rural schools.—Dr. Philip Sumner Spence, *Public Health,* September, 1915.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ETHYL BROMIDE (See N. N. R., 1915, p. 25).—The following non-proprietary preparation has been accepted:

Ethyl Bromide Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

HOMATROPINE HYDROCHLORIDE (See N. N. R., 1915, p. 57).—The following non-proprietary preparation has been accepted:

Homatropine Hydrochloride Merck. — Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following non-proprietary preparation has been accepted:

Sodium Cacodylate Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

IODOTHYRINE (See N. N. R., 1915, p. 219).—The following dosage form has been accepted:

Iodothyrine Tablets, 3 grains.—Each tablet contains iodothyrine 3 grains. Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

THYRESOL (See N. N. R., 1915, p. 277).—The following dosage form has been accepted:

Thyresol Pearls, 5 grains.—Each pearl contains thyresol 5 grains. Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

THEOCIN-SODIUM ACETATE (See N. N. R., 1915, p. 375).—The following dosage form has been accepted:

Theocin-Sodium Acetate Tablets, 1½ grains. — Each tablet contains theocin-sodium acetate 0.1 Gm. (1½ grains). Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

EMETINE HYDROCHLORIDE (See N. N. R., 1915, p. 107).—The following dosage forms have been accepted:

Ampuls Emetine Hydrochloride, Mulford, 1/12 grain.—Each ampule contains emetine hydrochloride 0.005 Gm. (1/12 grain). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Emetine Hydrochloride, Mulford, ⅓ grain. Each ampule contains emetine hydrochloride 0.02 Gm. (⅓ grain). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Emetine Hydrochloride, Mulford, ⅔ grain. — Each ampule contains emetine hydrochloride 0.04 Gm. (⅔ grain). Prepared by H. K. Mulford Co., Philadelphia.

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following dosage forms have been accepted:

Ampuls Sodium Cacodylate, Mulford, 1½ grains. — Each ampule contains sodium cacodylate 0.1 Gm. (1½ grains). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 3 grains.—Each ampule contains sodium cacodylate 0.2 Gm. (3 grains). Prepared by H. K. Mulford Co., Philadelphia.

QUININE AND UREA HYDROCHLORIDE (See N. N. R., 1915, p. 260).—The following dosage form has been accepted:

Ampuls Quinine and Urea Hydrochloride, 1%, Mulford.—Each ampule contains 5 Cc. of a sterile 1 per cent. solution of quinine and urea hydrochloride. Prepared by H. K. Mulford Co., Philadelphia.

MERCURIC SUCCINIMIDE (See N. N. R., 1915, p. 201).—The following dosage form has been accepted:

Ampuls Mercury Succinimide, Mulford, ⅙ grain.—Each ampule contains mercury succinimide 0.01 Gm. (⅙ grain). Prepared by H. K. Mulford Co., Philadelphia.

CALCIUM PEROXIDE (See N. N. R., 1915, p. 230).—The following non-proprietary preparation has been accepted:

Calcium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

MAGNESIUM PEROXIDE (See N. N. R., 1915, p. 231).—The following non-proprietary preparation has been accepted:

Magnesium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

SODIUM PEROXIDE (See N. N. R., 1915, p. 232).—The following non-proprietary preparation has been accepted:

Sodium Peroxide. P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

STRONTIUM PEROXIDE (See N. N. R., 1915, p. 233).—The following non-preprietary preparation has been accepted:

Strontium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

ZINC PEROXIDE (See N. N. R., 1915, p. 234).—The following non-proprietary preparation has been accepted:

Zinc Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

SODIUM PERBORATE (See N. N. R., 1915, p. 277).—The following non-proprietary preparation has been accepted:

Sodium Perborate, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

FORMIC ACID (See N. N. R., 1915, p. 141).—The following non-proprietary preparation has been accepted:

Formic Acid, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

AGAR AGAR (See N. N. R., 1915, p. 22).—The following non-proprietary preparations have been accepted:

Agar Agar Powder, Merck.—Agar Agar in the form of a coarse powder. Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

Agar Agar Shreds, Merck.—Agar Agar in the form of shreds. Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

BERBERINE HYDROCHLORIDE (See N. N. R., 1915, p. 58).—The following non-proprietary preparation has been accepted:

Berberine Hydrochloride, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

FLUORESCEIN (See N. N. R., 1915, p. 132).—The following non-proprietary preparation has been accepted:

Fluorescein, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MERCURY CYANIDE (See N. N. R., 1915, p. 198).—The following non-proprietary preparation has been accepted:

Mercury Cyanide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

POTASSIUM MERCURIC-IODIDE (See N. N. R., 1915, p. 203).—The following non-proprietary preparation has been accepted:

Mercury and Potassium Iodide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

TYPHOID VACCINE (See N. N. R., 1915, p. 324).—Swan-Myers Company, Indianapolis.

Swan's Typhoid Bacterin (No. 41) (Prophylactic). — Marketed in packages of three 1 Cc. vials, of which one contains 500 million, and the other two each 1 billion killed typhoid bacilli; also in packages of six 1 Cc. vials, two of which contain each 500 million, and four vials contain each 1 billion killed typhoid bacilli.

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SATURDAY, NOVEMBER 27, 1915

THE INHERITANCE OF ABNORMALITIES

Modern science has clearly demonstrated that many conditions once ascribed to hereditary factors can no longer be regarded as inherited. The overwhelming majority of the cases cited as instances of the influence of maternal and paternal impressions on bodily features are clearly not cases of inheritance in the strict sense; for the "impression" has almost always been reported to occur after conception. Mutilations are no longer believed to be capable of transmission by inheritance. More significant than all of these instances, however, is the demonstration, due to the modern science of bacteriology, that there is no such thing as the true inheritance of specific infectious diseases. The accepted etiologic rôle of micro-organisms in these pathologic conditions has excluded the possibility of a hereditary smallpox, tuberculosis or syphilis, for example. At first, when the untenability of the older views became apparent, it was customary to refer to the inheritance of a "tendency" to these diseases, of a "weakened constitution" especially predisposing to them. When the true mode of transmission of the infections became better understood, it was easy to see that in some cases, at least, what is "inherited" is an unfavorable hygienic environment—an opportunity for exposure to the dangerous surroundings that had been the real menace to the victims of a previous generation, rather than disease itself.

To say that "specific infections are not inherited, but are of postconceptional acquirement" does not by any means imply that there is no inheritance whatever of conditions which have a pathologic significance. Familial inheritance of abnormal conditions is too common to have escaped notice. The growing interest in the scientific aspects of heredity and the development of a real experimental science of genetics have put new enthusiasm into the study of human anomalies of all kinds — to peculiarities or perversions of anatomic form, temperament, mentality and metabolism. The investigation of the mendelian and other theories of inheritance has disclosed so much of importance that it has become popular among medical writers to subject instances of alleged "constitutional tendencies" to the critical analysis of succession demanded by the newer hypotheses.

Certain qualities seem to be transmitted from parent to offspring either completely or not at all. The manner in which such characteristics are transmitted follows a plan, in many instances, familiarly known as Mendel's law. This postulates certain characters as dominant and others as recessive. If both characters relating to a particular part or function are present together in one individual, the latter will exhibit the dominant type. Many characters can be brought under this law; but in some cases the mendelian principle seems to fail. Thus in man the progeny of a cross between a white and a black race are more or less intermediate between the two in color. The offspring are frequently of various degrees of brownness, rather than definite black or white individuals.

Enough has been indicated to suggest the importance of considering supposed hereditary defects from the standpoint of these modern hypotheses. Among recently considered cases belongs the constitutional tendency to brittle bones. Weakness of the long bones may arise from a number of pathologic conditions affecting the bones, but the typical fragilitas ossium or osteopsathyrosis runs through families. An examination of a large number of family histories by Davenport and Conard[1] shows clearly that heredity in osteopsathyrosis is typically direct, that is, the factor which determines the irregular bone formation is a dominant one. The view that it is due to "some disturbance of metabolism of the mother" is disproved by the instance of twins, described by Schwarz and Bass; one twin showed osteopsathyrosis at birth while the other did not. The rare exceptions to the rule that a generation is not skipped are explained by the well-known principle of imperfection in dominance or possibly by a lack of knowledge of an infantile condition of a parent. That osteopsathyrosis depends on a single dominant factor is further indicated by the fact that the proportion of children in an affected fraternity that shows osteopsathyrosis is approximately half—actually 55 per cent. According to these investigators of the Eugenics Record Office, Davenport and Conard, the presence of biotypes can be recognized. In some families the slightest pressure results in fracture; in other families the bones are fairly resistant. The commonest bone to break is the femur; but in some families the humerus seems especially weak, and in still others the clavicle is frequently broken. Thus, associated with the imperfect bone development are special family traits which modify the result.

Expressing the outcome of these studies in a somewhat different way, it appears that of a parent exhibiting the features of hereditary fragility of the bones in early life, at least half of the children will be similarly affected. But if neither parent, though of affected stock, has shown the tendency, then expectation is that none of the children will have brittle bones. Moreover, when a parent is affected, it is possible that his children will show the tendency at about the same time of life, in the same bones and to the same degree as he himself showed it. Davenport and Conard state that an association of osteopsathyrosis with blue sclerotics has often been pointed out. The condition of blue sclerotics also appears to be a dominant trait.

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[1] Davenport, C. B., and Conard, H. S.: Hereditary Fragility of Bone, Proc. Nat. Acad. Sc., 1915, i, 537.

In similar ways the relation of digital abnormalities to pedigree has been investigated by Manson.[2] Such peculiarities as syndactylism and polydactylism require no special skill in diagnosis, so that statements regarding them are likely to acquire a considerable degree of accuracy. Manson has obtained the statistics of the descendants of a man living in Wales about the beginning of the nineteenth century who was affected with webbing of the third and fourth fingers of the hand, and had six toes on each foot. Of the sixty-four descendants investigated, twenty-seven were affected with similar abnormalities, thirty-three were unaffected, and four were doubtful. Both the syndactyly and the polydactyly appear as a dominant character. The abnormality appears in the offspring of an affected parent, and either sex may transmit it. The offspring of unaffected parents are always free from it.

In the family here reported on, sesamoid bones are present in the majority of the affected hands at the second, third and fourth metacarpophalangeal joints where they are not usually present in normal hands. Inasmuch as these bones are frequently present in embryonic hands, Manson infers that in the affected hands the processes of absorption are below normal.

THE ACIDITY OF THE GASTRIC SECRETION

It is somewhat surprising that the remarkable contributions to physiologic science by William Beaumont were not promptly followed by a succession of studies in the same field. For many years—almost to our own generation—writers on medical subjects related to digestion were content to quote the findings and the conclusions of the pioneer American physiologist as the final verdict. Nevertheless, it was clearly understood in Beaumont's time that his statements were by no means to be implicitly adopted. Thus we read: "The rapidity of digestion, as the author himself shows, varies greatly according to the quantity eaten, the amount and nature of the previous exercise, the interval of the preceding meal, the state of health and of the weather, and also the state of the mind. But in scarcely any of the experiments have these conditions been carefully noted." [3]

Good clinical usage should be based on sound physiology. Recently a revival of interest in gastric physiology has occurred, beginning with the widely quoted work of the Russian physiologist Pawlow. Carlson of Chicago has contributed a series of fundamental observations which have been referred to from time to time in The Journal. Attention has been directed to the fact pointed out by Boldyreff[4] that the actual acidity of the human gastric juice is considerably greater than that which the customary figures reported after the examination of a test meal would lead one to surmise. In conformity with this, Carlson[5] has also demonstrated, notably in two cases of gastric fistula in man, that normal human gastric juice (appetite secretion), when secreted above a certain minimum rate, shows a practically constant total acidity of nearly 0.5 per cent. hydrochloric acid, or the same as the gastric juice of the dog. According to Carlson, this uniform and constant acidity is true for man only in regard to the "appetite, digestion and hunger juice," secreted at a fairly high rate. He states that we must take cognizance of the equally important fact that the normal gastric mucosa is capable of secreting a juice of submaximal acidity. The contents of the "empty" stomach, and the continuous or hunger secretion (when the secretion rate is low) have a uniformly lower acidity than the appetite juice. The total acidity of contents of the "empty" stomach is about 0.2 per cent., in terms of hydrochloric acid, a figure frequently given by clinicians as the acidity of the pure gastric juice of normal persons. When the secretion rate becomes higher, the acidity increases, but never exceeds that of the juice which flows under the stimulus of the appetite.

According to the foregoing facts, the normal human gastric juice, provoked by a suitable stimulus, is equal in total acidity to the maximum acidity reported by clinicians for so-called hyperacidity in man. Carlson insists that there is no evidence that the gastric glands under any pathologic condition are able to or do secrete a juice of higher than normal acidity. In fact, the presence in the stomach of gastric juice of full acid strength leads, by itself and immediately, to no untoward symptoms.

Why, then, are figures lower than 0.5 per cent. so frequently and commonly found for gastric juice? Boldyreff[6] believes that the most important factor in lowering the acidity of gastric juice from that actually secreted by the gland (0.5 per cent. as hydrochloric acid) to that usually found in the cavity of the stomach (0.25 per cent.) is the entrance of intestinal contents (pancreatic and intestinal juice and bile) into the stomach. Carlson, who accepts this interpretation, suggests that it is this mechanism for self-regulation of the acidity of the stomach content which breaks down in cases of so-called hyperacidity in man. He adds that in cases of "hypersecretion" the quantity of juice secreted is greater than normal, and the secretion may persist in the absence of all normal stimuli, but the neutralizing factors suffice to reduce the acidity of the juice approximately to that found in the normal stomach. It is purely a balance of secretion rate and neutralization capacity. It follows that impairment of the neutralization factors or very excessive rate of gastric secretion would tend to render the acidity of the gastric content equal to that of pure gastric juice; in other words, to produce clinical "hyperacidity."

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[2] Manson, J. S.: Hereditary Syndactylism and Polydactylism, Jour. Genetics, 1915, v, 51.

[3] Beaumont, William: Experiments and Observations on the Gastric Juice and the Physiology of Digestion, Edinburgh, 1838, p. 37, footnote by Dr. Combe.

[4] Boldyreff: Quart. Jour. Physiol., 1914, viii, 1.

[5] Carlson, A. J.: Contributions to the Physiology of the Stomach, XXV, A Note on the Chemistry of Human Gastric Juice, Am. Jour. Physiol., 1915, xxxviii, 248.

[6] The Actual Acidity of Human Gastric Juice, editorial, The Journal A. M. A., Aug. 15, 1914, p. 580.

Carlson[5] has also offered a suggestion in partial explanation of the continuous secretion of gastric juice which may be observed. It is well known that products of digestion may act as secretory stimuli. The proteins of pure gastric juice undergo digestion in the stomach cavity. By yielding gastric secretagogues, this autodigestion of the gastric juice itself may be a factor in the continuous secretion of the stomach.

SOME ASPECTS OF LACTATION

Science has often cherished the hope of finding specific stimulants for the individual glands or organ functions. In the days when the now discarded expression "biliousness" was popular, great expectations were awakened by the possibility of finding a cholagogue which might in some way promote the physiologic activities of the liver. Indeed, cholagogic potencies were at one time ascribed to a number of familiar drugs, and actually received the endorsement of serious investigators. It was later demonstrated, however, that the evidence regarding the promoting effect of the selected substances on biliary secretion was either not valid when observations were extended over a sufficiently long period, or they were misleading in that the drug merely produced muscular effects along the biliary tract so that a more immediate discharge of bile simulated an increased secretion in the sense of new production. Thus far, bile alone has proved to be a true cholagogue.

A somewhat analogous experience appears to be in progress in the case of the mammary gland. The possible occurrence of real galactagogues — agents which will promote the production of milk by stimulating its secretion — has long made an appeal both to the dairy farmer and to the physician who is interested in the problem of lactation in women. Not long ago we commented on the recent observations that the extracts of certain glands appear to cause an immediate effect on the flow of milk from lactating animals.[1] The explanation of this peculiar response, which could be provoked by injections of suitable pituitary extracts, for example, was not entirely clear at first, although the observation itself was verified by several competent physiologists and on a variety of animal species. Obviously, if the result is merely a mechanical action giving rise to a sudden discharge of stored milk, its significance would be quite different from that of an action on the secreting mammary cells whereby they are stimulated to augmented activity, as the pancreas is after an injection of secretin into the circulation. Augmented milk production and accelerated discharge of milk are by no means of equal import or necessarily identical.

As the outcome of a series of experiments at the University of Chicago, Gaines[2] has come to the conclusion that the transient outflow of milk after injection of pituitary extracts is not at all due to secretory performance of the gland cells, but can be explained as a muscular phenomenon. The substance causes a muscular constriction of the milk ducts and alveoli, with a consequent expression of the milk present. Accordingly, the temporary flow of milk produced by such injections is entirely dependent on the amount of milk in the gland. The muscular character of the response can be demonstrated on an active mammary gland inflated with air, and even in an excised gland devoid of any circulation. The nonlactating gland, up to a late stage in pregnancy, is not sensitive to the pituitary substance. This difference in the response of the contractile tissue of the mammary gland, according to its stage of functional activity, finds an analogy in the unlike effects of epinephrin on the gravid and virgin uterus, respectively.

An active increase of pressure in the mammary gland closely resembling this effect of the pituitary product is caused by the simple act of nursing. Milking excites a similar reflex contraction of the gland musculature and an expression of milk, though in lesser degree than normal nursing. Of late it has been believed that the removal of milk from the mammary gland goes on quite independent of the nervous system. Gaines, however, has furnished strong presumptive evidence of a reflex, which can be completely inhibited by anesthesia. He believes that the stimulus which naturally excites this conditioned reflex must be found in the friction and sucking movements of the young acting on the cutaneous organs of the teat. The reflex arc is conceived to be dependent at times on the psychic condition of the mother, for the failure of vigorous nursing to secure milk under certain conditions (as in anesthesia or during the absence of the sucklings and consequent maternal concern) indicates that the removal of milk is not purely passive with respect to the activity of the gland. In the animals studied, the return of the young, after separation from the mother, greatly augmented the effect of nursing or milking. It is even reported that with the gland under extreme tension, a contraction of the musculature and an actual ejection of milk in a spurt may follow the signs of maternal concern. It is said that the mother whale ejects milk from her mammary gland into the mouth of the young without the active sucking commonly observed in other mammalian species.

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[1] Pituitary Extract and Milk Secretion, editorial, The Journal A. M. A., Dec. 26, 1914, p. 2292.

[2] Gaines, W. L.: A Contribution to the Physiology of Lactation, Am. Jour. Physiol., 1915, xxxviii, 285.

It has been doubted whether the capacity of the ducts and alveoli of the udder is as large as the volume of milk yielded at one time. In the case of the goat, the species particularly studied by Gaines, the indication is that practically the entire quantity of milk obtainable at any one period is present preformed in the udder. There is no reason, he argues, why the milk should not be regarded as being accumulated in the udder during the intervals between milkings, and the milking operation regarded as a more or less effectual method of stimulating a reflex. The latter may thus be conceived to cause a contraction in the gland musculature, resulting in the discharge or ejection of a greater or lesser part of the milk present, according to the effectiveness with which the reflex is excited. The problems of this suggested muscular mechanism, and its location, structure and innervation, are still to be elucidated.

TIME RELATIONS IN METABOLISM

The time relations of metabolism are beginning to arouse the attention of investigators. This is the result of the advance in knowledge of the biologic performances of the organism. In earlier days it represented progress to be able to contrast the beginning and the end results of metabolism; to measure accurately the intake and output of matter and energy, and to account exactly for the expenditures of the organism. This no longer suffices for the properly inquisitive physiologist. He is determined on learning where and how the intermediate stages of nutrition are carried on, so that each step in the fundamental chemical changes in the living body can be followed. The pathology of nutrition has thus gained a broader outlook. In the future, defects of function are to be located more specifically. It will no longer suffice to say that sugar is not burned up in some individual organism, and to designate this with the indefinite label of the diabetic. The deranged organ or the perverted mechanism must be discovered. Only in this broader way is there an opportunity for real therapeutic progress.

Proteins are highly complex substances far removed, in a chemical sense, from the simple end products in the form of which they leave the body. One might reasonably expect, therefore, that the story of this conversion would be a long one and that the time required for the disintegrative changes of protein digestion and metabolism would be correspondingly extended. The series of links in the chain of successive transformations is a long one. Digestion, absorption, transport and location in some tissue or other, synthesis or destruction, removal of the products and return to the blood stream, excretion—every step requires some time.

It has been shown that of the ultimate products of protein digestion—the amino-acids—the simpler representatives, such as glycocoll and alanin, require for their metabolism under optimal conditions a period of about nine hours' duration until the nitrogenous end products are recovered in the urine.[1] This period corresponds in a general way with the time relations for a comparable part of the protein molecule ingested as such.[2] By the use of the drug phlorhizin, which induces a condition of experimental diabetes in animals whereby a large portion of the protein metabolized in the body is excreted in the form of unoxidized sugar, both the nitrogenous and non-nitrogenous metabolic products of proteins and amino-acids can be studied. When protein is fed to a phlorhizinized individual, the urea and the glucose derived are excreted quite promptly.

Data are now available for the rate of metabolism of both proteins and amino-acids fed under the conditions noted. It is likewise known precisely how long a time is required for the reappearance of glucose itself fed to an animal rendered temporarily diabetic with phlorhizin. It appears[3] that the entire series of metabolic changes leading to the synthesis of glucose from amino-acids and its excretion may occupy a period of time only slightly in excess of that necessary for the simple absorption and elimination of the corresponding amount of ingested glucose. Janney[3] has shown essentially the same relations to exist after feeding a variety of typical proteins themselves. It follows, as he points out, that the rate of metabolism of proteins may be practically identical with that of amino-acids. The time required by the organism to effect digestion of the complex protein molecule into amino-acids, and the metabolism of the latter is scarcely longer than that required for the simple process of absorption and elimination of glucose (in the diabetic). This emphasizes the unexpected relative rapidity characteristic of metabolic reactions, for the chemical and physiologic changes involved include the digestion, that is, hydrolysis of protein into complex and simpler polypeptids, their further breakdown into amino-acids, absorption of these products, denitrogenization, the synthesis of glucose and urea, and the final elimination of these end products.

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1. Csonka, F. A.: Jour. Biol. Chem., 1915, xx, 539.
2. Janney, N. W.: Jour. Biol. Chem., 1915, xx, 321.
3. Janney, N. W.: A Note on the Rate of Metabolism of Proteins and Amino-Acids, Jour. Biol. Chem., 1915, xxii, 191.

In this connection, it is interesting to compare the time relations of a quite different physiologic process for which figures have recently been supplied from the Department of Physiology at Columbia University.[4] It is now well known that foreign fats, as well as certain fat-soluble substances, such as some of the plant pigments, readily find their way into the secretion of the mammary gland. Bowes[4] fed arachis oil, which contains about 5 per cent. of arachic acid, to a lactating animal, and watched for the appearance of this readily identified substance in the milk. The result demonstrated that the time required for the ingested fatty acids to appear in this way is not over twelve and one-half hours, and probably less.

THE LOSSES OF WEIGHT DURING STARVATION

During starvation, body materials are necessarily used up to supply the energy requisite for the vital functions. Some of the organs, like the heart and the respiratory muscles, are maintained in continued activity independent of the intake of food, while life lasts. The result is well known. The body loses weight during inanition, owing to the consumption of some of its own tissue substances. This process of nutrition at the expense of one's own tissues may go on not alone for days, but even for weeks. Fasts exceeding a month in duration are not at all uncommon in the literature of physiology.[5]

Whether or not all tissues participate to a comparatively equal degree in the depletion brought about by starvation is a question which has long interested investigators. Statistics on the relative losses of weight in the case of different organs were collected more than half a century ago. The brain, heart and respiratory muscles, such as the diaphragm, were found to undergo little loss of weight for a long time. Hence arose the teleologic explanation that those organs which are most necessary for the maintenance of life are protected, as it were, from depletion. It might be assumed that those organs which are most active, and therefore require most energy, would show the greatest loss of weight. But this does not follow in fact. It is true that the nutritive needs of a tissue are determined by its activity; but inasmuch as the circulating fluids offer a common store of energy to be drawn on, the active tissues of the body can easily appropriate the materials set free elsewhere, and maintain their integrity at the expense of other parts.

A tenable explanation[6] of the varying losses of weight in the organs during starvation appears to be offered by the new investigations of Jackson at the University of Minnesota. Actual measurements show that with respect to the relative loss in weight during inanition, the organs may be divided into three groups. In the first group, which includes the suprarenals, thyroid, skeleton, eyeballs, spinal cord and brain, and thymus, there is little, if any, loss in absolute weight during inanition, and a corresponding increase in relative weight. In general, there is a relatively greater loss during chronic inanition, which is especially marked in the case of the thyroid gland. The thymus, having already undergone age involution, is affected only slightly, if at all. In the second group, which includes the kidneys, hypophysis, heart, testes, lungs, musculature and integument, the loss in absolute weight during inanition is more nearly in proportion to that of the whole body, so that their relative weight is usually not greatly changed. In all except the hypophysis, however, the loss is relatively greater during chronic inanition. Especially the lungs, testes, integument and musculature appear to lose markedly during chronic inanition. In the third group, including the spleen, liver and alimentary canal, the loss in absolute weight is relatively much greater than in the body as a whole, so they decrease in relative as well as in absolute weight.

To explain these facts, Jackson inclines to the view of Paschutin, who stated that the various organs lose in proportion to their storage content of available food supply. The various proteins, fats and carbohydrates are dissolved and carried away by the circulation at different times and with different degrees of rapidity. Thus the variability in the loss of weight in different organs and in different types of inanition would be ultimately explained primarily on a chemical basis. In the absence of a food supply, the animal organism deals with the resources of its tissues with an economy referable to the peculiarities of its composition.

Current Comment

HEALTH DISTRICTS IN NEW YORK CITY

A pamphlet recently issued by the Department of Health of the City of New York reports an interesting experiment in municipal health administration which has been carried on during the past year. Sept. 30, 1914, the commissioner of health issued an order establishing an experimental health district within which all the functions of the health department were to be locally directed. This district is bounded by Scommel, Division and Clinton streets and the East River, the objects being to try out the plan of local health administration, to avoid the overlapping of different bureaus and departments and to increase the usefulness of the department of health through the establishment of intimate neighborly relations between the department of health and the community. It is obvious that with the continued growth of our larger cities, the municipal department of health will become as abstract and impersonal an institution as is the state department of health to the majority of the inhabitants of the state. Health District No. 1 is situated in the seventh ward of the lower East Side, in one of the most densely populated districts of New York. The twenty-one city blocks cover approximately 63 acres, with a population of about 35,000. Permanent quarters were secured in which three rooms are used for a milk station. On the walls appear placards and photographs of health exhibits, together with pictures illustrating the work of the street cleaning, tenement house and fire departments. Room has also been provided for afternoon and evening meetings of girls' leagues, boys' health leagues, parents' meetings, etc. Four rooms contain the offices of the district commissioner, the visiting nurses, tenement house inspectors, and others. From this office is carried on the work in the district on infant feeding, preschool and school examinations, midwife and foundling supervision, infectious disease supervision, food inspection and sanitation. The staff consists of a health officer, a medical inspector, one nurse each from the milk station, school group and infectious disease district, one nurse's assistant, one food inspector and one sanitary inspector. Each block in the district is numbered, and for each family an envelope is provided in the office files. These envelopes are grouped by houses and by blocks. A separate record is also kept of each house. Educational pamphlets were distributed to the people of the district by inspectors and officers direct to the patrons of the milk station, to the boys' and girls' leagues and to the parents' conferences. Mothers' meetings are held at the milk station, and talks given by the nurses on the care of the baby. The physicians located in the district have been organized into a local physicians' advisory committee. The various relief societies and the social agencies working in the district have been banded together as a local relief committee. Principals of the public schools, superintendents of hospitals, directors of social organizations and local civic workers have been organized into a general advisory committee. While the report covers only the first six months' work, it has already been demonstrated that the work of the health department has become a concrete matter to the inhabitants of the district. The district office is now recognized as a place where the people can come for guidance on health matters. The district staff has developed an interest in and a knowledge of the individual and in the various health conditions of the community. Many small matters have been adjusted directly at the district office without delay and without burdening the officials of the city health service. The cooperation between physicians and nurses has produced better results, the interest of the people in the exhibits and the literature has been marked, and the local organizations and individuals have been enabled to render much effective aid to the health department in developing a community health program. This most interesting experiment is worthy of the careful study of the health officers of all our larger cities. There is little doubt that, in the development of our great centers of population, much has been lost in the way of personal influence and acquaintanceship. Experimental Health District No. 1 is an effort to bring the public health work of our cities into closer relation and usefulness to the individual.

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[4] Bowes, O. C.: The Rate of the Passage of Fatty Acid of Food into the Mammary Glands of the Goat, Jour. Biol. Chem., 1915, xxii, 11.

[5] Prolonged Fasting, editorial, The Journal A. M. A., Sept. 11, 1915, p. 956.

[6] Jackson, C. M.: Effects of Acute and Chronic Inanition upon the Relative Weights of the Various Organs and Systems of Adult Albino Rats, Am. Jour. Anat., 1915, xviii, 75.

THE EFFECTS OF INHALATION OF CHLORIN GAS

The use of poisonous gases as a mode of warfare in the present European conflict has been attended with severe physiologic effects on the individuals who have been attacked by them. A few records are available of the responses of the animal organism to very dilute concentrations of chlorin and bromin, but they shed little light on what has lately been observed to occur when soldiers are "gassed" on the battlefield by the vapors of these elements mixed with air. Evidently the concentrations of the noxious gases in the atmosphere under the conditions in which they are employed in attack is greater than is generally encountered under any other likely condition such as might ordinarily arise in industrial works. Sir Edward Schäfer,[1] the Edinburgh physiologist, has demonstrated in a recent experimental investigation of the subject that the result of the inhalation of chlorin gas is always serious. When the content in the respired air is relatively small, no effect may be visible for some minutes, after which time a profound change takes place, sometimes with great suddenness. The conspicuous symptoms of the sudden change include a fall of blood pressure and a slowing or interruption of respiration. On the substitution of air for the gaseous mixture, a recovery may result if the content of chlorin has not been too large. Inasmuch as the inhaled chlorin cannot be carried to the tissues in a free state, the effects mentioned must be due to something happening in the lung. The "vitality" of the tissues is not lost, for the muscles and nerves are still irritable in the usual manner immediately after death, and the heart may also be responsive to appropriate stimuli. The lungs, however, invariably give evidence of the damage done by the inhalation of chlorin. Even after the shortest exposure to a fatal dose, they become intensely red and congested, either all over or in innumerable patches. There is room for considerable speculation as to the varied effects which might be produced locally in the lung by an irritant gas like chlorin. As Schäfer has pointed out, it may directly affect the bronchial musculature or the vascular musculature; it may stimulate the mucus-secreting mechanism of the air tubes; it may influence the coagulability or viscosity of the blood within the pulmonary vessels, or it may produce reflex effects by exciting the endings or afferent nerves within the lungs. Schäfer's own investigations point to the conclusion that chlorin produces its fatal results by causing obstruction of the pulmonary vessels, amounting in some cases to complete stasis, and not by causing contraction of the bronchioles. The pulmonary capillaries are found to be gorged with blood, and there is an extraordinary amount of edema in the interstitial tissue of the lung.

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[1] Schäfer, Edward: On the Immediate Effects of the Inhalation of Chlorine Gas, Brit. Med. Jour., Aug. 14, 1915, p. 245.

The edema is presumably secondary to the vascular obstruction. Apart from this, the tissues of the lung in cases of death by chlorin gas inhalation are normal, the epithelium cells of the bronchial tubes being well preserved, and little increase of mucus being evident. Information regarding the effects of inhalation of bromin vapor is still rather scanty. It appears, however, from Schäfer's statements, that although much more irritating to the conjunctival mucous membrane, bromin is less deleterious to the respiratory organs than chlorin, the fulminating effect of which appears to be absent in the case of bromin.

EMOTIONS AS CAUSES OF ORGANIC DISEASE

Skeptics have not been wanting who doubt the alleged influence of the mind on the physical organism, partly because of a materialistic philosophy dominant in scientific circles, but chiefly because of the difficulty of understanding how such influences could produce permanent bodily changes. Evidence to satisfy all the canons of inductive logic is now available not only to prove conclusively that emotions may operate in such a way as to cause organic as well as functional diseases, but also to show the exact mechanism by which the sympathetic nervous system, cooperating with certain of the ductless glands, may produce pathologic conditions. Naunyn reported a case of diabetes mellitus, the cause of which was an emotional shock. The Allen treatment of pancreatic diabetes, by means of starvation, recognizes the possibility of a "functional" disturbance of the pancreas, which may disappear with rest. Osler cites violent emotion, such as fright, in his account of the etiology of diabetes insipidus. Diseases of the skin, as alopecia areata, may have an emotional origin. The mechanism by which such profound organic disturbances are brought about is the autonomic nervous system. The rôle of this system in producing emotions has been studied over a period of years by Cannon and his pupils.[1] Beginning with the well-known fact that the autonomic nervous system takes its origin from the cranial-cervical, thoracic-lumbar and sacral regions of the cerebrospinal axis, Cannon attempts to correlate the activity of these portions of the system with three distinct types of emotions. Furher, he points out as a result of physiologic experiment that whenever the innervation from the thoracic-lumbar (sympathetic) portion of the system meets, in a viscus, the innervation from either the cranial-cervical or the sacral portion, there is always an opposition of the effects produced. In the eye, the contraction of the pupil is due to impulses received from the cranial autonomic, while the dilation of the pupil is effected by nerve fibers which come from the thoracic portion of the sympathetic. Again, the secretory and tonic motor innervation of the stomach come through the vagus nerve from sympathetic neurons which have their origin in the cervical division of that system. Stimulation of the splanchnic nerves causes an inhibition of both the secretory and motor functions of the stomach. The viscera of the pelvis are likewise doubly innervated. The autonomic neurons from the thoracic-lumbar segment cause relaxation of the lower end of the intestine. The sacral autonomic fibers for the same organ cause contraction. The bladder and reproductive organs are similarly innervated. Corresponding to the three parts of the autonomic system and the organs associated with them, there are three types of emotional response. The cranial portion of the system, by regulating the secretion and motion of the digestive organs, is concerned with building up the reserves of bodily strength. The emotions correlated with these physiologic activities are bodily satisfaction and well being. The sympathetic system is concerned especially with the functions of the suprarenal gland. The physiologic effects of the secretion of this gland are identical with the effects of stimulating the thoracic-lumbar sympathetic system: the pupil is dilated, the heart is accelerated, the functions of the stomach are inhibited, and the glands of the skin and the erector muscles of the hair are excited. Glycogen in the liver is liberated in the form of dextrose, with the result that sugar is available for muscles. The emotions which call for a sudden summoning of muscular energy are rage and fear, since correlated with them are the instincts of fighting and flight. The functions of the pelvic viscera are mainly in the nature of emptying accumulated secretions. The emotions depending on these functions are those of satiety and repletion. The conclusion is then evident that emotions may cause all of the changes which are produced by the autonomic system. The vascular changes thus produced have long been known, but the intimate relation between the suprarenal gland and this system has only recently been demonstrated. The case for emotional etiology of some diseases is thereby greatly strengthened.

A METHOD OF ATTACK ON POVERTY AND TUBERCULOSIS

The New York Association for Improving the Condition of the Poor has just published a report on the results of the first two years of its Home Hospital experiment. The methods adopted in this experiment were described in The Journal last year.[1] It is based on a recognition of the fact that tuberculosis is not merely a human disease but also a social disorder. The problem among the tenement poor is often that of loss of self-respect and standards of living in the family, as well as loss of health in the tuberculous member. The association has found that by transplanting the whole family to suitable surroundings under adequate supervision, it is possible to preserve the family unit, and in some cases to rehabilitate it physically, socially and economically, while caring for the tuberculous patient. Many patients in the early stages of tuberculosis have been cured, while improved health and earning capacity have been attained for others whose cases were moderately advanced. Meanwhile, the well members of the family, especially the children, have been protected from infection, and their physical condition improved. The family's total earning capacity has also been increased and its standards raised. The cost of this combined social and physical treatment of the whole problem has been found less than that of sending the breadwinner or homemaker to a hospital and either placing the dependents in institutions or supplying necessary relief at home. The Home Hospital plan, moreover, has a profound advantage over the other method in that the whole family is being taught proper habits and helped back to a normal self-supporting existence while the disease is being treated in one or more of its members. The hospital now has, on an average, about 130 patients and over 200 inmates. The demand for its services is so great that the intention is to make it permanent and to increase its size. The association disclaims any intention to supplant other much-needed agencies already in the field. The success of the Home Hospital experiment, however, must inevitably suggest the question whether it is not possible that in our tuberculosis campaign we have directed our attack too exclusively toward the disease as it exists in the individual. If tuberculosis is a social disorder, before we can hope to exterminate it, we must strike at its social roots.

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[1] Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear and Rage, an Account of Recent Researches into the Function of Emotional Excitement, New York, Daniel Appleton & Co., 1915.

[1] A Hopeful Experiment in the Treatment of Tuberculosis, Miscellany, The Journal A. M. A., March 28, 1914, p. 1043.

THE WAR AND MEDICAL EDUCATION IN ENGLAND

According to the *British Medical Journal* there has been a decided falling off this year in the number of young men entering on the study of medicine. The number of medical students entering Cambridge is 41, as compared with 64 last year and 116 in 1913. There has also been a general falling off of students entering the medical schools in London. At St. Thomas Hospital, the entry is only about 45 per cent. of the average. At St. Mary's Hospital the attendance of students is about 23 per cent. of the average for the three years prior to 1913. At King's College Hospital Medical School the attendance is only 11 per cent. of the average; at Guy's Hospital it is only 10 per cent. of the average, and at St. Bartholomew's Hospital, only 2 per cent. At University College Hospital Medical School the entry is only a little below the normal; while at the London Hospital Medical School the entry is only 5 per cent. below the normal, and is actually larger than in 1913. Even with the reduced attendance as just indicated, it is believed that the number will be still further greatly reduced, since many of the students who have entered this year, it is expected, will shortly enlist in the army. The entry for special postgraduate classes has likewise declined, the reduction being 62 per cent., as compared with the average figures for the three years before the war. In contrast to the reduction in the number of male medical students, the enrolment at the London School of Medicine for Women has increased, 110 having entered this fall, as compared with sixty-nine last year and an average of forty-four in the three years preceding the war.

A NAUSEATING PUBLICITY

Sensational medical articles in newspapers have become a common, every-day occurrence. Pathology is now a breakfast table topic and the science of eugenics agitates the fluttering breasts of stately matrons and young débutantes at afternoon teas. The most recent sensation concerns the action of a Chicago physician regarding an infant marred by various anomalies of development. The newspapers featured the case; they elaborated it with gossip and discussion; with opinions from physicians; with the statements of social workers and psychologists; with letters of mothers and even of crippled and imbecile children. And the end is not yet. One newspaper publishes an autobiography of the physician, who promises to write, in serial form, the story of the case. The whole incident is nauseating. Infants with similar anomalies are born almost daily; no two cases are exactly alike; each is a problem unto itself. In this instance, apparently, the rights of the individual have been flippantly considered and the sacredness of the home has been ruthlessly bandied in public. Nothing has been nor can anything ever be gained by such disgusting discussion as has accompanied this particular incident. One person has been basking in the limelight of publicity, but in this instance it is not the brightness of the spotlight but a yellow sickly flame.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Drug Addict Attacks Physician.—A cocain addict of Galesburg entered the office of Dr. George D. Prewett, Peoria, November 5, and demanded cocain, and when refused attempted violence.

Personal.—Dr. John H. Riley, DeKalb, who has been ill for several weeks, is now reported to be improving.——Prof. Oliver H. Moore of the University of Illinois, who has recently returned from the war zone, gave a talk before the Y. W. C. A. at Champaign, November 15, in which he related his experiences with the Red Cross in France.——Dr. Warren R. Rainey, Salem, who is on duty in France, writes that he and Mrs. Rainey expect to return home before Christmas.——Dr. Oscar B. Stafford, La Salle, was seriously injured in a collision between his buggy and an automobile, November 10.——Dr. William G. Bechtold, Breese, who has been seriously ill with tetanus, is reported to be convalescent.

Chicago

Fresh-Air Cars.—Sixty surface street cars, five operated on each of twelve lines, were placed in service, November 21, as fresh-air cars. Each car had its windows and doors open and bore signs "Fresh-Air Car." The company announces that the experiment will be continued indefinitely. It is too early yet to determine whether or not it will be a success.

Diphtheria Carriers.—During October, 15,234 throat cultures from children were examined by the laboratory of the Department of Health. Of these, 656 were found to be carriers of the diphtheria bacillus, which means that they were innocent sources of danger to other children with whom they came in contact. According to the bulletin of the Health Department, 22,572 diphtheria specimens were examined during the month. This number included 7,338 specimens from known cases of diphtheria. The figures show that twenty-five suspected cultures were examined for each positive case found. The bulletin says that this might seem to be a small percentage of positive cases, but, when it is considered that over 600 children were potential distributors of this disease, the importance of these examinations will be realized, as it has long been known that the diphtheria carrier is the most prolific source of the spread of the disease.

The Case of the Bollinger Baby.—During the last few days the newspapers have been publishing more or less sensational statements regarding the case of a child born defective who was, it is alleged, allowed to die, when an operation might have saved its life.

The essential malformations of the body, as disclosed by the records of the coroner's office, were as follows:

> Imperforate anus; fusion of the two kidneys into one, located on the left side and with a single ureter; absence of the right external ear and of the external auditory canal; a defective development of the skin over the shoulders, especially the right, causing an apparent shortening of the neck; absence of all or part of the coccyx and absence of the right testicle.
>
> The acquired pathological conditions were: Small extradural hemorrhages in the spinal canal; small subpleural hemorrhages; a discharge from the nose, and the Coroner's physician reports an area of hemorrhage in the pia-mater in the left Sylvian fissure.

INDIANA

Tuberculosis Hospitals.—Two tuberculosis hospitals are being constructed for Blackford County by the Red Cross Society, one in Montpelier and the other at Hartford City.

Whiting Physicians Organize.—Physicians of Whiting met at the office of Dr. George H. Hoskins, November 7, and organized the Physicians' Club of Whiting, electing Dr. George H. Hoskins, president; and Dr. Chauncey M. Gillespie, secretary-treasurer.

Epidemic of Gastro-Intestinal Disorder.—More than 1,000 cases of some form of gastro-intestinal trouble occurred in the northern part of Indianapolis last week. Dr. Herman G. Morgan, sanitarian, after eliminating all other causes but that of water supply, has concluded that it is due to either bacteria or chemicals in the water. Boiling the water has prevented a spread of the infection.

Personal.—Dr. Frederick N. Wright, Hazelwood, while hunting near Hazelwood, was injured by the accidental discharge of his shotgun and may lose his right foot.——The house of Dr. George W. Grossnickle, Elkhart, was damaged by fire to the extent of $600, November 14.——Dr. Thomas B. Eastman, a member of the Indianapolis Board of Health, has been selected as a representative of that body on the advisory board which will consider the affairs of the city dispensary which has again been placed under the management of the Indiana University School of Medicine.

MARYLAND

Hospital News.—The new Emergency Hospital Building, Easton, was formally dedicated, November 23.

Leaves Large Estate.—Dr. Edmund C. Rivers, Baltimore, who was drowned October 24, left an estate valued at $170,000.

Hospital Wins Suit.—The Sheppard and Enoch Pratt Hospital was successful in a suit against Baltimore city in regard to damage and assessment of benefits on property of the trustees condemned in the construction of the Key Hyway. The hospital was finally awarded $1,705.

Physician Gives Travelogue Lecture.—Dr. Henry O. Reik, secretary of the board of managers of the Baltimore Eye, Ear and Throat Charity Hospital, is delivering a series of four travelogue lectures, illustrated by autochrome photographs. The subject of the first lecture was "The Great Southwest and the Grand Cañyon."

Neurologists Organize. — The Baltimore Neurological Society was recently organized with a charter membership of seven. Dr. Charles M. Byrnes was elected president, and Dr. Daniel D. V. Stuart, Jr., secretary-treasurer. One of the requirements for membership is that the applicant shall have published at least one contribution to neurologic study.

Physicians Organize.—The Physicians' Civic Club was organized at a meeting of physicians at the Medical and Chirurgical Faculty Building, November 11, with a charter membership of 100. Dr. William T. Watson was elected president; Dr. Nathan R. Gorter, vice president, and Dr. Walter D. Wise, secretary-treasurer. Mr. Frederick C. Howe, commissioner of immigration of New York, delivered an address before the college on "An American City; Its

Pasteur Institute to Close.—The Pasteur Institute at Mercy Hospital, Baltimore, is to be discontinued after the two patients now under treatment are discharged. This decision was made on account of the recent reduction in the number of patients, the lack of work, the excess of expenses over income, and because the United States Public Health Service furnishes to reputable physicians, free of charge, the antirabic serum. Nearly 2,000 cases of hydrophobia had been treated in the hospital since the institution became associated with it.

Personal.—Dr. F. Janney Smith, chief resident physician at Johns Hopkins Hospital, Baltimore, has been appointed resident physician to Ford Hospital, Detroit.——Dr. Ralph B. Seem has been appointed first assistant superintendent to Johns Hopkins Hospital, succeeding Dr. Karl H. VanNorman, resigned.——Dr. Lewis A. Sexton has been promoted from admitting physician to the directorship of the dispensary of Johns Hopkins Hospital.——Dr. Leonard G. Rowntree, assistant head of the department of medicine of Johns Hopkins University, has been appointed professor of medicine and chief of the medical department of the University of Minnesota.——Dr. David M. R. Culbreth, Baltimore, has been elected vice president of the Caroline County chapter of the Eastern Shore Society of Baltimore.

MICHIGAN

The Ranney Bequest.—By the will of the late Dr. George E. Ranney, Lansing, a 20-acre tract is bequeathed as a memorial playground for the city.

Personal.—Dr. Abner Hayward, Mt. Clemens, is reported to be critically ill as the result of a cerebral hemorrhage.——Dr. James G. Cumming, Ann Arbor, has been appointed chief of the bureau of communicable diseases of the State Board of Health of California.

MISSOURI

Purchasable Factors in Public Health.—Dr. Allen W. Freeman, epidemiologist to the United States Public Health Service, delivered an address at the luncheon of the Commerce Club, St. Joseph, November 1, on "Purchasable Factors in Public Health."

Diphtheria Epidemic in Lamar.—On November 11 the Lamar City Board of Health issued orders closing all opera houses, picture shows and other public entertainments and all churches and meetings to children of 15 years of age and under, on account of the epidemic of diphtheria which prevails in the city. The lower grades of the city schools were ordered closed by the board of education until November 15.

Kansas City School Physicians Named.—Dr. Paul Paquin, health director of Kansas City, has appointed twenty-nine physicians as medical inspectors of schools. The examiners will serve gratuitously. They will be given police power as sanitary inspectors, receiving free street car transportation, will examine children in each school at least once a week and will inspect school hospitals and grounds and report insanitary conditions to the health department.

Personal.—Dr. J. Elliott Royer, Kansas City, has returned after two years postgraduate study in Europe, the last twelve months of which has been spent as volunteer special neurologist in British military hospitals.——Dr. John N. Baskett, Hannibal, was operated on in St. Louis, recently, for the removal of gallstones.——Dr. Luther A. Todd has resigned as president of the St. Joseph Board of Health.——Dr. Frank R. Morley, Sedalia, is reported to be critically ill with septicemia.——Dr. John P. Ralston, Springfield, suffered a second cerebral hemorrhage, October 25, and is reported to be in a serious condition.

St. Louis

Social Service Lecture.—Dr. Walter Fischel on October 25 delivered the third lecture in the course being given by members of the faculty of Washington University, under the auspices of the Department of Nursing and Social Service. The subject of his lecture was "Tuberculosis and Its Significance on the Social Problem."

Federal Sanitation Bureau in St. Louis.—St. Louis is to be district headquarters for the federal government's rural sanitation work. Surg. Mark J. White, U. S. P. H. S., now in charge of the St. Louis Marine Hospital, will supervise this work for the time being. Ten or more rooms in the Marine Hospital building will be refitted for the purpose and from ten to twelve chemists of the department will be sent from St. Louis to work in this field.

Washington University Appointments.—Washington University announced the appointment of Dr. Leo Loeb to the newly established chair of comparative pathology in the medical school; Dr. Philip A. Shaffer, Ph.D., has been appointed dean to date from June 3, 1915; Dr. Borden S. Veeder, has been promoted to assistant professor of pediatrics; Dr. Robert A. Gazell to associate in physiology and Dr. Philip C. Jeans to instructor in pediatrics.

Personal.—Dr. John A. Pringle, acting assistant superintendent of the City Hospital, is said to have made the highest grade in proficiency in the recent efficiency examination for superintendent of the institution; Dr. James Lewald stood second on the list and Dr. Eugene A. Scharff, third.——Dr. Frederick A. Baldwin, city bacteriologist, is suffering from a streptococcus infection of the right hand.——Dr. Ralph L. Thompson, recently returned from service on the western war front, delivered an address before the City Club, November 6. He also spoke before the members of the various alumni associations of the university.

MONTANA

Deaconess Hospital.—An active campaign is being carried on in Miles City to raise $30,000 for the construction of a Deaconess Hospital.

Sanitary Surveys Completed.—Inspectors connected with the State Board of Health have completed sanitary surveys of the water systems of Great Falls and Helena.

Professional Building in Bozeman.—Physicians, dentists and lawyers of Bozeman have united in the erection of a professional building, which will contain offices for members of the three professions.

Personal.—Dr. John W. Frizzell, Great Falls, fractured his leg while cranking his car recently.——Dr. Thomas E. Murray, Great Falls, will spend a year in Arizona and Florida.——Dr. George H. Putney, Carter, suffered a Colles fracture while cranking his automobile recently.——Dr. William G. MacDonald, Stockett, left for Europe, November 18, where he will serve with the royal army corps.——Drs. William H. Buskirk, Miles City, and Marcus H. Heldman, Ismay, will spend a year in the East in postgraduate work.

NEBRASKA

State Hospital Foundation to be Laid.—Foundations for the State Hospital of the Medical College of the University of Nebraska, Omaha, will be laid this winter. The hospital will be four stories in height with three story wings and will have six wards with accommodations for 116 beds and twelve private rooms.

NEW JERSEY

Dinner to Health Officer.—A testimonial dinner was given to former Health Officer David D. Chandler of Newark by about 200 of his friends, October 26.

Contract for Tuberculosis Building Awarded.—A contract has been awarded for the construction of a tuberculosis building for the New Jersey State Institution for Feeble-Minded Women, Vineland. The stipulated cost was $3,290.

Physicians' Club Organized.—The Physicians' Club of the city of Passaic was formally organized October 27. Dr. John N. Ryan was elected president; Dr. Abraham Machlin, vice president; Dr. Gerard J. Van Schott, Jr., secretary, and Dr. Cornelius Van Der Clock, treasurer.

Must Report Tuberculosis.—Dr. Charles V. Craster, health officer of Newark, has issued a circular to the physicians of Newark calling attention to the requirements of the tuberculosis law of the state, which he says is being continuously violated. The law requires that every case of tuberculosis, as well as any other case of contagious or communicable disease, be reported to the local board of health within forty-eight hours. Physicians have been in the habit of not reporting tuberculosis. The penalty for violation of the law is a fine of from $10 to $500.

Personal.—Dr. Charles Van Kopper, Great Notch, was seriously injured in a collison between automobile buses, November 12.——Dr. Jacob C. Price, Branchville, has been selected as director of the bureau of administration of the State Department of Health; Dr. Millard Knowlton, Trenton, chief of the division of publicity including the subdivision of child hygiene; and Dr. A. Clark Hunt, Metuchen, chief of the division of medical diagnosis, including contagious diseases.——Dr. Britton D. Evans, Greystone Park, medical director of the Morris Plains State Hospital, has been appointed chairman of the committee to prepare legislation for the better care of the insane of the state.——Dr. Charles E. MacDonald, Salem, has returned after several months' service in a war hospital in Budapest, Hungary.——Dr. Arthur J. Casselman, Camden, sailed for Europe, October 24, to become chief bacteriologist of the Women's American War Hospital, Paignton, North Devon, England.

NEW YORK

Personal.—Dr. William H. Heath, Buffalo, has been appointed executive medical advisor and sanitarian to the king of Siam. His duty will be to establish modern sanitary conditions in that country.——Dr. R. Leighton Leak, Syracuse, has been appointed physician in charge of the Syracuse Psychopathic Hospital, succeeding Dr. Hersey G. Locke, resigned.

Rabies.—During the year ended November 1, dogs bit 3,107 persons in New York City, requiring these persons to take the Pasteur antirabic treatment. It is said that the muzzling ordinance is ineffective, and that 354 of the dogs that bit were on the leash and 567 were muzzled. In all instances in which the muzzled dog bit, the muzzle was of the strap variety.

State Investigation of Anthrax Fatalities.—The recent death of Siphia Rosen from anthrax attributed to infection from a fur collar has led to an investigation by the state. Dr. T. C. Graham Rogers, director of the division of industrial hygiene of the state department of labor, is giving the matter his personal attention and proposes to make a thorough investigation of the method of curing and manufacturing cheap furs in this city. Both Dr. Rogers and Dr. Alva H. Doty have expressed the opinion that there need be no alarm felt that the disease would spread.

Tuberculosis Hospitals.—Plans are being made by the board of supervisors of Herkimer County for the County Tuberculosis Sanatorium for which an appropriation of $25,000 was voted at the last election.——At the election in Niagara County, November 2, the tuberculosis hospital referendum was carried by a safe plurality.——The supervisors of Chautauqua County have accepted the gift of a hospital for tuberculosis to be erected on a site purchased by the trustees, under the will of Elizabeth N. Newton, Fredonia, who left a bequest of $150,000 for that purpose.

The Infant Welfare Campaign of 1915.—Official statistics with reference to infant mortality are now available for the first seven months of 1915. They demonstrate the success of the campaign against infant mortality that has been prosecuted with such vigor since the spring of 1914. The infant mortality rate from Jan. 1 to Aug. 1, 1913, was 111 per 1,000 living births; for the same period of 1914 it was 102 per 1,000, and this year the rate has fallen to 98 per 1,000. Two exhibits were in constant use throughout the state and the newspapers have accorded the work generous support. By the aid of these instrumentalities the workers have been enabled to increase the number of infant welfare stations from thirty-two in twelve different localities in 1913 to seventy-four in forty-five cities and towns during the present year. The statistics have demonstrated the utility of these stations in every locality in which they have been established. Efforts have also been made to establish little mothers' leagues in the public and parochial schools and thus far about 12,000 children have been enrolled. Sunday, June 20, was generally observed throughout the state as Child Welfare Day and it is hoped that this may become a permanent feature and be generally observed in succeeding years.

New York City

Health Department Official Dies.—Bayard Clark Fuller, formerly chief inspector for the department of health, died November 10. Mr. Fuller had been in the service of the department for twenty years.

Harvey Society Lectures.—The third lecture of the Harvey Society lecture series, delivered before the New York Academy of Medicine, October 27, was by Dr. Eugene DuBois, Cornell University, on "The Respiration Calorimeter in Clinical Medicine."

Diagnostic Clinic for the Bronx.—The Department of Health has established a Wassermann diagnostic clinic at its Bronx office, Third Avenue and St. Paul's Place. Physicians who desire to avail themselves of the services thus offered are urged to refer their cases to this office.

Court Enforces Medical Treatment of Child.—The authority of the board of education to compel parents to send their children to school in good physical condition has been sustained by the children's court of Brooklyn, which ordered the parents of a pupil to have the boy's diseased tonsils removed.

Personal.—Dr. Wesley M. Baldwin has accepted the appointment of professor of anatomy at the Albany Medical College.——Dr. Charles V. Morrill has been appointed instructor in anatomy and Dr. Robert Chambers assistant in anatomy, to succeed Dr. Baldwin at the Cornell University Medical College.

Lectures for Health Board Employees.—A course of lectures on the "Haunts and Habits of Microbes" will be given to the employees of the Health Department on alternate Saturday afternoons, beginning November 20, and continuing until May. The lectures are under the direction of Dr. William H. Park, and will be given at the laboratory of Bellevue Hospital Medical College.

Suit Against Rockefeller Institute Fails.—The damage suit against Rockefeller Institute for $200,000, brought by two of the former employees of the institute, was dismissed in the United States district court, November 4. The plaintiffs in the case alleged that the doctors had persuaded them to submit to the injection of serum from which they had become infected with an incurable disease. The court held that the facts were insufficient to constitute a cause of action.

Homes for the Aged Investigated.—During the past summer the Department of Health, through its division of inspection, made a survey of forty-six institutions devoted exclusively to the care of the aged, for the purpose of determining the adequacy and suitability of the provisions made for old people in the various homes throughout the city. The report shows that in not a single instance was anything found concerning which serious complaint could justifiably be made. The buildings were all found to be ample in size, and the ventilation, lighting, heating, plumbing and sewage satisfactory. The buildings were all well equipped and the housekeeping invariably well done. There were excellent accommodations for the sick. There were a few minor suggestions made, among them that in several instances a more thorough screening against flies would add to the comfort of the inmates.

Medical College Reorganizes Surgical Staff.—Cornell University Medical College has recently reorganized its surgical service at Bellevue Hospital. There is now one visiting surgeon in charge with continuous service; two visiting surgeons with continuous service limited to some special subdivision of general surgery; two associate visiting surgeons on a full-time salary basis with four assistants who will also be juniors to the outpatient department. The organization now includes laboratories for surgical pathology and experimental surgery each under a full-time salaried man. These laboratories are available to all members of the staff who have the privilege of working therein. The entire staff has been appointed to positions on the department of surgery in the medical college. All students take a portion of their ward work in this organization. The essential changes from the system formerly in vogue consists in having one head, continuous service, full-time salaried surgeons and laboratories under the jurisdiction of the surgical service. The staff as at present constituted is as follows: visiting surgeon in charge—Dr. John A. Hartwell, assistant professor of surgery; visiting surgeons—Drs. George Woolsey and John Rogers, professors of clinical surgery; associate surgeons—Drs. Kenneth Bulkley and James N. Worcester, instructors in clinical surgery; junior surgeon—Dr. Fenwick Beekman, instructor in operative surgery; surgical pathologist—Benjamin M. Vance, instructor in pathology, and assistant in experimental pathology—Dr. Joseph W. McMeans, assistant in surgery.

OHIO

Youngstown Pulpits Filled by Physicians.—November 28, through the efforts of the Mahoning County Medical Society, the pulpits of Youngstown were filled by physicians who delivered addresses on health and sanitation.

Personal.—Dr. E. Sheldrick, Cleveland, while motoring near Hagerstown, was seriously injured November 2, by the overturning of his automobile.——Dr. Elmer W. Coe, Youngstown, is ill with smallpox.——Dr. W. R. Moore, Mt. Pleasant, has been appointed assistant medical examiner on the State Industrial Commission.——Dr. William Scott, Loveland, underwent an operation, November 2.

District Tuberculosis Hospital.—At a meeting of the trustees of the District Tuberculosis Hospital held in Chillicothe, November 11, it was decided to erect an administration building to cost $35,000. The funds will be furnished by the counties in the district, each county paying a proportionate share on the basis of its tax duplicates, which will be turned over to the trustees by the first of the year.

Hydrophobia.—According to figures of State Board of Health, since January, 1915, the laboratory examined 189 brains of animals suspected of having rabies, and the Board of Health of Cincinnati examined twenty-four additional. In 115 of the state and fourteen of the Cincinnati examinations the disease was found, showing that the rabies is widespread in Ohio. Five cases in human beings were reported during the year, all of which were fatal.

Hospital News.—The physicians of Bellaire and trustees of the City Hospital held a conference, November 12, on the question of equipment. An offer has been made by a friend of the institution to donate $3,000 to the hospital fund on condition that the trustees raise an additional $10,000. Of this amount, $6,000 had already been subscribed at the time of the meeting.——A Roentgen-ray machine to cost about $3,000 has been installed in the East Liverpool City Hospital. Dr. Joseph W. Chetwynd has been appointed roentgenologist to the institution.

Cincinnati

Work on School to Begin in April.—Dr. Christian R. Holmes, dean of the medical department of the University of Cincinnati, announces that it is expected that the work of construction on the new medical school will begin in April next. The site for the college building is now being graded and a revision of the building plans is being made.

Personal.—Drs. Guy G. Giffen and Giles A. DeCoursey have been appointed junior surgeons on the genito-urinary staff of the Cincinnati Hospital.——Dr. Max W. Shaweker has succeeded Dr. Philip Coulter as assistant receiving surgeon of the Cincinnati General Hospital. Dr. Coulter has been appointed to a position in the United States Public Health Service and will take part in the campaign against trachoma in Virginia.——Dr. Erie A. Fennell has resigned as resident physician of the City Infirmary and the two refuge farms.

Warning to Physicians.—The *Weekly Bulletin* of the Cincinnati Academy of Medicine warns local practitioners against a young German who has been visiting the members of the profession in Cincinnati who have German names, claiming that he bears the same name and obtaining small sums of money from them on the pretense that he is an interned sailor and wishes to enlist in the United States Navy.

PENNSYLVANIA

Personal.—Dr. Frank V. McConkey, York, who underwent operation for appendicitis, recently, is reported to be convalescent.——Dr. Albert A. Lindabury, Scranton, is reported to be seriously ill and is under treatment at the Scranton State Hospital.——Dr. James R. Montgomery, Bloomsburg, while making a professional call in the country, suffered a fracture of the arm by the overturning of his automobile.

Philadelphia

Rush Society Lecture.—The twelfth Rush Society lecture will be delivered at the College of Physicians, November 29, by Dr. Daniel J. McCarthy of the University of Pennsylvania Medical School, on "Medical and Surgical Problems Incident to War."

Women Physicians to Lecture.—Drs. Clara Marshall and Martha Tracy and Miss Mary Ingham have been appointed a committee to arrange for a course in preventive medicine and hygiene to be given to mothers and women generally by the Women's Medical College of Pennsylvania.

Civil Service Examinations.—Notice is given by the Philadelphia Civil Service Commission of the following examinations: December 15, chief of the Division of Vital Statistics with a salary of $1,750 under the Health and Charities Department of the Bureau of Health; January 18, resident physician, open to residents of Pennsylvania with a salary of $600 to $900 under the Department of Health and Charities under the Bureau of Health and Charities; January 19, assistant bacteriologist, first assistant bacteriologist and fourth assistant bacteriologist with respective salaries of $1,400 to $1,500; $2,000 and $1,000, under the Department of Health and Charities of the Bureau of Health; January 13, assistant, pathologic and bacteriologic laboratory, with a salary of $720, under the Department of Health and Charities of the Bureau of Charities; December 10, assistant, antitoxin laboratory, men and women, with a salary of $1,000, under the Department of Health and Charities of the Bureau of Health;

December 27, assistant bacteriologist with a salary of $1,200, under the Department of Public Works of the Water Bureau. Applications for these positions must be executed and filed with the commission not later than the third day prior to and exclusive of the day of the examination.

SOUTH DAKOTA

Off for the War.—Dr. Ole W. Rood, Watertown, has started for Paris, where he will enter a French military hospital.——Dr. Alexander O. Fasser, Bellefourche, has started for France, where he will serve in an American hospital in the war zone.

Removal of a Smallpox Patient.—The supreme court of South Dakota has decided in the case of Gould, appellant, vs. Dr. William F. Keller, Sioux Falls, officer of the board of health in Minnehaha County, that a health officer or physician cannot be compelled to remove a smallpox patient, or other such dangerous patient, from a residence, when there is no pest house or place provided by the city for the detention of such patients. In Sioux Falls a patient had smallpox in a private house and the owner, Gould, tried to compel the board of health to remove the patient. As the city had no pest house, there was nothing to do but leave the patient in the house where the illness occurred. The trial court refused under the circumstances to issue a writ to remove the patient.

CANADA

Hospital News.—Upper Lodge, the beautiful royal domain at Bushey Park, Surrey, has been offered by the king to the Canadian Red Cross. The offer has been accepted by Surg.-Gen. Carleton Jones, on behalf of the Canadian Army Medical Service. It will be furnished and equipped as a convalescent home under Col. Charles A. Hodgetts. It will be known as the Princess Mary's Canadian Red Cross Convalescent Home and will be equipped with 300 beds.——The Carleton County Protestant General Hospital, Ottawa, Ont., held its annual general meeting October 14. The year has been successful and the finance committee was enabled to reduce the overdraft by $2,500. The number of patients admited during the year was 2,743, including a number of soldiers.——The new civic hospital for infectious diseases in Quebec was opened September 30. The hospital will be under the supervision of the sisters of the gray nunnery.——Stratford, Ont., will vote on a bylaw January 1 to provide for $7,500 to wipe out the debt of their city hospital.——The old Bishop Strachan School on College Street, Toronto, will soon be in operation as the first convalescent home for returned wounded soldiers. When completed it will accommodate 200.——The public institutions, including hospitals for the insane and others, in Ontario, have contributed a large proportion of the equipment for the new Ontario Military Hospital being established in Orpington, Kent, England.

Personal.—Lieut. James W. Richardson, M.D., Calgary, Alta., operating specialist in the Imperial Army Medical Corps, is in Canada on furlough after a year's service.——Lieut. Ramsay D. Rakin, Stratford, Ont., is medical officer to the Perth County, Ontario, Battalion Staff.——Dr. Daniel Phelan, surgeon to the Kingston, Ont., penitentiary for nineteen years has retired.——Dr. Benjamin J. McConnell, Winnipeg, Man., has been appointed coroner for that city.——Dr. Weston W. Milburn, Macleod, Alta., has been appointed surgeon for the Blood Reserve in succession to the late Dr. Oliver C. Edwards.——Dr. John Cameron, Middlesex Hospital, London, Eng., has been appointed to the chair of anatomy in Dalhousie University, Halifax, N. S., in succession to the late Dr. Andrew W. H. Lindsay.——Dr. Oliver R. Mabee, Toronto, has been appointed acting professor of pathology in the University of Toronto, pending the return of Prof. John J. Mackenzie, Toronto, whose leave of absence has been extended.——Maj. George H. Burnham, Toronto, has been mentioned for distinguished conduct in the field.——Maj. R. Percy Wright, Montreal, has been appointed officer in command of No. 1 Field Ambulance in succession to Lieut.-Col. Arthur E. Ross, Kingston, Ont., who is now assistant director of medical services of the first Canadian division.——Dr. Henry H. Planche, A.M.C., Cookshire, Que., is on active service at the Dardanelles.——Dr. Howard Hepburn, one-time medical superintendent of the General Hospital, Montreal, is serving on the staff of one of the British field hospitals.——Dr. Harold Tait, R.A.M.C., St. John's, N. F., is on the staff of a base hospital of 3,000 beds in Malta.——Maj. L. Handford McKee, Montreal, has been invalided to England from the Dardanelles.——Capt. William J. Enright, Twenty-Second Battalion, of Port Daniel East, Que., is reported wounded.

Ontario Medical Commission.—The past week has been an important one before the Ontario Medical Commission. The Academy of Medicine, Toronto, presented the case for the medical practitioners from various standpoints, the president of the academy, Dr. William H. B. Aikins, being in charge. Dr. Arthur Jukes Johnson, chief coroner for Toronto, presented the medicolegal aspect of medical practice and cited concrete cases in support of his views. Dr. Albert A. Macdonald, Toronto, spoke for the life insurance companies and also cited cases supporting his claim that the public interested in their policies should be protected by the law. Dr. D. J. Gibbs Wishart said that specialists after graduation should take from two to five years special training before becoming specialists in any line. Dr. Goldwin W. Howland, specialist in nervous diseases, told of the many cases which came to him from the osteopaths and chiropractors after they had failed to relieve the "kinks in the spine" and he had to pass them on to the Home for Incurables. Postmortem examinations showed that the "kinks" had been cancer of the brain and various other nervous diseases. Dr. Clarence L. Starr made out a strong case for the orthopedic surgeons. Dr. Charles R. Dickson stated that the Roentgen ray in the hands of an unqualified man was as dangerous as strychnin. Dr. Charles J. C. O. Hastings, M. O. H., Toronto, and Dr. John W. S. McCullough, chief health officer for Ontario, made strong attacks against licensing any one to practice medicine who had not passed the prescribed examinations. Dr. McCullough presented the following memoranda from the Ontario Board of Health: (1) The standard of medical education should be maintained and with the advance of scientific knowledge increased. (2) Those entering on the study of medicine should have a good preliminary education equal at least to honor matriculation. (3) The course of study should embrace at least five years of nine months each. (4) Since it is admitted that the fundamental principles of medicine embrace a thorough knowledge of anatomy, physiology, biology, physiologic chemistry, bacteriology, pathology, diagnosis, as well as clinical experience, these subjects must be included in the course of study, no matter what form of treatment any physician desires to pursue. (5) No unqualified man or woman should be allowed to practice medicine in any shape or form. The nursing profession also placed its views before the commission. The suggestions included the establishing of a chair of nursing in the University of Toronto, and the appointment by the provincial government of a council for the education of nurses to consist of seven members, two to be medical men and the remaining five to be nurses. It was also proposed that an inspector of nurse training be appointed, and that a uniform examination be established twice a year with nurses as examiners. The fact was presented to the commissioner that there are no schools or colleges in Canada for osteopaths or chiropractors, and that such practitioners are not licensed in England.

GENERAL

Dr. Carter Seriously Ill.—It was reported from Washington, November 18, that Asst. Surg.-Gen. Henry R. Carter, U. S. P. H. S., who recently went to Porto Rico to study dengue, is critically ill with that disease.

Eye, Ear and Throat Specialists Will Meet.—The twenty-first annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in Memphis, Tenn., December 5 to 7, under the presidency of Dr. John E. Brown, Columbus, Ohio.

Southern Medical Women Elect Officers.—At the third annual meeting of the Association of Southern Medical Women at Dallas, November 10, the following officers were elected: president, Dr. Mary E. Lapham, Highlands, N. C.; vice presidents, Drs. Mary A. Parsons and Mary L. Strobel, Washington, D. C.; and secretary-treasurer, Dr. L. Rosa H. Gant, Spartanburg, S. C.

Distributing Points for Red Cross Supplies.—At a meeting of the American National Red Cross in New York City, recently, it was announced that Boston, Washington, New Orleans, Jeffersonville, Ind., Chicago, St. Louis, Omaha, San Antonio, Texas, El Paso, Texas, Seattle and San Francisco would be the distributing points for Red Cross supplies and mobilization centers for nurses and physicians. At present 7,000 Red Cross nurses are enrolled in the United States.

First Aid Symposium.—At the regular meeting of the Baltimore City Medical Society, November 19, a symposium on first aid was held, in which the subject was discussed from the standpoint of the Army by Col. Louis A. LaGarde, M. C.; from the standpoint of the Navy by Surg. Richmond C. Holcomb; from that of the Public Health Service by Asst. Surg.-Gen. William Colby Rucker, and from the standpoint of the American National Red Cross by Maj. Robert U. Patterson, M. C., U. S. Army.

Baby Week.—The health officials of thirty-nine states have already pledged their cooperation in the observance of a nation-wide "Baby Week," March 4 to 11, 1916, according to an announcement of the federal children's bureau. There has been much interest manifested and many inquiries to the bureau regarding the coming Baby Week. The bureau has prepared a circular, which will be of great assistance to communities proposing to conduct local Baby Week campaigns.

Railway Surgeons Meet.—At the annual meeting of the Southern States Association of Railway Surgeons held in Dallas, November 8, under the presidency of Dr. Thomas H. Hancock, Atlanta, Ga., Dr. Southgate Leigh, Norfolk, Va., was elected president; Dr. Robert W. Knox, Houston, Texas, vice president, and Dr. Ambrose McCoy, Jackson, Tenn., secretary. A day was appointed to work with Dr. Joseph C. Bloodgood, Baltimore, in aiding the propaganda of the first aid conference.

Buy and Sell Christmas Seals.—Red Cross Christmas Seals, which were first put on sale in 1907 in the state of Delaware, are now sold throughout the United States. The educational influence of the Christmas seals campaign has been responsible for much of the present widespread interest in the campaign against tuberculosis. The worker in the Christmas seals campaign meets with an established demand for Christmas seals. The campaigns in various states have different forms. The National Association for the Study and Prevention of Tuberculosis, in cooperation with the American Red Cross, will again this year award banners for the largest sales of Christmas seals per capita for population. It is hoped that new records for total sales and interest in this worthy cause will be established this year. Over a half million dollars was raised last year. Information and literature regarding the campaign may be obtained by addressing the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-Second Street, New York City.

Bequests and Donations.—The following bequests and donations have recently been announced:

Mercy Hospital, Cadillac, Mich., $10,000, and $20,000 to be used by the municipality in the betterment of health conditions, the income to be used for paying the salary of a visiting nurse, by the will of Mrs. Delos F. Diggins.

Jewish Hospital, Kansas City, for the erection of a memorial building in honor of their mother, a donation of $15,000 from Henry, Samuel, Robert, Isadore and Charles Straus.

Women's Hospital in the State of New York and Presbyterian Hospital, New York City, each $100,000; Manhattan Eye and Ear Hospital, and New York Institute for the Deaf and Dumb, each $50,000; St. Luke's Hospital, $25,000; by the will of Mrs. Maria DeWitt Jesup.

Methodist Episcopal Hospital, New York, $5,000, and Presbyterian Hospital, $1,000, by the will of George Clinton Batcheller.

Long Island College Hospital, Brooklyn, $75,000; House of St. Giles the Cripple, Brooklyn, $30,000, and Hudson City Hospital, Hudson, New York, $25,000, by the will of Mrs. Katherine S. Leavitt.

National Medical Day.—The National Association for the Study and Prevention of Tuberculosis makes an urgent plea that every man and woman in the United States of adult age join in the movement for annual or other periodic medical examination of themselves. During the week from December 6 to 12, known as tuberculosis week, one day, December 8, is asked to be observed as a national medical examination day. The association has issued a circular describing in detail how the advantages of medical examination may be obtained and details certain physical impairments. This circular is sent on request from the office of the association, 105 East Twenty-Second Street, New York City.

Health by Pictures.—The United States Public Health Service has opened a new campaign to teach the people of the country to combat disease. It has established a "stereopticon loan library," the first of its kind. This library is sending out daily, at the request of sanitarians, educators and other persons interested in the promulgation of personal and public sanitation, slides portraying the different phases of the subjects. The surgeon-general's office has prepared catalogs containing photographs of the slides and descriptive matter thereon. These books are being sent out to persons and organizations interested, so that request may be made for the particular slides desired for lectures in the various communities. A wide range of subjects is covered by the stereopticon loan library. It portrays sanitary conditions in Alaska and covers the whole field of yellow fever. There are special collections on the diseases of children, the hookworm, leprosy, malaria, milk production, mouth hygiene, pellagra, plague, rural schools, smallpox, tropical diseases, tuberculosis and typhoid fever. There are duplicate sets of these slides, so that the service is able to supply more than one call at the same time, should any of them prove more popular than others. The new library rapidly is growing in demand, and individuals as well as state and local health authorities and schools throughout the country are sending in their requests for the pictures. This new scheme performs a twofold function. It provides a logical system of public health education, while at the same time furnishing entertainment for the people. It also enables the service to spread the doctrine of personal hygiene and public sanitation thus over a large field, and possibly reach many persons who could not be interested in the reading and study of dry technical pamphlets on these important subjects.

WAR NOTES

American Physicians and Sanitarians Decorated.—Crown Prince Alexander of Serbia decorated forty-three American physicians and sanitary engineers for their services in controlling typhus fever.

Obligation of the Red Cross to the Armed Forces of the United States.—The American Red Cross has issued a circular of information regarding the obligation of the American Red Cross to the armed forces of the United States. These obligations are divided into three classes: funds, personnel and supplies. The personnel is divided into three classes: including those of the trained personnel who are willing to serve wherever needed; those willing to serve in their home country only, and those willing to serve at their places of residence only. From the first class only are taken the personnel for field columns, hospital columns, supply columns and information bureau sections.

More Hospital Supplies Shipped.—The American Red Cross shipped on the steamer *Rochambeau,* from New York, November 6, 12,130 pounds of relief contributions for the sick, wounded and destitute in France, consigned to the American Relief Clearing House, Paris, and also 7,000 pounds of supplies for Armenia, 15,000 pounds of hospital supplies for German prisoners in Russia and 4,875 pounds for the Russian Red Cross. This last consignment was sent in care of the Russian minister for foreign affairs, Petrograd.——Nearly 10,000 cases of medicines and medical and surgical supplies for use in military hospitals in England and on the British war front, were shipped on the steamer *Colonian,* from Boston, November 6.

Third Harvard Surgical Unit Sails.—The Third Harvard Surgical Unit sailed from New York for Falmouth, England, on the steamer *Noordam,* November 17. The unit is in charge of Dr. David Cheever, Boston, and consists of thirty-six nurses and the following physicians: Drs. John L. Bremer, Boston; Bronson Crothers, Cambridge, Mass.; Abram L. Van Meter, Boston; John F. Dillon, San Francisco; R. H. McNair, Springfield, Mass.; Frank A. Smith, R. S. Catherton, Armond A. Halliday, Toronto; Edward B. Towne, Boston; William D. B. Jack, Vancouver, B. C.; George Benet, Boston; Eben W. Fiske, Boston; Frank Abbott, Toronto; Lawrence R. Hill, Concord, N. H.; Winford O. Wilder, Pittsfield, Mass.; A. Gale Straw, Manchester, N. H.; E. O. Thomas, John C. Phillips, Wenham, Mass.; George Osgood, Cohasset, Mass.; George M. Watson, Manchester, N. H., and Macy Brooks, Philadelphia. Sir Wilfred T. Grenfell of Labrador expects to associate himself with the unit and will sail early in December for England.

LONDON LETTER

London, Nov. 5, 1915.

The War

THE POSITION OF MEDICAL STUDENTS

The position of medical students is the subject of a good deal of discussion. On the one hand, the government is appealing to every physically fit man of military age to join the combatant forces of the greatest voluntary army the world has ever seen. On the other hand, the shortage of physicians, which has frequently been pointed out in The Journal, will be increased if medical students are withdrawn from their studies. The authorities have decided that students in the fourth and fifth years of study should complete their course as rapidly as possible but that students in the first, second and third year should join the army. The effect of recruiting is shown by the statistics of ten leading medical schools, in which, during the first year of the war, the number of students was 1,891, as compared with the normal number of 2,562. The number of medical students who have entered Cambridge University this year is forty-one, as compared with 116 in the year 1913. At St. Thomas's Hospital, London, the number is 45 per cent. below the average. The director general of the Army Medical Corps has asked for an additional 2,000 physicians before Christmas for war service. The casualty lists of one week show the names of fifteen physicians, and the obituary lists of physicians killed usually three or four, Sir D. Macalister, in his presidential address at the opening of the present session of the General Medical Council, said that within the next few months every qualified man of suitable age who was fit for the work of an officer in the medical corps would be needed. The profession looked to the public to lighten the sacrifices and burdens which all must endure in these days, both by loyalty to the absent and by consideration for those who took their place. The proportion of country physicians who had been set free for military service was higher than that from the large centers of population. The town physician, owing to the somewhat loose attachment of his patients to him, feared that they might be alienated if he went into the army. The medical war committees were endeavoring to promote equitable agreements between practitioners who remained on civil duty and their colleagues on active service, and he thought the profession had given abundant proofs that it would not be wanting in duty or in self-denial. From the British dominions and from other countries over 240 physicians had been registered this year, and when certain reciprocity arrangements had been completed, the number from Canada would be considerably increased. Although the War Office authorities recognized that the withdrawal from professional instruction of large numbers of medical students, of the first years, would have a serious effect on the future, they had deemed it inadvisable to discourage junior students who offered themselves for combatant service. The result of medical students accepting commissions and enlisting was that the prospective shortage of 250 qualified practitioners per annum, which he had mentioned on a former occasion as probable during the coming years, would almost certainly be exceeded. There was one direction in which it appeared likely some economy of medical students might be effected. The minor vessels of the fleets carried a surgical "probationer," and for this work medical students who had completed their physiologic and anatomic studies and had been instructed in surgical dressing are preferred. He was authorized to make it known that any "probationer" who after, say, six months' service, desired to present himself for a professional examination or to resume his studies, would be granted leave of absence or be demobilized, and a less senior student be appointed in his place. By such rotation of service, a succession of students might continue to be employed in war work and yet the qualification of none would be unduly delayed.

THE ROYAL COLLEGE OF SURGEONS

The manner in which the war is permeating our whole national life is shown by the recent report of the College of Surgeons. Six members of the staff have enlisted in the army. The physiologic curator of the museum is serving in connection with the voluntary hospital under the French Red Cross. It is proposed to transfer temporarily a pathologic attendant in the museum to the Army Medical Service for duties in connection with the transport to this country of pathologic specimens from military sources. In several cases, candidates are allowed to present themselves somewhat earlier than would otherwise be allowed. Moreover, time spent as assistant on active service in a naval vessel or in a naval or military hospital, or any hospital utilized by the naval or military authorities, not exceeding six months, may be allowed to count for the equivalent period of medical and surgical hospital practice and for three months each of medical clinical clerkship and surgical dressership, provided that a satisfactory certificate is produced from the principal medical officer under whom the assistant serves.

PARIS LETTER

Paris, Oct. 28, 1915.

The War

MEASURES FOR THE BETTER UTILIZATION OF MEDICAL ABILITY

Because of the constant increase of the staff of the medical service and the desirability of having exact information available with regard to the officers of the service, the assistant secretary of the military medical service has ordered a report to be drawn up for each officer and each civilian physician employed in a military establishment, to permit the best utilization of each man's abilities. Each individual report is to show, apart from the physician's military titles, the following data: university titles (professor, agrégé professor in a medical school, prosector, anatomic assistant, head of a laboratory, etc.); hospital physician (physician or surgeon of the hospitals, head of clinic, surgical assistant, hospital intern); specialty (mention particulars, such as directing a surgical clinic, a bacteriologic or roentgenographic laboratory, etc.).

THE SANITARY PROTECTION OF THE TROOPS IN THE FIELD

The novel conditions of trench warfare, the use of previously unfamiliar chemical weapons, such as asphyxiating or toxic gases, and the necessity of protecting our men against poisoned drinking water—all these considerations have necessitated the organization of a new protective service. The medical service has just organized about 200 toxicologic laboratories to examine foodstuffs and drinking waters, to study the ways and means for combating asphyxiating gases and other dangerous chemical products, and to assist in solving all problems of disinfection. The laboratory workers, who are selected after a rigid examination, are in the main pharmacists, court experts, doctors or licentiates in science, or holders of various teaching positions in our colleges and schools. The authorities of the medical service will summon them to Val-de-Grâce, part at a time, to receive instructions with regard to analytic methods to be used and measures to be employed in case the enemy should make use of new deleterious gases. Each laboratory is supplied with material and indispensable chemical reagents, so that it can answer promptly the most urgent question. Thus the drinking waters for troops arriving at new quarters will be analyzed, rejected or purified, foodstuffs will be carefully examined, gases or deleterious products will be identified so that they may be combated with chances of success, and the disinfection of trenches, buildings, clothing, etc., performed under the oversight of a competent specialist.

ARTERIAL INTUBATION AS A SUBSTITUTE FOR IMMEDIATE LIGATURE IN WOUNDS OF LARGE VESSELS

At a recent session of the Académie de médecine Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, gave an interesting address on this subject. Ligaturing large arteries, when these are wounded, immediately suppresses the circulation in the whole limb or organ tributary to the wounded vessel. This sudden suppression may cause gangrene of the limb and necessitate amputation or produce serious functional disturbances. To avoid such results, Tuffier has devised a method that he calls "arterial intubation." It consists in reuniting the two cut ends of the vessel by a special tube which permits the circulation to continue for some days. Suppression of the circulation being progressive, the troubles mentioned above are avoided. The difficulty consists in avoiding the coagulation of the blood in the tube. For this purpose Tuffier makes use of instruments which have been employed in transfusion, namely, silver tubes with extremely thin walls which have been placed in boiling paraffin. This paraffin coating permits the blood to circulate in the tube without coagulating or at any rate makes the coagulation extremely slow.

As an instance in favor of the new method, the applications of which in military surgery may become very numerous, Tuffier reports the case of a patient with a transverse wound of the elbow, cut by machinery; the forearm and hand were cold and livid, without trace of circulation, on the side of the wound. Seven and a half hours after the wound, a relatively long time, the circulation was reestablished by means of a 2-mm. paraffined tube uniting the brachial artery to the radial artery of the forearm. The circulation was immediately reestablished and the radial pulse was perceived for ten hours; the forearm and the hand became warm. Three days later the tube was removed. There was only a partial success, owing to the small caliber of the tube employed and the relatively considerable time which had elapsed between the injury and the intubation. Still only a part of the hand underwent sloughing. It is, in short, a method which will render valuable service in the conservation of limbs after serious traumatism of the arteries.

PATHOLOGIC AND SIMULATED ALBUMINURIA

At a recent session of the Société de biologie, Drs. A. C. Hollande and J. Gaté presented a study of one of the most interesting questions for military physicians, that of the simulation of albuminuria by the introduction into the urine of the subject under examination, by means of an intravesical injection, of a certain quantity of egg albumin. From their investigations it appears that the presence of egg albumin in human urine may be ascertained by Maurel's fluid (250 c.c. of 33 per cent. sodium hydroxid; 50 c.c. of 3 per cent. copper sulphate; 700 c.c. of pure acetic acid) and precipitins. Important indications are also furnished by the macroscopic and microscopic examination of recently voided urine. The rapid disappearance (within from two to four days) of albumin from the urine of the subject under examination, or disappearance after the lavage of the bladder confirms the results of chemical procedures.

PLANTS SUITABLE FOR USE IN THE SANITATION OF BATTLEFIELDS

In a previous letter (The Journal, Aug. 28, 1915, p. 813) I mentioned various plants which are suitable for the sanitation of battlefields because they have in high degree the faculty of absorbing rapidly decomposing organic matter. MM. Vilmorin and Mottet have just called attention, in *La Nature*, to various graminaceous and leguminous forage plants, annual and perennial, that might profitably be used in the zones of battle for purifying the land and furnishing harvests of fodder, a most valuable resource in view of the impoverishment of the country with respect to cattle and the need of increasing our herds as rapidly as possible. Among the annual graminaceous plants, the authors mention various species of maize, of millet, of sorghum; among the perennial graminaceous plants, the tall oat grass (*Arrhenaterum elatius*), which is suitable for all kinds of soils, and a number of different species which are suitable for soils of various characters; among the annual leguminous plants, the red clover, the velvet vetch and other vetches, the kidney bean, and some varieties of peas; among perennial leguminous plants, alfalfas, sainfoin, etc. These perennial leguminous plants, because of their very long roots, are most valuable for the purification of battlefields. Annual leguminous plants, such as peas, winter vetches and red clover, sown at the end of summer or in autumn, furnish an early forage crop in the spring, and leave the ground free for the immediate planting of another crop of some such plant as maize or Jerusalem artichoke. Thus the absorption of decomposing organic matter is considerably increased, while the land is producing crops all the year and yielding a double harvest, thereby serving both public salubrity and the interest of agriculture.

Death of Prof. Albert Malherbe

Dr. Albert Malherbe, formerly professor of pathologic anatomy and honorary director of the Ecole de médecine de Nantes, has just died in his seventieth year. He was the author of interesting works on sarcoma. Professor Malherbe had been in the service of the school for forty years. He was a corresponding member of the Académie de médecine.

Foundation of New Chairs in the Faculté de médecine de Paris

On the recommendation of the minister of public instruction, there were created by a decree dated Oct. 7, 1915, a chair of topographic anatomy and a chair of bacteriology in the Faculté de médecine of the University of Paris.

Marriages

Joseph Hall Whiteley, M.D., Bonaparte, Iowa, to Miss Nellie Elizabeth Linder of Libertyville, Iowa, at Des Moines, Iowa, October 27.

George Osgood, M.D., Cohasset, Mass., to Miss Barbara Kendall Bolles of Boston, at her summer home in Cohasset, November 7.

Lee Roy McBurney, M.D., Belt, Mont., to Miss Birdie Josephine Charleson of Chicago, at Great Falls, Mont., October 2.

John Martin Earnhardt, M.D., Mount Pleasant, N. C., to Miss Daisy Myrtle Bost of Philadelphia, November 10.

Lynn Brian Vaughan, M.D., Hurley, S. D., to Miss Viola Constancia Fraser of Downers Grove, Ill., November 16.

Warren Deweese Coy, M.D., Youngstown, Ohio, to Miss Alma Shollenberger of Montgomery, Pa., November 3.

Charles Wallace Armstrong, M.D., Troy, N. C., to Miss Mabel Harris of Roxboro, N. C., November 9.

James Brown Biggs, M.D., Bowling Green, Mo., to Miss Edna Major of Sedalia, Mo., November 10.

Erwin Hare Mudge, M.D., to Miss Florence Minton, both of Westfield, N. Y., November 3.

John Woodly Wallace, M.D., to Miss Helen Archey, both of Concord, N. C., November 12.

John Henry O'Shea, M.D., to Miss June Twohy, both of Spokane, Wash., November 24.

John Whiting Hargis, M.D., to Miss Edythe Grant, both of Pensacola, Fla., October 30.

Silvies S. Fuller, M.D., to Miss Maud Wilson, both of Idaho Falls, Ida., October 30.

Dorris May Presson, M.D., to Mr. Arthur H. Kraus, both of Augusta, Me., October 27.

Deaths

George E. Ranney, M.D. University of Michigan, Ann Arbor, 1863; aged 76; a member from 1866 to 1886, secretary and in 1891 president of the Michigan State Medical Society; president of the Michigan Central Medical Society in 1873; of Lansing, Mich.; division surgeon of the Chicago and Grand Trunk Railroad; surgeon of the Second Michigan Volunteer Cavalry during the Civil War, and a prisoner in Libby Prison, Richmond, Va., who had conferred on him two Congressional medals of honor for gallantry in action; formerly state inspector of communicable diseases; organizer of the State Board of Health and of the Health Department of Lansing; died in the Michigan Karlsbad Sanatorium, Lansing, November 11, from cerebral hemorrhage.

William S. Holliday, M.D. Louisville (Ky.) Medical College, 1874; aged 65; of Monmouth, Ill.; a member of the Illinois State Medical Society and for more than forty years a practitioner of Warren County, Ill.; county physician of Warren County from 1876 to 1882; and coroner from 1881 to 1883; for more than twenty-five years a member of the city council of Monmouth; died in the Monmouth Hospital, November 6, from pulmonary embolism, two weeks after an operation for appendicitis in which a gangrenous appendix was found.

J. B. Gregg Custis, M.D. New York Homeopathic Medical College, New York City, 1878; aged 60; president of the board of medical supervisors of the District of Columbia and formerly president of the American Institute of Homeopathy; a director of the National Capitol Bank, Washington, D. C.; died at his summer home on Grindstone Island, Thousand Islands, N. Y., November 2, from hemorrhage of the stomach.

James Taylor Jones, M.D. Washington University, Baltimore, 1870; aged 59; a member of the Tennessee Medical Association; a Confederate veteran; formerly president of the West Tennessee Medical and Surgical Association and one of the best-known practitioners of that part of the state; died at his home in Jackson, Tenn., November 5, from pleuropneumonia.

Horatio L. Foster, M.D. New York Homeopathic Medical College, New York City, 1881; aged 58; a Fellow of the American Medical Association; formerly mayor of Reed

City, Mich.; local surgeon of the Grand Rapids and Indiana Railroad, and surgeon to the Reed City Sanitarium; died suddenly, November 7, in his car near Orono, Mich.

Arthur Pollard Mulligan, M.D. Bellevue Hospital Medical College, 1893; aged 55; of Salida, Calif.; a member of the Medical Society of the State of California; formerly surgeon for the Southern Pacific System; who was thrown from his buggy in a runaway accident on his ranch near Modesto, Calif.; died in a hospital in Modesto, November 5.

Howard Johnston Lee, M.D. University of Wooster, Cleveland, 1876; aged 64; a Fellow of the American Medical Association; for many years a practitioner of Cleveland, but since 1914 a resident of St. Johnsbury, East, Vt.; a member of the staff of Charity Hospital, Cleveland; died at his home in St. Johnsbury, East, Vt., November 5.

Edgar Miller, M.D. Ensworth Medical College, St. Joseph, Mo., 1905; aged 31; a patient in State Hospital No. 2, St. Joseph, Mo.; formerly a practitioner of Mound City, Mo.; was struck by a Burlington passenger train near Platte River, November 3, and died in a hospital in St. Joseph from his injuries on the next day.

Joseph Albright, M.D. Trinity Medical College, Toronto, 1873; aged 78; a member of the staff of Butterworth Hospital, Grand Rapids, Mich.; for more than forty years a practitioner of Grand Rapids and formerly an alderman and a member of the board of education; died at his home in Grand Rapids, November 8.

Norton Jerome Sands, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 70; a Fellow of the American Medical Association; of Port Chester, N. Y.; a veteran of the Civil War; a specialist on diseases of the eye; twice president of the village of Port Chester; died at his home, November 14.

Charles A. Church, M.D. New York Homeopathic Medical College, New York City, 1871; aged 76; at one time president of the New Jersey Medical Club; a member of the staff of the Passaic General Hospital, and chief surgeon of St. Mary's Hospital, Passaic, N. J.; died at his home in Passaic, November 12.

John F. Richards, M.D. College of Physicians and Surgeons, San Francisco, 1906; of San Francisco; while on a hunting expedition near Bear Falls, Contra Costa County, Calif., November 7, was accidentally shot by a companion, and died while being taken to the Roosevelt Hospital, Berkeley, Calif.

Charles A. Hollingsworth, M.D. University of Maryland, Baltimore, 1881; aged 58; a member of the Medical and Chirurgical Faculty of Maryland; from 1881 to 1912 a practitioner and druggist of Belair, Md., and since that time postmaster of the city; died at his home, November 10, from nephritis.

Ralph B. McCleary, M.D. Hahnemann Medical College, Chicago, 1878; aged 82; for nearly half a century a practitioner of Monmouth, Ill.; a veteran of the Civil War; coroner of Warren County from 1869 to 1880; died at the home of his daughter, in Monmouth, November 12, from senile debility.

John B. Alexander, M.D. Cincinnati College of Medicine and Surgery, 1875; aged 63; of McPherson, Kan.; formerly a member of the Kentucky State Board of Health and president of the Kansas Academy of Medicine; died in the hospital in Dodge City, Kan., November 5, from disease of the kidney.

William Francis Knox, M.D. University of Pennsylvania, Philadelphia, 1854; aged 84; a Fellow of the American Medical Association; one of the founders and formerly president of the Allegheny County (Pa.) Medical Society; died at his home in McKeesport, Pa., November 12, from pneumonia.

Martin Marmaduke Burchfield, M.D. Chattanooga (Tenn.) Medical College, 1908; aged 31; physician for a coal company at Whiteside, Tenn.; died in a hospital in Chattanooga, November 13, from injuries received several weeks before when his automobile took fire near Hooker Station.

Sherman Miller, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 49; a member of the Missouri State Medical Association; of Mayesburg, Mo.; while returning from Clinton, Mo., in his automobile, was drowned in a ditch by the overturning of his car.

George M. Burdette, M.D. Medical College of Georgia, Augusta, 1861; aged 78; a Fellow of the American Medical Association and a well-known practitioner of Lenoir City, Tenn.; died at his home in that place, November 4, from cerebral hemorrhage.

Frank J. Huizenga, M.D. Rush Medical College, 1895; aged 42; of Rock Valley, Iowa; formerly coroner of Sioux County, Iowa; died at his hospital in Rock Valley, November 9, from injuries received in an automobile accident the week before.

James N. Coons, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1857; Washington University, St. Louis, 1868; aged 86; a retired practitioner of Marion County, Mo.; died at his home in Palmyra, Mo.; November 9, from heart disease.

William P. Powell, M.D. Tulane University, New Orleans, 1869; aged 79; surgeon in the Confederate service during the Civil War and for many years a practitioner and druggist of Willis, Texas; died at his home in that city, November 6.

Nehemiah Davis, M.D. Jefferson Medical College, 1886; Ph.G., Philadelphia College of Pharmacy, 1878; a practitioner of Camden, N. J., and in charge of the Camden Dispensary; died at his home in Camden, October 11.

August W. Duvall, M.D. Jefferson Medical College, 1877; aged 75; a practitioner of South Philadelphia; was taken ill with uremia while on the street, November 13, and died in the Hahnemann Hospital a few hours later.

Francis C. Kienzle, M.D. Northwestern University Medical School, Chicago, 1909; aged 39; a Fellow of the American Medical Association; died in his apartment in Chicago, November 15, from paratonsillar abscess.

Lawrence S. Ball, M.D. American Medical College, Eclectic, Cincinnati, 1855; aged 86; for sixty-five years a practitioner of medicine and druggist of Prairieton, Ind.; a veteran of the Civil War; died at his home, November 1.

David A. Amoss, M.D. Homeopathic Hospital College, Cleveland, 1880; aged 58; of Cobb, Ky.; died in the Rockefeller Institute, New York City, November 3, after an operation for the removal of a tumor of the throat.

Harry Daniel Reutter, M.D. Jefferson Medical College, 1884; aged 54; formerly a member of the Medical Society of the State of Pennsylvania; died at his home in Duncannon, Pa., October 30, from cerebral hemorrhage.

Joseph Shields Howe (license, Pennsylvania, 1882), aged 78; a practitioner of Industry and Rochester, Pa., for forty-five years and a veteran of the Civil War; died at the home of his daughter in Los Angeles, October 28.

Alexander C. Freeman (license, Indiana, 1890), aged 81; for more than forty years a practitioner of Kokomo, Ind.; was struck by a passenger train near his home, November 1, and died from his injuries two hours later.

Buehler Shoup Boyer, M.D. University of Maryland, Baltimore, 1911; aged 30; medical examiner for the Baltimore and Ohio System at Parkersburg, W. Va.; died in that place, August 8, from subacute nephritis.

John F. Brendel, M.D. Physio-Medical College of Indiana, Indianapolis, 1892; aged 62; formerly a Fellow of the American Medical Association; died at his home in Zionsville, Ind., November 5, from arteriosclerosis.

Samuel L. Nash, M.D. University of Michigan, Ann Arbor, 1863; University of Victoria College, Coburg, Ont., 1865; aged 83; died at his home in Bath, Ont., July 7, from carcinoma of the stomach.

William Lawrence Bailey, M.D. Chattanooga (Tenn.) Medical College, 1907; aged 40; a Fellow of the American Medical Association; died at his home in Coronaca, S. C., October 20.

Frank Dexter Harter, M.D. Chicago Homeopathic Medical College, 1900; aged 42; died at his home in Grand Rapids, Mich., October 31, from septicemia due to an ulcerated tooth.

John A. Murphy, M.D. Jefferson Medical College, 1848; aged 93; of Island Mills, Tenn.; died in Johns Hopkins Hospital, Baltimore, November 4, after an operation for prostatitis.

Frederick Russell S. Brown, M.D. Hahnemann Medical College, Chicago, 1898; aged 45; died at his home in Doerun, Ga., July 30, from intestinal obstruction.

John A. Orr, M.D. University of Louisville, Ky., 1877; aged 64; of Verona, Miss.; died in Memphis, Tenn., October 24, from appendicitis.

John Jefferson Manard, M.D. Tennessee Medical College, Knoxville, 1895; of Morristown, Tenn.; died near that place about November 2.

J. R. Sample, M.D. New Orleans School of Medicine, 1886; aged 74; of Summit, Miss.; died at the home of his daughter in Jackson, Miss., November 8, from acute gastritis.

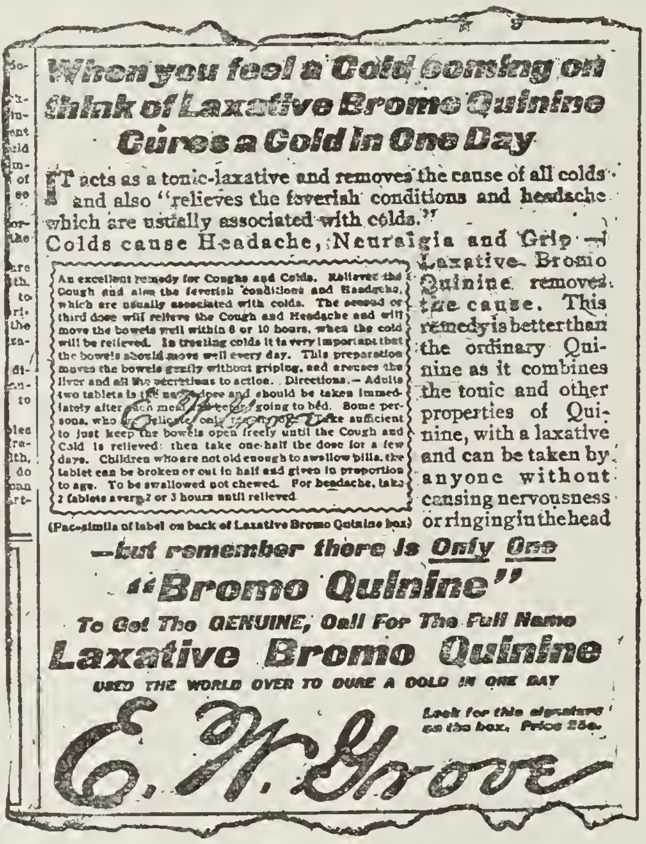
The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

LAXATIVE BROMO QUININE

"Laxative Bromo Quinine," which for years has been fraudulently advertised under the claim that it "Cures a Cold in One Day," is put on the market by the Paris Medicine Company, St. Louis, Mo. Apparently, the business was founded by one E. W. Grove, president of the concern, who is said to have amassed a fortune in the business. As one newspaper has said, the Paris Medicine Company "has changed its promoter from a salaried drug clerk to a multi-millionaire in twenty years' time."

In addition to Laxative Bromo Quinine, the Paris Medicine Company also puts on the market "Dr. Porter's Antiseptic Healing Oil," "Pazo's Pile Ointment" and "Grove's Pepsin Coffee." While Laxative Bromo Quinine is sold as a "headache remedy," "Grove's Pepsin Coffee" is sold under the claim that it is "the only harmless headache remedy"!



When you feel a Cold coming on think of Laxative Bromo Quinine

Cures a Cold in One Day

IT acts as a tonic-laxative and removes the cause of all colds and also "relieves the feverish conditions and headache which are usually associated with colds."

Colds cause Headache, Neuralgia and Grip — Laxative Bromo Quinine removes the cause. This remedy is better than the ordinary Quinine as it combines the tonic and other properties of Quinine, with a laxative and can be taken by anyone without causing nervousness or ringing in the head

An excellent remedy for Coughs and Colds. Relieves the Cough and also the feverish conditions and Headache, which are usually associated with colds. The second or third dose will relieve the Cough and Headache and will move the bowels well within 8 or 10 hours, when the cold will be relieved. In treating colds it is very important that the bowels should move well every day. This preparation moves the bowels gently without griping, and arouses the liver and all the secretions to action. Directions.— Adults two tablets is the [illegible] dose and should be taken immediately after each meal [illegible] going to bed. Some persons, who [illegible] delicate, only [illegible]. Take sufficient to just keep the bowels open freely until the Cough and Cold is relieved: then take one-half the dose for a few days. Children who are not old enough to swallow pills, the tablet can be broken or cut in half and given in proportion to age. To be swallowed not chewed. For headache, take 2 tablets every 2 or 3 hours until relieved.

(Fac-simile of label on back of Laxative Bromo Quinine box)

—but remember there is Only One

"Bromo Quinine"

To Get The GENUINE, Call For The Full Name

Laxative Bromo Quinine

USED THE WORLD OVER TO CURE A COLD IN ONE DAY

Look for this signature on the box. Price 25c.

E. W. Grove

Typical advertisement (from Chicago *Daily News*) of Laxative Bromo Quinine.

Some of the claims that have been, or are being made for Laxative Bromo Quinine are, in addition to the slogan already quoted:

> "Cures Grippe—prevents Grippe."
>
> ". . . removes the cause of Colds, Coughs, Headache, Neuralgia, Grippe, Feverish and Malarious Conditions. . . ."
>
> "The quinine that does not affect the head."
>
> "Laxative Bromo Quinine will be found better than the ordinary quinine."
>
> "Relieves a Cold in the Head in the shortest possible time."
>
> "For Colds, Coughs, La Grippe, Bronchitis, Catarrh and Headache."
>
> "An Improved Quinine, Does Not Cause Nervousness Nor Ringing in the Head."

Laxative Bromo Quinine Tablets were subjected to analysis in the Chemical Laboratory of the American Medical Association. The report of the chemist, which will appear in full in the Annual Report of the Laboratory for 1915, may be summarized as follows:

CHEMIST'S REPORT

Laxative Bromo Quinine comes in the form of light brown tablets, possessing a faint odor and a bitter, rather sharp taste. Each tablet is stamped with the letters "L. B. Q." Qualitative tests showed the presence of aloin or aloes, quinin or cinchona alkaloids, phenacetin, caffein, starch, small quantities of chlorid and sulphate and a trace of bromid. Quantitatively, the tablets were found to have:

Phenacetin	44.78 per cent.
Caffein	4.33 per cent.
Quinin (or cinchona alkaloids)	8.91 per cent.
Starch	17.58 per cent.
Ash	5.00 per cent.
Bromid (Br')	0.51 per cent.
Chlorid (Cl')	0.40 per cent.
Sulphate (SO_4'')	0.20 per cent.
Aloin or aloes, and undetermined (by diff.)	18.29 per cent.

From the analysis it is concluded that Laxative Bromo Quinine is a mixture consisting mainly of phenacetin and aloin, with smaller quantities of caffein and quinin and only a trace of bromid.

Based on the foregoing, it appears that each tablet of Laxative Bromo Quinine (weighing 4⅓ grain) contains, as its essential ingredients:

Phenacetin (about)	2 grains
Caffein	⅕ grain
Quinin or cinchona alkaloids	⅖ grain
Aloin or aloes	Undetermined

While the name "Bromo Quinine" naturally gives the impression that bromin and quinin are the important ingredients, analysis shows that the bromid content is only 1/200 of the whole and corresponds to only about 1/30 of a grain of potassium bromid or 1/500 part of the pharmacopeial dose.

The formula for Laxative Bromo Quinine Tablets, apparently, was changed about the time the federal Food and Drugs Act went into effect. At any rate, an analysis made for the American Medical Association in 1905 indicated that, in addition to the laxative principle, the tablets contained acetanilid, quinin sulphate and caffein. No trace of bromin was found at that time. An analysis made by the state chemists of North Dakota, and published in the Annual Report of the North Dakota Agricultural Experiment Station for 1907, also failed to disclose the presence of bromin. According to this report, when the North Dakota authorities notified the Paris Medicine Company of the results of their analysis, the company stated that previous to the enactment of the federal Food and Drugs Act "they used the combined alkaloids of cinchona . . . as found in the cinchona bark, but were advised by the government to use some form of bromid in their preparation, and that they had since been using the bromid and quinin." The North Dakota chemists were thereon furnished a sample of the "New product," which "on analysis showed the presence of a small amount of quinin and bromin."

The attempt of the manufacturers of Laxative Bromo Quinine to make the public believe that this product is "an improved quinin" and "better than the ordinary quinin" as well as "the quinin that does not affect the head," is entirely in keeping with the general policy of falsehood and deceit so characteristic of the nostrum business. The real reason, of course, that Laxative Bromo Quinine Tablets do not affect the system in the same way as ordinary quinin is that there is practically no quinin present. While the average dose of alkaloidal quinin is 4 grains, the amount of this substance in Laxative Bromo Quinine is but ⅖ of a grain. Put another way it means that, in order to get an ordinary pharmacopeial dose of quinin, it would be necessary to take ten Laxative Bromo Quinine tablets, and if this were done, the person taking it would get 20 grains of phenacetin, a dangerously poisonous dose.

Again referring to the disparity between the composition of this preparation and the name, it is worth noting that one of the rulings, made by the officials who are intrusted with the enforcement of the federal Food and Drugs Act, declares that "an article containing more than one . . . active medicinal agent is misbranded if named after a single constituent." As the active medicinal agents in Laxative Bromo Quinine are not bromid or quinin but rather phenacetin and aloin, it seems strange that the company putting out this product has so far escaped prosecution under the federal law.

Laxative Bromo Quinine in addition to containing the dangerous heart-depressing and habit-forming drug, phenacetin, is a fraud both in name and in method of exploitation. In a full-page advertisement appearing in the *National Druggist* some months ago, the Paris Medicine Company stated that it was "giving the retail drug trade a much larger profit than they receive on any other leading advertised article." If this is true and so long as there are millions in the sale of this preparation, the publication of the facts just given will not, presumably, greatly affect the business.

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

PERRY'S MOTH AND FRECKLE LOTION

Perry's Moth and Freckle Lotion Compound, according to the Report of the Connecticut State Chemists for 1914, is put on the market by Brent Good & Co., New York City. According to these chemists, the preparation is another one of the bichlorid of mercury solutions containing in addition a small amount of a lead salt. The Connecticut report, commenting on the claim in the circular that this "lotion is for the safe and speedy eradication of moth patches, freckles and tan" says: "No preparation containing 16.5 parts of corrosive sublimate per 1,000 can be considered a 'safe' remedy even for external use."

PYROXIN

Pyroxin, a preparation sold on the "prescription fake" method, is sold as an eyebrow and eyelash grower, for example:

> "Plain Pyroxin applied to thin, straggly eyebrows with finger tips causes them to grow in thick and beautiful."
>
> "Eyelashes will come in long and curly if Pyroxin is applied to the roots with forefinger and thumb."

This nostrum has been the subject of reports by the state chemists of North Dakota, New Hampshire, Indiana, Ohio, Kansas and Michigan. These reports agree in exposing Pyroxin as being essentially perfumed vaseline! According to the Indiana State Board report, while this stuff sells for $1 a package, the cost of the ingredients is 2 cents.

ROSE-KAYLOIN

Rose-Kayloin is another one of the preparations put out by the Blackburn Products Co., Dayton, Ohio. It is advertised in the "Dr. Lewis Baker" fake "health department." Rose-Kayloin, according to the reports of state chemists, is a rose-scented, pink powder, containing, according to the chemists of the Indiana State Board of Health:

Sulphur	80 per cent.
Potassium carbonate (washing soda)	15 per cent.

This stuff is recommended in the Dr. Lewis Baker "Answers to Correspondents" for numerous conditions. For instance:

> "Valentine:—A person afflicted with chronic ulcers, itching skin and constipation, as you say you are, usually has frequent attacks of indigestion, causing the poisons of fermented food to be absorbed into the blood. This is manifested by pimples, ulcers, itching, etc. I have had great success prescribing an ointment of rose-kayloin, 2½ drams; lanolin, 2 oz. Mix and apply to the skin or sores two or three times daily after a thorough cleansing with soap and water."

And then this:

> "Katherine Anxious:—You ask for a preparation to remove freckles (and tan). I don't think well of face creams, but this face wash is most effective if persistently and regularly used. It removes tan and freckles by absorption: Potassium Carbonate, 3 drams, Sodium Chloride 2 drams, Rose-Kayloin, 2½ drams (package), Orange Flower Water 2 oz., Rose Water 8 oz. Mix and apply two or three times daily as a face wash, permitting it to dry on the face."

Other conditions in which Rose-Kayloin—in various combinations—is recommended, are "blackheads, pimples, boils, sore spots, and large pores in skin of the face," also "eczema," "sty on the eyelids," "itching piles," etc.

MME. RUPPERT'S FACE BLEACH

"Mme. Ruppert's World Renowned Face Bleach" is put on the market by Mme. A. Ruppert Co., New York City. According to the report of the Connecticut Agricultural Experiment Station for 1914, the label declares the presence of 6 per cent. alcohol. According to the Connecticut chemists the preparation is an alcoholic solution of bichlorid of mercury containing four parts of the mercury salt to 1,000. It also contains a small amount of benzoin. This dangerous poison, according to the same authority, "is falsely labeled 'harmless.'"

STILLMAN'S FRECKLE CREAM

Stillman's Freckle Cream has been reported on both by the Indiana State Board of Health in its bulletin on "Medical Frauds" and by Dr. Wiley in his book "1001 Tests." The preparation is put on the market by the Stillman Freckle Cream Co., Aurora, Ill., and advertised under such claims as:

> "Freckles, tan or liver spots positively removed by using Stillman's Freckle Cream."

According both to Dr. Wiley and to the state chemists of Indiana, this preparation is another one of the ammoniated mercury pastes and as such is a dangerous caustic poison.

TAN-A-ZIN

Tan-A-Zin is said to be put on the market by John A. Brown, Washington, Kan. It is another one of the "Complexion Beautifiers" and, according to the state chemists of North Dakota, has for its essential ingredient ammoniated mercury.

WRINKLE LOTION

"Wrinkle Lotion" put on the market by Sarah Thompson, Terre Haute, Ind., is according to the bulletin on "Medical Frauds" of the Indiana State Board of Health, sold under the claim that it removes wrinkles. The same authority declares that it contains the following:

Alum	7 per cent.
Glycerin	29 per cent.
Water	64 per cent.

The Indiana chemists further state that the stuff sells at 50 cents and the cost of the ingredients is 3 cents.

ZINTONE

Zintone is another of the Cooper Pharmacal Company's nostrums that has been advertised as one of several "Remarkable Formulas Revealed by Valeska Suratt." Some of the claims that have been made for Zintone are:

> "Produces faultless complexion quickly."
>
> "It gives the skin a superb pinky whiteness, removes all muddiness and spots in a very short time."
>
> "In a few weeks your complexion will be almost perfect with a bloom and freshness that is adorable."

This marvel has been reported on by the state chemists of Indiana, Kansas, Michigan and Connecticut. According to the latter, Zintone is a grayish white powder perfumed with vanillin and having the following composition.

Borax	23 per cent.
Stearic acid and soap	77 per cent.

DISCLOSING THE FORMULA

What One Druggist Thinks of the Plea that Formula Disclosure Means Ruin

The frantic efforts of the "patent medicine" fraternity to discredit the Health Department of New York City in its laudable effort to give the public some measure of protection against fraudulent "patent medicines" has been referred to at various times in The Journal. Nostrum mongers always have fought the disclosure of formulas or, in fact, the giving of any information that would make it possible for those who wish to drug themselves to know what they are taking. The reason is obvious. Take away the mystery from a "patent medicine" and you have taken away its most potent asset.

Several "patent medicine" concerns have written to New York druggists urging them to refuse to obey the law that is to go into effect on the last day of this year requiring the statement of the potent ingredients of all "patent medicines" either to be filed with the Department of Health or to be plainly printed on the labels. More than one New York druggist has openly resented this offer on the part of the "patent medicine" makers of protection against legal proceedings, if they will violate the law. In a recent issue of the New York *Tribune* a letter from one such druggist—Mendel Zagat—is printed. The letter was addressed to Smith, Kline & French Co. of Philadelphia, the purveyors of "Dr. Hand's Remedies." In replying to the letter received from Smith, Kline & French Co. Mr. Zagat, in the name of his company, thanks the concern for its letter but adds:

> "We feel, however, that we shall not have to avail ourselves of your kind offer to protect us in breaking the law."

Further, the druggist suggests, that "no manufacturer producing an honest product should be averse to obeying Dr. Goldwater's regulations." Moreover, Mr. Zagat points out that the fact that Smith, Kline & French Co. are opposed to giving the Health Department a statement of the ingredients of its preparations "is strong presumptive evidence that the claims you make for these preparations are false." Then follows this statement which, coming from an expert pharmacist, nails the specious falsehood so loudly and widely put forward by the nostrum interest:

> "That you are afraid of revealing the nature of your preparations to your competitors is absurd. There is no preparation on your list that cannot be matched or bettered by one in the National Formulary or the United States Pharmacopeia. The sale of your preparations, and of others like them, depends on advertising and not on therapeutic value."

Truth, the whole truth and nothing but the truth and, as Mr. Samuel Hopkins Adams says in commenting on the letter as it appears in the *Tribune:*

> "What is true of the Smith, Kline & French Co.'s secret preparations is true of practically all secret nostrums. The secrecy is but a pretense, a 'bluff.' It is reduced to the lowest terms of absurdity by the clear logic of Mr. Zagat's professional and expert knowledge."

Correspondence

The Choice and Technic of the Anesthetic

To the Editor:—The results of the anesthetic experiments of A. D. Bevan, as described in his excellent paper (The Journal, Oct. 23, 1915, p. 1418), are very interesting and should be of benefit to any one interested in this important branch. With one item, however, I take exception, that is, the statement that: "warm ether possesses no advantage over cold." The work and experiments of anesthetists prove otherwise.

To a patient suffering from shock do we apply cold externally or internally? Nay, rather we apply heat. Why is chloroform safer in warm climates than in cold? Because it is warmer. Any fluid in a can or bottle is warmer in summer than in winter. No matter how well heated be a room, the air in it cannot prevent the formation of frost on the window. It cannot keep the window warm. The air in a comfortably heated room is pleasant to breathe. The chilliness of very cold air as we step outside of the house is unpleasant to our mouth, nostrils, lungs. Even after we have become accustomed to it, a deep breath is not pleasant. Does not the same principle apply to ether? Cold ether causes the formation of "snow" on the mask. Warmed, it does not. Cold causes contraction of tissues. Heat causes relaxation and is soothing. Warm ether causes less coughing and is more pleasant to the patient, especially if given in warm vapor with oxygen. The opinion of anesthetists is opposed to that of Dr. Bevan.

A. S. McCormick, M.D., Akron, Ohio.

A National Examination Board for License to Practice

To the Editor:—In The Journal, Nov. 6, 1915, p. 1652, attention was called to the board examinations for entrance to colleges of arts, and to the fact that they were held all over the country simultaneously; that they were recognized as sufficient by all colleges, and the fees received made the board practically self-supporting. It is formed by representatives of universities and high schools or preparatory schools. The examination questions are prepared by experts, and the answers are graded by experts.

If this is possible for the many colleges in the country, how much easier it would be for the fewer state licensing boards if those of all, or at first even most of the states should form a similar board for examining graduates in medicine for license to practice. If examinations were held by such a representative board there could be no question as to the justice of reciprocity, and the long desired national examination would be attained. The laws of the states do not make it necessary for the members of the state boards to examine students personally, but to see to it that suitable examinations are held. Nothing would help more to make the standards uniform and high throughout the country.

N. S. Davis, M.D., Chicago.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MEDICAL JOURNALS AND HONEST ADVERTISING

To the Editor:—Referring to your editorial "May We Count on Your Assistance?" (Current Comment, The Journal, November 13, p. 1736): The Association, which now renders such valuable aid to its members by keeping them informed as to clean advertised drugs, could still further aid physicians by publishing at intervals a list of those medical journals that "are making a creditable stand for decency in advertising." In your position you can more readily separate the sheep from the goats. It may be a delicate task, but it is one that would be an aid to the rank and file of the profession.

A. A. Stafford, M.D., San Francisco.

To the Editor:—Can you send me a list of medical journals (not state journals) that are devoted to therapeutics or the diagnosis and treatment of internal diseases, and that contain no objectionable advertisements?

G. A. Chilgren, M.D., Burlington, Iowa.

To the Editor:—Your editorial "May We Count on Your Assistance?" has appealed to me. I have just notified four journals to discontinue, and for heaven's sake to clean up their advertising pages. Please send me a list of good journals on surgery, gynecology and children's diseases.

Leo W. Chilton, M.D., Canyon City, Ore.

Answer.—The following journals limit advertising of proprietary medicinal preparations to announcements of such products as have been accepted for New and Nonofficial Remedies by the Council on Pharmacy and Chemistry of the American Medical Association:

American Journal of Diseases of Children, American Medical Association, 535 North Dearborn Street, Chicago, monthly, $3.
American Journal of the Medical Sciences, Lea and Febiger, 706 Sansom Street, Philadelphia, monthly, $5.
American Journal of Obstetrics and Diseases of Women and Children, William Wood Company, 51 Fifth Avenue, New York, monthly, $5.
American Journal of Physiology, Baltimore, monthly, $5.50.
American Journal of Roentgenology, New York, monthly, $5.
American Journal of Tropical Diseases and Preventive Medicine, New Orleans, monthly, $2.
Archives of Ophthalmology, New York, bimonthly, $5.
Arizona Medical Journal, Phoenix, Ariz., monthly, $2.
Archives of Internal Medicine, American Medical Association, 535 North Dearborn Street, Chicago, monthly, $4.
Boston Medical and Surgical Journal, 101 Tremont Street, Boston, weekly, $5.
Bulletin of the Medical and Chirurgical Faculty of Maryland, Baltimore, monthly, 25 cents.
Cleveland Medical Journal, 2318 Prospect Avenue, Cleveland, monthly, $2.
California State Journal of Medicine (California and Nevada), San Francisco, monthly, $1.
Colorado Medicine, Denver, monthly, $2.
Journal of the American Medical Association, American Medical Association, 535 North Dearborn Street, Chicago, weekly, $5.
Journal of the Arkansas Medical Society, Little Rock, Ark., monthly, $1.
Journal of Experimental Medicine, New York, monthly, $5.

Journal of the Florida Medical Association, Jacksonville, Fla., monthly, $1.
Journal of the Medical Association of Georgia, Augusta, Ga., monthly, $1.
Journal of the Indiana State Medical Association, Fort Wayne, Ind., monthly, $1.
Journal of Infectious Diseases, 629 South Wood Street, Chicago, bimonthly, $5.
Journal of the Iowa State Medical Society, Des Moines, Iowa, monthly, $2.
Journal of the Kansas Medical Society, Topeka, Kan., monthly, $2.
Journal of Laboratory and Clinical Medicine, C. B. Mosby Company, St. Louis, monthly, $3.
Journal of the Maine Medical Association, Portland, Me., monthly, $2.
Journal of Medical Research, Boston, irregularly, $4.
Journal of the Michigan State Medical Society, Grand Rapids, Mich., monthly, $3.50.
Journal of the Missouri State Medical Association, St. Louis, monthly, $2.
Journal of the Medical Society of New Jersey, Orange, N. J., monthly, $2.
Journal of the Oklahoma State Medical Association, Muskogee, Okla., monthly, $2.
Journal of the South Carolina Medical Association, Anderson, S. C., monthly, $2.
Journal of the Tennessee State Medical Association, Nashville, Tenn., monthly, $2.
Kentucky Medical Journal, Bowling Green, Ky., monthly, $2.
Memphis Medical Monthly, Goodwyn Institute, Memphis, Tenn., monthly, $1.
New Mexico Medical Journal, Las Cruces, N. M., monthly, $2.
New York State Journal of Medicine, New York, monthly, $1.
Northwest Medicine (Oregon, Washington, Idaho and Utah), Seattle, monthly, $2.
Ohio State Medical Journal, Columbus, Ohio, monthly, $2.
Old Dominion Journal of Medicine and Surgery, 116 East Franklin Street, Richmond, Va., monthly, $2.
Ophthalmic Record, Chicago, monthly, $4.
Ophthalmology, Seattle, quarterly, $5.
Pan American Surgical and Medical Journal, New Orleans, monthly, $2.
Pennsylvania Medical Journal, Athens, Pa., monthly, $2.
Southern Medical Journal, Birmingham, Ala., monthly, $2.
Surgery, Gynecology and Obstetrics, Surgical Publishing Company, 30 North Michigan Avenue, Chicago, monthly, $5.
Texas State Journal of Medicine, Fort Worth, Texas, monthly, $1.50.
Wisconsin Medical Journal, Milwaukee, Wis., monthly, $2.
West Virginia Medical Journal, Huntington, W. Va., monthly, $1 (after Jan. 1, 1916).

TREATMENT OF FRIEDREICH'S ATAXIA

To the Editor:—One of our members requests us to furnish him with information on the modern treatment of Friedreich's ataxia. We can find considerable in the recent literature on hereditary ataxias but little, if anything, along the line of treatment. Can you help us out? Even though this condition is generally considered hopeless, there must have been some serious efforts made toward amelioration of symptoms and retardation of progress of the disease.

San Diego Medical Library Association,
Robert Pollock, M.D., Secretary.

Answer.—As this disease, so far as we know, is always inherited, as a rule begins in early childhood and consists of maldevelopment of the central nervous system, especially of the cerebellum and certain fiber systems of the spinal cord, it is obvious that treatment can only be symptomatic. In every suspected case, however, there should be a Wassermann test and complete examination of the cerebrospinal fluid, including the Lange colloidal gold test, as congenital syphilis may be responsible for an almost identical clinical picture; in fact, ancestral syphilis is given as a factor in the true Friedreich's ataxia. If either patient or parents give evidence of syphilis, specific treatment should be used. According to Dana, arsenic may give temporary relief in the early stages. For the most distressing symptom, the ataxia, we fortunately have an important remedy, the so-called Frenkel reeducative exercises, which may be applied in this disease in the same manner as in tabes. The object is to reeducate the limbs by means of the eyes, and by utilizing to the full those pathways which are not degenerated. The principle and methods are fully set forth in H. S. Frenkel's "Tabetic Ataxia: Its Treatment by Systematic Exercises," translated by L. Freyberger (Philadelphia, P. Blakiston, Son & Co., 1902, price $3).

CARBOHYDRATE CHANGES IN BAKING AND BOILING POTATOES — NATURE OF EDEMA IN CARDIAC WEAKNESS

To the Editor:—1. Please describe the carbohydrate changes involved in baking a potato and boiling one. What is it that accounts for the sweeter taste of a baked potato?

2. Is edema of the extremities in cardiac pathology construed as a conservative process or not?

R. W. Adams, M.D., Newport Center, Vt.

Answer.—1. When a potato is boiled, the starch, which is granular in a raw potato, is converted into the so-called soluble starch, a more readily digestible form. The temperature of boiling is not sufficient, in the short time required to boil a potato, to hydrolyze much of the starch. In baking a potato, a crust is formed on the outer surface. The temperature is higher within the potato because the tension is greater, owing to the confining of the water present in the potato. With a higher temperature and tension—as occurs in baking—there is more hydrolysis than in boiling. The starch is converted into dextrin, which accounts for the sweeter taste of a baked potato.

2. The edema which occurs in cardiac weaknesses is not a conservative process. It would more likely be considered a progressive process. As the edema increases, the difficulty of the heart becomes greater and there is edema of the heart muscle, thus increasing the inability of the heart muscle to perform its work. In other edematous tissues the interference of the circulation must be considered as preponderantly adverse to the tissues affected as well as to the heart.

IODEOL AND IODAGOL

To the Editor:—The salesman has been making such extravagant claims for Iodeol and Iodagol that I am sending the literature for investigation.

Francis Schill, M.D., Johnstown, Pa.

Answer.—Both Iodagol and Iodeol are said to be manufactured by E. Viel & Co., Paris. They are imported into this country by David B. Levy, Inc. Both appear to be iodin preparations. They are called in the advertising literature, "Electro-Chemical Colloidal Iodine." Iodeol is recommended in tuberculosis, pneumonia, typhoid, asthma, syphilis and other conditions as "iodine with all its potentialities . . . stripped of all its drawbacks—non-irritating, non-caustic, non-toxic, non-cumulative, injectable without pain"; "many times more active than ordinary iodine." Iodagol is recommended in specific urethritis, cystitis, arthritis, etc., under similar claims. According to the advertising literature, "It is, in fact, known that iodine when brought into the colloidal state increases its action tenfold and diminishes in toxicity to the same extent." No such fact is generally known; it would be difficult to demonstrate, and no proof is offered. Nor is any adequate evidence offered in support of the therapeutic claims made for Iodeol and Iodagol, although the assertions as to the action of Iodeol in tuberculosis and pneumonia, in particular, are susceptible of test by laboratory and animal investigation. Our correspondent is justified in calling the claims "extravagant."

THE TEACHING OF PEDIATRICS

To the Editor:—Can you furnish me references to articles on the teaching of pediatrics?

C. D. W.

Answer.—The following is a list of recent articles on this subject:

Marfan, A. B., Pediatrics in the Medical Course, *Presse méd.*, Sept. 16, 1911.
Medin, O.: Teaching of Pediatrics at the University of Stockholm, *Jahrb. f. Kinderh.*, November, 1911.
Improvement of Instruction in Pediatrics, Berlin Letter, The Journal, March 11, 1911, p. 756.
Epstein, J.: Special Training in Pediatrics, *Am. Jour. Obst.*, July, 1914.
Rhodes, C. A.: Present Status of Pediatric Teaching in Sixteen Southern States Forming Southern Medical Association, *Georgia Med. Assn. Jour.*, August, 1914.
Royster, L. T.: The Pediatrician and the Section on Diseases of Children, The Journal, Aug. 14, 1915, p. 567.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alaska: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Colorado: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Minnesota: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

North Dakota: Grand Forks, Jan. 4-7, 1916, Sec., Dr. G. M. Williamson, Grand Forks.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Oregon: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

Rhode Island: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

Utah: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Washington: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

Oklahoma April Report

Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, April 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 95; percentage required to pass, 70. The total number of candidates examined was 12, of whom 9 passed and 3 failed. Eighteen candidates, including 2 osteopaths, were licensed through reciprocity. Seven candidates were granted reregistration licenses and 1 candidate's license was reinstated. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Indiana University	(1914)	84
University of Louisville	(1914)	71
Baltimore Medical College	(1895)	71
Baltimore University	(1904)	73
College of Physicians and Surgeons, Baltimore	(1907)	78
St. Louis University	(1914)	77
Meharry Medical College	(1914)	74, 82
Memphis Hospital Medical College	(1911)	72
FAILED		
University of Arkansas	(1912)	66
Meharry Medical College	(1914)	46.1
Vanderbilt University	(1893)	58.3

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Little Rock	(1911)	Arkansas
University of Arkansas	(1907)	Arkansas
Denver and Gross College of Medicine	(1904)	New Mexico
George Washington University	(1911)	Maryland
Atlanta School of Medicine	(1911)	Georgia
Hahnemann Medical College and Hospital, Chicago	(1896)	Kansas
Illinois Medical College	(1902)	Michigan
Kansas Medical College	(1907)	Kansas
Detroit College of Medicine	(1910)	Michigan
Eclectic Medical University, Kansas City	(1906)	Arkansas
Marion-Sims-Beaumont Medical College	(1903)	Missouri
St. Louis University	(1914)	Missouri
College of Physicians and Surgeons, Memphis	(1911)	Tennessee
Memphis Hospital Medical College	(1911)	Arkansas
Vanderbilt University	(1905)	Tennessee
University of Vermont	(1905)	Vermont

The following questions were asked:

ANATOMY

1. How much of length of spinal column is made up by intervertebral disks? 2. At what point does the spinal cord terminate? 3. Describe arrangement of gray and of white matter in spinal cord. 4. Give origin and termination of thoracic duct. 5. Give shape, weight and position of heart. Describe the pericardium. 6. Into what two principal parts is the kidney divided? In which part are the functionating structures situated? 7. Where is Petit's triangle? How is it formed? 8. How would you differentiate a movable kidney from a wandering spleen by palpation? 9. Of what artery is the middle meningeal a branch? What relation does it bear to the dura mater? 10. Give average number of red and of white blood corpuscles in a cm. of blood.

CHEMISTRY

1. What is the chemical antidote for iodin? 2. Chemically, what is albumin? 3. How would you determine, chemically, whether a urinary deposit was composed of urates or phosphates? 4. How does potassium permanganate act as a disinfectant? 5. What is the composition of the pancreatic juice? 6. What is the difference between an alloy and an amalgam? 7. What is chloroform? Give the chemical name and formula and properties. 8. What element is constantly present in the coloring matter of the blood and what elements are common in all acids? 9. Complete the equation $CaCO_3 + 2HCH = ?$ 10. Give antidotes for following: Carbolic acid, formaldehyd, nitric acid.

SURGERY

1. Give a classification of burns and constitutional symptoms. 2. What diseases attack the antrum of Highmore? 3. What are the causes of esophageal stricture? 4. Define volvulus and give its treatment. 5. What are the predisposing and what are the exciting causes of abdominal hernia? 6. Describe dermoid cysts. In what situations are they most commonly found? 7. What are the chief surgical diseases of the groin? 8. Give symptoms of stone in the kidney and treatment of same. 9. Give diagnosis and treatment of floating kidney. 10. What are the causes of ischiorectal abscess? Give treatment.

MATERIA MEDICA AND PRACTICE

1. How soon is Widal's test positive in typhoid fever? 2. How would you treat average case of intestinal stasis? 3. Treat the average case of incipient tuberculosis. 4. What is the incubation period of scarlet fever? 5. Diagnose and treat mitral regurgitation with broken compensation. 6. Give average dose of sulphate of morphin. 7. What is the emetic dose of apomorphin? 8. What effect has digitalis on heart and why? 9. What is an astringent? Give example. 10. Give hypnotic dose of chloral hydrate.

GYNECOLOGY

1. Diagnose retroversion and differentiate it from retroflexion. 2. Differentiate pyosalpinx from ectopic pregnancy. 3. Give difference in the bleeding due to carcinoma of cervix and that of submucous fibroid. 4. Name some dangers of sharp curets. 5. When should the radical breast operation be done?

OBSTETRICS AND HYGIENE

1. Describe the changes which take place in the generative organs during pregnancy. 2. What conditions may be mistaken for pregnancy? 3. On making the first examination of a woman in labor, how would you proceed and what would you expect to learn? 4. What is dry labor? How does it differ from normal labor, and what are the dangers accompanying it? 5. How would you distinguish one shoulder from the other where the hand and arms could not be felt? 6. How soon after delivery would you ligate the cord? How should it be dressed? 7. What condition during the third stage of labor would cause you to insert your hand into the uterus? 8. Give the external diameters of the pelvis. 9. Give a patient having tuberculosis instruction to prevent communicating it to other persons. 10. What are the most common poisons occurring in food. How may we prevent this occurrence?

PHYSICAL DIAGNOSIS

1. Name the normal thoracic landmarks. 2. Describe the phthisical thorax. 3. What is dyspnea? 4. Describe the emphysematous thorax. 5. Name the types of dyspnea. Their causes. 6. Define cyanosis. How recognized? 7. Diagnose displacement of the larynx and give causes. 8. Describe bronchial breathing. 9. Name the respiratory sounds. 10. Diagnose acute bronchitis.

TOXICOLOGY AND MEDICAL JURISPRUDENCE

1. In a case of death by poison, what organs would you select for chemical examination, and how would you prepare them for the chemist? 2. Give symptoms caused by eating poisonous fungi. In fatal cases how soon does death occur? 3. What are the important symptoms of poisoning by digitalis? 4. Name maximum dose of (a) tinct. of opium, (b) heroin, (c) white arsenic. 5. Give symptoms of poisoning from cocain and the treatment. 6. What is the duty of the state regarding preventable diseases? Name ten preventable diseases. 7. Define medical jurisprudence. 8. When may abortion be legally permitted? 9. In case of poisoning, the nature of the poison being unknown, how should the case be handled? 10. What is the best method or course to pursue in order to detect feigned mental disorder?

BACTERIOLOGY AND PATHOLOGY

1. Give the pathology of dry and moist gangrene. 2. What is eccentric and concentric atrophy? 3. Describe briefly calcareous infiltration. 4. What are: retention cysts; congenital cysts; extravasation cysts? 5. Give the pathologic changes that take place in hyperemia of the liver. 6. What is infarction? Why are some red and some white? 7. Differentiate septicemia and pyemia. 8. Name four ways by which tubercle bacilli may enter the body. 9. Give the pathologic changes that take place in arteries infected by syphilis. 10. Give the pathology of cerebrospinal sclerosis.

PHYSIOLOGY

1. Name three uses of the blood. 2. Give functions of the skin. 3. Give functions of the cerebrum. 4. Describe the sympathetic nervous system and tell its office. 5. What are the chief factors concerned in stimulating the secretion of the gastric juice? 6. What do you understand by the term digestion? Name the organs of digestion. 7. In what part of the brain is the center for sight? 8. What is the office of the cerebellum? 9. Describe spinal nerves in general where they leave the cord and divide into anterior and posterior branches and tell how the anterior and posterior divisions differ in functions. 10. Give the name and origin of the nerve that supplies motor function to the face.

Utah Reciprocity Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports that three candidates were licensed through reciprocity Oct. 4, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
College Physicians and Surgeons, Chicago	(1901)	Illinois
Northwestern University	(1908)	Wyoming
Columbia University, College of Phys. and Surgs.	(1911)	New York

Book Notices

Geschichte der Augenheilkunde. Von Dr. J. Hirschberg, Drittes Buch, Zwölfter Abschnitt — Amerikas Augenärzte im 19 Jahrhundert. Paper. Price, 6 marks. Leipzig: Wilhelm Engelmann, 1915.

The preparation of a reasonably complete and well-balanced history of ophthalmology is no light task. The basic material needed for such a work is much more scattered and more difficult of access than that required for similar investigations in other sciences, while much important information—biographies in particular—can in many instances be obtained only by painstaking and repeated inquiry and search among unpublished and private sources. Many years ago Professor Hirschberg undertook the work of collecting, sifting and publishing ("Handbuch der gesamten Augenheilkunde," second edition) the data for a history of ophthalmic science in all countries since its shadowy beginnings as a special department of surgery in Ancient Egypt 4,000 years ago. As a consequence, we owe this tireless worker a debt of gratitude for his remarkable series of books on the subject; and if, as in the present volume, he has fallen short of the standard set by him in some of his earlier contributions to the subject, we who know the difficulties of his problem can excuse his partial failure to solve it.

The defects of the volume under examination are much the same as those of Hirschberg's "Englands Augenärtze" (The Journal, July 31, 1915, p. 449). In the first place, the title is quite misleading. The author is supposed to be writing a history of ophthalmology in the United States during the nineteenth century; we find, however, that a considerable amount of space is devoted to the doings of ophthalmologists (and not always of Americans) in the twentieth century. It would be an improvement to delete from the subtitle the words *im 19. Jahrhundert.* The preliminary review of general medical and surgical conditions in the United States, though ostensibly carried down to the date of publication of the book, is very defective. For example, the latest educational number of The Journal referred to (or, seemingly, consulted) is that of 1905—just ten years behind he times—and surely we have advanced somewhat during he past decade! What is said about American instruction n ophthalmology is especially unfair. Nothing at all, for example, is said of the special provisions for a thorough nstruction developed in the last few years at the Universities of Colorado and Minnesota, and leading to a special degree.

In one point, at least, the volume under discussion is uperior to its predecessors: the items in its various bibliographies are, in general, arranged in chronological order. This was not true of Professor Hirschberg's former volumes, n which, not infrequently, the bibliographies were compiled n the greatest confusion.

One of the greatest errors in the present work consists in he failure to observe a just proportion between the space allotted to individual ophthalmologists. For example, a ong bibliography is appended to the sketch of A. R. Baker, nd either none at all or but scanty and incomplete ones to those of men like Aaron Friedenwald. Extremely scanty, oo, are the sketches themselves, especially of such widely nown men as Boerne Bettman (one-third page); George Strawbridge (one-third page); Leartus Connor (two-thirds age); John Green (one and two-thirds pages); Henry Gradle (one-half page); Aaron Friedenwald (fourteen ines); Charles A. Oliver (one and one-third pages); Wiliam F. Norris (one and two-thirds pages); George Harlan three-fourths page); Charles John Kipp (one-third page), nd A. A. Hubbell (one-third page). In most of these nstances the extreme brevity of the sketches is a matter for wonder in view of the fact that abundant information is upplied about these men by the very journals, society reports, etc., which Professor Hirschberg himself acknowldges to have been his sources. The reason for this cavalier reatment of leading American ophthalmologists is a little ifficult to understand. Then, too, many of the important merican ophthalmologists are not merely dismissed with a ew brief words; they are wholly omitted, absolutely excluded, from this partial hall of fame. Among those who have been thus dealt with are Duff Warren Greene, M. H. Post, Edward Shakespeare, Joseph Pancoast, Charles Michel, George Chadwick and O. A. Griffin.

The author seems to have an uneasy feeling that he may have forgotten some deserving names in American ophthalmology because he complains that he has looked in vain in the "American Encyclopedia of Ophthalmology" for an account of our illustrious dead under the heading "American Oculists." The learned professor is not aware that, at least in the polite literature of this country, the word *Augenärtze* has not exactly the same significance as "oculists." In this particular, as in some others, we have not followed the German usage. In the list of American textbooks of ophthalmology, we note, incidentally, the omission of Ball's "Modern Ophthalmology," one of the best and most widely used books in this country. A matter of minor (and yet sufficient) importance is the great multitude of typographic errors which spot and mar this book on every page. Thus, for a very few examples: p. 8, "responsability"; p. 11, "in ninety per cents of our medical colleges"; p. 20, "Hubbel." for "Hubbell"; p. 65, "A. B. Prince, Jacksonville, Jllin"; p. 153, "Edwards Hartshorne"; p. 156, "cylindrical tenses"; p. 166, "Charles Archibald Robertson" for "Richardson"; p. 184, "Christopher Smith Fenner"; p. 188, "Blencowe Fryer." Professor Hirschberg tells us—and we heartily approve the sentiment—that he is proud of the record of his former pupil, William Campbell Posey of Philadelphia, but surely that does not justify writing him "Poosey." Even the index, in which, if in any place, the utmost accuracy should exist, is full of errors. The most provoking of these is the frequent setting down of a page number as just one less than the proper one. For example, Culbertson, Howard, 180 (should be 181).

Of almost every one of Professor Hirschberg's former historical volumes, one might truthfully say: "This is not a book, so much as the almost chaotically assembled material for a book"; yet, of the present volume one can hardly say so much; even the material for a history of ophthalmology in America is not present in this work. Some day, when Professor Hirschberg has finished the collection of data for a history of ophthalmology (collecting for all countries with equal assiduity) he will, we trust, proceed to the writing of that history.

Diseases of the Nervous System. A Textbook of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital, and William A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington, D. C. Cloth. Price, $6 net. Pp. 796, with 341 illustrations. Philadelphia: Lea & Febiger, 1915.

This is a new textbook of neurology and psychiatry, not a mere verbal alteration of the old books. There are three divisions: Part 1 treats of the physicochemical systems (vegetative or visceral neurology); Part 2, the largest portion of the book, deals with sensorimotor neurology, and Part 3 is devoted to psychic or symbolic systems (neuroses and psychoses). The authors have demonstrated that with some effort it is possible not only to write in good literary style, but also to condense, for in most cases only one of these forms of writing is practiced. One may well call this an up-to-date text-book without violating the truth, for nothing in the recent literature seems to have escaped these vigilant seekers after the new. Indeed, one may even discover that which is made today and may be overthrown tomorrow; but we can easily overlook this anxiety to be modern, when for many years our new editions of older textbooks brought nothing that was not at least five years old. One of the best chapters in the book is that on the autonomic and sympathetic nervous systems and the internal secretions. It embodies everything worth knowing of that difficult theme from the physician's and student's point of view. The illustrations elucidating this part of the textbook have been taken from the recent monographs on the subject, and are excellent guides to a proper understanding of the theoretical and practical sides of the subject. The chapters dealing with methods of neurologic and mental examinations are modern in every detail, though rather brief. They contain material which can be well elaborated by the teacher in the class room, after the student has mastered the bare outlines. Of other portions of the book we may emphasize the excellence of the chapter on syphilis of the nervous system, which contains almost everything known on diagnosis and therapy, including the Swift-Ellis treatment of late syphilis of the nervous system.

As both authors are distinctly and avowedly freudian in their tendencies, it was to be expected that freudian doctrines would find a prominent place among the neuroses and psychoses chapters of this book. It is remarkable, however, that both authors have been able to exercise self-restraint, for psychanalysis has not usurped too much space. With the clearness usual with the authors, the entire field of psychiatry has been set forth from kraepelinian concepts, slightly tinged with freudianism. This textbook may profitably be utilized by the thinking physician and the advanced medical student. Indeed, even the neurologist will find in it much that he has seen elsewhere, but not in such compact form.

On Pharmaco-Therapy and Preventive Inoculation Applied to Pneumonia in the African Native. With a Discourse on the Logical Methods Which Ought to be Employed in the Evaluation of Therapeutic Agents. By Sir Almroth E. Wright, M.D., F.R.S. Cloth. Price, $2 net. Pp. 118. New York: Paul B. Hoeber, 1915.

This book consists of a report to the Witwatersrand Native Labor Association on work undertaken under its auspices directed to the discovery of some method of mitigating the ravages of pneumonia among the native laborers in the Rand mines in South Africa. The material was published in the London *Lancet* in 1912 and 1914. The outstanding result of this investigation appears to be that the prevalence of pneumonia among the native workers in the Rand mines is to be ascribed to the bringing together in close contact in compounds of a population which has, as a racial character, a low resisting power to the pneumococcus, and that it is possible by means of prophylactic injection of pneumococci to increase greatly the resistance to pneumococcus infection and thus diminish the incidence and death rate from pneumonia among the native laborers. When the author says that in taking up experimental work on the phagocytobactericidal action of human blood with reference to pneumococci he is "breaking new ground," it shows that he is not familiar with the results of such work already recorded in medical literature. It must be regarded as unfortunate also that throughout all this work no consideration whatever is paid to the different groups of pneumococci as determined by immunologic reactions. All workers in this field will regret exceedingly that no information is vouchsafed as to the particular immunologic group to which belong the strain or strains of pneumococci used in the preparation of the vaccine employed in the prophylactic inoculation and in the other work to test the resistance of natives and others.

A Text-Book of Histology. By Rudolph Krause, A. O. Professor of Anatomy at the University of Berlin. Translated from an Original Manuscript and Printed Only in the English Language. Cloth. Price, $2.50. Pp. 274, with illustrations. New York: Rebman Company, 1915.

This textbook is a companion volume to the author's "Course in Normal Histology," to the illustrations in which the reader is constantly referred. Written by a man of real scientific eminence, with a creditable research record, the book has many unique features which should commend it to teachers. One notes with pleasure that the author recognizes the impossiblity of giving any structural definition to which all cells will conform, and the necessity of correlating the information gained in different fields of inquiry. It is one of the few books in which an attempt is made to establish a relation between histology and gross anatomy, on the one hand, and between histology and physiology, on the other. The absence of adequate illustrations is not wholly a disadvantage, when we reflect that histologic study is always carried on in presence of the material, and when we remember the baneful influence on the student's objectivity of the conventional caricatures which so commonly disfigure our textbooks on this subject. Such figures as are reproduced are new, or from the work of recognized authorities. Krause has made an honest attempt to present to students, as far as can be done in a book of this scope, the present status of the science, and throughout has enriched the text with facts and conclusions based on his own broad experience.

Index of Prognosis and End-Results of Treatment. By Various Authors. Edited by A. Rendle Short, M.D., B.S., B.Sc., Hunterian Professor, Royal College of Surgeons. Cloth. Price, $7. Pp. 570. New York: William Wood & Co., 1915.

This is a companion volume to the index of treatment and index of differential diagnosis produced by the same publishers. It represents essentially a compilation from the literature with careful editorial supervision. It is perhaps a correct presentation of medical efficiency at the time of publication. Numerous statistics are cited, and the results achieved in various localities are balanced one against the other in arriving at the status of results in various conditions. The various factors concerned in prognosis are considered under separate subheadings. The work presents, of course, chiefly the English point of view, although American literature has not been overlooked in compiling it. The book is marred by few didactic statements, though some do occur. For example, "No one who has been infected with syphilis in the past should be permitted to marry until his Wassermann reaction has proven to be negative," or the following: "Of the different functional tests the most valuable is the phenolsulphonephthalein test described by Rowntree and Geraghty. The simplest for the practitioner is the iodid of potash test." The price of the book would seem to be somewhat disproportionate to its evident cost of production.

Food—What It Is and Does. By Edith Greer. Cloth. Price, $1. Pp. 251, with illustrations. Boston: Ginn & Co., 1915.

This little book is intended as a school text, especially where cookery is not a school course. School instruction with regard to the nature, preparation and uses of foods serves a useful purpose, and an interesting and instructive book might be arranged to meet this need. Unfortunately the principles (whatever they were) that guided the selection and arrangement of material have produced a confused assemblage of facts. No fixed principles seem to have guided the selection of illustrations; some (as the full-page pictures of "Old Chinese Dishes," opp. p. 224 and "A Tea Tray," opp. p. 206) are irrelevant to the subject, while one ("Grinding Buckwheat," p. 23) would surely be misleading to children if not accompanied by further explanation. Altogether, the book seems praiseworthy as an earnest attempt rather than as a notably successful achievement.

Student's Text-Book of Hygiene. By W. James Wilson, M.D., D.Sc., D.P.H., Bacteriologist to the Counties of Down and Antrim. Cloth. Price, $2.50. Pp. 270, with illustrations. New York: Rebman Company, 1915.

While based on lectures given to the undergraduate class in hygiene in Queen's University, Belfast, and primarily intended for medical students, Dr. Wilson's book will also prove of interest to teachers, sanitary inspectors and others interested in public health. Though making no claim to originality, the book is a clear, concise summary of the best authorities on the various subjects included in modern hygiene. It is interestingly written, well printed and copiously illustrated.

Practical Oral Hygiene Prophylaxis and Pyorrhea Alveolaris. By Robin Adair, B.S., M.D., D.D.S., Professor of Oral Prophylaxis, Southern Dental College. Second Edition. Cloth. Price, $5. Pp. 462, with 121 illustrations. Atlanta, Ga.: Oral Hygiene Publishing Company, 1915.

Recent advances in dental science have encouraged the author to undertake the preparation of a new edition of this work. The book is practical, but is, of course, written with a special reference to the needs of the dentist rather than those of the physician. The author seems hardly prepared to accept the recent work on endamebas in pyorrhea, but places more reliance on the mechanical treatment. The book contains many new illustrations and several popular dental lectures.

Miscellany

A Community Sickness Survey

In 1912 and 1913, a study was conducted in Dutchess County, New York, by the State Charities Aid Association, to secure reliable data relative to sickness, nursing care and treatment among the general population. The period of study included all of 1912 and four months of 1913, and was made at the request of the Thomas Thompson Trust, an agency interested in the improvement of social conditions.

It was planned in this investigation to secure directly from families as full and accurate data as possible concerning sickness, including medical and nursing service obtained, the sufficiency, cost and need for domestic assistance in homes where sickness existed, etc. In Pamphlet 136 of the association, the results of this study are set forth and recommendations made for the improvement of existing conditions.

Many difficulties were encountered in carrying out the study in a satisfactory manner. During the sixteen months' period, 1,600 cases of sickness were found to have occurred, 786 of which were communicable, 673 were general medical and surgical cases, and 141 were obstetric cases. There were in addition 452 cases of chronic illness recorded, but for various reasons they are not considered in this study. Of the 1,600 patients, 1,217, or 76 per cent., secured medical care—1,058 in their homes, 101 in hospitals, fifty-eight both at home and in hospitals, and 383 patients remained at home without medical care. Of a total of 1,441 patients (90 per cent.) who remained in their homes during their entire sickness, 31, or 2 per cent., secured resident trained nursing service; fifty-three, or about 4 per cent., had visiting trained nursing service; seventy-seven, or 5 per cent., were cared for by resident untrained nurses, and twelve, or less than 1 per cent., by a visiting untrained nurse. In thirty-two homes (2 per cent.), resident domestic help was secured, and in one home visiting domestic help. In 852 instances (59 per cent.), some member of the family did whatever nursing was done.

According to the judgment of the investigators, only 55 per cent. of the 1,441 patients who remained in their homes throughout their sickness were cared for adequately; 44 per cent. received inadequate care. Only 80 per cent. of the hospital patients were cared for adequately; 20 per cent. were cared for inadequately, chiefly, it is said, because of the lack of social service and follow-up work. In many cases patients returned to homes unprepared for them, and proper convalescence was therefore impossible.

Combining home and hospital care, 57.5 per cent. of the patients were cared for adequately, and 42.5 per cent. inadequately. It was found that on account of lack of proper facilities, of 506 patients who could have paid for any necessary service, 81 per cent. were cared for adequately and 19 per cent. inadequately; 212 patients could not pay for medical or nursing service. Of these, 32 per cent. received adequate care and 68 per cent. inadequate care. It is said that in nearly 79 per cent. of the cases in which there was a lack of proper service, poverty was not a controlling cause. There were in most cases no facilities for service to be had, and in other cases there was lack of proper knowledge as to what service to seek and how to get it. Many other interesting facts were developed relative to this group of cases, which, it is believed, represent a fair average of conditions in like communities.

Dutchess County, it is said, is in rather better condition with respect to facilities for taking care of the sick than many others, and the figures emphasize the great necessity for improvement in these respects.

It is believed that the first thing necessary is to secure the cooperation of all existing agencies by organization into what the committee believes might properly take the form of a county health association. This might at first be a private organization, or might even remain so permanently, although from time to time many of its activities might be taken over by public agencies, as has happened in many instances.

In order to secure any results, it is said, the sympathetic interest and cooperation of the physicians of the county must underlie all work. To carry out the scheme proposed in the report of the committee would be a monumental undertaking at this stage of public opinion and education, and would require a large expenditure. The cost of securing the kind of service which the committee believes should be provided is not touched on in the report.

Mental Prophylaxis and Aftercare

One of the facts which emphasize the need for mental prophylaxis and aftercare of the insane is the large number of readmissions in hospitals for the insane. According to the government report "Insane and Feeble-Minded in Institutions, 1910," 23 per cent. of the 60,769 patients admitted to institutions for the insane in this country during 1910 had previously been in hospitals for the insane. As Dr. E. F. Leonard suggests in the *Institution Quarterly*, when the patient is discharged from hospital, he usually returns to the environment in which his mental disease developed and which perhaps aided in producing the disease. He has lost confidence in himself, is sensitive and feels doubly the suspicion and distrust which probably greet him as a discharged inmate of an insane hospital. Everything favors a relapse. The need for aftercare and of a friendly sympathetic oversight of such patients is evident.

As illustrating one phase of such aftercare, the same number of the *Institution Quarterly* prints an extract from the report of the Illinois Mental Hygiene Society, which has opened an industrial center in Chicago where work is to be given to convalescent mental patients. Here patients are taught handicraft; their products are placed on sale for their benefit. Some patients have been rendered partially, others wholly self-supporting. It is recorded of two patients that their whole attitude toward society changed because of the friendly interest shown in them; others have been improved in greater or less degree.

In most of the states in this country such work for the prevention of mental breakdown is either entirely neglected or left to private agencies. Several European countries, however, have a system of aftercare. In this country New York, Massachusetts, New Jersey, Rhode Island and Michigan are reported as doing some systematic work of this character. The *Institution Quarterly* also contains the plan of Dr. H. J. Smith of the Chicago State Hospital for an aftercare department to be maintained in connection with the state hospitals.

Medicolegal

Law and Evidence Applicable to Fracture Case

(Dunman vs. Raney (Ark.), 176 S. W. R. 339)

The Supreme Court of Arkansas affirms a judgment for $500, which plaintiff Raney obtained against defendant Dunman for alleged malpractice in the treatment of a broken leg. The court says that the injuries complained of were that the defendant, after setting the leg, so negligently and unskilfully treated and cared for it that it could not heal, but, on the contrary, became inflamed and diseased and the bones became dead so that the flesh did not adhere to them and the leg became so twisted, shortened, deformed, and diseased as to necessitate its amputation. The jury were instructed that, if the defendant failed to use reasonable care and diligence either in the diagnosis, treatment or the giving of instructions to the plaintiff or his attendants, and such failure resulted in the injuries to the plaintiff's leg, or any of them, of which he complained, without the fault of the plaintiff, it would be the duty of the jury to find for the plaintiff, and to assess his damages at such sum as, in the opinion of the jury, taking into consideration all the evidence in the case, would justly, fairly, and reasonably compensate him for such injury or injuries. Taking the instruction in connection with the allegations of the complaint, it could not have misled the jury, and it was not abstract so far as furnishing the jury a guide by which to determine whether or not the injuries of which the plaintiff complained, or any of them, were caused through the defendant's negligence. The instruction was no broader than the allegations of the complaint, and the evidence on behalf of the plaintiff which went to the jury without objection warranted the instruction. It permitted the jury to find only for those injuries of which the plaintiff did complain that resulted from the defendant's negligence. It was the duty of the defendant, if he conceived that the instruction permitted recovery for injuries not set up in the complaint, to call the court's attention to same by a specific request. The contention that the instruction was erroneous because it did not correctly define the elements constituting the measure of damages would have been well taken if this had been the only instruction on the subject. But a second instruction told the jury that they might take into consideration the plaintiff's loss of time, if any, resulting from the defendant's negligence, the plaintiff's loss of earning power, if any, the bodily pain and suffering which he had been compelled to endure, and mental anguish, if any, which had resulted from such negligence, and any future suffering or inconvenience which he must suffer by reason of such negligence, if any. The two instructions supplemented each other, and taken together, were a complete and accurate statement of the law. A physician or surgeon is not required to exercise the highest skill possible. He is bound only to possess and to exercise that degree of skill and learning ordinarily possessed and exercised by members of his profession in good standing, practicing in the same line and in the same general neighborhood or in similar localities. He must use reasonable care in the exercise of his skill and learning, and act according to his best judgment in the treatment of his patients. Nor was there error in a refusal to strike out the plaintiff's testimony that his leg got dislocated about a certain date. That was not exclusively a matter of expert or scientific knowledge. The plaintiff was competent to testify as to whether his limb was dislocated and out of shape after it had been set. Ordinary observation would discover whether a limb that had been properly set had been dislocated, especially where such dislocation was so marked as to cause the foot to be twisted and the limb to be in an abnormal position. Moreover, the plaintiff, who was enduring the pain and experiencing the ill effects from the broken limb, was certainly competent to testify that the leg, after being set, had become dislocated.

Sufficient Evidence of Fraudulent Diagnosis and Violation of Federal Law

(*United States vs. Smith* (*U. S.*), *222 Fed. R. 165*)

The United States District Court for the Eastern District of Pennsylvania, in denying the defendant's motion for a new trial after he had been convicted of using the mails to defraud, says that the charge as presented in the indictment was a scheme or artifice to defraud within the meaning and the language of the acts of Congress on the subject. The scheme or artifice laid at the door of the defendant by the indictment consisted in representing to intended dupes that he was a physician professionally equipped and specially trained in the diagnosis and treatment of certain diseases and ailments. This, of course, was for the purpose of inspiring them with confidence in him and trust in his judgment of their condition. The scheme further contemplated that the persons thus approached should be invited to submit statements of symptoms to the defendant, and that, irrespective of what the symptoms indicated, whether health or disease, the defendant would dupe the patients into the belief that they were the victims of serious ailments and in dire need of medical attention, when in point of fact they were in normal health, and thus fraudulently induce them to part with their money for the defendant's benefit. It was enough if so much of the charge was proved as constituted an offense against the law, and the offense for the commission of which the defendant stood indicted. If the case involved, as counsel for the defendant assumed, nothing more than a difference of diagnosis, or of opinion as to the proper diagnosis, the position would be well taken that a mere difference of opinion offered no evidence in itself of any insincerity in any one of the opinions. The case presented against the defendant, however, was more than a difference of opinion. He was a physician. When the defense, as well as the case for the United States, was under the consideration of the jury, there was evidence of competency and experience as a medical practitioner. Moreover, whether there was knowledge or ignorance on the part of the defendant, the real question was the same. The evidence for the United States was full, and indeed unanswerable, that the symptoms which the defendant represented to his prospective patients as alarming evidence of disease were in fact no symptoms of disease at all, but of normal health. In point of fact, the symptoms set forth were the recognized symptoms of perfect health. This afforded the basis for the judgment of the jury as to whether or not, under all the evidence, the diagnosis made by the defendant was a fraudulent one. A finding of guilt was consistent with the view that, without knowledge of whether the symptoms were those of health or disease, the defendant, with the intent of fraudulent deception, meant to frighten the supposed patient into parting with his money. The finding was likewise consistent with the view that the defendant, being a physician, with a like purpose pretended the symptoms to be those of disease, when he knew them to be indicative of health.

Alcoholic Insanity as a Defense to Crime

(*Cheadle vs. State* (*Okla.*), *149 Pac. R. 919*)

The Criminal Court of Appeals of Oklahoma holds that, in a prosecution for murder, alcoholic insanity, or mental incapacity produced by voluntary intoxication existing only temporarily at the time of the homicide, is no justification or excuse therefor. Drunkenness is one thing, and the disease of the mind to which drunkenness leads is a different thing. Temporary insanity, occasioned immediately by drunkenness, does not destroy responsibility for crime, where the defendant, when sane and responsible, voluntarily makes himself drunk. To constitute insanity, caused by intoxication, a defense in a trial for murder, it must be insanity caused by chronic alcoholism, and not a mere temporary mental condition.

The distinction between a fit of drunken frenzy or madness, commonly called "delirium tremens," and temporary delusional insanity, a disease caused by excessive and long-continued indulgence in alcoholic liquors, technically called "delirium tremens" or "mania a potu," is well defined by the authorities and text-writers. The principle is everywhere recognized that voluntary intoxication is no justification or excuse for crime, and is no excuse for homicide, though carried to the extent of producing incapacity to control the mind and will. However, while intoxication does not excuse homicide, it may produce a state of mind in which one is incapable of forming a design to take life; but evidence of intoxication is admissible only as bearing on the existence or nonexistence of malice.

Insanity, though superinduced by excessive and long-continued indulgence in alcoholic liquors, and known as "delirium tremens" or "mania a potu," renders a person so afflicted irresponsible for his acts, if it be of such a character as to deprive him of the mental capacity to distinguish between right and wrong, as applied to the particular act, whether he be under the influence of liquor at the time of the commission of the act or not; but, to do so, his affliction must be settled or fixed insanity, not a mere fit of drunkenness. A person, not previously laboring under such a disease or affliction, who voluntarily becomes intoxicated to such an extent or for such a period of time as to cause unconsciousness, of his acts, is not irresponsible under the law for the acts done by him while in such mental condition.

A person who commits a homicide while so drunk as to be incapable of forming a premeditated design to kill, if he had formed no purpose to commit the crime prior to the time he became so intoxicated, is not guilty of murder, but is guilty of manslaughter in the first degree.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Forty-First Annual Meeting, held at Lexington, Ky., Oct. 19-21, 1915

The President, Dr. Hugh Cabot, Boston, in the Chair

Arteriosclerosis of Uterine Vessels

Dr. John W. Price, Louisville, Ky.: A microscopic study of specimens I removed suggested that the hemorrhages were the result of rupture or sclerosed arterioles in the submucosa. Some areas beneath the submucosa contain recent hemorrhages undergoing fibrosis; other areas appear to be old hemorrhages which have undergone fibrosis, and in other places outside the vessels is evidence of repair. The patient had a single profuse hemorrhage three years before operation, and had no unusual bleeding during the following two years. The history of the case, the character of the hemorrhages, and the appearance of the patient are the greatest aid in making the diagnosis in the absence of a palpable tumor. In cases in which there is any doubt as to whether there is present a cancer of the body of the uterus, I suggest the use of the curet or hysterectomy. In cases in which the bleeding has been serious, no time should be lost in curetting—the uterus should be removed as quickly as possible, and if found to be malignant, a more radical operation can be performed at once. All my cases except the last one had been treated previously by so-called conservative methods. A continuance of a palliative treatment for too long a time subjects the patient to unnecessary danger, and if the patient is suffering with a malignant condition, much valuable time is lost.

DISCUSSION

Dr. Channing W. Barrett, Chicago: The uterus is an organ unlike other organs in that it has a physiologic hemorrhage, and any departure from that regular bleeding may be just a little change from the normal and the cause may be very slight. In weighing the different causes of hemorrhage, we must recognize that there is a material resistance to treatment owing to a change in the blood vessels themselves. Often coming on at about the menopause, we must remember that the uterus is a senile organ at that time. Instead of deciding that the uterus should come out if it is malignant, and ought to remain if it is not malignant, we should bear in mind that many of these uteri have to be removed at that time.

Dr. Thomas J. Watkins, Chicago: As a remedy for temporary use in these cases, I would suggest an old but very efficient one, which consists in packing the uterus with gauze saturated with iron, Monsell's solution or the tincture. It is the only packing that can be left for a long time without becoming offensive. It can be left for a week without disturbing conditions or developing odors.

Kidney Lesions Diagnosed with the Aid of the Cystoscope and Roentgen Ray

Dr. Courtney W. Shropshire and **Dr. Charles Watterson**, Birmingham, Ala.: The cystoscopic examination and functional test, together with careful urinalysis, is by far the most important. Next comes the roentgenographic examination and then the physical findings and the patient's history. We place little faith on shadows said to be within the kidney or ureter unless they are shown positively to be within one of these structures by means of the shadow catheter, pelvic injection or the stereoscopic plate. Pelvic injection is one of the most valuable means for diagnosing lesions of the kidney. It is the duty of the cystoscopist to insist on those procedures which are safe and painless when properly performed before having numerous roentgenograms made which are worthless even though the suspicious shadows are shown.

DISCUSSION

Dr. Bransford Lewis, St. Louis: The general practitioner should familiarize himself with the cystoscope and the urethroscope, because the proper application of these instruments will enable him to make a correct diagnosis. I have known a number of patients who have gone on for many years suffering because they were told by general practitioners that their trouble was practically incurable, yet their condition could have been relieved promptly by simple operative measures.

Dr. F. M. Buckmaster, Effingham, Ill.: I recall the case of a woman who was operated on three times before the cause of her trouble was ascertained. She was about 30 years of age, and complained of recurrent attacks of pain, slightly continuous between times, along the lower end of the ureter in the appendiceal region. She also complained of attacks of cystitis. There was more or less urinary disturbance all the time, especially severe at times. The abdomen was opened and the appendix removed without relieving her symptoms. A year later, the symptoms continuing, the same surgeon opened the abdomen again, and removed a tube and ovary on that side. The cystitis and attacks continued. Three years after the first operation the symptoms not only continued but became worse, and at that time pus cells and blood cells were found in the urine, and the cystitis was quite severe a large part of the time. On investigation a stone was found in the lower end of the left ureter. This stone was removed and the woman recovered.

Dr. Leon Solomon, Louisville: The Roentgen ray may or may not disclose the nature of the trouble, and I feel that sometimes it has been the cause of surgery that is difficult and might have been avoided. I have in mind a piece of surgery which was proposed by a careful diagnostician, himself an internist, in which the positive finding of the operation was that of a stone in the ureter. It was demonstrated in advance of the operation by the catheter in situ that the shadows were phleboliths.

Limitations of High Frequency Treatment of Papilloma of the Bladder

Dr. H. G. Hamer, Indianapolis: Applications of the high frequency current in cases of carcinoma showed some hemostatic effect and slight reduction in the size of tumor or, on the other hand, marked reduction in size to be followed by rapid growth uncontrolled by burning. In one case it seemed to cause more rapid extention. High frequency cauterization is an important addition to our means of attacking vesical papillomas of the noninfiltrating type. All benign papillomas should be treated primarily with the high frequency current in view of the high percentage of recurrences following open operation (50 per cent.) and the high mortality (10 per cent.). In cases in which suprapubic operations have been done recurrences should be looked for and, if present, treated by fulguration on their first appearance. In dealing with papilloma involving the vesical orifice and prostatic urethra, perineal cystotomy with removal of as much of the tumor as possible, and application of the high frequency current to the remaining growth, seems a rational procedure.

DISCUSSION

Dr. John R. Caulk, St. Louis: The general practitioner should consider any bleeding from the urinary tract as serious, particularly a symptomless hematuria, and not stamp these hemorrhages as due to a congested bladder neck, and various other things that are so commonly ascribed as causative factors in these cases. The general surgeon has yet to be convinced of the importance of the cystoscope in almost all cases of prostatic hypertrophy before operation. Patients should be subjected to cystoscopy because of the fact that tumors quite frequently are back of prostatic obstructions, and many of the untoward results following perineal prostatectomy seem to be due to leaving behind a tumor which is back of the obstruction. I have seen four such cases.

Caudal Anesthesia for Prostatectomy and Other Genito-Urinary Surgery

Dr. Bransford Lewis, St. Louis: This method of anesthesia was used in seventy-seven cases with gratifying results. The method is far preferable to the other methods.

DISCUSSION

Dr. Charles E. Barnett, Fort Wayne, Ind.: I think the mortality of prostatectomy is due more to general anesthesia than any other one thing, on account of the deficiency of the kidneys in these cases, and the sooner we can get away from general anesthesia, the less the mortality will be following prostatectomy, no matter what route we adopt in removing the prostate.

Dr. John W. Deal, Springfield, Ill.: In speaking of the high mortality, I should like to ask whether reference is made to gas followed by ether or gas with the occasional administration of ether.

Dr. Richard A. Barr, Nashville, Tenn.: Three years ago, Dr. Brown of Nashville noticed an account of this method of anesthesia in a German medical journal, and he immediately adopted its use. It has been quite generally used in our city since then by a number of surgeons doing rectal work. I have done a little rectal work and a few perineorrhaphies by the method, and have found it entirely satisfactory.

Dr. Filipp Kreissl, Chicago: The methods of local anesthesia for operations on the pelvis, bladder and prostate are intraspinal, epidural or sacral, and parasacral. The dangers of injecting the epidural canal with novocain or cocain, or the dangers of nerve blocking with novocain, are grossly exaggerated. If one will keep well within established and safe limits of this drug, not using more than a definite quantity of a certain concentration, there is absolutely no danger.

Dr. Stanley G. Zinke, Richmond, Ky.: As to caudal anesthesia, the sacral canal is a cavity or sac, and we require from 30 to 90 c.c. of the agent we use before we get the anesthetic effect. Why? Because the capacity of these little sacs differ. The anesthesia is due entirely to pressure and not at all to the novocain present, 0.5 per cent. It makes no difference what quantity is injected, it is the pressure that does the work.

When Is a Prostatic Fit for Operative Procedure?

Dr. Charles E. Barnett, Fort Wayne, Ind.: After the maximum benefit from thorough preoperative treatment finds the patient below par in fitness for operative procedure, the question of the anesthetic given should be the most considered. The less the fitness, the less the general anesthetic. Local anesthesia when possible, and to the greatest degree when not possible is the one to be chosen.

DISCUSSION

Dr. Ben Morgan, Chicago: Local anesthesia in surgical operations on the prostate should come first in conjunction with a general but mild anesthetic, and what general anesthetic should be preferred? Chloroform? No. Ether? Doubtful. Nitrous oxid? Yes.

Dr. W. D. Haines, Cincinnati: The surgeon's duty, especially in this type of cases, is to save life, not time. The preoperative management of cases of prostatic disease is infinitely more important than what the surgeon is going to do at the operating table. It is not hard to take out the prostate; almost any general surgeon can do it; but the experienced man who has handled many cases will have a high mortality if he does not heed well the warning given us.

Dr. J. B. Taulbee, Lexington, Ky.: I am favorably impressed with nitrous oxid as an anesthetic. My experience with ether in doing prostatectomy has convinced me that in these cases in old men, in whom the system is run down, it is better to forego the operation than to risk a general anesthetic as ordinarily given, whether it is ether or chloroform. The safest method is to do a two-stage operation under local anesthesia.

Autogenous Vaccines in the Treatment of Bronchitis and Asthma

Dr. Robert H. Babcock, Chicago: Autogenous vaccines prepared from the sputa have yielded such results in three cases of acute bronchitis, one of chronic bronchitis, and four of chronic bronchitis associated with attacks of spasmodic asthma as to warrant recommending this mode of therapy as against the old time use of expectorants by mouth. In bronchitis independent of asthma, the organisms have been mainly *Bacillus mucosus*, the *Diplococcus mucosus*, the *Micrococcus catarrhalis* and an influenzalike bacillus, while in cases of bronchial asthma an anaerobic fusiform bacillus has been added. Asthma has yielded to this vaccine treatment only when this anaerobic fusiform bacillus has been largely present in the vaccine. Great care should be exercised in the use of vaccines that the dosage be not so large or so often given as to cause reaction, since this reaction, whether general or local, indicates a negative phase and aggravates the patient's condition. The main drawback to the use of autogenous vaccines is the necessity of perhaps several cultures, and the preparation of new vaccines should the cultures show that some of the germs found originally have disappeared or become subordinate in number to others. New vaccines should be prepared whenever the condition of the patient seems to have come to a standstill.

DISCUSSION

Dr. Leon Solomon, Louisville, Ky.: My experience with vaccines includes not only autogenous vaccines, but also the so-called stock vaccines. Their employment in properly selected cases is fraught with as many and as positive results as those obtained from the use of autogenous vaccines. The fusiform bacilli have been absent in every case under my observation, as well as that of a competent bacteriologist in a thoroughly equipped laboratory.

Dr. R. H. Babcock, Chicago: One reason the fusiform bacilli are not more frequently obtained in culture is that this bacillus grows very slowly. My laboratory reports show that frequently after all other bacilli have put in an appearance the anaerobic bacilli will fail to become manifest until after the third and sometimes the fourth day. In cases of bronchial asthma, when an alveolar abscess is present in any given case, the cultures in that case will show two organisms, the *Streptococcus mucosus* and the anaerobic fusiform bacillus. I am not prepared to say that this is the organism which is responsible for the asthma; nevertheless it has been a striking experience in every one of my cases of alveolar abscess that, with one exception, a fusiform bacillus has been cultivated when the procedure has been allowed to extend over a sufficient length of time.

Typhus Fever

Dr. Richard P. Strong, Boston: The epidemic of this disease which recently raged in Serbia was the most severe one which has occurred in modern times. A few cases of typhus had occurred in Serbia in October, 1914, but the disease did not make its appearance in epidemic form until January, 1915, and then in the northwestern part of the country, among the Austrian prisoners, who were greatly crowded and who necessarily were compelled to live under very insanitary conditions. The disease quickly spread from them to other individuals, and as the infected patients and the districts in which they were situated were not quarantined, and the Austrian prisoners and infected individuals were sent or allowed to go to various parts of the country, Serbia was soon afflicted with a terrible and widespread epidemic. The country, weakened by war, was not prepared for an epidemic, and for a time one might say that the typhus raged almost at will. The majority of the small number of Serbian doctors sooner or later became afflicted with the disease. Those who remained well were occupied with treating the sick and also the wounded from the battlefields, and methods for prevention were impracticable or were not undertaken. Wounded soldiers, or those afflicted with minor ailments or diseases with relapsing fever, wandered into the hospitals at will and entered the wards filled with cases of typhus, sometimes occupying the same bed, for it was not unusual for two or even three patients to be found lying in the same bed, and the available floor space was also filled with patients with no beds. The epidemic increased through January, rose more rapidly in February and March, and reached its height in April, when the number of cases was in the neighborhood of 9,000 a day. Through the combined efforts of all the outside volunteer workers, and with the cooperation of the Serbian physicians and officials, the epidemic rapidly declined, and for the last three weeks before my departure from Serbia we could not find a fresh case of typhus. The sanitary condition of the army and the people was then excellent. I trust that the sanitary demonstrations in the prevention of typhus, which have been given the Serbian people, and the construction of the various disinfecting plants throughout the country will prevent the occurrence of another epidemic of typhus, such as we have just witnessed, and which destroyed in the neighborhood of 150,000 people. All of the Serbian hospitals had been thoroughly disinfected before I left that country, and are ready for the reception of the wounded.

Gastric and Duodenal Ulcer from the Standpoint of the Internist

DR. W. F. BOGGESS, Louisville, Ky.: I would urge that the internist be more careful and painstaking in his examination of the various digestive disturbances that come to him, to fit himself to recognize these conditions in their earlier stages, and to urge on him the fact that there is a medical side to the question, and that if the majority of these patients go to the surgeon it is a reflection on the internist's diagnostic as well as therapeutic acumen. When do these cases cease to be medical and become surgical? No time limit can be stated. Each case is an individual one. When all medical means have been intelligently tried, and one is threatened with a condition of chronic invalidism, then call a surgeon with the assurance that he can and will restore the patient to a fair, if not perfect, condition of health and happiness.

(To be continued)

MEDICAL ASSOCIATION OF THE SOUTHWEST

Tenth Annual Meeting, held at Oklahoma City, Oct. 12-13, 1915

(Concluded from page 1845)

Management of Pellagra

DR. W. T. WILSON, Navasota, Texas: A valuable test of pellagra in case of doubt is to expose the bare arms to the sun for an hour for two or three days, and if the person is a pellagrin the characteristic eruption usually appears. In acute pellagra, or in pellagra of recent origin, picric acid is of value internally and as a gargle. In severe cases or those with malarial symptoms, quinin hypodermically should be used first, the picric acid following. In the chronic forms, picric acid and sodium cacodylate may be alternated or given at the same time, and also some sodium bicarbonate at intervals.

An Outline of the Progress of Prostatic Surgery

DR. CLARENCE CAPELL, Kansas City, Mo.: There has been progress in prostatic surgery. The mortality has been reduced from about 15 to about 7 per cent. This progress has been along several lines. In the first place we have a better knowledge of the anatomy and mechanics of the condition. We know now that in only about 90 per cent. of the cases is there present a true hypertrophy of the prostate. There may be a fibrous bar across the floor of the bladder near its outlet, or there may be a fibrous infiltration entirely surrounding the internal meatus. The word "prostatism" is the better word to designate the condition. Another advancement is the more thorough preliminary examination and investigation of the cases. I should like to emphasize the value of the cystoscope and functional kidney tests. When the kidney function is low the mortality is high, and when the kidney function is high the mortality is low. Another advancement is in the improvement in the operative technic. The suprapubic is fast becoming the more popular route, as it enables the operation to be done more easily. There is less likelihood of doing injury to the rectum and other structures. There is less likelihood of its resulting in lack of urinary control or of there being a permanent urinary fistula. It is true that the mortality is a little higher, but the results are so much better that if there are no special indications for the perineal operation, the suprapubic should be the route of choice.

DISCUSSION

DR. A. B. SMALL, Dallas, Texas: My experience in doing prostatectomy is that the suprapubic route is much preferable to the perineal, and if I were doing this work now I should do it under caudal anesthesia.

DR. JOHN A. WALKER, Shawnee, Okla.: It is essential to get patients on whom we are to do a prostatectomy in the best possible condition before the operation. In the old men with enlarged prostates in whom the catheter has been used from three to ten years, the walls of the bladder are enormously enlarged, thickened, congested and stretched out of shape and out of the normal relations that they ought to have. The operation should be done in two stages, first opening the bladder suprapubically, and inserting a large drainage tube, and then later enucleating the gland.

DR. J. M. COOPER, Enid, Okla.: It has been my observation that when a patient has been accustomed to the use of the catheter for a number of years, the suprapubic route is preferable. The urethra is more or less infected, there is a large amount of congestion, and in some cases the walls of the urethra will be hardened, and in such cases you will not get the urethra to heal readily after the operation.

DR. F. H. CLARK, El Reno, Okla.: I have always resorted to the perineal route in removing the prostate, and have not had any difficulty in doing so. I think we obviate the two stage operation by so doing.

DR. J. E. GILCREEST, Gainesville, Texas: We should get these patients in readiness for operation and try to get the bladder thoroughly drained suprapubically before removing the prostate. I did a suprapubic prostatectomy in one case, but in the last twelve years I have done nothing but the perineal operation.

DR. T. M. SANGER, Oklahoma City: In nine tenths of these bladder cases, the operation should be performed at one sitting. I have learned from experience that if free drainage of the bladder is kept up, there will be very little trouble from infection. In one case, before operation the patient was passing stones because there was so much sediment in the urine, but as long as I kept the drainage tract open there were no further infection, no fever, and no trouble.

Catarrhal Deafness, with Special Reference to a New Method of Treatment

DR. W. E. DIXON, Oklahoma City: After recovery from all throat and nose operations, and especially secretions in the nasopharynx, I pass an applicator wound with cotton which has been dipped in a 5 per cent. solution of cocain and epinephrin in one tube, and immediately follow this by another dipped in a 1 or 2 per cent. solution of silver nitrate. The next day the other tube is treated in a like manner. This mode of treatment is continued until the hearing is improved or until the tubes are patent. I have treated each tube every day, but better results are obtained, perhaps, by not treating so often. It may be better, after the first week or two of treatment, to treat each tube only twice a week, then once a week. Finally the patient will tell you that the air passes freely, at which time it is best to lengthen the interim between treatments.

Treatment of Nevus

DR. J. L. MCDERMOTT, Kansas City, Mo.: Treatment should be instituted as soon after birth as the strength and health of the baby will permit, especially in those nevi which manifest a tendency to grow. If properly treated, the growth will be checked at once and its complete removal will be facilitated. As to the method of treatment, that will depend on the age of the patient, the location of growth, the size and character of the growth, and the ability of the doctor to keep his patient under observation and control for the necessary time to complete the treatment. In recent years the use of Roentgen and radium therapy has grown in popularity in the treatment of nevus. Both agents have a specific and selective action on the endothelial cells of the vessel walls, and produce an endarteritis followed by a fibrosis. Successive treatment causes the fibrous tissue to undergo contraction, and the vessels are largely obliterated. How perfect the results of the treatment are will depend on the operator's ability to destroy the subcutaneous vessels, and at the same time preserve the surface epithelium. In papillary angiomas and small localized nevi, excellent results may be secured with carbon dioxid snow. Even in cavernous angiomas in which spontaneous hemorrhages have occurred, the snow may be used without danger of hemorrhage following the treatment. In the application of snow, caution should be used in the depth of the freezing produced, for, as in any other form of treatment, an ugly scar may result if due care is not used.

DISCUSSION

Dr. E. H. Skinner, Kansas City, Mo.: I have not had success with radium in treating port wine marks, but I think all of the work that has been done with radium in lymphangiomas can be duplicated by the Roentgen ray. There is a tendency at the present time on the part of people to take advantage of radium, which not all of us can afford to keep in our offices, and as long as the same results can be obtained by means of the Roentgen ray, except in cases of port wine marks, it is unnecessary to advise patients that radium is the only treatment.

Nervous Disorders Associated with Pelvic Disorders

Dr. G. H. Moody, San Antonio, Texas: Any pelvic disease should be corrected, if possible, just as should any disease of any other organ of the body without reference to the question as to whether or not a nervous or mental disorder exists in order to stop its drain on the general health, provided in a neurotic individual, when a surgical operation or other heroic treatment is indicated, the nervous depression or instability is not so great as to precipitate an acute outbreak as often happens. Several cases have come under my observation in which nervous and run-down women have become abruptly insane immediately following an operation, well performed, and in good surgical hands. A few patients also have been operated on under my observation during an attack of insanity, neurasthenia or hysteria with the results of an intensification of the nervous symptoms, induced by the extra strain and shock made by the operation and anesthetic on an already depressed nervous system. I have also seen more or less important operations, made on a diseased pelvic organ in an excited, delirious or maniacal patient, result in marked improvement, when the operation was followed by the patient being put to bed and absolute rest enforced. The same immediate improvement has also been observed in others, men as well as women, not requiring an operation, when absolute rest and proper care and attention were likewise enforced.

DISCUSSION

Dr. G. W. Robinson, Kansas City, Mo.: If the pelvic organs are diseased in nervous women, they should be treated just the same as they would be in those who are not nervous. The same changes take place in the nerve cells, as the result of constant pain, which occur in cases the result of shock. We also get a state of intoxication because in these conditions the body is not able to take care of toxins that normally develop in the system, and naturally we would expect neurologic conditions to develop as the result of pain extending over a long time. Especially do we have infections in the pelvis from which we get an absorption of toxic material.

Dr. S. Grover Burnett, Kansas City, Mo.: I know of no question more difficult to answer than when we shall remove pathologic conditions in the pelvis in a patient who has gone to pieces mentally. When there is unmistakable disease in the pelvis that is doing damage to the patient, it should be removed; but there has been too much removal in women for so-called neurotic ovaries. Surgery is contraindicated in such cases.

Nitrous Oxid-Oxygen Analgesia in Obstetrics

Dr. F. K. Camp, Oklahoma City: The time of labor is materially shortened. Perineal lacerations are less frequent. In forty-four primiparas to whom gas was given, twenty showed some degree of laceration, or 45 per cent., while with sixteen primiparas without gas, there was some degree of laceration in twelve cases, or 75 per cent. In my series of twenty-five cases, all of the babies cried just as early and just as vigorously as those who did not receive the gas, and showed no signs of anesthesia. The convalescence in these patients was in every way smoother and quicker than I have ever seen in a corresponding series of cases. More patients left the hospital under ten days after delivery, than over twelve. Multiparas were generally out of bed on the fifth day, primiparas up in a chair on the sixth or seventh day.

DISCUSSION

Dr. S. J. Wolfermann, Fort Smith, Ark.: I should like to report a fatal case in a member of my own family. The patient, aged 32, was given nitrous oxid gas in New York by one of the best anesthetists there for the purpose of undergoing an operation for a peritonsillar abscess, and died in a minute and a half from respiratory failure.

Diagnosis and Medical Treatment of Gastroduodenitis

Dr. F. B. Erwin, Wellston, Okla.: The nervous phenomena in these cases are so very prominent that many have at first been diagnosed hysteria, neurasthenia and other nervous diseases. They have even been diagnosed as gallstones. The patient complains of general weakness, occipital headache, hot flashes, numbness of limbs, nausea with occasional vomiting, disturbance of vision, pain in region of stomach and duodenum, in from one to two hours after eating, belching considerable quantities of gas, palpitation of the heart and many other similar symptoms. On physical examination the patient frequently presents a pale, rather sallow, listless expression; the heart action in the incipient stage is usually in fairly good condition, with the exception of being easily irritated; some tenderness in the region of the stomach and duodenum; kidney action increased at the time of attacks of pain; increased acidity of the urine; bowels in the first few months usually constipated; blood pressure slightly lowered, and the superficial reflexes increased considerably and the deep reflexes slightly. The treatment of these cases is largely dietetic, with a small amount of medicine the first few weeks. The medicinal treatment should be so adjusted as to check and change the too acid condition of the stomach and return it to a normal condition. A mild alkaline preparation should be given every two or three hours for a few days. At the same time strychnin should be given three or four times daily. A gentle laxative should be used from every two to four nights. No severe purgative should be prescribed at any time, for the reason that it irritates and aggravates this condition. Strychnin has an excellent tonic action on the muscular striae of the intestinal wall when given three or four times a day. It also has a good tonic effect on the heart. The length of time for medicinal treatment will depend on the stage of the disease and the reactive power of the patient. The diet should consist largely of carbohydrates and fats so as to place as little work as possible on the stomach and duodenum. It should be taken every three or four hours for a time in small quantities. Such food as cream, butter fat, toasted light bread and like foods are easily digested. No fried foods or acid should be allowed at all.

Tracheobronchoscopy and Esophagoscopy

Dr. D. L. Shumate, Kansas City, Mo.: I have done all my work through the mouth, not finding it necessary to do a tracheotomy. Under general anesthetic, I use a dorsal position, with the patient's head held off the table by an assistant. I have found that the quicker you operate, the better the condition of the patient and the easier to remove the foreign body. I have two cases of safety pin in the esophagus, one in a grown woman, the other in a 7-months-old baby. A case of a 25-cent piece in the middle third of the esophagus, I failed to find the first time I tried, but got it on second trial.

One half-dollar that I saw disappear into the stomach under anesthesia in a 6-year-old boy was passed in the stool five days afterward. I saw one peach seed do the same trick, except that it passed from the esophagus before the patient had entirely lost consciousness from the anesthetic, but was unable to tell us until afterward. Of course I failed to find the seed, for it was no longer in the esophagus. I have had cases of big buttons, little buttons, a buttonhook, a plum seed, pieces of tin and many foreign bodies in the esophagus. I have had thirty-odd cases all together, and I feel that I have only begun to acquire the skill and knowledge of doing good work. I have had only two deaths.

NEW YORK ACADEMY OF MEDICINE

Meeting held Oct. 21, 1915

The President, Dr. Walter B. James, in the Chair

SYMPOSIUM ON TYPHUS FEVER

The Form of Typhus Fever that Is Endemic in New York and Has Been Called Brill's Disease

Dr. Nathan E. Brill: Typhus fever is always the result of conditions which are associated with personal filth, with the segregation of people in confined quarters, and with economic conditions which produce squalor and famine; finally, it stands as an index of man's greed, of his lust of conquest, of his sociologic inefficiency. In short, the disease appears whenever conditions are favorable to the development of vermin, particularly the body louse, with which the disease is now specially associated as an etiologic factor. The body louse explains most of the epidemiologic factors of the disease, particularly its appearance and its spread. Typhus fever has appeared in all countries, particularly in those in which the social conditions are associated with poverty. Even America had not been spared in the past, as is evidenced by its occurrence in 1836, 1847, 1865, 1881 and 1893. With the last two epidemics I have had personal experience in New York. In order to form a proper conception of the disease, it will be necessary to divest the mind of all preconceived notions gained from textbooks and monographs. Typhus fever exists in two forms, a mild, attenuated or endemic form, so disguised as to have escaped observation and to have been mistaken by almost everybody for typhoid fever, and the epidemic form which usually begins rather suddenly with a chill or chilly sensations, though it may occasionally be preceded by two or three days of malaise and general body pains. Headache rapidly supervenes and fever immediately appears. These symptoms ars quickly augmented, so that by the second or third day the fever may have reached its fastigium of 104 or 105 F. As the disease progresses it is marked by profound toxemia, signs of intense blood infection, marked involvement of the nervous system manifested by delirium, excitement and tremor, and somnolence, stupor, coma vigil, and an unusually severe involvement of the muscular system as well, with the tremor and physical exhaustion which were so often manifested. Epidemic typhus fever is a disease of the winter months and is highly communicable. Wherein does the endemic or mild form of typhus fever differ from the epidemic typhus fever? The two are alike in their onset, in the first stage of the eruption, in the critical decline and both are terminated, not followed, by relapses. In all other respects they differ. The eruption in the mild form rarely goes to the hemorrhagic stage; it is always an erythema. There is no profound involvement of the nervous system; there may be a slight delirium, but it is mild in type, appearing only at night. The patient is never, or rarely, stuporous, never seized by maniacal excitement, never goes into coma vigil, and has no muscular tremors, subsultus, or carphology. Involuntary discharge of urine and feces has never been seen by me in the mild form of typhus fever. In the mild form the headache, instead of diminishing about the eighth day as in the epidemic form of the disease, becomes progressively more intense even up to the end of the illness. The mortality of the mild form is less than 0.25 per cent. I have seen only one death in over 400 cases which up to this time have been entered on our records at Mount Sinai Hospital. This is a marked contrast to the mortality of 20 per cent. in the hospital cases of epidemic typhus fever seen by Murchison and Curschmann. The period of the greatest prevalence of the mild form is in the summer months, which is directly opposed to the time of prevalence of the epidemic form. In the mild form a little less than 70 per cent. of all the cases appear in the months of July, August, September and October. There is a decided difference in the communicability of the two forms, the endemic form showing no evidence of being at all communicable. It seems to me that the body louse is not an important factor in the communicability of the mild form of this disease, and that some other agent must be looked for to explain the origin and spread of this form. It was the epoch-making work of Dr. Harry Plotz, who isolated the organism of the mild form and of the epidemic form of this disease, which he found to be identical in all respects, which proved that the disease which I described was typhus fever. I am thoroughly convinced that the work of Dr. Plotz and Dr. Peter K. Olitsky has established the etiologic factor of typhus fever in its two forms, and that this dread disease is no longer one of unknown origin but is due to the invasion of the body by the *Bacillus typhi exanthematici.*

Typhus Fever in Mexico, in England and in This Country

Dr. John F. Anderson, Washington, D. C.: Typhus fever in England, in Mexico and in the United States, so far as my observations go, shows no essential differences, except as regards severity and mortality. The disease as it came under my observation in England had a mortality of about 20 per cent.; the mortality in America is not over 2 per cent. The mortality in Mexico shows considerable variation in different years and among the native and foreign population. In 1909 and 1910, the mortality among the patients in the Mexican General Hospital was 10 per cent., while in 1911 and 1912 it was nearer 5 per cent. The disease is much more severe among the foreign population than among the natives. Of 144 cases of typhus fever treated in the American Hospital in Mexico City from 1888 to 1910, fifty died, a mortality of 34 per cent. Many mild cases escape observation, while the severer cases are seen by a physician, and in this way the mortality rate is increased over the true figure. In the western hemisphere typhus fever occurs in a mild type in practically all the larger cities as far west as Milwaukee and as far south as Atlanta. It also occurs in certain portions of Mexico and Central America. In Mexico it has been observed that it never prevails below an elevation of five or six thousand feet. Even when persons come from a high altitude during the incubation period of the disease and develop the disease after reaching the coast, it does not spread. The inability of typhus fever to spread in the lower altitudes of tropical and subtropical countries and its lessened prevalence in summer and fall is attributed to the effect of the higher temperature on the transmitting insect, the body louse or *Pediculus vestimenti.* Since we know that typhus fever is transmitted by the body louse and know the effect of high temperature on the life of the insect, we can explain the influence of the high temperature on the prevalence of the disease. Typhus fever is still endemic, and the United States should require American sanitarians to recognize the persistence of the problem and to guard against a disease that may at any time assume epidemic prevalence and virulence. All efforts at prevention must be centered on the louse. These should include measures for the destruction of all lice and their eggs, the adoption by persons in the vicinity of cases of typhus of measures to prevent the possibility of their being bitten by lice, and inoculation with the mild type of the disease of persons entering localities where the disease is present.

Pathogenesis of Typhus Fever

Dr. Peter K. Olitsky: The organism of typhus fever is a small gram-positive bacillus which grows only under anaerobic conditions. It is found in 100 per cent. of the epidemic typhus cases in which cultures were made before the crisis and in 53 per cent. of the endemic cases. The earlier in the disease the blood culture is taken the more often it is positive. The more severe the case, the more numerous are the organisms. Antibodies against the organisms are found in the blood of typhus fever patients or in animals in which the disease has been produced experimentally. Complement-fixing bodies, agglutinins, precipitins and opsonins have also been found. These antibodies are usually absent when the fever is present, and are present to a small extent at or shortly after the crisis. The greatest concentration is found from five to twelve days after the crisis. The crisis is not due to sudden destruction of the bacteria, but rather to the result of the activities of the cells. Complement-fixation tests are positive in 71 per cent. of the cases after the crisis. They are negative when tests are made with the serum of patients suffering from other diseases or with the serum of typhus fever cases tested against other organisms. Agglutinins were present in 92 per cent. of the cases after the crisis. In numerous control cases no agglutinins were found. Precipitins were found in 73 per cent. of the cases after the crisis. In monkeys with experimental typhus fever, antibodies were found the same as in man. In guinea-pigs only opsonins were found. In cases of endemic typhus the most marked antibody reactions were found in cases with negative blood cultures. Antibodies could be produced in a few monkeys by inoculation of the organism, but they were not immune to the virus of typhus fever. It was found that blood from typhus fever patients which contained no bacilli or very few was not infective for animals, while typhus blood in which the bacilli were more numerous was infective for animals. Finally, we have succeeded in finding a febrile reaction like that in typhus fever by injecting a guinea-pig with an emulsion of live typhus bacilli from a case of endemic typhus fever. In one guinea-pig the organism was recovered from the blood at the height of the febrile reaction.

Discussion on Typhus Fever

Dr. G. A. Friedman: Three epidemics of typhus fever came under my observation while I was in active practice in western Russia. The disease was constantly endemic and ran a mild course. If an epidemic occurs in a locality in which typhus fever has not recently been present, the cause is an exogenous one. In such a community the epidemic spreads more rapidly than in a community in which outbreaks occur at frequent intervals. These cases run a more severe course, and the mortality is higher. An epidemic breaks out with few exceptions in the fall, reaches its height in February or March, and dies out with the first warm days. Somehow there is a tendency for the contagion to remain in endemic form in many regions of the world in an attenuated state. From these endemic cases an epidemic may be expected at any time. It is impossible to state why the endemic cases do not more frequently lead to epidemics in the overcrowded dwellings of our large cities. In endemic regions one sees cases of typhus fever at all seasons of the year, though in the fall and winter the moderately severe cases are more numerous, while in the spring and summer the mild cases predominate. As a rule, the course of the disease is mild among children even in epidemics.

Dr. E. Libman: Dr. Brill did not mention two cases of endemic typhus fever in which he made necropsies and found the bone marrow of the femur red. This feature was first noticed by Dr. Welch, who has expressed the view that possibly the organisms multiply in the bone marrow. The suspicions that have been expressed that the organism of Dr. Plotz may be a secondary invader can easily be dismissed. We know of no disease that has a constant secondary invader. The organism described by Drs. Plotz, Baehr and Olitsky was found regularly in the blood of epidemic typhus fever cases and in half the cases of endemic typhus fever. The organisms from the epidemic cases were found to be virulent; those from the endemic cases were not. I should like to call attention to the part of the work done by Dr. Olitsky in which he finds in the endemic cases of typhus fever the most marked complement-fixation and agglutination reactions in the twenty cases that had negative blood cultures. Cultures were made in most of those cases within five days before the crisis. As the organism was not in the blood at the time, it is evident that it was either in the blood before that time or was in the organs; otherwise reactions would not have been obtained against the organism. This is definite proof that the organism cannot be considered a secondary invader. I have just received a letter from Dr. Baehr in which he states that the blood cultures in the very first two cases of typhus fever which he and Dr. Plotz studied in Belgrade showed the typhus bacillus. The blood culture from the first case was taken on the fifth day and showed a larger number of organisms than that of any case so far studied. This is an additional proof that the bacteremia is more marked early than late. Probably the investigators who have been studying typhus fever in Serbia did not find the organism in any number of cases because the serum which they used was not favorable to the growth of the organism. As to immunization, it seems to me that it would be best before adopting the method suggested by Anderson, namely, injecting a patient with the virus of the disease, to try the injection of dead bacilli, then of sensitized living bacilli, and, finally, if it should be found necessary, small numbers of live bacilli from the endemic cases, these bacilli not being virulent. The experiments of Dr. Anderson are interesting, but it must be noted that his inoculations were all made intraperitoneally. Apart from that, the organisms used by Dr. Anderson were not virulent, and, again, from the results of immunity experiments on animals one can draw no binding conclusions as regards the efficiency of vaccination in human beings. Our best course will be to take the advice of Leishmann in connection with typhoid fever, to make a careful study in human beings.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

October, LXXII, No. 2, pp. 223-426

1 Study of Eugenic Forces. A. J. Rosanoff, Kings Park, N. Y.
2 Case of Retro-Anterograde Amnesia Following Gas Poisoning. P. C. Knapp, Boston.
3 Study in Social Maladjustment. H. B. Moyle, Brookline.
4 Paraphrenia Erotica. M. J. Karpas, New York.
5 Psychoses of High Imbecile. H. J. Berkley, Baltimore.
6 Some of More Recent Problems Connected with State Care of Insane. J. V. May, Albany, N. Y.
7 Value of Routine Laboratory Work in Psychiatry. P. G. Weston and I. Darling, Warren, Pa.
8 Institutional Stasis. H. C. Eyman, Massillon, Ohio.
9 Therapeutic and Economic Value of Diversional Occupation. B. D. Evans and F. M. Mikels, Morris Plains, N. J.
10 Voice in Tabes—Voice Sign. W. B. Swift, Boston.
11 Treatment of Paresis and Tabes Dorsalis by Salvarsanized Serum. (To be continued.) H. A. Cotton, Trenton, N. J.

American Journal of Medical Sciences, Philadelphia

November, CL, No. 5, pp. 625-780

12 *Roentgen Diagnosis of Gastric Cancer; Report of Twelve Cases. R. D. Carman, Rochester, Minn.
13 Significance of Acro-Ataxia and Proximo-Ataxia. C. F. Hoover, Cleveland.
14 *Studies of Nephritis. H. A. Christian, C. Frothingham, Jr., J. P. O'Hare and A. C. Woods, Boston.
15 Studies in Moniliasis of Digestive Tract in Porto Rico. B. K. Ashford, U. S. Army.
16 Occurrence of Sprue in United States. E. J. Wood, Wilmington, N. C.
17 *Gangrene of Lung. G. D. Head, Minneapolis.
18 *Luetin Reaction in Diagnosis of Tertiary and Latent Syphilis. F. M. Hanes, Richmond, Va.
19 *Friedländer Bacillus Pneumonia; Report of Cases. W. R. Sisson and C. B. Thompson, Boston.
20 *Elimination of Acetone and Diacetic Acid in Two Hundred and Fourteen Surgical Cases. M. R. Bradner and S. P. Reimann, Philadelphia.
21 Luetic Arthropathies. W. H. Higgins, Richmond, Va.

12. **Roentgen Diagnosis of Gastric Cancer.**—The records of the Mayo clinic, according to Carman, show that in a large series of cases confirmed by operation, 67 per cent. of the patients had palpable tumors and 53.3 per cent. had food remnants. In other words, 33 per cent. had no palpable tumors and 46.7 per cent. had no food remnants to indicate obstruction. It is precisely in those cases, says Carman, which show neither tumor nor food remnants, that the Roentgen rays have their greatest field of usefulness and superiority. It is no longer necessary to wait until the tumor is palpable or until evidences of marked obstruction exist. He does not say that the clinical data should be discarded. On the contrary, the roentgenologist should in every instance be acquainted with the clinical facts. If suggestive of cancer, they will stimulate him to a more exhaustive search. If negative, they will exercise a wholesome restraint on his interpretation of the reflex phenomena so often produced by conditions outside the stomach. More important still, the final diagnosis should be compatible with all the findings, if possible, and occasionally only their correlation will make the diagnosis. A combination of all methods forms a net through which few cancers will escape.

The roentgenologic manifestations of gastric cancer include departures from the normal contour, pyloric action, peristalsis, motility, flexibility, mobility, position and size of the stomach. Enumerated in the order of their relative importance, these signs are: 1. Filling defects. 2. Alterations of pyloric function: (*a*) gaping of the pylorus; (*b*) obstruction of the pylorus. 3. Perversion of peristalsis: (*a*) absence of peristalsis from involved areas; (*b*) weak peristalsis; (*c*) antiperistalsis; (*d*) exaggerated peristalsis; (*e*) irregular peristalsis. 4. Altered motility: (*a*) rapid and early emptying (nonobstructive cases); (*b*) delayed emptying (obstructive cases). 5. Lessened flexibility. 6. Lessened mobility. 7. Diminished size (capacity). 8. Displacement. Roentgenologic determination of the absence or presence of obstruction, its site and degree, aids materially in judging the advisability of palliative surgery and in selecting the operation, whether gastro-enterostomy or gastrostomy, or jejunostomy. In expressing any opinion as to operability, unless the cardia or upper media is definitely implicated, or unless the growth is extraordinarily extensive, the roentgenologist should be chary of saying that a case is inoperable, as he may thus deprive the patient of relief or cure at the hands of the surgeon. In the majority of instances exploration alone is the final word and the patient should be given the benefit of the doubt.

14. **Nephritis.**—The authors summarize the results of their extensive study as follows: A. Test renal meals in relation to renal function. 1. Of two general methods used the v. Monakow standard diet with days of added salt or urea and the Hedinger and Schlayer test day on a mixed diet, the first requires about ten days of hospital study and the second three days. Using the two methods on a series of patients the authors have obtained similar results by each. 2. Though similar, the results are not quantitatively identical. The same is true for the same test repeated several times on the same patient. 3. For the Hedinger and Schlayer test there is no constant normal curve of excretion. Normality consists in the ability to vary from period to period the amounts and concentration of the substances quantitated. Abnormality consists in a more or less marked degree of fixation in all of these values from period to period. 4. Fixation in excretion of nitrogen seems to develop at a later period in most cases than is true for water and salt.

B. Quantitative studies of nonprotein nitrogenous bodies of the blood. 1. Urea nitrogen in a series of cases averaged 63.4 per cent. of the total nonprotein nitrogen of the blood, and its increase was usually proportionate to the increase of the total nonprotein nitrogen. 2. Ammonia nitrogen increased slightly but not proportionately. The same held for uric acid and amino-acid nitrogen. 3. Creatinin showed roughly a proportionate increase. 4. The difference between determined forms of nitrogen and total nonprotein nitrogen was greatest in cases with clinically most severe symptoms. 5. In the spinal fluid the increase in nitrogen is almost solely in urea nitrogen except in cases of anuria. 6. The authors can see no advantage in quantitating the nitrogen of the spinal fluid over quantitating it in the blood. 7. No relationship existed between the amount of nonprotein nitrogen in the blood and changes in the retina.

C. Diuresis in relation to diuretics. 1. Diuresis is relatively infrequent in the average hospital patient. 2. Except for diuresis in cardiac cases following digitalis, diuresis bears an inconstant relation to diuretic drugs. 3. In cases of nephritis with or without edema and without cardiac decompensation, diuretic drugs often fail to produce a striking diuresis. Their observations justify a healthy skepticism as to the efficacy of diuretic drugs in cases of nephritis without cardiac decompensation.

D. Functional tests in relation to anatomic changes in the kidney. 1. In eighteen cases of chronic nephritis, the patients dying and coming to necropsy, no constant relations have been found between anatomic lesions and renal function in so far as excretion of phenolsulphonephthalein, albumin in the urine, casts, presence or absence of edema, blood-pressure determinations, etc., are concerned.

17. **Gangrene of Lung.**—In Head's case the diagnosis of gangrene of the lung was made by plunging a long exploring needle into the area of lung involved and withdrawing about 5 c.c. of dark-colored fluid having the typical smell of gangrene and containing cellular elements of a peculiar type. Without this evidence, Head says, the diagnosis of gangrene of the lung could not have been made, since neither the breath of the patient nor the sputum coughed up gave out an odor suggestive to gangrene.

18. **Luetin Reaction in Syphilis.**—From the study of the luetin reaction in 200 medical cases presenting themselves for diagnosis, the following conclusions are drawn by Hanes: 1. The luetin reaction when positive is absolutely specific. The author has not seen a single positive reaction in a case free from symptoms and physical signs of syphilis. 2. The reaction is of limited value in other than tertiary cases. 3. The luetin reaction is a more delicate test for latent and tertiary syphilis than is the Wassermann reaction. 4. Patients suffering with visceral syphilis give positive luetin reactions with great constancy. This seems especially true of cardiovascular syphilis. The luetin test represents a distinct advance in the diagnosis of syphilis, and is a helpful supplement to the Wassermann test in the diagnosis of tertiary syphilitic lesions.

19. **Friedländer Bacillus Pneumonia.**—The study of four cases leads Sisson and Thompson to conclude that there exists a type of lobar pneumonia, *sui generis,* that is caused by the *Bacillus mucosus capsulatus.* Clinically, this so-called "Friedländer pneumonia" is subject to great variation. The exact diagnosis is difficult to make clinically, but is aided by the identification of the Friedländer bacillus, both in the blood and sputum. The pathologic findings taken together are usually quite typical for this form of pneumonia.

20. **Acetone and Diacetic Acid.**—Bradner and Reimann found that acetone occasionally accompanied by diacetic acid was eliminated in the urine of 182 out of 214 consecutive surgical patients (in 23.3 per cent. before surgical intervention and in 61.7 per cent. after operation, under ether anesthesia). The temperament of the individual and the length of time preoperative treatment (of nothing by mouth and saline by bowel) had been carried out, appeared to have a slight positive effect on the acetone eliminated. Acetone and diacetic acid were eliminated oftener and in larger quantities in women than in men. The fact of surgery alone increased the acid, but the severity of the operation and the amount of obvious shock present had but little bearing on the amount of eliminated acid and the time of elimination.

Boston Medical and Surgical Journal

November 11, CLXXIII, No. 20, pp. 723-758

22 Legislation for Insane in Massachusetts, with Particular Reference to Voluntary Admission and Temporary Care Laws. F. E. Williams, Boston.

23 Report of Harvard University Service at American Ambulance, Lycée Pasteur, Neuilly-Sur-Seine, France. R. B. Greenough, Boston.

24 Artificial Pneumothorax. E. O. Otis, Boston.
25 State of Respiratory Mechanism in Pneumonia. J. H. Means, L. H. Newburgh and W. T. Porter, Boston.
26 Exercise in Treatment of Severe Diabetes. F. M. Allen, New York.
27 Statistics of New York State Hospitals for 1913, with Special Regard to Statistics Regarding Dementia Praecox. C. T. La Moure, Lakeville, Conn.
28 Studies in Speech Disorder. W. B. Swift, Boston.
29 Time-Saving Method for Multiple Sugar Analyses. B. H. Ragle, Boston.

Indiana State Medical Association Journal, Fort Wayne

October, VIII, No. 10, pp. 455-498

30 Relation of Endamebae to Alveolar Pyorrhea. C. C. Bass, New Orleans.
31 Pathogenesis of Spontaneous and Experimental Appendicitis, Ulcer of Stomach and Cholecystitis. E. C. Rosenow, Rochester, Minn.
32 *Position of Normal Stomach, with Observations on Movements of Diaphragm. B. D. Myers, Indianapolis.

32. Abstracted in The Journal, Oct. 24, 1914, p. 1499.

Journal of Abnormal Psychology, Boston

October-November, X, No. 4, pp. 225-296

33 Psychologic Analysis of Stuttering. W. B. Swift, Boston.
34 Origin of Supernatural Explanations. T. A. Williams, Washington, D. C.
35 Data Concerning Delusions of Personality; Association of Bright's Disease and Unpleasant Delusions. E. E. Southard, Boston.

Journal of Infectious Diseases, Chicago

November, XVII, No. 3, pp. 437-584

36 New Member of Aciduric Group of Bacilli. J. C. Torrey and A. H. Rahe, New York.
37 Proteolytic Enzyme of Bacillus Proteus. A. I. Kendall and A. W. Walker, Chicago.
38 Economical Intracutaneous Method for Testing Virulence of Diphtheria Bacilli. A. Zingher and D. Soletsky, New York.
39 Etiology of "Symptomatic Anthrax" in Swine. K. F. Meyer, San Francisco.
40 Natural Hemolysins in Normal Horse Serum. F. Boerner, Jr., Philadelphia.
41 Effect of Bacterial Metabolism on Antigenic Properties and Serologic Reactions of Bacteria. J. P. Simonds, Chicago.
42 Lesions in Experimental Infection with Bacterium Tularense. P. G. Woolley, Cincinnati.
43 Varieties of Pneumococci Causing Lobar Pneumonia, with Especial Reference to Their Biologic Differences. G. Mathers, Chicago.
44 Importation of Typhus into United States. J. L. Kantor, Syracuse.
45 Nomenclature of Coccaceae. R. E. Buchanan, Ames, Iowa.
46 Effect of Anaphylactic Shock on Cellular Reaction of Peritoneum of Guinea-Pig. F. M. Rackemann, New York.
47 Outbreak of Roup and Chickenpox in Which High Mortality was Apparently Caused by Secondary Invader. B. A. Beach, H. Lothe and J. G. Halpin, Madison, Wis.
48 *Transmission and Administrative Control of Measles. H. F. Gray, Alto, Calif.

48. **Transmission and Control of Measles.**—From a study of an epidemic of 254 cases of measles when considered in connection with recent laboratory work on the disease, Gray believes that the following conclusions are justified: The minimal period from exposure to first symptoms was 7 days; the maximal, 14 days; the average, 11 days. The minimal period from the appearance of the first symptoms to the appearance of the exanthem was one day; the maximal, 7 days; the average, 3 days. The minimal period from exposure to the appearance of the exanthem was 11 days; the maximal, 19 days; the average, 13.5 days. The distribution between the sexes was nearly equal, with a slightly greater number of males than females. The average age of cases was, in males, 7.6 years; in females, 9.5 years. The incidence was greatest in males at 6 years of age; in females at 8 years. The cases in this epidemic were generally mild in character, only one severe case being reported. There were no deaths. The rate of attack per 10,000 of population was 487 (258 cases within the city limits in 1914 for a population of 5,300). Estimating an average case fatality of 4 per cent., one might have expected about 10 deaths. That they did not occur may be attributed to the mild character of the outbreak, to a general intelligent care of the cases, and to the excellent sanitary condition of the city.

Measles may be infective as early as five days prior to the appearance of the exanthem; the appearance of the rash marks probably the height of the infectiousness of the disease; the infectivity does not extend beyond 7 days after the appearance of the rash, and is probably shorter. The experience of the New York City department of health is that the disease is probably not infective 5 days after the appearance of the rash, and the experiments on monkeys would indicate that the infectiousness ceases with the approach of convalescence. The essential points in regulations for the control of measles are: The case shall be recognized and isolated at the earliest possible moment; the premises on which the case is isolated shall be placarded; the patient shall be isolated for at least five days after the appearance of the exanthem; adults and children who have previously had the disease need not be restricted, but it is advisable to warn them as to the slight possibility of second attacks, and keep them under observation; children who have not previously had measles and who are in contact with cases, need not be restricted for seven days after contact, but should thereafter be isolated for at least ten days and carefully observed. Disinfection after measles is useless and unnecessary. Transmission of measles by third persons or fomities must be exceedingly rare, if it occurs at all.

Journal of Laboratory and Clinical Medicine, St. Louis

October, I, No. 1, pp. 1-78

49 *New Method for Production of General Analgesia and Anesthesia. D. E. Jackson, St. Louis.
50 Specific Treatment in Typhoid. F. P. Gay, Berkeley, Calif.
51 Laboratory and Clinical Examinations. G. Dock, St. Louis.
52 Probable Toxic Effects of Prolonged Administration of Parathyroid Gland. R. S. Morris, Cincinnati.
53 Precancerous Conditions of Skin. M. F. Engman, St. Louis.
54 Staining Sections of Living Tissue, Unfixed. L. B. Wilson, Rochester, Minn.
55 *Intestinal Stasis and Intestinal Intoxications. P. G. Woolley, Cincinnati.

49. **Method for Production of General Analgesia and Anesthesia.**—Jackson describes a method for the production and maintenance of prolonged general analgesia or anesthesia by means of nitrous oxid, ethyl chlorid, ether, chloroform, ethyl bromid, etc., with oxygen. The method involves a continuous process of rebreathing of the gaseous or volatilized anesthetics from which the exhaled carbon dioxid, etc., have been removed and to which oxygen is constantly added in proportions suitable to maintain the patient in a satisfactory condition. The method involves the use of special apparatus which is so arranged as to give the anesthetist complete control of every phase of the anesthesia at all times. Great care has been taken to provide safety devices. So far Jackson has had an opportunity to try this method only on animals, but there seems to be good reason to expect that in man results entirely comparable to those produced in animals may readily be obtainable. For details the original article must be consulted.

55. **Intestinal Stasis and Intestinal Intoxications.**—Woolley summarizes his paper as follows: Absorption of bacteria and other substances from an unhealthy bowel may produce serious symptoms. A surgical operation for intestinal stasis is not justifiable except as a last resort. There is no definite information in the literature to show that surgical procedures, made for intestinal stasis, have been more successful than medical (including hygienic) ones. Many cases in which symptoms are attributed to intestinal stasis are suffering from focal infections entirely outside the intestinal tract. Such infections are illustrated by pyorrhea alveolaris, chronic tonsillar infection and chronic infections of the antra and sinuses of the head.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

November, XLII, No. 11, pp. 721-784

56 New Clinical Instruments for More Precise Estimation of Muscle Strength and Tendon Reflex Threshold; Clinical Myosthenometer and Reflex Liminometer. F. Tilney, Brooklyn.
57 Statistical Study of Hallucinations in Manic-Depressive Type of Psychoses. J. E. Lind, Washington, D. C.
58 Two Successfully Operated Cases of Extradural Fibroma Compressing Cord. P. Bassoe, Chicago.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

November, VII, No. 4, pp. 385-555

59 *Similarity and Synergy of Morphin and Strychnin Action. H. McGuigan and E. L. Ross, Chicago.
60 Synergism of Morphin and Scopolamins. M. I. Smith, Ann Arbor, Mich.
61 *Action of Cocain. M. Kuroda, London.
62 *Blood Flow in Patient with Double Aortic and Double Mitral Disease. L. H. Newburgh and J. H. Means, Boston.
63 Effect of Caffein on Blood Flow in Normal Human Subjects. J. H. Means and L. H. Newburgh, Boston.
64 Apparatus for Perfusion of Isolated Organs. A. N. Richards and C. K. Drinker, Philadelphia.
65 Urine Formation by Perfused Kidney; Preliminary Experiments on Action of Caffein. A. N. Richards and O. H. Plant, Philadelphia.
66 Action of Phenylethylamin on Heart. H. G. Barbour and E. M. Frankel, New Haven, Conn.
67 Response of Surviving Uterus to Morphin and Scopolamin. H. G. Barbour and N. H. Copenhaver, New Haven, Conn.
68 Action of Caffein and Epinephrin on Vagus Nerve. H. G. Barbour and S. B. Kleiner, New Haven, Conn.
69 Morphin and Scopolamin Action on Intact Uterus. H. G. Barbour, New Haven, Conn.

59. **Similarity and Synergy of Morphin.**—From the work recorded by McGuigan and Ross the following conclusions are drawn: 1. Morphin when injected intraspinally into mammals (dogs and cats) in adequate doses will produce tetanus after a latent period. Codein which is apparently not oxidized in the body will not produce tetanus. 2. Morphin when oxidized to a certain degree and injected into the spinal canal of dogs or cats, or into the lymph of frogs, will produce tetanus more quickly than unchanged morphin. Artificially oxidized codein will also produce tetanus when injected in this way. Oxidized morphin when administered otherwise than directly into the cerebrospinal fluid will not produce convulsions in mammals (dogs). The strychnin-like action of morphin is apparently due to an oxidation product which is first produced and then destroyed in the body. Differences in the rate of oxidation will explain the varied reaction in different animals.

61. **Action of Cocain.**—Kuroda found that cocain first increases the activity of unstriated muscle and then depresses it, whatever be the nature of the sympathetic control. In some instances the phase of increased activity was not observed. The action of cocain in first stimulating and then paralyzing muscle fiber (including that of the iris) is analogous to its effects on other forms of living matter, including that on sensory organs when directly applied to them.

62. **Double Aortic and Double Mitral Disease.**—Determinations of the blood flow during rest and in response to increasing amounts of muscular work in a patient with valvular heart disease are reported by Newburgh and Means. No essential differences between the cardiac and normal subject were found. In both the normal and the cardiac subject the oxygen absorption and the blood flow showed a progressive rise with increasing amounts of work. This rise in blood flow was met at first chiefly by an increase in systolic output until a maximum was reached; after that by an increase in pulse rate.

Lancet-Clinic, Cincinnati

November 6, CXIV, No. 19, pp. 407-424

70 Psychoses in Twins. P. B. Newcomb, Osawatomie, Kan.
71 Acute Middle Ear Inflammations. J. W. Murphy, Cincinnati.
72 Medical Results at Tuberculosis Dispensary in 1914. J. L. Tuechter, Cincinnati.
73 Sarcoma of Upper Jaw Symptomatically Cured by Roentgen Ray. S. Lange, Cincinnati.
74 Medicine; Profession or Trade. H. Cabot, Boston.

Maine Medical Association Journal, Portland

October, VI, No. 3, pp. 137-168

75 Physician's Long Arm in Preventive Medicine. A. J. Torsleff, Bango.
76 Cancer of Breast. W. E. Gray, Milltown, Canada.

Medical Record, New York

November 13, LXXXVIII, No. 20, pp. 815-856

77 Rheumatism and Skin. W. P. Cunningham, New York.
78 Iodid of Potassium in Syphilis. D. W. Montgomery, San Francisco.
79 Arterial Tension in Connection with Cardiac Murmurs. P. E. Tiemann, New York.
80 Traumatic Hysteria; Trauma Cause or Occasion? D. B. Hardenbergh, Middletown.
81 Etiology of Pellagra. B. W. Page, Lumberton, N. C.
82 Gastric Symptoms in Tuberculosis. L. H. Levy, New Haven, Conn.
83 Impairment and Loss of Sexual Power in Acromegaly. W. A. Boyd, Baltimore.
84 Artificial Infant Feeding. J. Epstein, Brooklyn.
85 Interesting Obstetric Case. I. Eckert, New York.

Michigan State Medical Society Journal, Grand Rapids

November, XIV, No. 11, pp. 555-596

86 Spasmophilic Convulsions in Infancy; Their Differentiation and Treatment. C. G. Grulee, Chicago.
87 Admission of Indigent Patients to University Hospital, Ann Arbor, Mich. R. Peterson, Ann Arbor.
88 Trend of Medicine Fifty Years Ago. B. R. Corbus, Grand Rapids.
89 Suppurative Ethmoiditis. S. G. Miner, Detroit.
90 *Ureteral Obstruction; Report of Unusual Case. F. C. Witter, Petoskey.
91 Relation of Hysteria to Other Diseases. T. Klingmann, Ann Arbor.

90. Abstracted in The Journal, September 25, p. 1137.

New York Medical Journal

November 13, CII, No. 20, pp. 977-1024

92 Peritonitis. J. B. Deaver and D. B. Pfeiffer, Philadelphia.
93 Indigocarmin Test. C. G. Cumston, Geneva, Switzerland.
94 Cancer Treated with Autolysin. H. S. Williams, New York.
95 Treatment of Colles' Fracture. A. E. Hoag, New York.
96 Anesthesia by Rectum in Thyroidectomy. W. Lathrop, Hazleton, Pa.
97 Case of Primary Carcinoma of Appendix. J. Goldstone, New York.
98 Clinical Teaching. M. Schulman, New York.
99 Suspected Thoracic Aneurysm with Death from Rupture. F. Griffith, New York.
100 Trachoma and Follicular Conjunctivitis. M. B. Beals, New York.

Ohio State Medical Journal, Columbus

October, XI, No. 10, pp. 605-658

101 Analgesics and Anesthetics in Labor; Their Indications and Contraindications. W. Gillespie, Cincinnati.
102 Pregnancy Complicating Tuberculosis. J. J. Thomas, Cleveland.
103 *Direct Treatment of Cerebrospinal Syphilis According to Methods of Swift and Ellis. C. L. Cummer and R. Dexter, Cleveland.
104 Extraction of Lens as Seen in Some of European Clinics. C. C. Stuart, Cleveland.
105 Amebic Bowel Infection in Ohio. W. H. Lewis, Newark.

103. **Treatment of Cerebrospinal Syphilis.**—Summarizing their work Cummer and Dexter find that they have given fifty-five intraspinous injections of serum. They have had no untoward or unfortunate results in any instance. There have been no deaths, paralyses, or bladder disturbances. With all patients but two sharp reactions have occurred following the intraspinous injections. When any form of crisis or lancinating pain has been present, the reaction has usually taken the form of an acute exacerbation of this symptom. In some instances the reaction has been of a most aggravated nature. The compensation to the patient, however, is that the greatest improvement has usually followed with those who have had the most intense reactions and conversely, they have come to expect little or slight betterment in those in whom the reactions were slight or were absent. The lymphocytosis, even when as high as 153, disappears quite promptly, after one, two or three injections. The globulin test is usually slower to disappear. In some instances, it does not clear up until much treatment has been given. As to physical findings, practically the only changes the authors have been able to detect have been restoration of sensation, when this had been impaired, disappearance or practically disappearance of Romberg's sign, increase in muscular strength, and a diminution in ataxia. In no instance have they noted pupillary reactions return to normal, nor have absent deep reflexes reappeared.

In every instance in which lancinating pains were present, they have either disappeared entirely or are so much diminished that the annoyance to the patient is comparatively slight. The striking feature is the improvement in general condition, in weight, strength and well-being. In certain instances this is partially attributable to the freedom from pain, but in other cases in which pain had not been a feature, this general betterment was noted at once. Vesical incontinence in one case has been so much less frequent that it has almost ceased to be an annoyance. The sum total in five cases has been a symptomatic improvement so decided that the patients' economic efficiency is restored and they are able to do their work and enjoy life as normal people. Concluding, the authors feel that they can state fairly that the Swift-Ellis method is safe when the original technic is followed painstakingly. Persistence is necessary to secure the best results.

Oklahoma State Medical Association Journal, Muskogee

November, VIII, No. 6, pp. 185-216

106 Serum Therapy, Its Uses and Abuses. L. H. Huffman, Hobart.
107 Crippled Mothers. S. H. Landrum, Altus.
108 Obstetrics in Country Practice. F. R. Wheeler, Mannford.
109 Abdominal Cesarean Section. C. D. F. O'Hern, Tulsa.
110 Definite System for History Taking and Case Record Filing. W. D. Berry, Muskogee.

Ophthalmology, Seattle

October, XII, No. 1, pp. 1-212

111 Surgical Removal of Tarsal Cartilage and Palpebral Conjunctiva in Four Hundred and Two Cases for Prophylaxis, Present and Future Elimination and Eradication of Trachoma. D. W. White and P. C. White, Tulsa, Okla.
112 Some Clinical Studies on Trachoma Question. E. E. Edmondson, Mt. Vernon, Ill.
113 Carcinoma of Caruncle; Report of Case. P. H. Dernehl, Milwaukee.
114 Local Anesthesia in Surgery of Iris and Lens. P. de Obarrio, San Francisco.
115 Complete Left Lateral Hemianopsia with Glycosuria as Result of Slight Trauma. F. E. Woodruff, St. Louis.
116 Triple Rupture of Choroid with Iridodialysis. L. F. Appleman, Philadelphia.
117 Is Migraine Forerunner of Glaucoma? R. S. Lamb, Washington, D. C.
118 Color Testing. G. H. Taylor, New South Wales, Australia.

Providence Medical Journal

November, XVI, No. 6, pp. 293-332

119 Care of Tuberculous. J. Perkins, Providence.
120 Appendicitis. J. W. Keefe, Providence.
121 Plea for Study of Pancreatitis. J. B. McKenna, East Providence.

South Carolina Medical Association Journal, Anderson

October, XI, No. 10, pp. 304-336

122 Control of Hemorrhage in Tonsil Enucleation. J. W. Jervey, Greenville.
123 Ovarian Cysts; Report of Case in Which Tumor Weighed Eighty-Five Pounds. S. O. Black, Philadelphia.
124 Ether Anesthesia. W. A. Boyd, Columbia.
125 Place of Laboratory Branch in Medical Education and Practice. K. M. Lynch, Charleston.
126 Milk in Diet of Infants. D. L. Smith, Spartanburg.
127 Stone in Wharton's Duct. R. T. Ferguson, Gaffney.
128 Banti's Disease; Report of Operative Case. B. B. Steedly, Spartanburg.
129 Tubercular Meningitis. R. M. Politzer, Charleston.

Southern Medical Journal, Mobile, Ala.

November, VIII, No. 11, pp. 925-1014

130 Report on Sanitation of Guayaquil. W. C. Gorgas, Washington. D. C.
131 *Relation of Bovine Infection in Child to Clinical Tuberculosis in Adult. F. M. Pottenger, Monrovia, Calif.
132 *Treatment of Honduranian Balantidiosis. N. Barlow, Cuyamel, Honduras.
133 Importance of Cerebrospinal Fluid Examinations in Syphilis of Central Nervous System. S. R. Miller, Baltimore.
134 Hereditary Syphilis in Negro Race. N. M. Moore, Augusta, Ga.
135 What Civil Surgeon Can Do for Military Surgery in Times of Peace. J. C. Bloodgood, Baltimore.
136 One Thousand Operations for Appendicitis. W. D. Haggard, Nashville, Tenn.
137 Uses and Limitations of Blood Vessel Suturing, with Special Reference to Reversal of Circulation. J. S. Horsley, Richmond, Va.
138 Neglected Eyes; the Cost. J. F. Woodward, Norfolk, Va.
139 Laryngeal Tuberculosis. J. B. Greene, Asheville, N. C.

131. **Relation of Bovine Infection in Child.**—If bovine infection quiets down and remains inactive for a time, to break down in later life the same as the human infection does, it certainly does not show as a bovine infection when it does become active again. Unless transmutation occurs and the bovine bacilli of the early infection changes and becomes of the human type, Pottenger believes we are compelled to assume that bovine infections in childhood do not, except rarely, produce metastases in later life, and that, in this, they are wholly unlike human infections. The most rational explanation of the facts observed requires the acceptance of the idea of transmutation.

132. **Treatment of Honduranian Balantidiosis.**—The balantidiosis of Honduras, if uncomplicated by pathogenic amebae, according to Barlow, is best treated by methylene blue, 2 grains three times daily, not less than four days. If an endamebic or similar infection is also present, emetin combined with oral administration of some suitable form of ipecac will be appropriate for both infections. Especial stress is placed on the oral administration, and not less than ten days of continuous treatment. With either method, at least three thorough cleansings should be given the intestines, at the beginning, middle and end of treatment. If uncinariasis be present, thymol may be given if the patient is not debilitated.

Texas State Journal of Medicine, Fort Worth

October, XI, No. 6, pp. 313-360

140 Brain and Sinus Complications of Otitis Media, with Special Reference to Symptomatology. A. H. Andrews, Chicago.
141 Accessory Sinusitis. C. P. Schenck, Waco.
142 Case of Double Chronic Maxillary Sinusitis Complicated with Unilateral Ethmoiditis. E. M. Sykes, San Antonio.
143 Some Investigations Concerning Mysterious Form and Function of Internal and Middle Ear. W. F. Cole, Waco.
144 Excessive Bleeding at Menstrual Period. F. R. Winn, Alvin.
145 Placenta Praevia; Report of Case. T. E. Hunt, Hillsboro.
146 Some Pathologic Conditions of Breasts. M. A. Wood, Houston.
147 Allergic Reactions in Pregnancy. J. H. Black, Dallas.

Wisconsin Medical Journal, Milwaukee

October, XIV, No. 5, pp. 181-220

148 *Disturbances of Central Nervous System Accompanying Pernicious Anemia; Report of Two Cases. A. W. Rogers, Oconomowoc.
149 Nose and Throat in Etiology of General Diseases. R. W. Porteus, Rochester, Minn.
150 Cystoscopy in Surgical Diseases of Bladder and Kidney. E. A. Fletcher, Milwaukee.

148. **Nervous System in Pernicious Anemia.**—Rogers concludes his paper as follows: It would seem that pernicious anemia was the result of a toxemia or autotoxemia acting on the tissues of the body in general, but showing a selective action for certain tissues, preferably the red blood cells and nervous tissue. Certain types of pernicious anemia, in cases in which symptoms indicating involvement of the nerve centers are first to appear, may readily be confounded with tabes, paresis, myelitis, insular sclerosis and even hysteria, the diagnosis resting with the blood examination. In cases of pernicious anemia with marked involvement of nerve tissues, the blood findings are less characteristic and, too, these cases manifest a greater tendency toward remissions, making the prognosis more favorable.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

October, XII, No. 142, pp. 289-320

1 Education of Children with Defective Vision. N. B. Harman.
2 Case of Extra-Genital Primary Chancre of Wrist. G. Pernet.
3 Case of Extensive Pigmented and Hairy Nevus with Molluscous Tumors. W. M. Smith.

British Medical Journal, London

October 23, II, No. 2860, pp. 593-628

4 *Analysis of Cases of Tetanus Treated in Home Military Hospitals. D. Bruce.
5 *Hemolytic Action of Urine in Certain Conditions. C. S. McKee.
6 Ureteral Calculus; Its Symptoms and Treatment. D. Newman.
7 Epidemic Jaundice in War-Time. S. Moritz.
8 Malaria Contracted in Flanders. J. M. H. Reid and H. E. Humphrys.

4. **Tetanus Treated in Home Military Hospitals.**—In December, 1914, a return of cases of tetanus was called for from British home military hospitals, and an army form issued. Notes on 231 cases were sent in; of these, 98 recovered and 133 died, a mortality of 57.7 per cent. The death rate in

untreated cases is stated to be 91 per cent. in those of short incubation, 50 per cent. in those of delayed incubation. If the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 66.6 per cent.; if between the eleventh and twenty-fifth day, 39 per cent. Among the 231 cases, only 37 patients are noted as having been treated with antitetanic serum before the onset of symptoms. Of these 18 recovered and 19 died, a mortality of 51.3 per cent. The usual dose was 1,500 units, but 1,000 were given in 3,500 in 2 and 4,000 in 2 cases. The average incubation period of 17 fatal cases was thirteen days; of 15 patients which recovered 18.5 days.

Out of the total of 231 cases the number of patients treated with antitetanic serum after the onset of symptoms was 215 (93 per cent.). Sixteen patients did not receive curative treatment with antitetanic serum in England. Of these, 3 recovered and 13 died; mortality, 81.25 per cent. Of the 3 which recovered, all had been treated prophylactically in France. Of the 13 who died, 6 had been treated prophylactically in France. Of the 215 patients, 116 were treated by subcutaneous injections alone; 46 recovered, 70 died; 7 were treated by intravenous injections alone; 1 recovered, 6 died; 14 were treated by intrathecal injections alone; 8 recovered, 6 died; 17 were treated subcutaneously and intravenously; 5 recovered, 12 died; 41 were treated subcutaneously and intrathecally; 23 recovered, 18 died; 2 were treated intravenously and intrathecally; 1 recovered, 1 died; 16 were treated subcutaneously, intravenously and intrathecally; 8 recovered, 8 died; 73 were treated intrathecally with or without subcutaneous or intravenous injections; 40 recovered, 33 died. It would appear that injections of antitetanic serum into the spinal canal are more effective than subcutaneous or intravenous injections. Out of 200 cases 4 patients received 1,000 units or under; 2 recovered, 2 died; 61 received from 1,001 to 5,000 units; 24 recovered, 37 died; 50 received from 5,001 to 10,000 units; 14 recovered, 36 died; 20 received from 10,001 to 15,000 units; 12 recovered, 8 died; 19 received 15,001 to 20,000 units; 6 recovered, 13 died; 19 received from 20,001 to 30,000 units; 10 recovered, 9 died; 14 received from 30,001 to 40,000 units; 9 recovered, 5 died; 13 received from 40,001 to 147,000 units; 9 recovered, 4 died.

The main conclusion drawn by Bruce from a study of these patients treated therapeutically by antitetanic serum is that it seems highly probable that the serum has little or no effect on the course of the disease. There is a little evidence that, if the serum has any effect at all, then the intrathecal method of injection is the most effective in as large dose as possible, and repeated as often as safe and practicable as long as symptoms persist. If there is any likelihood that tetanus toxin is still being absorbed into the blood stream from the wound, then, in addition to the intrathecal injection, a further quantity of serum may be introduced intravenously and subcutaneously. In this way 3,000 to 5,000 units could be injected into the spinal canal and 10,000 to 20,000 into vein and under the skin. Thirty-three patients were treated by phenol injections; 12 patients recovered and 21 died (63.6 per cent.). Nine patients were treated with magnesium sulphate; of these 7 patients died and 2 recovered. Bruce sums up the treatment of a case of tetanus as follows: (a) Place in a quiet, darkened room under care of a sympathetic and capable nurse. (b) The best surgical treatment of the wound should be thoroughly carried out to insure the prompt and complete removal of all septic products. (c) The intrathecal injection of at least 3,000 units of antitetanic serum. At the same time 10,000 to 20,000 units may be injected intravenously and subcutaneously. This procedure to be repeated as frequently as the course of the disease seems to demand. (d) In addition to this the patient should receive sedative drugs, such as chloral or chlorbutanol in full doses.

5. **Hemolytic Action of Urine.**—A phenomenon found by McKee to be of fairly constant occurrence in certain morbid states, is here described, namely, the rapid laking of blood corpuscles by the urine. It has never been noted in the urines of normal individuals. The agent causing this hemolysis is left an open question, but there is no doubt in McKee's mind that it is not a normal constituent of the urine. Save in the case of certain strongly hemolytic alkaline urines, of which one drop sometimes causes instant laking of the blood emulsion at room temperature, the hemolytic process requires incubator temperature of 37 C. Sodium bicarbonate definitely influences the reaction in vitro, and possibly when administered to patients by mouth. This appearanee of a body or bodies in urine of a more or less actively hemolytic nature, is a fairly frequent accompaniment of grave disturbances of metabolism. In severe chronic anemia the reaction is frequent, but not of daily occurrence, and after having tested and cross tested the red cells of several pernicious anemia cases, it appears that some patients' cells are much more resistant than others, but also that all are less resistant than normal cells. The reaction is obtainable in erysipelas, gout, acute rheumatic fever, advanced tuberculosis, and certain cases of syphilis. In acute rheumatic fever the urine was found to lake blood cells in all cases at some period during the course of the disease, in most cases all through the acute stage. The same has been true of severe erysipelas and streptococcal throat cases. In syphilis the reaction depended on the severity of the symptoms. In all severe burns the urine has been regularly hemolytic and has remained so until death, or recovery was well assured. In some cases of skin disease in which a large part of the skin surface has been involved, laking by the urine has been common and persistent. In two cases of phenol poisoning the urine, twenty-four hours later, was intensely hemolytic and remained so till death. In starvation the reaction appeared to depend on the severity of the symptoms. In cancer with wasting, the reaction has always, so far, been present. In septic cases also it is common.

Journal of Royal Naval Medical Service, London

October, I, No. 4, pp. 373-509

9 Report on Cerebrospinal Fever in Royal Navy. H. D. Rolleston.
10 Use of Hypochlorous Acid as Antiseptic in Naval Medical Service. H. E. R. Stephens.
11 Surgical Technic on Board Royal Naval Hospital Ship Drina. R. J. Willan.
12 Possible Recurrence of Mediterranean or Undulant Fever and Its Treatment by Sensitized Vaccines. P. W. Bassett-Smith.
13 Vital Importance of Efficient Training of Naval Ratings in First Aid. R. J. G. Parnell.
14 Mental Conditions as Observed Among Ship's Company of Battleship in War-Time. T. Beaton.

Lancet, London

October 23, II, No. 4808, pp. 901-956

15 *Cases of Tetanus Treated in Home Military Hospitals. **D.** Bruce.
16 Pellagra. F. M. Sandwith.
17 Treatment of Cerebrospinal Fever in Royal Navy. H. D. Rolleston.
18 Traumatic Asphyxia; Report of Case. W. W. Linington.
19 Condition of Lungs during Recovery from Chest Wounds. **T.** G. Brodie and J. J. Mackenzie.
20 Nystagmus and Allied Conditions. J. A. Wilson.
21 Effect of Nauheim Baths on Cardiac Conductivity and Contractility. L. T. Thorne.
22 Anesthesia (General and Spinal) for Suprapubic Prostatectomy. J. D. Mortimer.
23 Cases of Diarrhea from Gallipoli. A. E. A. Ismail.
24 Case of Tapeworm Accompanied by Hemoglobinuria. W. E. Masters.
25 Case of Complete Inversion of Uterus. C. L. Fraser.

October 30, No. 4809, pp. 957-1008

26 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
27 Case of Tetanus of Short Incubation Period (Five Days) with Recovery. R. L. Scott.
28 Four Cases of Congenital Pulmonary Stenosis. D. Martin.
29 Use of Hypertonic Saline Solution in Gynecology. C. White.
30 Three Cases of Concussion Aphasis; Treated by General Anesthesia. A. P. Procter.
31 Case of Self-Inoculation with Bacillus Aerogenes Capsulatus. K. Taylor.

15. See *British Medical Journal,* Abstract No. **4.**

Quarterly Journal of Medicine, London

October, IX, No. 33, pp. 1-65

32 *Clinical Observations on Atrioventricular Rhythm. G. **D.** Mathewson.
33 *Case of Pancreatic Insufficiency. E. I. Spriggs and A. J. Leigh.
34 *Researches on Perfused Heart. W. Burridge.
35 Recent Researches Dealing with Typhoid and Paratyphoid Infections. A. C. Inman.

32. **Atrioventricular Rhythm.**—A case is recorded by Mathewson which displayed a rhythmic change in the mode of the heart's contraction. Graphic records showed that the beat was initiated by the sino-auricular and atrioventricular nodes alternately. A corresponding rhythmic change in the first sound and in an accompanying mitral murmur was observed on auscultation. The rate of the beat during the atrioventricular rhythm was either equal to, or slightly less than, that of the periods of normal rhythm. Observations were made on the effect produced by stimulation and depression of the controlling nerves on the heart's mode of contraction. Recurrent increase of vagal tone is suggested as a possible explanation of the alternating rhythm.

33. **Case of Pancreatic Insufficiency.**—A patient with the symptoms of chronic disease of the pancreas was under the observation of Spriggs and Leigh for twenty-one weeks, in five periods extending over eighteen months. The urine and feces were analyzed for sixty-four days, and compared with the intake of food. Trypsin could not be detected in the feces and Sahli's capsules were not digested. Diastase was present in the urine in normal amount. An average of 1,200 gm. of feces was passed in a day on admission. With the reduction of unassimilable forms of fat in the food the quantity was reduced to 800 gm. in the first period of treatment, much to the comfort of the patient. An average of 302 gm. of fat per day was lost in the motions on admission. This is higher than in any other case the authors have found recorded. From 25 to 59 per cent. of the caloric energy of the food was lost in this way. The proportion of fat in the food which was lost in the feces varied from 55 to 99 per cent. The emulsified fat of milk was much better absorbed than the fat of butter, meat or cod liver oil. The percentage absorbed was less when a large quantity of fat was given.

The proportion of the total fat in the feces which had been split, and was in the form of fatty acids and soaps, was rather more than is normal throughout, the average of fifty-four days' figures being 87 per cent. Variations in the quantity and nature of the fat did not affect fat-splitting appreciably. Nearly half the nitrogen of the food appeared in the feces. Sugar was present in the urine. At first it soon disappeared with suitable food, but each time the patient came under treatment a longer period on a restricted diet was required before the urine became sugar-free. In the intervals of treatment unsuitable food was eaten. There was no evidence of acidosis. Various ferments were used in experimental periods. All except fresh pancreas and trypsogen irritated the intestinal tract. With a proprietary trypsin preparation there was improvement in the absorption of fat, and with a tannin pancreatin compound improvement in the absorption of nitrogen. The general condition of the patient improved considerably with each period of rest and treatment.

34. **Researches on Perfused Heart.**—Burridge claims that the two muscular functions of contractile capacity and ability to contract in respect to excitation by induced shocks are entirely distinct. In every heart examined it was possible by employing potassium salts to demonstrate the presence of a certain capital stock of contractile material. This capital stock is designated C. C is a quantity varying from heart to heart, but constant in value under ordinary conditions in any particular heart. The variations in amplitude of the spontaneous contractions correspond to variations in the proportion of the total contractile material evoked by the normal stimulating agency of the blood. The majority of drugs, though they may cause great variations in spontaneous activity, do not alter the value of C. Its value seems only altered by coagulation or rigor. Two groups of phenomena are described, to each of which the term cardiac failure is applied: (a) Cases in which the amplitude of these spontaneous contractions has increased, but in which by using potassium it can be shown that the capital stock of contractile materials is undiminished—C unchanged; (b) cases in which the amplitude of the spontaneous contractions has diminished, accompanied by a corresponding diminution in the amplitude of the contraction then evoked by potassium—C diminished. The two types may be combined in any one heart. Digitalis can restore the amplitude of the spontaneous contractions toward their original value in cases of the first type only. Accordingly, it is concluded that the condition of the heart in clinical cardiac failure is of that type also.

An examination of cases of the first type shows that the failure in them results from alteration in the relation of the heart to the calcium in the solution perfusing it. Two subdivisions are found. There are: (a) cases in which the heart beats are diminished in amplitude consequent on a decreased tension of calcium in the perfusing solution, the heart itself remaining "normal"; (b) cases in which the composition of the perfusing fluid remains constant, but in which the heart itself reacts less vigorously to calcium than it did originally. The mechanism for maintaining and utilizing the cardiac reserve is suggested to be as follows: The heart has a certain capital stock of contractile material, the activity of which is evoked by the calcium of the blood. Under ordinary circumstances the relations between the heart and the blood calcium are such that the calcium evokes the activity of a certain proportion of the whole. By altering the magnitude of response of the heart to calcium a greater or less proportion of that whole is rendered active. During sympathetic stimulation a given tension of calcium can evoke the activity of greater proportion of the whole cardiac contractile material than was the case before such stimulation. In clinical cardiac failure the response of the heart to such amounts of calcium as are at present in blood is sufficient to maintain an adequate circulation. Digitalis is a drug which enables a given tension of calcium to evoke the activity of a greater proportion of the whole contractile material than is the case in its absence.

Annales de Gynécologie et d'Obstétrique, Paris

September-October, XLI, No. 5, pp. 609-668

36 *Radium Treatment of Cancer of Uterine Cervix. P. Degrais.
37 *Indications for Radium Treatment of Uterine Cancer. Fabre.
38 Is Partial Resection of Sclerous Ovaries Justified? (La résection partielle des ovaires reconnus macroscopiquement scléreux ou scléro-kystiques, est-elle justifiée au point de vue microscopique?) J. P. de Figueiredo. Commenced in No. 4. To be continued.

36. **Radium Treatment of Cancer of the Cervix.**—Degrais remarks that as the term radiotherapy is applied indiscriminately to various forms of application of radiant energy in therapeutics, it is liable to be confused with radium therapy. He suggests therefore the advantage of calling radium therapy "Curie therapy," just as we speak of Roentgen therapy, and for the same reasons. He has now had several years of experience with radium treatment, and regards it as a most valuable aid to surgery, applied after curetting or partial or total extirpation, or as a preliminary to render an inoperable growth operable. Even in the desperate cases, radium may relieve and render the condition more tolerable. The benefit from it in cases beyond the scope of surgery gives it a unique position in treatment of malignant disease. He has a number of patients who seem to be in perfect health, two, three or four years since cross-fire radium treatment of their cancers. He insists on the patients returning to be examined at regular intervals, and sometimes he gives another course of the treatment. In other cases the radium has been impotent to prevent return of the cancer. The indications and technic are discussed in detail. He always tries to utilize all the rays, with suitable filters, the cross-fire exposures including one tube in the rectum.

37. **Radium Therapy of Uterine Cancer.**—Fabre declares that in only about 25 per cent. of the cases of uterine cancer is the growth in a condition so that operative treatment can eradicate the malignant disease. Inoperable and recurring cancers should be treated exclusively with radium, operative measures in these conditions being only secondary and inadequate. On the borders of inoperability, radium may modify the growth until it can be successfully removed. Operable growths should always be removed, but even here radium therapy is important, as it tends to complete the surgical act and ward off recurrence. Ten typical cases are described in detail with the exact technic of the radium treatment applied, and the outcome.

Archives Mensuelles d'Obstét. et de Gynécologie, Paris

October, IV, No. 10, pp. 369-400

39 *Frequency of Coexistence of Myoma and Cancer in the Uterus. J. Olow.
40 *Glucuronic Acid in Urine Test of Liver Functioning in the Pregnant. (La glycuronurie de la grossesse.) R. Jean.

39. **Coexistence of Myoma and Cancer.**—Olow reviews the experiences at the gynecologic clinic of the University of Lund, Sweden. He found eight cases of malignant disease among the 205 operative cases of uterine myoma up to the year 1909. Since then eight new cases have been encountered among 154; 5.2 per cent. were thus complicated with cancer. This percentage is larger than that reported from most clinics, which he thinks is because the microscope is used more regularly at Lund than elsewhere, even when macroscopic indications of cancer are not apparent. The evidence thus presented in regard to the frequent coexistence of myoma and cancer is discussed from the standpoint of treatment of myomas. Consequently he mentions only parenthetically a number of other cases in which myomas were casually found in operating for uterine cancer. The significant fact is emphasized that in the myoma cases reported the presence of cancer had not been diagnosed in any instance before the operation, and had been suspected only in one case. In another case one ovary had been left after removal of nearly the whole of the uterus of a woman of 50, and necropsy in less than a year afterward showed a cancer that had developed from the stump of the ovary. Olow cites MacDonald's article in The Journal, 1909, lii, p. 952, accepting his conclusions. With regard to radium treatment, Olow thinks that if improvement is not promptly apparent, or symptoms recur soon afterward, operative measures should not be deferred further. The influence of radium treatment is particularly favorable on climacteric hemorrhages, and hence if conditions do not rapidly improve malignant disease is almost certain. The data cited suggest the advisability of total hysterectomy for myoma whenever conditions favor it, regardless of whether there is known cancer or not. They also suggest the advantage of removing the ovaries at the same time, when women are approaching the menopause, at least.

40. **Glucuronic Acid in the Urine During Pregnancy.**—Jean gives the simple technic for quantitative tests of glucuronuria, declaring that this should be a routine procedure in examining pregnant women. It should rank with the search for albumin and sugar, as it reflects the functioning of the liver and thus permits the discovery in time of impending insufficiency on the part of the liver.

Paris Médical

V, No. 9, pp. 165-180

41 First Treatment of Skull Wounds. (Traitement des coups de feu du crâne, dans las ambulances de l'avant.) A. Schwartz.
42 *Epidemic Tetragenemia; Thirty-Five Cases. F. Trémolières and P. Loew. Commenced in No. 5.
43 Local Steam Bath for Trophic Disturbances. L. Salignat.
44 Impressions of an Ambulance Surgeon in 1870. A. Le Dentu.

No. 10, pp. 181-196

45 A Laparotomy Service Close to the Firing Line. (Une salle d'opération sur le front.) A. Mignon.
46 Psychiatry and Legal Medicine in the Army. P. Chavigny.
47 Peritoneal Symptoms from Nonpenetrating Wounds of the Abdominal Wall; Nine Cases. J. Quénu.

Nos. 11-12, pp. 197-228

48 Prophylaxis of Cholera in the Active Army. C. Dopter.
49 Differentiation and Treatment of Diarrhea in the Active Army. Sacquépée, Burnet and Weissenbach.
50 Prophylaxis of Bacillary Dysentery. C. Dopter.
51 Prophylaxis of Typhus and Relapsing Fever. J. Renault.
52 Paratyphoid Fever. M. Labbé.
53 Cultivation of Typhoid and Paratyphoid Bacilli from the Blood. D. de la Rivière and J. Leclercq.
54 *Atypical Acute Meningitis. Lacoste and L. Boidin.
55 *Acute Meningitis Following Antityphoid Vaccination. (Démonstration de l'origine toxinique de certaines réactions puriformes aseptiques des méninges.) Moussaud and R. J. Weissenbach.

No. 13, pp. 229-244

56 After-Treatment of Wounded Nerves. (Technique de la libération des nerfs blessés.) O. Laurent.
57 Arrangement for Model Contagious Hospital in Connection with the Active Army. D. de la Rivière.

42. **Tetragenus Sepsis.**—Only one of the thirty-five patients died from the tetragenemia alone, but mixed infection seemed peculiarly grave. One patient died from tetanus; in another case the tetragenus seemed to be responsible for the flaring up of tuberculous or streptococcus processes. The pleura and lungs seem to be the favorite points where the tetragenus locates, and convalescence from the tetragenemia is long and tedious, with frequent relapses. The diagnosis was confirmed by the pronounced auto-agglutination when the patient's serum was added to a fresh culture of the microbe isolated from his blood. Clumping was marked in from half an hour to an hour and a half, while control cultures showed no change. The tetragenus is said to be a harmless dweller in the mouth, but it seems to acquire virulence under certain conditions. Forty-seven healthy men were examined in seeking for carriers, and the tetragenus was found in four. When it invades the blood and settles on the lungs and pleura, it is liable to induce pneumonia, congestion of the lungs and pleurisy of various types. In its milder forms, tetragenemia simulates influenza, and in the severe forms, typhoid and paratyphoid. Cultivation of the germ from the blood and the specific seroreaction indicate that it is a morbid entity that deserves consideration in the pathology of the troops.

54. **Atypical Meningitis.**—In three cases of meningitis with limpid spinal puncture fluid, one was tuberculous and the others the work of the Friedländer bacillus or of a paracolon bacillus. In six cases with turbid fluid only two were due to the meningococcus; in two others there was evidently an aseptic effusion. In both these cases the men suddenly developed severe headache with vomiting, pain in the spine and temperature of 40 C. (104 F.). One had herpes. Both men were given an injection of 40 c.c. of antimeningococcus serum and prompt recovery followed. Although the fluid looked turbid, yet the polynuclears were intact and the sugar and albumin were in normal proportions and there was no coagulation of fibrin, and no microbes could be cultivated from the fluid. It seems as if the meningitis in these cases must be the work of some germ not revealable by our present technics to date, but the infection, if such it be, is mild and tends toward a spontaneous cure. The series of atypical cases related were all sporadic, with no apparent connection between them except that they all occurred within a comparatively brief period.

55. **Aseptic Puriform Meningitis.**—In the case reported in detail a robust young man developed acute meningitis after his third inoculation against typhoid. Epidemic meningitis was suspected at first, but the fluid on lumbar puncture was sterile and merely puriform in aspect. Improvement was evident within twenty-four hours of the single evacuating lumbar puncture; the headache subsided, he ceased to vomit and the temperature went down. Two days later the stiffness of the neck and Kernig's sign also disappeared and lumbar puncture showed a clear fluid, normal except for a few lymphocytes. No focus of infection in the meninges or elsewhere could be discovered. It was learned later that the second antityphoid inoculation had been followed by violent headache, fever, chills and vomiting, the malaise keeping up for two days. The main differential features distinguishing the puriform from the purulent form of meningitis is that the polynuclears are intact and that the course is mild and brief. The case reported demonstrates anew that microbian toxins are able to irritate the meninges without the presence of living microbes.

Presse Médicale, Paris

October 11, XXIII, No. 48, pp. 393-400

58 *Distant Dystrophy of Muscles in the Wounded. (Sur certaines dystrophies musculaires du type myopathique consécutives aux traumatismes de guerre.) H. Claude, A. Vigouroux and J. Lhermitte.
59 Abortive Treatment of Infection in Wounds. (Traitement abortif de l'infection des plaies.) A. Carrell, Dakin and Others.
60 *Filtration of Boiled Water for Intravenous Injection. (Nouvelle simplification de la technique des injections intra-veineuses concentrées d'arséno-benzol.) P. Ravaut.

October 14, No. 49, pp. 401-408

61 *Prophylaxis and Treatment of Venereal Diseases in the Active Army. F. Balzer.
62 *The Toxins of Intestinal Worms. D. E. Paulian.

63 Ligation of Carotid Arteries. A. Broca.
64 Abortive Tetanus with Long Incubation and Protracted Evolution. H. Claude and J. Lhermitte.

October 21, No. 50, pp. 409-416

65 The Thumb Sign in Ulnar Paralysis. (La préhension dans les paralysies du nerf cubital et le signe du pouce.) J. Froment.

58. **Atrophy of Muscles in Wounded Soldiers.**—This communication refers to trophic disturbances in muscles which apparently have little or no connection with the wound. An illustrated description is given of four typical cases. The atrophy develops independent of any detectable lesion in the central or peripheral nervous system, and seems to be the result of nutritional disturbances in the muscle, primary or secondary to some reflex irritation. The men had all been wounded but at some point more or less remote from the scapular region which was the usual site of the muscular anomalies. The ultimate outcome is a question which time alone can answer.

60. **Intravenous Injections Without Distilled Water.**—Ravaut relates that distilled water is not to be had in his service near the firing line. He has found that it can be dispensed with and ordinary contaminated water used without harm, by the simple precaution of pressing the tip of the syringe down on a wad of cotton at the bottom of the dish in which the water has been boiled. By aspirating the water thus into the syringe through the thick wad of cotton. the water is effectually filtered and he makes the intravenous injection without apprehension.

61. **Prophylaxis of Venereal Diseases.**—Balzar reviews the experiences in this line in different armies during the present and other recent wars. He emphasizes the responsibility of the military medical authorities in supervision and control of sources of possible infection, in early detection of infection, and most effectual treatment. His recommendations for abortive treatment are based on his long experience at the Saint Louis Hospital in Paris. He insists that a special record must be kept by the physician of each case of gonorrhea or syphilis, and an individual record given each patient which he should present to each physician to whom he applies. These individual cards might be utilized for brief instructions and warnings as to the gravity of the disease. As models in this line he cites the bulletins issued by the Société de Prophylaxie sanitaire et morale during the last fifteen years, and Guiart's recent work, "Syphilis et blennoragie."

62. **Toxins of Helminths.**—Paulian injected guinea-pigs with alcoholic extracts of various intestinal parasites, including ascarides, oxyuris and tenia. Other tests were made with macerations of their bodies. He found evidences of severe toxic action, from congestion and hyperemia to actual degeneration of tissues, loss of resisting powers of the red corpuscles, intense anemia and eosinophilia. The nervous disturbances and even the eosinophilia may be regarded, he thinks, as phenomena of anaphylaxis. His findings confirm those reported by others except that he never detected the lesions described by Rachmanov in the nervous elements. The organs predominantly affected were the spleen, kidneys and liver, the latter showing fatty degeneration in one animal. The suprarenals were always hyperemic and with intertrabecular hemorrhages.

Berliner klinische Wochenschrift

October 18, LII, No. 42, pp. 1081-1104

66 Itching and Pain. (Jucken und Schmerz.) P. G. Unna. To be continued.
67 *Production of Bile Pigment Outside the Liver. (Ueber anhepatische Gallenfarbstoffbildung.) A. A. H. van den Bergh and I. Snapper (Groningen).
68 Standard Weight for Adults. (Die Gärtner'sche Normalgewichtstabelle für Erwachsene.) G. Oeder.
69 Experiences with Infectious Diseases in Field Hospital. Grundmann. To be continued.
70 *Hard Filtered Roentgen Rays in Treatment of Skin Diseases. F. M. Meyer.

67. Practically the same article was summarized in The Journal, Sept. 4, 1915, p. 913.

70. **Filtered Hard Roentgen Rays in Treatment of Skin Diseases.**—Meyer enumerates a number of advantages from using filtered hard rays, among them the less danger of a reaction, the shorter exposures required, and that various skin affections refractory to ordinary Roentgen treatment yield to the filtered hard rays, as he describes in detail.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 2, XLV, No. 40, pp. 1249-1280

71 *Treatment of Tetanus. T. Kocher.

October 9, No. 41, pp. 1281-1312

72 Blood Findings Reveal Leukemia in Puzzling Cases. (Die hämatologische Diagnostik der Leukämien.) A. Suter.
73 *Experiences with Smallpox. Tièche.

71. **Treatment of Tetanus.**—Kocher discusses some recently published cases of tetanus developing after prophylactic serotherapy and under magnesium sulphate treatment, and exonerates these two measures. In his own last three cases, the one adult died of pneumonia when the tetanus was under control. The two children were brought through safely. The tetanus was extremely severe in one of them, a boy of 10, with a six-day incubation and no antitetanus serum. Magnesium sulphate was given freely to keep the muscles constantly relaxed, first subcutaneously, then intramuscularly, to a total of 315 gm. of the sulphate, in a 25 per cent. solution, in the course of eighteen days. Kocher reiterates that the main point is to gain time, tiding the patient along until enough antibodies are produced to neutralize the tetanus toxin. The magnesium sulphate helps to tide the patient through this waiting period, and Kocher announces that by fractioning the maximal dose over the twenty-four hours it can be given for from six to eighteen days without harm. He regards his recent experiences as suggesting great progress in that they show that it is not necessary to give the full dose at one time, but that it can be distributed over the twenty-four hours, commencing with the largest fraction of the dose, and reaching the total dose of 1.5 gm. per 1 kg. weight before the close of the twenty-four hours. The severer the case, the larger the portion to be given at first, and it may be well to inject it into a vein or into the spinal canal.

He insists further that it is not necessary to give enough of the drug to relax the muscles completely; all that is necessary is to reduce the excitability of the centers to the point that the paroxysms no longer occur, even although some stiffness persists. Managed in this way, there is practically no danger of paralysis of the respiration. This is explained by Straub's discovery that the paroxysm-producing overexcitability subsides before the ability to respond to physiologic stimuli becomes paralyzed. He also comments on the cumulative action of the drug and its rapid elimination. The latter proceeds most rapidly after intravenous injection; next, after intramuscular, and most slowly after intraspinal injection. Kocher advocates prophylactic subcutaneous injection of 10 c.c. of antitetanus serum, repeated the fifth, eighth and twelfth days. If the magnesium sulphate is given by intraspinal injection he has the patient lie flat, only the head, not the neck, on a pillow. If the muscles of the trunk and chest do not relax, the head must be lowered, the whole body slanting downward. The deep narcosis which this induces is useful, but there is danger of arrest of respiration. He keeps the Meltzer apparatus beside the bed, ready to use it at the first sign of trouble, but he uses oxygen instead of air. The heart is not affected by the sulphate, and he emphasizes that the respiration stoppage is really not dangerous under proper care.

73. **Smallpox.**—Tièche relates a number of incidents from two recent visitations of variola in Swiss cantons where vaccination is not compulsory. The cases were mostly in imported laborers, but several occurred in persons who had been twice vaccinated. One unvaccinated small child developed smallpox in a building that had been used to house a few smallpox patients. The interval since the last case had been twenty-seven months, and the premises had been supposedly thoroughly disinfected at the time. His further

experience has confirmed the reliability of the skin allergy reaction in differentiating variola from varicella. (Described in The Journal, Nov. 7, 1914, p. 1702.) He relates several cases in which it proved a great convenience, definitely clearing away the suspicion of smallpox in hotel inmates or demonstrating the necessity for their immediate isolation.

Medizinische Klinik, Berlin

October 10, XI, No. 41, pp. 1119-1146

74 *Treatment of Suppurating Wounds of the Knee. (Zur Behandlung eiternder Knieschüsse.) H. Schloffer.
75 Surgical Preliminaries for a Functionally Capable Artificial Hand. (Chirurgische Vorarbeit für eine willkürlich bewegliche künstliche Hand.) F. Sauerbruch.
76 Experiences of a Surgeon During the Siege of Przemysl. R. Pamperl.
77 Importance of Dosage and Filtering in Roentgen Depilation. F. M. Meyer.
78 Simple Technic for Secondary Amputation. W. Pfeilsticker.
79 Fenestrated Plaster Casts for First Treatment of Fractures in War. (Erhebungen über die Brauchbarkeit der gefensterten Gipsverbände für die erste Behandlung der Schussfrakturen im Kriege.) C. Hempel.
80 Frame to Hold Stretchers for Operations. A. Partos.
81 First Measures in Case of Fracture. H. Spitzy and A. Hartwich. To be continued.

74. **Treatment of Suppurating Knee.**—Schloffer has been surprised by the excellent results obtained by opening up the suppurating joint, and immobilizing it held at an acute angle. He has applied this technic in eleven cases and was able to save the limb when amputation seemed otherwise unavoidable. The condition at the *Aufklappung* and the outcome later are shown in eight illustrations, and the advantages over resection are extolled. Even when bone has been shattered, resection may be restricted to removing merely the loose scraps.

Münchener medizinische Wochenschrift, Munich

October 12, LXII, No. 41, pp. 1381-1416

82 *Anaerobic Sepsis. B. O. Pribram.
83 Experiences with "Partial Antigen" Treatment of Tuberculosis. (Erste Erfahrungen mit Deycke-Muchschen Tuberkulosepartialantigenen im Hochgebirge.) W. Müller.
84 Early Exercises with Extension Dressings. (Frühmobilisierung im Zugverband.) A. Ziegler.
85 The Prothesis Question after Amputations. Spitzy.
86 Treatment of Gunshot and Shell Wounds of the Upper Arm. (Kriegsverletzungen des Oberarms.) E. v. Redwitz.
87 Mechanical Protection against Flies. (Zur Bekämpfung der Fliegengefahr.) Seelhorst.
88 Experiences in a Field Hospital. E. Sonntag. Commenced in No. 40.
89 Experiences of a Troop Medical Officer. (Erfahrungen eines Truppenarztes.) Haehner. Commenced in No. 40.
90 Roentgen Localization of Foreign Bodies, especially in Eye and Orbit. L. v. Liebermann, Jr.
91 Denunciation of Collective Inquiry on Sexual Abstinence. (Sammelforschung der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten über die Frage der sexuellen Abstinenz.) R. Schaeffer.

82. **Anaerobic Sepsis.**—Pribram found anaerobic bacteria of different kinds in the blood in some severe cases of gas phlegmon. He declares that the organism seems to be perfectly helpless against this invasion of the blood by the anaerobics, as their products cause rapid coagulation of the blood. From the finest capillaries to the larger vessels, all become plugged with thrombi, thus shutting off the oxygenated blood which would be unfavorable for the anaerobes. They can thus proliferate unmolested in the dead tissues, which amply explains the gravity of the gas phlegmon process. Even deep incisions into the region bring no blood; this is more characteristic of anaerobic infection than the production of gas. As long as anaerobes are limited to this region there are no general symptoms except the fever. But when they break into the circulation, the respiration becomes like that of diabetic coma, the blood pressure declines, the body grows cold, and death follows from gradual failing of the heart. During this phase bacteriologic tests of the blood always gave positive findings. Necropsy a few minutes after death showed the heart and coronaries full of bubbles, and in some cases the liver, kidneys and spleen were foamy—all, he thinks, the result of the production of carbon dioxid in the blood vessels. Some cases are described in detail. Pribram reiterating that there are scarcely any other bacteria against which we are so powerless as anaerobics when they have an opportunity to localize in broad masses of muscles. He adds that possibly serology may yet provide us with a weapon against them.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 36, pp. 965-992

92 Peculiar Features of War Typhoid. G. Herrnheiser.
93 *Nephrotyphoid. F. Deutsch.
94 Reaction Disturbances after Inoculation against Typhoid. M. Löwy.
95 Alimentary Toxic Polyneuritis in Mother and Daughter. G. Bikeles.
96 *Test for Urobilin in Urine and Stool. A. Edelmann.
97 Suggested Chart for Record of Action of Therapeutic Measures to Permit Comparison Better. (Vorschläge zu einer geregelten Heilstatistik.) O. Klaus.

No. 37, pp. 993-1020

98 *Motility Test for Typhoid Bacilli in Water. M. V. Carbonell.
99 Treatment of False Aneurysms. Zahradnicky.
100 Anise Oil in Treatment of Scabies. A. Perutz.

No. 38, pp. 1021-1048

101 *Detection of Tendency to Epilepsy. S. Jellinek.
102 Wounds of the Skull. (Erfolge und Misserfolge bei der operativen Behandlung der Schädelschüsse.) B. O. Pribram. (Ueber Schädelschüsse.) M. Maresch.
103 Charcoal in Sterilization of Fluids. R. Kraus and B. Barbara.
104 Sources of Error in Bacteriologic Diagnosis of Dysentery. H. Egyedi and W. Kulka.
105 Gas Phlegmons. M. Cernic.
106 Inoculation of Army against Typhoid. K. Russ. Commenced in No. 37.

93. **Typhoid Nephritis.**—Deutsch relates that three persons in one house developed in turn acute nephritis with high fever. It proved to be the only local manifestation of typhoid fever. Typhoid bacilli were found numerous in the urine in one case the fourth day and also in the blood. The bacilli in all the cases were persistently serum-proof, not clumping at 1 : 50. The patients were children; the intervals between the cases were eleven and four weeks.

96. **Test for Urobilin in Urine and Stool.**—Edelmann's test is a modification of Schmidt's test for feces, which is based on the red pigment formed when dissolved feces are treated with a concentrated aqueous solution of mercuric chlorid. By using an alcoholic solution, he states, the reaction is much more pronounced. One of the two reagents is a 10 per cent. alcohol solution of mercuric chlorid. The other reagent is a 10 per cent. alcoholic solution of zinc chlorid and amylic alcohol. Only one or two minutes are required for the test, and its simplicity adapts it, he reiterates, for bedside use.

98. **Motility Test for Differentiating Typhoid Bacilli in Water.**—The Journal described Sept. 4, 1915, p. 908, the U tube, with sand in one side, through which motile bacteria readily make their way. The nonmotile stay in the sandless side in which they were all placed originally, while the motile typhoid bacilli make their way through the sand and proliferate above it.

101. **Detection of Tendency to Epilepsy.**—Jellinek lists the points which differentiate a true epileptic seizure from a hysteric spasm. Among them he notes that in true epilepsy the face muscles twitch predominantly while in hysteria the muscles of the trunk or limbs are most affected. With epilepsy the spasmodic movements are synchronous on one side of the body. In hysteria it is the whole of the upper part of the body or the legs alone that are mainly affected. After an epileptic seizure the individual feels prostrated and takes long to recover, while recuperation is rapid and complete after a hysteric attack. He adds that the Babinski toe sign, plantar flexion of the big toe, seems to be a reliable sign of true epilepsy. He found it constant in all his cases of epilepsy while the sign could never be elicited in any of his numerous hysteria cases.

Zeitschrift für Tuberkulose, Berlin

September, XXIV, No. 5, pp. 321-400. Last indexed Oct. 9, p. 1315

107 *Origin of Tuberculous Apical Lesions. (Betrachtungen über die Entstehung der tuberkulösen Lungenspitzenphthise. V.) C. Hart.
108 *Tuberculosis in the Active Army. (Die Tuberkulose im Heere zur Zeit des Krieges.) G. Schröder.

109 *The War and Pulmonary Tuberculosis. (Krieg und Lungentuberkulose.) H. Grau.
110 Tuberculosis in the Prisoners of War. (Die Tuberkulose der Kriegsgefangenen.) G. Liebe.

107. **Factors Leading to Apical Tuberculosis.**—Hart reviews much of the literature on this subject in this fifth article of the series. His own view is that a constitutional predisposition is the most important factor that determines the direction of the individual's fate so far as tuberculosis is concerned. The mode of life, the environment, unhygienic conditions in general breed tuberculosis only as they develop a latent into a well defined predisposition. Bacmeister contends that in children a localized and healed tuberculous focus in the lung might deform the upper aperture by muscular contraction in Pottenger's sense. Hart rejoins to this *Man soll nicht päpstlicher als der Papst sein.* Pottenger's theory presupposes a primary apical process, and this, we all know, is a great rarity in children, while in adults deformity of the aperture precedes the development of the tuberculous apical process. Hart insists that conclusions drawn from experiments on dogs cannot be applied to man. He has devised a method for experiments on monkeys which he thinks seems very promising, and he has not given up the hope that some day he may have the means to undertake research in this line. He is convinced that tubercle bacilli can exist as saprophytes in the lungs, or, as Liebreich expresses it, as nosoparasites. There may be functional, secondarily acquired and congenital factors cooperating, mechanically inducing a predisposition in the apex region for defective circulation of blood and lymph, thus providing conditions favoring localization of tubercle bacilli.

108. **Tuberculosis in the Active Army.**—Schröder remarks that the war conditions are like a laboratory experiment on a vast scale to decide certain questions as to the etiology of tuberculosis. The importance of a constitutional predisposition is exemplified again and again in the men who develop tuberculosis in active service. They all had had some tuberculous process early in life, but it had healed in time and the men were sound to all intents and purposes. Then came the war, with its tremendous demands on heart and mind, physical deprivations, powerful emotional stress, and inadequate or defectively cooked food, colds, etc. These factors are liable to rouse the latent, practically healed old foci and fan them to a flame, or start new endogenous foci elsewhere, the physical exertions of active service whipping up the circulation of blood and lymph and aiding in disseminating the germs. He knows to date of no instance of tuberculous processes developing in bones or joints in connection with external injuries, but these injuries, by lowering the resisting powers, favor metastasis.

All these factors act more potently in case of constitutional physical inferiority. On the other hand, the out-of-door life, muscular exercise and strengthening of the will power aid in combating the action of the invading germs so that in many cases the old latent foci remain latent, and the number of men developing active tuberculosis is less than might be expected. At the same time, early recognition of the flaring up of the old process and a prompt course of sanatorium treatment arrest the autoreinfection in many cases, so that there is every prospect that a not inconsiderable number of the men can be restored to the army in time. The main thing, therefore, is to distinguish between active and inactive cases, that is, those not requiring treatment. He outlines the examination necessary to determine this, including the minute inspection of all the organs, weighing the previous history, and signs of constitutional inferiority, unstable pulse, anemic heart murmurs and weak heart action, examination of the upper air passages and ears, taking the mouth temperature morning and afternoon every two hours and the temperature in the rectum before an hour's walk, after it, and again after half an hour of repose. The subcutaneous tuberculin test is not a reliable criterion as to whether a focus is active or latent, while he has seen harm result from it. The skin test is decisive for the diagnosis only when it is negative, but it may aid in the prognosis as a pronounced response to the graduated titration test, in the absence of signs of active tuberculosis, indicates a favorable prognosis. He says of tuberculin treatment that artificial production of "anergy" by no means signifies a cure of the tuberculosis, an acquiring of immunity, but rather the reverse. Individuals thus artificially rendered tuberculin-proof seemed more inclined to relapses than those not taking tuberculin. The proportion of soldiers recovering clinical health after a course of sanatorium treatment is larger than among civilians. At the Schömberg sanatorium only 3.4 per cent. of the 200 died or were dismissed as incapable of further military service.

109. **The War and Pulmonary Tuberculosis.**—Grau gives his impressions from observation of 100 tuberculous men at the Rheinland sanatorium. In two cases the men were unusually well developed but there was a suspicion of tuberculosis in the history, and after a period of exhausting overexertion both developed a febrile tuberculous process in the costal periosteum. The local process has persisted unmodified during the six months since, with occasional febrile periods. In some other cases, the inoculation against typhoid seemed to rouse a sleeping tuberculous focus, with prolonged fever afterward. In these and the rib cases the specific resisting power of the organism seems to have been unfavorably modified. A number of other interesting cases are described, the war affording typical examples of the numerous different causes that are liable to induce tuberculosis.

Pediatria, Naples

October, XXIII, No. 10, pp. 689-752

111 Connection between Rachitis and Inherited Syphilis. (Sul cosidetto "rachitismo sifilitico.) S. Mura.
112 Streptothrix Cerebrospinal Meningitis in Six-Months Infant. G. Rutelli.

Policlinico, Rome

October 10, XXII, No. 41, pp. 1365-1400

113 The Soldier's Ration. (L'alimentazione del soldato.) G. Dragotti.

October 17, No. 42, pp. 1401-1436

114 Lesions of the Nose and Accessory Cavities in War. G. Ferreri. Commenced in No. 40.
115 *Revulsion with the Actual Cautery in Treatment of Inflammatory Tuberculous Processes. (Le punte di fuoco nella terapia delle cosi dette tubercolosi inflammatorie.) A. Maffi.
116 Artificially Induced Lesions and Workmen's Compensation. (Le lesioni artificiali negli infortuni sul lavoro.) S. Diez.

October, Surgical Section, No. 10, pp. 463-500

117 Treatment of Gunshot Wounds of the Shoulder. (2 casi di ferite di arma da fuoco a pallini della spalla.) O. Cignozzi.
118 *Effectual Biochemical Action of Copper Sulphate in Treatment of Uterine Cancer. (Cancro dell' utero guarito col solfato di rame.) L. Manara.
119 Deviation of Complement Test in Echinococcus Disease in Man. L. C. Zapelloni. To be continued.
120 Mixed Tumors of the Palate. G. Morone. To be continued.

115. **The Actual Cautery in Revulsion Treatment of Inflammatory Processes.**—Maffi states that laymen in his country have an exalted opinion of the efficacy of revulsion with the actual cautery applied at numerous points over and around a long continued inflammatory process. This is also a favorite therapeutic measure of French physicians, especially in country practice. In a recent case of a tuberculous process in the knee, after failure of other measures, he yielded to the patient's insistence and applied the actual cautery at fifty points to encircle the knee. The spontaneous pain subsided at once; in forty days the patient was able to get up and in another month to walk without pain or further impairment of function. Encouraged by this experience, he has applied the measure since in all forms of what Poncet calls inflammatory tuberculosis, joint troubles, ostitis, neuralgia, synovitis, etc., and has obtained surprising effects, he relates, with revulsion in this way as an adjuvant to repose, fresh air and sunlight. He uses the ordinary thermocautery, with a blunt point, about 4 or 5 mm., and plunges it into the derma, sometimes to a depth of 1 cm. as in a case of sciatica rebellious to all other measures. After cauterization in this way at 100 different points on the buttocks and rear of the thigh, the neuralgia subsided promptly and permanently. After the cauterization he applies gauze with a little borated petrolatum. Change to a country life is always the surest means to cure in all such cases. He reiterates that this

form of revulsion with the actual cautery is always harmless and was borne perfectly even by his most sensitive patients.

118. **Copper Sulphate in Treatment of Cancer.**—Manara gives a number of views of the microscopic findings in a case of cancer of the cervix in a woman of 49. They show the varying aspect of the pus and scrapings from the cancer during a course of copper sulphate treatment, with final cure and no signs of recurrence during the months that have elapsed since. The woman had refused an operation and treatment was merely a daily intramuscular injection in the buttocks of a 1 per cent. solution of ammoniacal copper sulphate in distilled water. He relates that the glycogen in the neoplasm transforms the copper sulphate reaching it, into copper oxid. Under the caustic action of this copper oxid the cancer tissues swell and break down into an amorphous mass. This arrests the growth of the cancer which thus becomes transformed into an afebrile, mild inflammatory process which gradually heals. The course of these changes can be traced in the microscopic findings reproduced in the typical cases reported, all of which confirms his previous announcements on the subject. Cancer elsewhere than in the uterus is less protected against injury from without or from digestive juices, etc., so to date he commends the copper sulphate treatment only for uterine cancers.

Riforma Medica, Naples

October 9, XXXI, No. 41, pp. 1121-1148

121 *Successful Use of Quinin in Mild Protracted Fevers. (La cura chininica delle febbricole.) G. Rummo and L. Ferrannini.
122 Congenital Hernia of the Diaphragm. C. Volpe.
123 Pneumococcus Empyema and Peritonitis. L. Della Valle.

121. **Quinin in Chronic Mild Fever.**—Rummo and Ferrannini refer to cases that seem to be common in Italy in which the temperature runs up a trifle above normal at some time in the day, and this keeps up for weeks or months. When tuberculosis and syphilis can be excluded, they have found that a large dose of quinin by the mouth for a ten-day period restores the temperature permanently to normal in 80 or 90 per cent. of the cases. There does not seem to be any specific effect from the quinin but merely an antiseptic and antitoxic influence on the blood, which exerts an unfavorable action on all micro-organisms with which it comes in contact. Test tube experiments confirm the inhibiting influence of quinin on development of the colon and paratyphoid bacilli and others. A few typical instances of what they call "*febbricole*" are described showing the effectual action of the quinin, with a few refractory cases. Among the latter are two women who have had abnormally high temperature during part of the day, as a rule, for eight or nine years. Serologic tests have been constantly negative and several courses of quinin have not modified the temperature in any way. The daily dose is 1 or 1.5 gm., fractioned, taken while the temperature is at its lowest range. If one course is not effectual, they repeat it after a pause of four or five days. If three of these courses fail they accept the case as refractory and cease to push the quinin. The functioning of the kidneys and liver must be carefully supervised throughout.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 25, II, No. 13, pp. 1559-1646

124 *Research on Phagocytosis Suggests an Explanation of Certain Features of Chloroform Anesthesia. (Verklaring van het excitatiestadium der chloroformnarcose in verband met onderzoekingen over phagocytose.) H. J. Hamburger.
125 *Conjunctivitis Probably Part of Clinical Picture of Foot-and-Mouth Disease in Young Man. (Een geval van mond- en klauwzeer met oogverschijnselen?) L. A. Faber, Jr.

October 2, No. 14, pp. 1647-1726

126 *Importance for Diagnosis and Prognosis of Retention of Nitrogen in Chronic Nephritis. (Over stikstofretentie bij chronische nephritis.) R. R. Rochat and M. Hijmans.
127 *Clinical Importance of the "Urea Index" in Chronic Kidney Disease. (De klinische waarde van de onderzoekingsmethoden volgens Widal-Ambard bij chronisch nierlijden.) D. Klinkert. Commenced in No. 13.
128 Disturbance in Executing Volitional Movements. (Over sommige stoornissen in de uitvoering van eenvoudige, willekeurige bewegingen.) W. Van Woerkom. Commenced in No. 12.
129 Mucilaginous Seeds to Combat Constipation, especially Plantain Seeds. (Het zaad von plantago major als afvoermiddel.) H. and J. Pinkhof.
130 Recurrence of Quartan Malarial Fever after Intermission of Forty-Two Years. I. van der Heijden.

124. **Factors Causing Agitation Phase in Chloroform Anesthesia.**—Hamburger has been studying the process of phagocytosis as influenced by drugs. He mixed fine charcoal or sawdust with leukocytes in salt solution and counted the number of leukocytes that had incorporated the foreign particles, counting them before and again after a drug had been added to the suspension of leukocytes. In this simple way he was able to sift out the drugs that promoted from those that depressed phagocytosis. Minute quantities of calcium always augmented phagocytosis, suggesting the use of calcium in treating wounds. Iodoform has a similar influence, but iodin checks phagocytosis abruptly. Iodoform and likewise chloroform and all other substances tested which dissolve fats, lipoid substances, all have a pronounced accelerating influence on phagocytosis when in very dilute solutions. The results of recent research indicate that the outer layer of certain cells consists of a lipoid substance. As the drugs of this class, including chloroform and benzol, dissolve this lipoid coating, the ameboid movements are facilitated, and phagocytosis is thus promoted. When the drug in question is in a stronger solution, then it does more than merely dissolve the outer coating of the cell; it gets inside and acts on the body of the cell, paralyzing it, and hence all ameboid movements cease, and phagocytosis is completely arrested.

Hamburger tested further whether the presence of oxygen had an influence on these phenomena, and found to his surprise that phagocytosis was most pronounced the less oxygen present. Study of this phenomenon revealed its close analogy with the behavior of the functioning of the respiration center. The latter is stimulated by carbon dioxid and depressed by oxygen. When respiration is impeded, the oxygen content of the blood becomes low and thus also the amount of oxygen reaching the respiration center; the latter under the influence of this becomes stimulated above the normal conditions. The circumstances are thus like the acceleration of phagocytosis, and in both conditions, the stimulation carried too far forces the cell and the respiration center to excessive functioning, which leads to paralysis in time—the respiration center ceasing to work. The functioning of the respiration is thus shown to be not a special phenomenon, but a general property common to all nerve cells.

It is possible that the vomiting center might be influenced by inhalation of oxygen; deep breathing alone might bring sufficient oxygen to depress the functioning of the vomiting center and thus arrest the tendency to vomit. Experiments with potassium cyanid showed that this also stimulates both the respiration center and phagocytosis, probably because it prevents them from getting the oxygen present, and thus acts like deprival of oxygen by other means. Carbon dioxid also affects the respiration and phagocytosis in the same way, first stimulating and then forcing the stimulation to excess and consequent paralysis. It is possible that this may explain in part the benefit from Bier's stasis hyperemia. The higher nerve centers probably feel the effects of deprivation of oxygen, the same as other cells, and they are thus stimulated to extra functioning when oxygen is shut off. This is what happens when chloroform is given. When the patient has inhaled a little, at the very beginning of the anesthetization, the small amount of chloroform thus taken checks the gas interchanges, thus shuts off the oxygen supply to the brain cells, and they are stimulated to extra functioning. This is manifested clinically by the phase of agitation. Then the overstimulation brings paralysis, and we say the anesthesia is complete. In conclusion, Hamburger describes what he calls "endochemotaxis," which explains the mechanism of ameboid movements in general.

125. **Foot-and-Mouth Disease in Man Involving the Eyes.**—The young man applied for treatment because vision had become impaired in the last twenty-four hours, and there was a feeling of oppression over the eyes. Otherwise he felt well, but vision was 1 : 100 and 1 : 60 in the right and left eyes, respectively. The fundus seemed normal the first

day, but the next day showed some congestion in the retinal vessels. Glasses brought no improvement in vision. The ophthalmologist ascribed the disturbances to the fact that the young man had been doing some work with a benzin flame. Fever and a chill developed the day after the disturbance in vision was noted, and during the following week lesions developed in the mouth and on the soles suggesting foot-and-mouth disease, as also on the genital organs. There was no fever after the first day, but conjunctivitis and iritis developed, and by the twenty-third day vision was still only 1 : 3, and embolic foci were evident in the fundus; no leukocytosis, no eosinophilia, no Wassermann reaction. The mouth lesions had not entirely retrogressed and there was still some conjunctivitis the fourth week. By the end of the second month, vision was normal and there were no further symptoms. The only trace of the trouble left was a slight tendency to night blindness. Some cases of foot-and-mouth disease in cattle were known in the district. The young man never drank raw milk but, being a coppersmith, he mended milk cans. Others have reported involvement of the genital region in foot-and-mouth disease, but Faber knows of no case on record with involvement of the eyes, and he is not positive as to whether this was the correct diagnosis in his case. The blisters burst and ulcerated. The lesions on the feet and hands were all below the ankle and wrist.

126. **Retention of Nitrogen in Chronic Nephritis.**—Rochat and Hijmans have been investigating the urea content of the blood in 110 persons with healthy kidneys, as they describe in detail. The range was from 0.117 to 0.667. Computed by Ambard's formula, the range in 112 persons was below 0.09. Accepting 1.00 as the standard in health, not one of the healthy subjects surpassed this, while the patients with chronic kidney disease always gave a much higher figure, and the increasing urea content was always paralleled by aggravation of the clinical symptoms. The discovery of a high urea content often cleared up a puzzling diagnosis, before any definite symptoms of uremia became apparent. A number of experiences are related, all confirming the simplicity and reliability of the Ambard formula for sifting out the cases of kidney disease with retention of salt. This gives the clue to treatment and saves inflicting useless restrictions on the patients. With retention of nitrogen, of course, nitrogenous food should be restricted and the calories supplied in other ways. He lists for comparison some of the more common foods showing that 100 gm. each of sugar and butter represent 400 and 786 calories with no albumin; 100 gm. rice and bread, 253 and 235 calories with 7 gm. albumin; while 299 gm. potatoes represent 276 calories with 6 gm. albumin; 200 gm. green vegetables, 6 calories with 5 gm. albumin; 50 gm. meat, on the other hand, has 10 gm. albumin to 66 calories. Ambard's formula and the bases for it have been described in The Journal; one communication on the subject was published March 7, 1914, p. 813.

127. **The Ambard Formula in Chronic Kidney Disease.**—Klinkert reports fourteen cases of chronic nephritis in which the course was traced with Ambard's formula (see preceding abstract). Three of the patients were men of 24 or 30 with albuminuria, but the Ambard formula showed constantly normal figures for the urea index, and the course of the cases confirmed the assumption that there was merely a tendency to orthostatic albuminuria. When a normal Ambard index is confirmed by a normal response to the test ingestion of 20 mg. urea on a test diet, the suspicion of chronic kidney disease, even in its earliest incipiency, is rendered untenable. In three other cases the Ambard formula warned of impending danger and by dietetic restrictions based thereon the danger was averted, the headaches cured and the Ambard index brought to normal.

The value of the blood-urea index seems to be confirmed anew by the fifteen cases related. There is retention of nitrogen in all forms of uremia, and although the patient may seem not to be incommoded by it, yet his life hangs by a thread unless the diet is regulated to keep down the nitrogen to a low point and thus leave little to be retained. The urea content of the blood is thus reduced and the patient's symptoms improve as a rule, but not invariably. Uremic poisoning is not a simple quantitative retention; it is probably above all a qualitative dyscrasia. How otherwise, he remarks, can we explain the polyuria, pruritus, etc., liable to develop before, with our best tests, we are able to detect any quantitative increase of the urea content. The retina mirrors the true condition and especially the improvement on an appropriate diet. This can be counted on most regularly in cases with not over 1.5 gm. urea. In all cases, however, he urges that the restriction of albumin must not be too rigid as this is liable to do more harm than good. By taking into consideration the general physical and psychic condition, along with the Ambard index, he thinks that it will be found an important aid in guidance of the different cases. It at least gives us a railing to hold by where, till now, we have been groping in the dark.

Hospitalstidende, Copenhagen

October 6, LVIII, No. 40, pp. 1015-1046

131 *Achylia and Anemia with Chronic Polyarthritis. G. V. T. Borries.
132 Interchanges in Air in Human Lungs. (Om Blanding af Luft i Menneskets Lunger. Forsøg og Kritik.) A. Krogh and J. Lindhard.

October 13, No. 41, pp. 1047-1074

133 *Treatment of Postoperative Parotitis. S. Müller.
134 Atypical Form of Paroysmal Hemoglobinuria. (Tilfælde af Marchhæmoglobinuri.) A. Sabroe.

131. **Achylia and Anemia with Chronic Polyarthritis.**—Borries quotes from recent textbooks which state that the internal organs almost always functionate normally with chronic joint disease. Appetite and digestion keep good, except for the frequent tendency to habitual constipation. This statement is the more remarkable, he says, because fully six years before Mering's 1913 manual, and even before Strümpel's were published, Faber and Lange had published four cases of achylia with chronic polyarthritis, and later had encountered it in 50 per cent. of 28 cases, and in 23 per cent. of a still later series of 65 cases (1913). Anemia was evident in 9 per cent. Borries' experiences confirm this frequency of disturbance in stomach functioning and blood production, as he relates in detail. In chronic polyarthritis (gonorrheal or syphilitic origin excluded) in 84 patients under 50, achylia was pronounced in 30 per cent. Including the 21 patients between 50 and 60, the proportion was 37 per cent. These figures become more significant when it is learned that the achylia was found in 15 per cent. of the 40 cases in which the joint trouble was of less than two years' duration; in 33 per cent. of the 39 of up to eight years' duration, and in 60 per cent. of the 15 of from eight to thirty years' duration. Achylia thus was evident in 30 per cent. of the total 94 cases. Anemia was evident in about 20 per cent.; it is secondary but may reach high proportions.

133. **Postoperative Parotitis.**—Eleven cases are described by Müller who emphasizes the necessity for evacuating massage if pus is found in Stenson's duct, as this indicates an ascending affection. If no pus emerges from Stenson's duct on light pressure of the parotid gland and its outlet, massage is contra-indicated—there being then no reason to suspect metastatic parotitis. In one such case the primary trouble was in the scapula and the parotid swelled but no pus could be expressed. Finally, after four days, pus emerged but the patient then was practically moribund from pyemia. The duration of the parotitis in the other cases treated with massage was from three to eleven days, and no phlegmon developed in any instance. In the 5 cases in which massage had not been applied, a phlegmon developed in two, and the process lasted over three weeks in 2, for eighteen days on the right and fifteen days on the left side in one case, but in another case the whole trouble subsided harmlessly in five days under moist heat.

Ugeskrift for Læger, Copenhagen

October 7, LXXVII, No. 40, pp. 1571-1598

135 Roentgen Treatment of Metrorrhagia and Fibroma; Sixty Cases. H. J. Panner and S. Kjærgaard.

October 14, No. 41, pp. 1599-1638

136 Striking Benefit in Pernicious Anemia under Kefir. (Om Anvendelsen af Kefir ved Anæmia perniciosa.) S. Kemp.

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MAGIC AND MEDICINE *

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It is a pleasant academic custom, established of late years in this school, that the incoming students shall be welcomed, not only by the president of the university, but also by a member of the faculty, through the medium of an address, fortunately somewhat delimited as to time, usually devoted to some general aspect of medical practice or to some phase of the contributary sciences. This year the honor has fallen upon me, and I purpose to use the opportunity to call your attention to an important aspect of human psychology which has existed as long as the human race itself—was, indeed, fully developed before medicine as such was divorced from religion—but now remains chiefly as one of the subconscious vestiges of the mind—a spiritual remnant, quite as in the body we still find vestiges of the gill-slits inherited from our far-distant ancestors who swam about in some primeval sea. And just as these branchial clefts and arches remind us of our lowly anatomic origin, so, also, do the mystical yearnings of the mind point back to a period when the cave-man looked out upon a world full of terrifying portents, which, his spiritual advisers, after proper incantations, warned him could be overcome only by suitable offerings to the gods.

An examination of the relations between magic and medicine during that early period, although of great anthropologic interest, we must of necessity pass over, turning instead to our own day, to this complex and puzzling age which we so fondly think is governed by the cold light of reason, and in so doing we must, to paraphrase Spinoza, be most careful not to laugh at the actions of mankind, not to groan over them, not to be angry with them, but to try to understand them.

A full century has passed since Waterloo marked the freedom of Europe from the militaristic domination of Napoleon, and offered to man that liberty of thought and action which was acclaimed by all but a few reactionaries as enabling each to accomplish what had before seemed impossible: the releasing of all individual energies for moral, social and scientific achievement. And what has not that century of supreme and united effort brought forth! Today we boast such freedom for the soul that no one knows quite what to believe, and so believes that which he prefers; so definite and final a code for moral action that the minds of the people of this country oscillate between peace at any price and war at any cost; such widespread brotherly love that never since the world began have in one short year so many men fought face to face and laid down their lives with unimaginable heroism for what they thought a duty. Never have the benefits of human culture and efficiency been so perfectly demonstrated on a recalcitrant world by bayonet thrusts and shrapnel. The marvelous developments of chemistry are far less clearly shown in the synthesis of useful dyes and healing drugs than in the ability conferred on mankind to destroy his fellow creatures by suffocating gases or by liquid fire of such exquisite potency as to make death from that used by the somewhat illiterate and incompetent Greeks almost a pleasure, and to cause Torquemada to blush with envy.

Nor have we been willing to confine the blessings of this modern civilization, born of the new freedom, to our own people, but have generously, and occasionally forcibly, conferred them upon other and more benighted races, so that today no Chinaman need suffer for lack of opium, no South Sea Islander be denied his alcohol and syphilis, no Indian but can enjoy, with some slight restrictions, the commingled benefits of whisky and tuberculosis.

With such a record can any one deny that the human race is approaching spiritual perfection? Has not our own country set the pace? Have we not more universities than any other, even though certain safely endowed cynics *do* call attention to the annoying fact that some institutions still confer their Ph.D. degrees *in absentia,* after only a moderate amount of correspondence and the receipt of a small fee? Have we not more popular, if somewhat superficial, education than any other country in the world? Do we not show the wonderful results of civilization in that we manufacture more pig iron, mine more coal, send more telephone messages, consume more "patent medicines," than any other?

In response to this revaluation of all values, medicine too has risen from its humble beginnings in priestly incantations, to a point where its leaders declare it to be a science and no longer simply an art. Today we smile at the cautery and boiling oil of a surgery of bygone ages, for now the burns of radium and Roentgen rays, in virtue of their magic qualities, have, as Sganarelle has said, "changed all that." The mere mention of the prescriptions of a Malay magician, embracing scorched cat's whiskers and other equally valuable remedies, brings a smile to the face of the recent hospital graduate who prescribes from a sample package of the latest synthetic drug from Germany, just left at his door by the postman and proved to be of the highest value, because, first, the advertisements says so, and, second, it has been tested on ten dogs and twenty rabbits—a much more scientific method than trying it on man. The fortunate patient also escapes the bad tasting mixtures of his childhood and knows that his physician is progressive and ahead of the times, since no article commending the drug has as yet appeared in the monthly magazines.

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* An address delivered at the opening of the College of Physicians and Surgeons, Columbia University, New York, Sept. 29, 1915.

What country lad, suffering from that digestive remorse which so often follows an assault on a neighbor's apple tree, but would appreciate the modern improvement over castor oil and minted ginger, to be found in psychotherapy or even the Emmanuel movement, or, if willing to stray from the straight and narrow path of regularity, would not prefer absent treatment from a Christian Scientist or manipulation by an osteopath?

What pious spinster but would acknowledge the glories of modern therapeutic achievement in the discovery which enables her to enjoy in the innocuous form of a widely advertised tonic her daily or thrice daily cocktail, and still remain a zealous and esteemed member of the W. C. T. U.?

From these serene heights of scientific medicine we can well afford to treat with contempt such unfortunate aphorisms as that attributed to the greatest of medical comedians: "The only thing the matter with the quacks is that they cure so many people," and to regard with satisfaction the ominous gloom which has suddenly snuffed out the literary light who composed that libel on the medical profession, "The Doctor's Dilemma."

Yet sometimes this wonderful science of medicine does not seem to be a wholly satisfactory guide. You, as future practitioners of medicine, have still before you the pleasure of dismissal from the care of some small patient on whom you have spent all the scientific acumen with which your teachers will endow you in the next four years, because in grandmother's day it was not necessary to make such a fuss about baby's milk. "All of her children, and she brought up ten, took milk straight from the cow, and nobody ever thought of modifying it." And when after you have in desperation told the mother of the next small hopeful that it will be enough just to put a little lime water in the bottle, and have been promptly displaced by Dr. Blank, who is "so much more intelligent because he knows exactly how many calories each bottle contains," it will be small comfort that you are perfectly well aware of the fact that Dr. Blank never heard of a calory until a few weeks before, and thinks it means something about germs. When you have been replaced because you listened to grandmother's chest with your ear, showing that you knew nothing of modern medicine, or supplanted because you did use the offending instrument, showing that you must have bad hearing and really could not know that she had pneumonia from your knowledge of her constitution; when, as I say, all these things have happened, you may begin to wonder whether there is not some defect in your medical education. Then, when you see the street in front of the house of Dr. Blank, whose medical standing is questionable, but of whose financial ability there is no doubt, filled with the automobiles of the rich who are taking the latest sure cure for cancer or tuberculosis or having their souls analyzed by the newest method, which "feels just like the confessional and reveals such awful things in one's past, but must be all right because there was a long article about it in the September *Century Magazine*," it will be slowly borne in upon you that there must be some things not taught in the curriculum.

And what is the foundation for all this lack of appreciation of the last word of medical science? We must apply a sort of freudian analysis to the collective mind of the community, and in so doing it is extremely important that we remember the changed conditions of thinking which have come over medicine, for to these is due some of the present condemnation of the profession. In the older days all possible facts on which to base a diagnosis were obtained by talking with the patient or his family, and by making a simple—usually a very simple—examination of such portions of his body as were visible without removing more clothing than was conventionally considered to be within the limits of modesty. The discussion of such facts between a physician and a consultant, and even the mental processes by which the diagnosis was reached, bore largely on matters with which the patient and his family were familiar, and the only way in which the practitioner could gain the desired effect of great wisdom was by concealing his method of reasoning and the nature of the medicine prescribed. The more ignorant he was, the more obscure were both. Hence, the further back we go in the history of the art of medicine, the more mystical the methods of diagnosis, the more complex and fanciful the drugs.

Nowadays, no attempt is made by the intellectually honest physician to obscure the methods of diagnosis, or the results of the scientific reasoning, nor is there anything mystical in the treatment. We sift the testimony of the patient and his friends in the light of the known untrustworthiness of human evidence, and ask that a large portion of the diagnostic information be written records obtained often by chemical or biologic methods beyond the manipulative skill of the physician himself. The stress so often laid on such records has led the patient of today to feel that if he has access to them he can make as good a diagnosis as the physician. Indeed, it is not uncommon to have one of the modern, highly educated neurotics bring out a vast pile of analyses, sometimes so poorly done as to be of no value, lay them before the physician, proceed to inform the latter of the real condition from which he is suffering, and, then, if not flattered by instant approval, leave for some more amiable and perhaps more worldly healer, but ultimately to form the material on which the quack fattens his bank account.

Thus it is that a not inconsiderable portion of the community, especially those who have achieved success through their business ability, the while they glibly state that the physician is a fool in business, forget that the converse also may be true, and on the intellectual basis of a course in medicine obtained from the Sunday supplements of the daily press and a few popular magazine articles on the medical fads of the moment, pass judgment on the methods and results of medical art, which would be amusing if they were not so pitiful. For none of these men would for a moment consider the investment, even of other people's money, in a business scheme of which they had so little fundamental knowledge as they have of the medical subjects they airily discuss. The inevitable result of this superficiality in judgment, largely due, I believe, to the lack of thoroughness and mental discipline in our popular education is an underestimation of the real ability of the physician and an overemphasis on the practical value of surgery, both temporary phases certain to be adjusted in the course of time.

And so we see as a consequence that in its search for something to satisfy its desire for magic, a something which the scientific physician no longer supplies, a portion of the public has turned in another direction which leads to Christian Science and osteopathy. Each of these is singularly adapted to fill a mind of a certain type: the first, because of its aura of religion; the second, through its appeal to the practical as "doing something." The era of indiscriminate pill-giving by the physician having passed, it is hard for a patient to surrender a considerable fee for mere advice — usually irritating because so evidently just; but a half hour's massage and manipulation have a real cash value, even if they do not cure all maladies. The practitioners of each of these trades are well endowed with that insight into human nature to which the physician is often indifferent, and know how to supply that suitable atmosphere of mystery for which so many still yearn.

Perhaps the public is not altogether at fault in its attitude toward some phases of medical practice, for an insidious form of higher quackery is not infrequently exhibited by a certain type of physician who through the use of a majestic array of instruments or reports of complicated chemical analyses, of the real import of which he is often ignorant, seeks to conceal his intellectual nebulosity and to impress his more desirable and wealthy patients with his scientific equipment, just as did the doctor of a generation past with a dusty microscope, never disturbed from beneath its bell-jar, or the quack of a still older period, so lovingly satirized by the Dutch artists, with his consultation room decorated with skulls and stuffed reptiles. An appeal to magic all of this, though the modern chaser of diagnostic ichthyosauri may not see the connection. Sometimes the patient does.

A remarkable example of crowd psychology, affecting both the medical profession and the lay public and showing the appeal of the occult, was seen in connection with the Friedmann tuberculosis cure a few years ago. The cure was exploited, apparently, by a syndicate which shielded itself behind the discoverer, who was probably perfectly honest in his belief that the bacterial cultures which he used had some value in the treatment of tuberculosis. In Germany the remedy met a cold reception, but in this country, owing to the great advertising value of the daily press, to the pseudoscientific way in which the whole question was ventilated, even before Dr. Friedmann's appearance in the United States, and to the opposition of the medical profession to the use of this secret remedy, considerable sympathy for Dr. Friedmann was aroused, even among the intelligent, and there resulted a rather bitter feeling toward the medical profession as jealously preventing the public from benefiting by a marvelous discovery — somewhat as today the attitude of a portion of the press on the subject of "twilight sleep" is that the physicians have banded together to defraud the people of something valuable. If the newspapers would only publish the facts behind all these affairs, the public would be quickly disillusioned; but cold facts are rarely of news value, and we must remember the retort of Charles A. Dana to a young reporter who approached him with a news item concerning a man who had been bitten by a mad dog. "That is no news," said Mr. Dana; "go out and find a mad dog that has been bitten by a man, and we will give you plenty of space for the story." It is the sensational which appeals to the mass, not necessarily the true. When once a sensation gets well under way, it is wonderful to see how it is reflected from one portion of the country to another, appearing again and again in more and more distorted form, until in the boiler plate page of the country weekly it finally loses all semblance to the original. Until we realize that the vast majority of the people of this country read nothing but the newspapers, and have few opportunities for obtaining accurate information by word of mouth from physicians or informed laymen, we will not understand how merely printed matter can have such great influence. The wildest newspaper statement is absolutely believed, and however shrewd the individuals may be, yet when gathered in a group or united by a common emotional topic they undergo that curious physical alteration which Voltaire, the first of the crowd psychologists, noted — their ears elongate. And what would be rejected as nonsense by the individual is accepted by the crowd, which is swayed by self-interest or self-pity, or that love of the mysterious bequeathed us by our cave-man ancestors.

Nor does the magic of a phrase stop at the crowd; it involves men of scientific training, and illustrates another aspect of mystery in the field of medicine. Let me read you a paragraph from the report of the hearing before the Committee on Mines and Mining of the House of Representatives of the Sixty-Third Congress, Jan. 19, 1914:

> Radium goes further than surgery, like the blessed light from heaven above, bathes the part, throws its gamma rays, which are its active rays, into the part, acting on all the myriad microscopic cells like millions of microscopic knives to destroy them or like a lash to drive them back. In other words, radium will not only do what surgery does, but it goes beyond it and takes a class of cases which are utterly beyond surgery. It has wonderful possibilities in chemistry and physics—marvelous possibilities. One cannot let oneself dream about it.

Of course this is emotionalism, not reality; but why does this man of education and culture speak in this way? What is there in this element radium which so warp's men's judgment that they tell only of successes and forget to mention the vastly greater number of failures to cure? First, there is its great rarity. The human race has always treasured things difficult to find or to make, even if of little intrinsic value. Then, in this new element, also, are centered a fascinating series of qualities, simple enough today to the physicist but still mystical to the public. Radium gives off heat; its atom explodes into a heavy metal and a gas which bombards the walls of the container; it gives off rays which will pass through a foot of lead and take a shadow photograph on the other side of this dense mass of metal; it will burn the tissues just as the Roentgen ray burns, somewhat less rapidly and less effectively than a red-hot piece of iron, but much more quietly and mysteriously, since the burn does not appear for a week or more. The writers of scientific papers even speak of the "magic power of radium," but magic only because we do not understand it; and when its physical qualities are fully understood we shall hear much less about the use of radium in the treatment of cancer. For in spite of all the statements made in the daily press about the wonderful cures which radium produces, we know today that it will certainly cure only a very small number of cancers and will do nothing which cannot be done by surgery. The result of the furore and publicity is, however, that it is now not always possible to get patients to submit to surgery for the removal of a tumor; they are so anxious to be treated with radium. The farmer in the farthest New England hills, reading in his weekly paper that radium is a certain cure for all kinds of cancer, comes to town refusing operation which might save him, only to fall into the hands of the nearest quack who has a little powder in a tube.

Such is the power of the press, molding the uncritical opinions of the people in virtue of the mystical which it celebrates. This influence of the mystical affects us all. Do *you* refuse to open an umbrella in the house, or cross between the carriages of a passing funeral? Do *you* avoid going underneath a standing ladder, or knock on wood lest your boasting bring bad luck? Probably you do, not because you are superstitious, but because, as a witty friend of mine once said, when accused, he liked to be on the safe side.

And now we must pause, not for lack of further apt illustration, new examples of which will soon be furnished you from your own experience, but because the natural limitations of human attention must be respected, and drawing in the net, survey the catch, dealing leniently with the human frailties within. For are they not a part and parcel, obscure and stupid as they seem, of that yearning for a power and perfection beyond the mere limitations of the flesh, which has led men on for all time? Do they not represent a blind appeal to something superior and more permanent than human life itself, something not evident to the senses, too subtle for the balance of the physicist, not to be captured in the test tube of the chemist, capable of diversion to evil ends when exploited by the unscrupulous, of infinite power when used by the wise for spiritual development?

The remedy for the evils is simple enough — education. With the deepening of real knowledge comes intellectual charity, while a diminution in the sensationalism of the press and a corresponding increase in the clarity and honesty of such medical information as is suitable for the public, the really excellent educational campaigns now being conducted by physicians through the publications of medical societies and reports of public health officers, and the most effective propaganda of the American Medical Association and of certain publicists who have raised their voices against the widespread sale of quack medicines — all these will abate somewhat the density of popular ignorance. For it is our duty as physicians to lead in this intellectual reform by refusing to be limited by a narrow professionalism, both in education and in practice, and by entering more and more deeply into the life and problems of those for whom we care, to regain that position of intellectual leadership which some of our great predecessors held in virtue of the fact that they were, first of all, great men, and only secondly, accomplished practitioners of an ever-widening art. And it is with that suggestion that I welcome you to the study of the broadest of all professions, whose interests touch all sciences and to which nothing human is without value.

Laboratory and Clinical Examinations.—Not saving of time, or of thought, is the primary object of any diagnostic method of value, but the more complete and accurate knowledge of the patient's condition.—George Dock, *Journal of Laboratory and Clinical Medicine.*

HOSPITAL EFFICIENCY AS PRODUCED AND MEASURED BY A FOLLOW-UP SYSTEM *

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In the medical world no less than in business, efficiency has become a recognized essential attribute. We have but little use—and rightly—for the hospital which is not efficient. But just what do we mean by hospital efficiency? The term suggests to our minds a capable administrative board, a staff of skilled physicians, good team work and organization, and adequate and up-to-date equipment.

These *are* essentials to hospital efficiency. It is because of such standards that in the minds of the general public the word "hospital" is no longer synonymous with impending death.

Standards are, however, but relative. They must be constantly changed and raised to accord with advancement in medical knowledge.

Modern medicine, twentieth century medicine, includes in its scope not only the cure of disease but also the prevention of illness.

The children's medical department of the Boston Dispensary includes a hospital for children of twenty-five beds and an outpatient clinic receiving over 14,000 visits a year. We have believed that, especially in dealing with children, the best results can be attained only by safeguarding the health of the patient after discharge, and have included in our responsibility the medical supervision of the child beyond the hospital or curative period. To undertake this plan intelligently, or indeed to make any plans for the child's health, it is necessary to know more about the child, especially in regard to home and living conditions, than can be learned from hospital histories and physical examination. The Boston Dispensary Hospital for Children has therefore adopted the plan of having a member of the social service staff visit the home of each patient admitted to the hospital. The home environment as regards location, hygienic conditions, social and economic circumstances is noted. This information is obtained with the spirit and attitude of planning for the interests of the sick child and not as a "third-degree" probing into family and personal matters. As soon as the visitor has the home situation well in mind, a bedside conference is obtained with the physician who has had charge of and has studied the medical condition of the patient. The information each has obtained is collectively considered. The physician makes immediate use of the information obtained by the visitor in planning the length of time it will probably be necessary to keep the patient in the hospital. This often makes a decided difference in the methods of treatment employed, and often aids the physician to understand better the clinical picture presented by the patient.

The physician and the visitor, having the home and medical conditions in mind, then plan the course to be followed on the discharge of the patient from the wards.

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* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

If the home conditions are suitable, and the family is in a position to employ its family physician to supervise the convalescence of the case, the responsibility of the hospital is ended after the visitor has seen that the child is actually placed under the family physician's care.

If the character of the case is such that long and close supervision is necessary, as for example a feeding case, and the patient lives at some distance from the dispensary, it may be referred to the nearest "milk station" or "well baby clinic." The physician and nurse at the station will then assume the responsibility for the baby's feeding, and the supervision of home conditions. In other instances, as, for example, chronic heart cases, if the home conditions, as regards hygiene, etc., are favorable, the district physician of the Boston Dispensary and the district nurse may be asked to cooperate and to provide continued medical and nursing supervision in the home. Other patients requiring continued institutional care may be referred to a suitable chronic or convalescent hospital.

In other instances, the visitor and the physician work out what seems to be the best plan for the child, utilizing existing agencies, such as child placing and child helping organizations, for this purpose when indicated. The visitor in each case sees that the arrangement is in actual operation before transferring her responsibility.

The majority of the discharged patients are referred to the children's outpatient department of the dispensary. When this is the plan adopted, the visitor, after studying the home problems and conferring with the physician in charge of the case while in the hospital, secures as far as possible suitable home conditions before the discharge of the patient from the hospital wards. After discharge, the visitor is responsible for the first visit of the patient to the outpatient department, the responsibility after admission there resting with the outpatient department's follow-up system.

The return and continued supervision of cases in the children's outpatient department of the dispensary is effectively secured by means of a visible file index, and follow-up visits by the social service department. The visible file index makes obvious the failure of any patient to return on the date specified by the physician in charge of the case. A postal card is sent to the patients failing to return at the specified time, and if they then fail to return, the records of the cases are presented to the physician in charge, and he determines whether or not the condition of the patients justifies a visit to the home to insure their return or at least a report on the situation.

Good team work between the follow-up system of the outpatient department and that of the hospital is rendered easy, as home conditions of patients admitted to the hospital are in many instances already known to the social worker. All that is necessary in such cases is to carry out any new measures made necessary by the emergency of the acute illness and convalescence of the patient. Whatever the disposition of the case, each patient, as far as possible, is returned at three months and one year for medical inspection by the physician having charge of the case in the hospital.

The children's department of the Boston Dispensary introduced this plan of providing medical supervision and following up discharged hospital patients for several reasons. The number of babies and children readmitted to the hospital because of reinfection, failure to convalesce properly, and intercurrent disease was extremely suggestive. It was felt that it was a distinct loss in experience for the physician in charge of a hospital patient to terminate his knowledge of the case with the patient's discharge from the wards, with no opportunity to know of subsequent developments or end-results.

It seemed unfortunate that the patient should lose entirely the personal touch with the physician familiar with the course of the acute illness. It was felt that it would be of definite value if the patient could, whenever possible, benefit by a longer supervision and plan of treatment by the same physician.

From a purely economic as well as a medical point of view, it seemed poor business to call on the resources of the hospital for the care of a patient, and secure good results, only to have in a short time the hospital again burdened with the expense of more hospital care for the same patient. This pointed to a waste of effort and money that the efficiency man of any business would promptly criticize and attempt to remedy. The physical condition of readmitted patients, and the history of the case between discharge and readmission suggested that unfavorable home conditions and improper management of the patient was, in some instances at least, responsible for the readmission. This led to a study of the home conditions of patients admitted to the hospital in 1912. This study clearly indicated that the existence of unfavorable living conditions as indicated by clinical experience was a fact and not a mere theory. Investigation of the homes of all patients admitted to the hospital disclosed conditions unfavorable to convalescence or continued health in 94 per cent. of the cases. In other words, without the knowledge obtained by these home visits and the measures taken to improve the existing conditions, the dispensary would have discharged 94 per cent. of its patients into just the kind of environment that predisposes to readmission and unfavorable results.

This rather disquieting discovery suggested that even more valuable information might be obtained by determining the effectiveness of the measures taken to remedy these unfavorable conditions as judged by the physical condition of the patients at three months and one year after discharge from the hospital, at the same time checking up the findings of the previous study as regards the existence of unfavorable home conditions. Therefore, over a year ago, a system was adopted by which the condition of a child is ascertained and recorded, as a routine, three months and twelve months after discharge.[1]

From May 1, 1913, to April 30, 1914, 245 infants and children were discharged from the hospital. The illnesses responsible for the patients' stay in the hospital were about what one might expect. A brief summary is given in Table 1.

An investigation of the homes of these patients gave almost identically the same results obtained in the previous study. Of the 245 cases, 230 (93.8 per cent.) presented definite educational or home problems. A brief summary of these problems is given in Table 2.

These figures scarcely require discussion or interpretation. They speak for themselves. Whatever may be the conditions as regards other hospitals, the Boston Dispensary has a definite situation to meet. Although fundamentally social, the problem obviously at once becomes medical. The measures taken to remedy these unfavorable conditions must be based on medical knowledge of cause and effect. It becomes an individual problem with each patient, to determine, from the physical condition of the patient and the character of the home, what changes are necessary or desirable to secure a good medical result.

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[1] The blank forms used for this work will be sent to any one interested, on request to the author, at the Boston Dispensary, 25 Bennet Street, Boston.

TABLE 1.—ILLNESSES OF PATIENTS

Medical Illnesses.	No.	
Gastro-intestinal	58	
Respiratory	41	
Cardiac	19	
Congenital syphilis	10	
Genito-urinary	6	
Central nervous system	6	
Meningitis	5	
Pulmonary tuberculosis	5	
Infantile paralysis	3	
Scattered medical diseases	21	
		174
Orthopedic	26	
Surgical	25	
Nose and throat	12	
Eye	5	
Ear	3	
		71
Total		245

TABLE 2.—EDUCATIONAL AND HOME PROBLEMS

1. Educational:		
Homes presenting educational problems (such as teaching care of child, hygiene, need of treatment of other illnesses in the home; need of further medical supervision of the child)		187
Homes not presenting educational problems		58
2. Family Problems:		
Homes presenting family problems		218
Such as:		
Acute poverty	29	
Bad home condition other than poverty	44	
Illness in home	43	
Inadequate care of child other than poverty and illness	23	
Illegitimacy	17	
Homes presenting no family problem		27
3. No educational or family problem		15

The positive findings in the case of the Boston Dispensary would indicate that other hospitals, even if more fortunate in the economic and social circumstances of their patients, can scarcely claim efficiency unless this phase of the patients' welfare receives attention.

The following data appear to demonstrate two points:

1. The conditions disclosed in the study of the children's home environment had a definite bearing on the progress made by the patients after leaving the hospital.

2. The control of the patients through the follow-up system and the social service department was a factor in producing this progress.

Of the 245 patients admitted to the hospital, the condition at discharge was: well, 60 (25 per cent.); improved, 122 (50 per cent.); not improved, 21 (9 per cent.); died, 42 (16 per cent.).

Three months after discharge the conditions were: well, 57 (23 per cent.); improved, 103 (42 per cent.); not improved, 14 (6 per cent.); no record, 17 (7 per cent.); died, 54, that is, 12 who were alive at discharge died within three months. Ten of these deaths were due to conditions known to be hopeless at time of discharge.

At one year after discharge the conditions were quite different, as will be seen from the following: well, 119 (49 per cent.); improved, 47 (18 per cent.); not improved, 18 (7 per cent.); no record, 1; died, 60, that is, 6 had died between three months and one year after discharge.

It is certainly a striking fact that fewer children were well three months after discharge from the hospital than were well at the time of discharge. The data point strikingly to the conclusion that the task of restoring and maintaining the health of the patient is far from completed on the discharge of the patient from the hospital ward. It is to be borne in mind that these patients were all children mostly from poor homes and that about half were babies. When this is taken into consideration, it is encouraging to note that of 203 patients discharged alive, only 18 died during the year after discharge, and 12 of these cases were known to be hopeless at the time of discharge. Only 6 deaths were the result of intercurrent disease or unexpectedly unfavorable convalescence from the hospital illness.

On the other hand it is highly encouraging to see the steady and substantial improvement as the year advances. Of 103 patients recorded at three months as "improved," 49 were well at the end of the year, 45 were further and much improved, and only 9 were not improved. Of 14 "not improved" at three months, 3 are well at the end of the year, 2 are improved, and 9 remain not improved. At the time of discharge, 25 per cent. were "well"; three months after discharge, only 24 per cent.; but one year after, 49 per cent.

The decidedly improved standing at one year over the relatively poor standing at three months suggests that medical supervision and the measures adopted to improve unfavorable home conditions are producing, if slowly, desirable results.

Ignorance may be bliss, but it certainly is not efficiency. We must face the situation. The Boston Dispensary already knew that conditions unfavorable to health existed in the majority of the homes of its patients. An organized systematized plan for remedying these conditions and medically supervising the patient after discharge was carried out. We know that home conditions were immeasurably improved. We know that as the result of following up the patients, intercurrent diseases were seen by the physician early and that unfavorable convalescences were given medical attention. We have tabulated our results. If these results in spite of our efforts are not as satisfactory as we might wish, we hesitate to hazard a conjecture as to what the results would have been had no effort been made to safeguard the health after discharge from the hospital. Knowing the facts, knowing the difficulties, knowing where we have fallen down, are the first steps toward formulating effective measures to combat these difficulties and secure better results.

More study and a more accurate knowledge of the deleterious influence of environment on the convalescence, in predisposing to intercurrent disease, in preventing normal development and health are extremely desirable. How can we more readily secure this information and measure the results of our methods of remedying conditions unfavorable to health than by a follow-up system which includes the investigation of home conditions, the medical-social education of parents and medical supervision and periodic inspection? To be of real value, this system must apply to all cases, not to occasional or selected cases; it must be a continuous part of the hospital routine; and, finally it must not be merely a negative factor, finding out the patient's condition at periodical intervals after discharge, but a positive factor, exercising control over conditions. The cost of such a follow-up system adds only one tenth to our hospital budget.

Prevention is cheaper than cure. If we can by means of a follow-up system determine and measure our problems and secure results, this cost should be turned into actual saving to the hospital by decreasing the number of readmissions.

Does not our knowledge of preventive medicine and such clinical experience and statistical evidence as this study discloses indicate that a follow-up system to show problems and secure and determine results is an essential part of the equipment required to produce and measure hospital efficiency in its twentieth century interpretation?

THE EXPERIMENTAL TRANSPLANTATION OF THE EPIPHYSIS

WITH OBSERVATIONS ON THE LONGITUDINAL GROWTH OF BONE *

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No subject in bone surgery has been so extensively investigated during the last few years as has that concerning the transplantation of bone. As a consequence of these studies certain of the resulting changes that take place after transplantation have been solved, but there is still lacking a uniform agreement relative to some of these processes. From the clinical standpoint, however, there is a universal acceptance as to the successful applications of bone transplantations. Thus for the filling in of a bone defect, for the curing of a pseudo-arthrosis, for the producing of an ankylosis of the spine or the joint, and for the correcting of a nasal and other deformity, the transplantation of bone serves a very definite purpose. In all of these conditions a piece of diaphyseal bone with its periosteum is selected for the transplantation material.

From a practical standpoint it is not absolutely imperative that a transplant remain entirely alive and its cells be capable of proliferation, although if it possess these properties it is more likely to be successful. If it be demanded, in addition to the mere passive function of filling in a defect or acting as a framework for the ingrowth of neighboring bone, that the transplant must also possess the active property of increasing in length, within itself, then it is absolutely essential that its cells remain alive and be capable of dividing and extending in a linear direction.

As the longitudinal growth of bone is due to proliferation of the tissue at and adjoining the epiphyseal cartilage, it is necessary to include that part of bone in a transplant when an increase in length is desired. It is not alone sufficient that the cells of the part remain alive after transplantation, but they must retain their ability to multiply in such a manner as to further increase the length growth. In such a case there is an additional requirement of the transplanted tissue besides the mere supporting property of diaphyseal bone. This additional requirement demands that the tissue retain the active function and inherent property of the normal epiphysis to increase the length of bone. The epiphysis is to be considered as a highly specialized tissue which will undoubtedly respond to the general laws of regeneration and transplantation, in that the more highly differentiated the tissue and the more dependent on its blood, vascular, lymphatic and trophic nerve supply it be, the less likely is the possibility of the successful transplantation of that particular tissue. On the independency of the epiphysis to withstand these losses depends its functional transplantability.

It is surprising that this interesting and complex subject has not been more extensively investigated. Aside from the scientific problems connected with such a study there are offered numerous opportunities for clinical applications of a successful method. Instances of such possibilities are found in cases of destruction of the epiphysis following tuberculosis and acute infection of the bones in early childhood; in certain neoplasms necessitating the removal of the epiphysis, in congenital shortening of the limbs, in defective growth after infantile paralysis, in destructive traumatic injuries of the epiphysis, in rachitis, and in congenital dislocations of the hip. Since the reports of transplantation of joints by Lexer, Kuttner and others, it would be very important to know the behavior of the epiphysis after transplantation before attempting such procedures on growing individuals.

From the optimistic conclusions of Rehn and Wakabajashi[1] in 1912, one would be entirely justified in attempting to perform the transplantation of the epiphysis in order to correct any of the above-mentioned conditions when there was loss of the function or the destruction of the epiphysis. These investigators performed homoplastic transplantations on two months old rabbits of the same brood, using the upper end of the radius including the epiphyseal cartilage. They concluded from their experiments that the epiphyseal cartilage after homoplastic transplantations retains its full life properties, showing no evidence of degeneration, and from the very first took over the function of its resected predecessor. These conclusions cannot be accepted without comment, as they were drawn from experiments in which the proximal part of the radius was transplanted, the epiphysis of which shares only a small part in the production of the length growth and therefore a failure of its functions would not be very noticeable when compared with the marked activity of the distal epiphysis. They have relied entirely on a comparison of the roentgenograms of the two feet which were only taken at the conclusion of the experiment in order to determine the variation in growth. As the place of union was evident in

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* From the Pathological Laboratory and the Surgical Pathological Laboratory of Leland Stanford, Jr., University School of Medicine.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Rehn, E., and Wakabajashi: Die homoplastische Transplantation des Intermediärknorpels im Thierexperiment, Arch. f. klin. Chir., 1912, xcvii, 1.

their expermients they could have easily determined, by means of measuring at the time of the operation and at conclusion of the experiments, whether or not the transplanted piece actually increased in length.

In the same year appeared Axhausen's[2] experimental work in which he performed homotransplantations in young rabbits. He used the lower end of the femur, thin sheets of epiphyseal cartilage, and patella, for his transplantation material and transplanted them under the skin. He found that the greater part of the epiphysis died and that only that part remained alive which was situated beneath the perichondrium. In the middle part of the epiphysis he noticed degenerated areas, and he claimed that ossification took place only in the cartilage that remained alive. In these experiments there was lacking functional stimulation, and for that reason the results are open to criticism.

The results of Axhausen's work were diametrically opposite to Rehn and Wakabajashi. On the other hand, they agreed to a certain extent, with those of Enderlen[3] and Helferich.[4] The latter investigators, who were the pioneer workers on this particular subject, performed experiments of epiphyseal transplantations as early as 1899. They reimplanted the epiphysis in rabbits, using the lower epiphyseal cartilage of the ulna with an adjoining piece of the epiphysis and the diaphysis. Helferich, from the macroscopic findings, reported that the epiphyseal cartilage under favorable conditions need not lose its property of producing length growth. A lessening of this property might be observed but there was not an entire loss. Enderlen, who made the microscopic study of these preparations, reported that the reimplanted epiphyseal cartilage retained its vitality to a large extent. In agreement with Axhausen he noticed that the best maintained were those parts near the perichondrium, while those at the center showed evidence of degeneration. There was an increase in width of the epiphyseal cartilage due to an ossification coming from the living cartilage. The ulna was retarded in growth and, on that account, caused a bending of the radius.

Aside from the investigations of Zoppi[5] who found in his autotransplantation of the epiphysis a regular healing in and the formation of new bone, while in his heteroplastic transplantations there resulted a complete failure; and the studies of Galcarzi,[6] who found that there was a calcification of the epiphysis and loss of function in both auto and homotransplantation, there have been no other attempts to solve this problem prior to the beginning of the present work. During the last year several additional articles have appeared and they will be briefly reviewed.

Of these recent articles the first that appeared was by von Tappeiner[7] who performed reimplantations and homotransplantations on dogs six and twelve weeks of age, using the distal half of the metatarsal. In his reimplantations he found that there was no disturbance in length growth even after six months, while in his homotransplantations he noticed a regular increasing shortening which was proportional to the length of time that had elapsed. He emphasized the importance of early function, and states that the younger the animal the less the amount of shortening. From his homotransplantations he concluded that for clinical applications the transplantations of the epiphysis is unsuccessful.

A short time later there appeared an extensive article by Obata[8] who performed on rabbits reimplantations, autotransplantations and homotransplantations of the entire metatarsophalangeal joint with either a part or an entire metatarsal and phalanx. In some experiments the transplants were made from the dead animal either with or without keeping for a time in salt solution. He also repeated the experiments of Rehn and Wakabajashi by transplanting the head of the radius from one animal to another. In his conclusions he stated that there was more or less shortening in all the cases, but that it was most marked in the homotransplantations. A bony union occurred in all the experiments except in homotransplantations, in which condition a pseudo-arthrosis resulted. In homotransplantations of the head of the radius he found only a slight degree of shortening. He does not agree with Rehn and Wakabajashi that this transplanted epiphysis functionated, but ascribes the evening up of growth to more extensive proliferation of the distal epiphysis. In the transplantations from the dead animal he noticed no evidence of growth and found with one exception that a pseudo-arthrosis occurred.

The next article that appeared was by Heller,[9] who carried out reimplantations of the distal epiphysis of the radius and ulna as well as homotransplantations between related and nonrelated rabbits. He also made a few reimplantations and autotransplantations in goats. He reported that the epiphysis did not keep up its normal length growth in any of the forty-five experiments in which the epiphyseal cartilage was transplanted in the form of half joints. The least amount of shortening took place in the reimplantations, while a greater degree occurred in homoplastic transplants, most marked in the nonrelated animals. In homoplastic transplantation he believed there was a complete cessation in function of the epiphysis, and he ascribed all growths to the nonoperated proximal epiphysis. From his experience with goats, because of the more marked degree of shortening, he concludes that the larger the transplant and the greater the size of the animal, the more marked will be the shortening. In concluding, he said that in autotransplantations there was a lively regeneration of the epiphyseal cartilage from the perichondrium and that a not inconsiderable amount of bone apposition could be recognized, but nevertheless the bone growth remained checked and could not be utilized for practical purposes, especially so in cases of homotransplantations. He thinks that the most favorable conditions for the transplantation of the epiphyseal cartilage would be in the form of a thin sheet without adhering bone particles, so that it could come more directly in contact with the nourishing fluids of the body. In a postscript he added that in his more recent experiments on two months old animals, in which after autotransplantations of the epiphyseal cartilage in the form of very thin sheets, he found almost a normal growth. The exact details of these experiments are not given, so one cannot conjecture on the cause of the variations from his previous results.

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[2] Axhausen, G.: Ueber den histologischen Vorgang bei der Transplantation von Gelenkenden, in besondere über die Transplantationsfähigkeit von Gelenkknorpel und Epiphysenknorpel, Arch. f. klin. Chir., 1912, xcix, 1.

[3] Enderlen: Zur Reimplantation des resecirten Intermediärknorpels beim Kaninchen, Deutsch. Ztschr. f. Chir., 1899, li, 574.

[4] Helferich: Versuche über die Transplantation des Intermediärknorpels wachsender Röhrenknochen, Deutsch. Ztschr. f. Chir., 1899, li, 564.

[5] Zoppi: Quoted by Rehn and Wakabajashi, Note 1.

[6] Galcarzi: Quoted by Rehn and Wakabajashi, Note 1.

[7] Von Tappeiner, Fr. H.: Studien zur Frage der Transplantations fähigkeit des Epiphysenknorpels und des Gelenkknorpels, Ztschr. f. d. ges. exper. Med., 1913, i, 491.

[8] Obata, K.: Ueber Transplantation von Gelenken bei jungen Tieren, mit besonderer Berücksichtigung des Verhaltens des Intermediärknorpels. Beitr. z. path. Anat. u. z. allg. Path., 1914, xlix, 1.

[9] Heller: Experimentelle Untersuchungen über die Transplantation des Intermediärknorpels in Form der halbseitigen Gelenktransplantation, Arch. f. klin. Chir., 1914, civ, 843.

The most recent article is by Minoura[10] on the transplantation of metatarsophalangeal joints of two months old rabbits into the soft tissues. Either the whole or half joint that was either intact or split longitudinally was transplanted into the back, subcutaneous tissue, liver, or abdominal cavity of the same or different animal. In some instances the joint was placed in a Ringer's solution before transplantation or was removed from a dead animal. He observed that the transplanted joints became encapsulated after one or two weeks. The healing always appeared the same whether it was in the abdominal cavity, subcutaneous tissue, liver, or the muscle. The longitudinally split half joints underwent quicker organization than the unsplit and resorption took place more rapidly when the parts were allowed to remain in Ringer's solution. He concluded that autotransplantation was superior to homotransplantation and that the substitution processes were more active, quicker and intense, and that autoregeneration was more significant and continued for a longer period. Not much difference was noticed between transplants from the dead or from the living animal. In no case after transplantation, even in autotransplantation, was there any regular growth of the epiphyseal cartilage (only an irregular proliferation was found in the periphery) and in no case was there a lengthening of the transplanted joint. In comparing these experiments with those in which the transplantations were made into bone defects, it was noticed that the new formation was less evident, the degeneration appeared earlier in the new-formed tissue, and the resorption played a greater rôle, as in these cases the functional requirements of the respective tissue was lacking.

The prevailing opinions of these investigators indicate that the epiphyseal cartilage after transplantation loses more or less of its power to proliferate and thereby to increase the length of bone. In general they found considerable growth in reimplantations, less in autotransplantations, and practically none in homotransplantations. The greater the variations in the species the greater will be the growth disturbances. None of the authors agreed with Rehn and Wakabajashi in that there was no disturbance in growth after homotransplantation of the epiphysis.

All of the seventy-five experiments of this series were performed on dogs, the same animal often being used for two or more observations.

The majority of the animals were from one and a half to four months of age at the time of operation. In some animals the ages were not definitely known. They showed a definite growth after operation, but the metacarpals had not changed in length. This paradoxical condition can be explained by assuming that growth ceases in the metacarpals before it does in the longer bones.

The metacarpal and metatarsals were selected because they possessed but one epiphysis situated at the distal end of the bone and any growth which occurred could only be ascribed to proliferation at that particular epiphyseal cartilage. These bones were also easily measured at the time of operation and any change in length could readily be determined at the conclusion of the experiment. Another advantage in using these particular bones is that the adjoining bones serve as a natural splint.

METHOD OF OPERATION

All of the operations were performed under general ether anesthesia. The extremity was shaved and painted twice with tincture of iodin and the operation carried out with the usual aseptic technic.

The incision was made on the dorsal surface of the foot and special precautions were taken in order to preserve the normal vascular and nerve supply to that particular region.

In removing the segment to be transplanted special care was exercised so as not to injure the epiphyseal cartilage. In the very young animals a sharp knife was used, while in the older animals a small saw was necessary to sever the bony connections of the transplantation material.

The small transplants were anchored in place by means of an X-shaped silk suture, while the larger pieces were reinforced by an additional suture passed through the cortex of the diaphysis of each fragment. The total length of the operated and adjoining bones, also the removed and implanted segments were carefully measured. The wound was closed in layers and the foot encased in a plaster dressing, which was removed in from fourteen to twenty-one days. The animal was allowed its freedom from the start. Primary healing resulted in all but two cases.

At the conclusion of the experiment a roentgenogram was taken of the corresponding two feet. Then the foot was dissected and measurements made of all the metacarpals of both the operated and the normal foot. One half of a longitudinal section was preserved in Kaiserling's solution and the remaining part placed in Orth's fluid for further study.

It will be possible to give in this paper only the observations of the changes in growth following the various operative procedures.

In the interpretation of the results certain standards of comparison have been adopted in order to determine the various changes. The two inner metacarpals have been found from repeated observation on normal extremities to be of equal length or within 1 mm. of each other. It has also been noticed that the corresponding bones of each foot are practically of the same length. Thus there is a definite standard of comparison by means of which any change in growth may be calculated.

EXPERIMENTS

The following sets of experiments were performed:

1. Reimplantation of an entire metacarpal or metatarsal: In these experiments the entire bone with its articular surfaces and periosteum intact was raised from its position and immediately replaced. Table 1 shows the results.

Conclusion: After reimplantations of entire metacarpals or metatarsals, in growing animals, there is complete cessation of the growing function of the epiphysis.

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[10] Minoura, M.: Studien über Gelenktransplantation (inkl. Intermediarknorpel) in Weichteile, Frankfurter Ztschr. f. Path., 8, 1914, xv, 397.

TABLE 1.—REIMPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E2..........	5	52	3.05	3.15	0.1	0.7	
2. E2..........	5	52	3.15	3.3	0.15	0.7	
3. E3..........	5	208	6.3	3.2	—0.1	0.4	
4. E3..........	5	208	6.3	3.2	—0.1	0.4	
5. E4..........	3.5	113	3.65	3.6	—0.05	2.95	
6. E4..........	3.5	113	3.65 cut	3.7	0.05	2.75	Incised
7. E5..........	7	107	5.5	5.2	—0.3	0	
8. E6..........	4	298	5.6	4.9	—0.6	0	
9. E6..........	4	298	5.6 cut	4.9	—0.7	0	Incised
10. E13-R.......	Old	115	Not taken. Growth ceased	Not taken	0	0	Incision; shows degen.
11. E13-L........	Old	115	Not taken. Growth ceased; cut	Not taken	0	0	

TABLE 2.—AUTOTRANSPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E1...........	5	109	6.9 cut	1.5	—5.4	0	Cut off end
2. E1...........	5	109	6.9	6.6	—0.3	0	
3. E17..........	9	36	6.7 cut	6.1	—0.5	0.3	Long incis. at both ends
4. E8...........	6	91	6.7 right	6.8	0.1	0	
5. E8...........	6	91	6.7 left	6.4	—0.3	0.2	
6. E10-R........	3.5	89	4.8 cut	4.3	—0.5	0	Incision; showed evidence of degeneration
7. E10..........	3.5	89	4.8	4.3	—0.5	0	

TABLE 3.—REIMPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Operated Bone Cm.	Remarks
1. E9............	?	31	5.7	5.6	—0.1	0	
2. E14-6.........	4.5	237	5.9	5.8	—0.1	0	Consid. change in marrow
3. E15..........	6	38	5.8	5.8	0	0	
4. E18-2.........	6	223	6.05	3.3	—2.8	0	

TABLE 4.—AUTOTRANSPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E12..........	Very old	235	?	6.1	—0.2	0	Incised degen.
2. E17-R........	6	36	6.7	6.1	—0.6	0.4	Incised end necrotic

TABLE 5.—REIMPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E14-6..........	4.5	37	5.9	5.7	—0.2	0
2. E23-13.........	1.5	23	3.9	4.1	0.2	0.4
3. E24-14.........	?	4	3.6	3.8	0.2	0
4. E33-44.........	1.5	43	2.7	2.8	0.1	0.7
5. E38-26.........	4.0	55	4.4	4.2	—0.2	0.1
6 E41-39.........	5.0	43	4.55	4.5	—0.05	0.5

TABLE 6.—AUTOTRANSPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E9-4..........	?	86	5.1	5.0	0	0	
2. E10-5.........	3.5	89	4.8	4.5	—0.3	0.1	
3. E15-7.........	6.0	38	5.8	5.9	0	0	Piece inserted was 0.75 mm. wider than that removed
4. E23-13-R......	1.75	23	4.0	4.2	0.2	0.6	
5. E23-13-L......	1.75	23	3.6	3.8	0.2	0.4	
6. E32-39-R......	1.75	136	2.5	2.85	0.35	1.4	
7. E32-39-L......	1.75	136	2.55	2.9	0.35	1.4	

2. Autotransplantation of an Entire Metacarpal or Metatarsal: An entire bone was transplanted from one foot to another foot of the same animal. Results are given in Table 2.

Conclusion: The transplanted bones not only failed to grow, but showed definite evidence of degeneration and decrease in length.

3. Reimplantation of Split Metacarpal: The reimplanted bone was divided longitudinally and reinserted. Results are given in Table 3.

Conclusion: As these animals had reached the end of their growing period no observations can be made on the disturbances in growth lengthwise. Some of the bones showed definite evidence of absorption and decrease in length.

4. Autotransplantation of Split Metacarpal or Metatarsal: Before transplanting to another foot the bone was split longitudinally. Results are given in Table 4.

Conclusion: In the single observation in this group in which the animal showed evidence of growth in the normal bones there was a definite decrease in size of the transplant, showing that the splitting of the bone had no favoring influence on the viability of the epiphysis.

5. Reimplantation of the Epiphyseal Cartilage: In this series of experiments the epiphyseal cartilage, including a piece of adjoining epiphysis and diaphysis, was excised and immediately reimplanted. Table 5 gives the results.

TABLE 7.—REIMPLANTATION OF VARYING LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E5-1	5	107	Total 5.4; resected ½ piece 2.7	5.2	—0.2	0
2. E7	7	155	Total 7.4; resected ⅔ piece 4.4	3.7*	—3.7	0.3
3. E22-12	1.5	22	Total 4; resected ⅔ piece 2.55	3.9	—0.1	0.5
4. E30-38-R	?	13	Total 2.4; resected ⅓ piece 0.7	2.3	—0.1	0
5. E30-38-L	?	13	Total 2.4; resected ⅔ piece 1.8	2.5	0.1	0
6. E31-36	1.75	17	Total 2.5; resected ½ piece 1.25	2.5	0	0.1
7. E33-44	1.5	44	Total 2.7; resected ½ piece 1.5	2.7	0	0.7
8. E34-43-L	1.5	115	Total 2.8; resected ⅓ piece 1.1	3.25	0.45	1.20
9. E34-43-R	1.5	115	Total 2.8; resected ⅔ piece 2.0	2.95	0.15	1.45
10. E37-40	2	38	Total 3.05; resected ⅔ piece 2.3	3.0	0	0.3
11. E38-26	4	85	Total 4.5; resected ½ piece 2.25	4.2†	—0.3	0
12. E41-39	4.75	44	Total 4.4; resected ⅓ piece 1.8	4.3‡	—0.1	0.5

* Infection. † Bored holes—nonunion at operation. ‡ Nonunion.

TABLE 8.—AUTOTRANSPLANTATION OF VARYING LENGTHS OF EPIPHYSEAL END OF METACARPAL AND METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E19-5	5.0	34	Total 5.6; resected ½ piece 2.5	5.65	0.05	0.6
2. E19-5-R.	5.0	34	Total 5.6; resected ½ piece 2.6	5.6	0	0.6
3. E20-10-L.	1.5	25	Total 3.6; resected ½ piece 1.8	3.6	0	0.5
4. E21-11	1.5	42	Total 3.8; resected ½ piece 1.9	3.7	0	0.6
5. E29-37-R.	2	143	Total 2.6; resected ⅓ piece 0.7	2.75	0.15	1.15
6. E29-37-L.	2	143	Total 2.5; resected ⅓ piece 0.7	2.6	0.1	1.3
7. E35-41-R.	1.75	111	Total 3.0; resected ½ piece 1.55	3.0	0	1.6
8. E35-41-L.	1.75	111	Total 2.95; resected ½ piece 1.5	3.0	0	1.4
9. E36-42-R.	1.75	43	Total 2.8; resected ⅔ piece 2.1	2.9	0.1	0.55
10. E36-42-L.	1.75	43	Total 2.9; resected ⅔ piece 2.1	2.95	0.05	0.6
11. E40-37-L.	5.5	43	Total 4.3; resected ⅓ piece 1.8	4.2	0	0
12. E40-37-R. Homo	5.5	43	Total 4.1; resected ⅓ piece 1.6	3.9	0	0.15

TABLE 9.—TWO STAGE AUTOTRANSPLANTATION OF DIFFERENT LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at First Operation Cm.	Measurement at Second Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E16	9.0	89	Total 6.9; resected ½ piece 3.2	No second operation	6.9	0	0.
2. E20-10	1.5	25	Total 3.5; resected ½ piece 1.9	Not taken; union at first	4.0*	0.5	0.5
3. E21-11	1.5	42	Total 3.7; resected ½ piece 1.9	No second operation	4.3	0.6	0.6
4. E22-12	1.5	22	Total 3.9; resected ⅔ piece 2.85	No second operation	4.0†	0.1	0.4
5. E25-26	2.0	155	Total 4; resected ½ piece 1.9	Total? Resected piece 2	3.6†	—0.4	0.15
6. E26-27	1.5	64	Total 3.1; resected ½ piece 1.5	Total 3.7. Resected piece ?	3.85	0.75	1.6
7. E27-28	1.5	80	Total 2.9; resected ⅓ piece 1	Not taken	3.3‡	0.4	1.6
8. E28-29	1.5	67	Total 3; resected ⅔ piece 2.3	Total 3.7. Resected piece 3.	3.9	0.9	1.5
9. E37-40	2.0	38	Total 3; resected ⅓ piece 1	Total 3.25. Resected piece 1.2	3.3	0.3	0.3
10. E39-41	1.75	46	Total 4.4; resected ⅓ piece 1.6	Total 4.4. Resected piece ?	4.25‡	—0.15	1.1

* Died two days after second operation. Nonunion at second operation. † Nonunion. ‡ Nonunion first.

Conclusion: In none of these experiments was there an increase of more than 2 mm. in length since the operation, while the normal bones showed as much as 7 mm. of growth. A difference of 2 mm. in length is within the limits of error in measurement or lengthening due to failure of close approximation. After reimplantation of the epiphyseal cartilage there is at first a slight increase in length while at a later period there is a decrease in length.

6. Autotransplantation of the Epiphyseal Cartilage: In these experiments the resected epiphyseal cartilage was interchanged with a corresponding piece from a bone of the other foot. Results are noted in Table 6.

Conclusion: With the exception of two experiments there was no definite evidence of increase in size after autotransplantation of the epiphyseal cartilage. In these two positive results the increase in size was very limited, being only 0.35 cm. as compared with 1.4 cm. of normal growth. On section of the bones the epiphysis of the operated bones showed definite signs of degeneration, while the epiphysis of the nonoperated bones presented a normal appearance. After autotransplantation of the epiphyseal cartilage its function to increase in a linear direction is entirely lost or only persists in a very limited degree.

7. Reimplantation of Varying Lengths of the Epiphyseal End of the Metacarpal and Metatarsal Bones: In this series of experiments one third, one half and two thirds of the epiphyseal end of the metacarpal was removed entirely from its normal bed and reinserted immediately in the same position. Results are noted in Table 7.

Conclusion: In none of these cases with the one exception of Experiment 8 E 34-43 L, was there any evidence of increase in length growth. The exact reason for the increase in this experiment cannot be definitely determined. It is possible that for some special reason this particular epiphysis proliferated for a short time. In the gross specimen there is no evidence of epiphyseal cartilage, so what growth occurred took place early and only for a limited time. In view of the large number of negative results this experiment cannot be definitely considered as indicating an active functioning of the transplanted epiphysis. Whether a long or short piece of bone was transplanted with the epiphysis was of no consequence as there was practically complete failure of the growth in every case. Incisions or boring of holes into the bone seem to hasten the degenerative processes.

8. Autotransplantation of Varying Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: These experiments differ from those of the previous group (7) in that the segment of bone was interchanged with a corresponding segment from the opposite foot. Results are noted in Table 8.

Conclusion: There is a uniform failure of growth after autotransplantation of varying lengths of the epiphyseal end of the bones. The normal bones show a marked increase in length. Boring holes into transplants increases the degenerative processes.

9. Two Stage Autotransplantation of Different Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: In this set of experiments the distal one-third, one-half or two-thirds was united to the proximal two-thirds, one-half or one-third respectively of the adjoining metacarpal or metatarsal. After a sufficient length of time for union had elapsed a second operation was performed in which the distal segment was entirely separated from its surrounding tissues, thereby completing the autotransplantation. Results are shown in Table 9.

Conclusion: In this set of experiments there was evidence of almost normal growth up to the time of the second operation, but after severing the epiphyseal end from its surrounding tissue there was a marked diminution in growth. This shortening took place even when there was firm union with the normal proximal segment. It was noticed that in cases where nonunion occurred that there was more marked disturbances in growth — even in the first part of the experiment. Under these very favorable conditions for transplantation there was considerable diminution of the function of the epiphysis after transplantation.

GENERAL CONCLUSIONS

1. From the practically uniform failure of increase in length of the bones after transplantation of the epiphyseal cartilage, either alone or with an accompanying piece of the epiphysis and diaphysis, both in reimplantation and autotransplantation, it must be concluded that epiphyseal cartilage loses its power to functionate after such transplantations.

2. As the degenerative processes were more advanced in autotransplantation than in reimplantation, it can be almost certainly predicted that there would be a more marked degeneration in homotransplantation.

3. Whether a small or large sized transplant was taken was of no consequence, as there was the same failure of growth in every instance. Incisions into the periosteum or boring holes into the cortex hastened the degenerative processes.

4. There was marked disturbance of growth following the two-stage autotransplantation, in spite of the fact that osseous union was secured before severing the epiphyseal transplant from its surrounding and nourishing tissues.

5. The epiphyseal cartilage must be considered as a very vulnerable tissue, its viability being directly dependent upon its blood supply.

Shreve Building.

ABSTRACT OF DISCUSSION

Dr. D. B. Phemister, Chicago: The finding of Dr. Haas that there is apparently no longitudinal growth through the epiphyseal cartilage after transplantation is very interesting. One would expect cartilage to live if any tissue lives when transplanted, because it is nourished by a lymphatic instead of a blood vascular circulation. Hyaline articular cartilage covering the ends of bones is frequently detached with or without a portion of underlying bone and becomes a loose body in the joint. The bone cells, if any are present, always die and are absorbed, but the cartilage, receiving sufficient nutrition from the synovial fluid, remains alive indefinitely. The deeper cells which have a columnar arrangement slowly undergo necrosis. I have studied histologically ten or twelve such specimens of the various ages and have noted transformation of the superficial cartilage into fibrinous connective tissue in the older specimens. In one specimen that had been free in the joint for ten years there was proliferation of the cartilage and a connective tissue capsule had formed. The injury of the transplant resulting in disturbance of longitudinal growth might be either to the epiphyseal line or to the juxta-epiphyseal bone. The small amount of longitudinal growth occurring in some of his experiments might possibly be accounted for by longitudinal growth in the shaft itself. We see the shaft of a bone increase one-half an inch or more in length as a result of an inflammatory process, as syphilis or in osteitis deformans, where the epiphyseal lines are closed. Consequently, there is no reason why in the absence of the normal process of longitudinal growth, and where there is a great demand for it, the cells of the shaft should not proliferate and increase the length of the bone.

Dr. J. T. Rugh, Philadelphia: I think the important lesson for us as practical orthopedic surgeons is the postponement of our operative work in this type of cases until adult life or until the expectation of any natural increase in growth is past. I know in my own experience I have been sorely tempted at times to replace a very imperfect hip joint, in the case of congenital dislocation, or similar condition, with the head of the fibula, but have thus far refrained, and I shall continue to do so in the future. The lesson I have learned from this experimental work of Dr. Haas has been of enormous importance.

Dr. Roland Meisenbach, Buffalo: The work of Dr. Haas, in my opinion, is of great value. Although he has gotten some negative results, I think it touches on many things of value which will in the future give us a better understanding of one of the most important parts of the long bone; namely, the epiphysis. It may also assist in giving us a better understanding of the function of the epiphysis. I am particularly interested in this work because several years ago I did some research work on the chemical and mechanical stimulation of the epiphysis. In this work, I had occasion to observe the epiphysis both microscopically and macroscopically in about two hundred rabbits. In studying the epiphyseal and diaphyseal lines, it was interesting to see from the experimental work the close relation to the practical work; that is, the cases which we see daily that have interference of growth or which have stimulation of growth of the epiphysis. This work is really the fundamental source of all fracture and bone-graft work. I would like to ask Dr. Haas whether the transplant is divided from above or below the diaphyseal line. This will, I believe, change the results of the experiments materially. In my experiments I was able to stimulate and retard bone growth, depending on which part of the epiphyseal cartilage was attacked in the experiment. I have a few lantern slides which I prepared for the Pan-American Congress which show sections of the epiphysis and epiphyseal line in different stages of stimulation. That is, that by either toxic or mechanical means it is possible to cause more bone to form in the region of the epiphyseal end of long bones, as in my experiments with tibias, or to almost cause an arrest of growth. One slide shows that by means of toxic agents it has been possible to cause the entire epiphyseal line to close at a much earlier period by months than normally. This explains, I believe, many of the cases which have focal infection at some part of the body that later on developed joint lesions, and in which the joints became deformed; also it explains the arrest of growth following fractures, and therefore I think that an attempt to transplant the epiphysis depends largely on the point from which we take the transplant and the technic employed.

Dr. S. L. Haas, San Francisco: As Dr. Phemister has mentioned, cartilage is a very resistant tissue. It is able to withstand a considerable amount of injury and is dependent on the surrounding tissues and fluids for its nourishment. I have only studied a few microscopic preparations from these experiments and have found that the cartilage near the perichondrium remained alive. It is possible that some of this cartilage may continue to proliferate, but I doubt if it would cause any decided increase in the length of the bone. There is a distinction between growth in length and increase in size. It was noticed in some of these experiments that there was a marked swelling about the epiphyseal cartilage without any increase in length, showing that although there was cell growth there was no purposeful longitudinal increase like the normal epiphyseal cartilage. It was merely the regular cell division and multiplication which manifested itself by spreading in the line of least resistance. It was shown in the old experiments of Hunter and Duhamel that the longitudinal growth of bone takes place only at the epiphyseal ends. In these experiments two pegs were driven into the diaphysis and in spite of an increase in length of the bone there was no change in the distance between the two pegs. As to the increase in length following destructive osteomyelitis, it might be due to the general wild multiplication during the processes of regeneration, which, being unrestricted, spread in all directions.

In regard to Dr. Meisenbach's question as to whether the transplantation was made above or below the epiphyseal line, I presume he wishes to ascertain the relation of the incisions to the metaphysis, which is the most actively growing part of the bone. In all the excisions of the epiphyseal cartilage a piece of adjoining epiphyseal and diaphyseal bone was removed so as not to injure that particular region. Heller, in a postscript to his article, stated that he had succeeded in transplanting the epiphyseal cartilage in the form of very thin sheets of cartilage and that there resulted almost a normal growth. He does not give the exact details of his experiments, but from the results of my experiments I am forced to entertain some doubt as to the correctness of his conclusions. It is possible that by some special method he is able to get these good results.

THE RELATION OF THE ROENTGENOLOGIST TO THE HOSPITAL *

H. W. VAN ALLEN, M.D.
SPRINGFIELD, MASS.

The reason for presenting a paper dealing with the relation of the roentgenologist and the hospital comes from the very great variation of such relation at present. Were any one of the methods now in vogue approaching idealism, it would be shown by the number adopting such a method; while a study seems to show greater variation as time goes on. My attention was first called to this subject by the investigation made by a state committee in regard to patients coming to hospitals under the Massachusetts workmen's compensation act. This investigation showed no two institutions in the entire commonwealth making arrangements that could by any means be called similar. In medicine a multiplicity of drugs recommended for a particular disease shows a competency of none, and so it is fair to suppose the roentgenologist and the hospitals have not yet found a satisfactory arrangement one with the other.

The growth of the applications of the Roentgen ray is responsible for this condition. When first given to the medical profession, it promised to be one of the most limited specialties. The locating of dense foreign bodies and fractures of the bones of the extremities was its entire field. Now I say without hesitation there is no broader specialty in medicine. I cannot think of a single branch of the profession which does not call the Roentgen ray to its aid at times. Any medical journal is proof of the wide scope of this specialty, and more than half the articles show the dependence placed on the ray, either in diagnosis or in treatment.

The original roentgenologist was usually a photographer, electrician or a young and budding physician, hoping to use this as a stepping-stone to something more tangible. It was the way this original work was done that to a certain extent is the fault of the present condition. Many hospital superintendents and not a few physicians have failed to keep pace with the Roentgen progress and know the kind of man now required. A competent roentgenologist must have primarily a good knowledge of medicine in its various branches; he must be well versed in general science, with special information in regard to electricity, and, furthermore, he must have a working knowledge of photography. All these requirements being fulfilled, he must have the ability to acquire special acumen in interpretation of the shadow shown on Roentgen-ray plates. This mental coordination of the shadows and placing the right significance on each is almost an instinct, and if one fails in this, all other qualities cannot make one a real roentgenologist. Thus the roentgenologist must have combined medical, electric and photographic information to succeed.

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* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Many serious operations rest entirely on the Roentgen-ray findings. Why have less than the best skill in determining these findings? When the people come to know that their hospital treatment often rests on the Roentgen evidence found at entrance, they will select a hospital where this work can be best done. They should know that the expense of maintaining the rapidly improving Roentgen-ray apparatus is great, and proper fees must be arranged. A price per plate is the poorest way to estimate the cost, as the plate is the smallest item of expense. Hospital managers should trust their roentgenologist to carry on the entire department, including the financial policy, or take time to make a more thorough and comprehensive study than many are doing at present.

In writing this paper, I have had in mind more particularly the hospitals of 150 beds or less. A paper written recently by Dr. I. S. Hirsch[1] of New York has dealt admirably with the requirements of a large metropolitan hospital. Many of the requirements of such a hospital do not, however, apply in the one with the number of beds just referred to. In such hospitals it is not practicable to maintain a Roentgen staff, but one man with an assistant or two can make a creditable reputation for himself and the institution.

The cost of equipping and maintaining the Roentgen-ray department of hospitals is constantly under discussion. The rapid evolution of the Roentgen-ray machine has made changes necessary so often that up to the present time the money for instruments must come from other sources than the daily revenue of the department. When such a time comes that no radically new type of instrument is required, this expense will immediately be materially lessened. The cost of maintenance, however, except where the free bed system or outpatient department is very large, should be derived from the patients themselves.

This brings us to the question of private patients' fees. I maintain that they should be the same as in the roentgenologist's private laboratory; otherwise he would be a competitor with himself. The division of this fee between the roentgenologist and the hospital will vary, of course. The greater the skill of the roentgenologist, the larger his proportion. It should always be kept in mind that it is the perfection in technic and skill in plate reading that is required, rather than the sale of so many plates made on an instrument costing so much. Ordinarily, hospitals should not retain more than 25 per cent. of the fee charged private patients to cover the overhead expenses. Under few circumstances should the roentgenologist (who, I have said, should be a physician) sell his services at a fixed sum per year to a hospital. It opens opportunities for practices which are not elevating professionally, and are a source of constant friction.

The relation of the roentgenologist to the hospital staff is another question often discussed. If he is a real roentgenologist, his place on the staff should be the same as that of any physician doing special work. This place has not always been conceded him, owing in part to the confusion in the early days as to who should be a roentgenologist.

His report should also be in the nature of a consultation rather than that of a laboratory report. This report may be written, but I believe should be supplemented when possible by a verbal one, going into the various possibilities that may be recognized only by the roentgenologist in consultation with the clinician. It is only in this way that the patient can get the full benefit of our professional skill. The method of stated staff consultation is in vogue in Germany, and much of the diagnostic acumen of the Germans is due to this close relation into which the members of the staff are thrown.

The necessity of the preservation of the finished plate is not recognized sufficiently by the vast majority of hospitals. Too many times every one has access to them, and plates may be removed to be replaced at will or even not at all. These plates are an accurate record of the condition of a patient at a given time, and in many cases cannot be duplicated. A plate which, when taken, seems of ordinary moment may later become of the greatest value, either in treatment or medicolegally. All should be preserved. No one but the roentgenologist or his assistant should have the right of access to the files, and if for any reason plates are removed, they should be signed for and a record blank deposited in the place of the plate, showing who has taken it; and when it is returned, credit should be given for its return.

The plate legally belongs to the hospital or the roentgenologist, and never to the patient. He is entitled only to the information obtained from it, and given through his physician.

A medicolegal aspect too little recognized is that the roentgenologist must identify the plate himself in court. A medical man who simply borrows the plate to appear in court has evidence of no value. He cannot under oath connect it in any way with the patient. He did not see it developed, he has no mark on it which shows there was not an exchange made in the dark room, and moreover, he is not an expert in plate interpretation. The roentgenologist should have full control of the plate library, demonstrating the plates when required.

The method of preserving these plates hardly comes within the scope of this paper. It will vary with the size and requirements, as teaching, etc. It is a duty to the hospital, owed by the roentgenologist, to see that these plates are well preserved.

My plea in this paper has been for a closer relation medically of the roentgenologist to the hospital, and for a recognition of his ability. On his part, it is a duty to use his general medical acumen as well as his technical Roentgen information. Also there is a necessity for his being in entire charge of the department, which should be well correlated in all its branches.

19 Maple Street.

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[1] Hirsch, I. S.: Mod. Hosp., January, 1915, p. 11.

ABSTRACT OF DISCUSSION

Dr. A. R. Warner, Cleveland: The Roentgen-ray department has become an important specialty of hospitals and it has gone beyond the stage of a novelty. It is an essential. The principle brought out as to diagnosis and the handling of diagnoses and information in regard to patients as expressed in the paper I am quite sure is correct. We have had some trouble with this matter on several occasions in Ohio and each time the courts have held as the paper expressed.

Dr. Joseph M. Spellissy, Philadelphia: Dr. Van Allen mentioned the possession of the plates. I think we all agree that the plate should belong to the hospital. Where a great many plates are made the storage and preservation of the plates has become a bugbear in a large institution doing a large amount of work, so that plates are destroyed within a year. I know at the University Hospital, Philadelphia, with which I am closely associated, they have a department of photographic records there in which I am interested in standardizing photographic records and also Roentgen-ray plates. I have made Roentgen plates myself. I presented this morning a Roentgen-ray tracing such as we use in St. Joseph's Hospital. The paper is either "onion skin" or what is called buff manifold paper. It is transparent. It has printed on it the date of taking the plate and then the roentgenologist makes a tracing of the plate on the paper and that paper is bound with the records of the patient, so that if the plate is destroyed it still remains of value to the physician or surgeon.

Mr. F. M. Nesmith, Oakland, Calif.: I would like to ask Dr. Spellissy if that record is accepted in court?

Dr. Spellissy: I do not know. It has been mentioned that a roentgenologist sometimes goes to court. The testimony I should think would be acceptable that that was his tracing of what he saw in the plate. Where a plate is produced itself I have known the most eminent roentgenologists to disagree in the interpretation, and they would throw out the testimony.

Dr. W. H. Walsh, Philadelphia: I do not believe that the roentgenologist of a hospital should be permitted to have anything to do with the financial policy of the Roentgen-ray department, this question being one entirely within the province of the management of the institution. There should be no question as to the desirability of consulting the roentgenologist in all questions regarding the equipment of his department, but when questions of cost are involved they must be finally decided by the administrator. I can see no more reason in permitting the roentgenologist or the pathologist to handle the financial policies of their respective departments than I do in allowing the visiting physicians or surgeons of the staff to meddle in the financial matters.

With respect to the question of the division of fees between the roentgenologist and the hospital, I must express my disapproval of such an arrangement, as I do not think they work out to the ultimate benefit of either of the principals. There is no good and sufficient reason why the roentgenologist or members of the staff should not be the recipients of salaries for their work, a procedure which in no way affects the dignity of their position, nor which could prejudice their professional standing. Being opposed to the very proposition of dividing fees, *any* division would be objectionable to me; but I am rather inclined to think that the hospital that only retains 25 per cent. of the fees received, supplying as it does the apparatus, supplies, electrical current and assistants, is not getting its due, and I should feel inclined to reverse the arrangement, allowing the roentgenologist 25 per cent. and the hospital 75 per cent., a more equitable division.

Dr. H. W. Van Allen, Springfield, Mass.: In Massachusetts, at least, tracings of plates are not admitted as evidence in court. The actual plate is the only exhibit allowed. Tracings may accompany the plates in an explanatory way, as they are much more easily understood by the jury. If a plate has been lost or destroyed the roentgenologist may state his best memory of the plate, but cannot introduce a diagram.

Of course I do not have as large a Roentgen clinic as Dr. Spellissy of Philadelphia, but in proportion our space is as valuable. We, however, keep our plates easily accessible until one year old and then they are taken to space less valuable in the hospital and permanently stored. This is a necessity, as frequently they are required for reference to note changes in chronic cases, as well as for teaching and for court cases; the latter not required at times for several years after the plate is made. One recently was required after an interval of seven years.

In regard to the financial part, I believe it should be under the roentgenologist's control. It is so in the hospitals I am connected with, and the plan works nicely. Superintendents do not know the requirements of such a rapidly changing specialty, and I have found they appreciate careful financing, which can only be done by one familiar with the work. As to the 25 per cent. taken out for expenses by the hospital on private patient's fees, careful study of the subject makes me think this is about correct. It may vary in some hospitals slightly. This percentage (at rates charged in private laboratories) will cover actual expenses on private patients and it is self evident that the remainder is paid for the skill of the operator, and any of this going to the hospital would be as deplorable as fee-splitting is between doctors.

MANUFACTURE AND ADMINISTRATION OF NITROUS OXID FOR ANESTHESIA

THE EXPERIENCE OF LAKESIDE HOSPITAL *

A. R. WARNER, M.D.
CLEVELAND

At Lakeside Hospital, nitrous oxid gas has been used for anesthesia extensively for about eight years, and has been manufactured as a routine in the hospital for more than six years.

For the first four of these years, the gas we manufactured was not entirely satisfactory to any one, and at times was not without harmful effects. This was overlooked at first, partly because, on the whole, we had as good results as others, and partly because it was then believed that a certain amount of cyanosis was necessarily present during nitrous oxid-oxygen anesthesia, and that bad after-effects were in a measure to be expected. As our anesthetists developed more skill with this anesthetic, they were able to demonstrate to us that the cyanosis, the irritation, and the symptoms of toxemia following the anesthesia were present to a greater or less extent in all or in several patients on the same day, and that on other days there were no such symptoms at all: they convinced us that the gas made in the hospital contained a variable amount of some poison. Commercial gas, although producing at times the same symptoms of toxicity, seemed more uniform and distinctly less irritating. This difference was fairly constant, although our plant and methods of manufacture were the same as the commercial plants and methods known to us. On our worst day one patient of the gynecologic service died with all the symptoms of a severe toxemia a few hours after a simple operation; one patient of the surgical service was severely poisoned, and three others suffered to a lesser extent. The predominating symptom of the poisoning was a cyanosis that no amount of oxygen could dispel. The hemoglobin was evidently damaged, and our surgeons learned that outdoor fresh air treatment was the most effective treatment. The condition, with the exception of the color, resembled carbon monoxid poisoning, yet unfortunately no spectroscopic examinations of the blood of these patients were made.

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* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

About two years ago, it became evident to all that nitrous oxid must be obtained in greater purity, or its use in the hospital abandoned. On the good days this anesthesia was so satisfactory to the surgeons, so unobjectionable to the patient, and made the operative cases so easy to care for in the ward, that it seemed ideal for hospital use. In our opinion these facts justified every effort to make it right. The best consulting chemists obtainable were called to examine the plant and methods. Each pointed out possible defects, and all agreed that better apparatus and methods could probably be developed by experiment. Each called attention to the great number of the possible impurities. One of our trustees, Mr. H. M. Hanna, then offered to provide the funds necessary to run an experimental plant at the hospital, and I undertook to solve in such a plant the two following problems:

1. To find a method for the manufacture of nitrous oxid of sufficient purity to be without poisonous effect.
2. To devise apparatus by which this can be done as a routine in hospitals under hospital conditions.

The details of many experiments with new chemical processes and types of apparatus need not be presented. The entire plant was rebuilt several times. The net result of the first six months' work was only more uniform gas: we did not have the very bad days, yet the evidences of toxicity continued. About this time we found that nitric oxid, even when present in large amounts, was entirely removed from the nitrous oxid by confining in iron tanks or over water for a few hours. This explained the lesser irritation from commercial gas, which stands longer in the gasometers and is always shipped in iron cylinders. Commercial gas has always been free from nitric oxid, and our gas — sometimes used without standing long in the tanks — had not been. In these experiments we became convinced that the poisonous effects were, at times at least, not from the nitric oxid, which has been the generally dreaded impurity. We learned, too, that the effect of the poison was cumulative, and that a long anesthesia was the most delicate available test. In comparison with this, all analyses and chemical tests were crude.

The impurities theoretically possible to produce in the destructive distillation of even a pure ammonium nitrate in an iron or other reducing retort are many. Among these are many of the more highly organized, well-known, hemoglobin poisons, as the hydrazins and hydroxylamins. It was at least possible that some of these were causing the trouble. Our gas and the best samples of commercial gas obtainable were tested, and all were found slightly alkaline to phenolphthalein. Published analysis of commercial nitrous oxid made by reliable chemists had reported the presence of traces of ammonium compounds and other nitrogenous substances which certified to the presence of ammonia or of substances breaking down to ammonia. To test the hypothesis that these basic compounds might be the poison, a thorough washing with strong sulphuric acid was then added to the process of purification of the gas, for the purpose of removing all free basic radicals. On this day — now over a year ago — our gas became absolutely neutral in reaction, and the peculiar cyanosis and all other symptoms of toxicity disappeared from our operating rooms, never to appear again when acid-washed gas was used. We did, however, see it in varying degrees each time that the installation of new apparatus in the plant made it necessary to shut down and use for a few days commercial gas not scrubbed with acid. All of our days are good days now: we are enjoying the advantages of this anesthetic without the disadvantages which had been so constant as to become regarded as necessary and belonging to it.

Confirming evidence came from independent sources. The Ohio Chemical Company of Cleveland noted our better results, and remodeled their plant. Three competent anesthetists, whom I have happened to meet, one from Boston, one from New York and one from Ithaca, volunteered information regarding the uniformly better results which they were having with the Ohio gas, all dating the better results from the date the company remodeled its plant and instituted the acid wash as a part of the purification process. Later the Lennox Chemical Company remodeled its plant to include the acid wash. Since this date I have not heard of any evidence of toxicity or any bad results from the use of nitrous oxid in Cleveland or vicinity. These two plants manufacture all the gas sold in or about Cleveland.

The chemical work to identify the particular poison or poisons which have caused all the troubles has not been done. We know only that it is removed by the acid wash, and that it is found in the acid in the form of ammonium salts, which is consistent with the belief that it is one of the hydrazins or hydroxylamins. The problem of isolating the particular poisons by chemical means is too difficult to look attractive, now that the practical results have been attained without such work.

For the simple purpose of preventing commercial monopoly, applications for patents on a new method of separating the nitric oxid from the nitrous oxid, on a new wash jar devised, and on a process of removing the bulk of the impurities by condensing the 45 per cent. of water in the crude gas, as well as on the process of removing traces of alkaline substances, have been made. All patents issued will be held by the hospital to guarantee the unrestricted use of the apparatus and the methods covered by them.

To our mind the first problem has been solved. Nitrous oxid can be manufactured in sufficient purity to be absolutely safe for use in anesthesia. We are not yet quite sure about the second problem. Lakeside can now manufacture such gas as a routine, and safely, but the walls and ceiling of our room still bear marks made by pieces of bursted retorts, and our employees have not forgotten the fumes which repeatedly filled the corridors "from the gas plant." It is never entirely safe to place a pot containing a nitrogenous and an oxidizing substance over a fire. Many defects in the models of apparatus and troubles in the handling of the purification process have been overcome, some nonessentials have been eliminated, and safety devices have been added, so that it now seems to us entirely reasonable to expect a good chief engineer to supervise a similar plant and train a helper to run it; yet it remains to be demonstrated.

The cost of building a new plant for the manufacture, purification and handling of nitrous oxid similar to the one now in use at Lakeside would be about $2,700, and it would require about 600 square feet of floor space. This figure includes the cost of apparatus for liquefying the nitrous oxid and for filling small cylinders. The cost of apparatus for the handling of oxygen (purchased in large cylinders) outside the operating room, and for delivering it in pipes parallel with the nitrous oxid at the same constant pressure is about $300. This includes apparatus for filling small cylinders from the large. The cost of running the pipes for the nitrous oxid and oxygen to the operating rooms would be additional, and would vary with distance and difficulties. It would be the same as the cost of running water pipes the same distance.

COST

From the first there has been a gradual reduction in the cost of nitrous oxid-oxygen anesthesia. Three years ago our costs were running about $10 per hour, divided into $3 for anesthetists' salaries and $7 for the gases and incidentals. The present figures are $2.50 for anesthetists and $1.57 for gases and incidentals, making a total of $4.07. In order to present the details of cost as clearly as possible, I have prepared two series of the detail of six consecutive months, each with averages. The first series ends with March, 1914, and the second with April, 1915. During the first series we purchased the small cylinders used, so that the amount of gas manufactured was not the total amount used. In the second period we compressed our own nitrous oxid for small cylinders, and filled small oxygen cylinders direct from the large. The filling of the small oxygen cylinders from the large is distinctly a saving. In Cleveland, the price of oxygen in small cylinders is just seven and one half times as much per unit volume as in large cylinders. This is due to the fact that the large cylinders, at least, are oxygen from the Linde process, which is apparently of perfectly satisfactory quality. The small cylinders are either refilled or oxygen from the old process. The figures for the amounts of the gases used are from the storage tanks in the basement, and therefore account for all leaks, accidents and wasted gas. To determine the amount of gas used per hour, the total amount drawn from these tanks was divided by the total number of hours of anesthesia reported in the month. The length of anesthesia reported is the actual time that the gases are flowing.

TABLE 1.—AMOUNT OF GASES USED, FIRST SERIES

	No. Gallons N_2O from Plant	Cost of N_2O from Plant	Cost of N_2O per 100 Gallons	Total Gallons N_2O Used	Av. No. Gal. N_2O Used per Hour	Av. No. Gal. O_2 Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Oct., 1913....	54,346	$320.02	$0.59	69,646*	470	170	148	$6.18
Nov., 1913....	44,001	262.30	.58	61,401*	464	170	132:10	6.63
Dec., 1913....	43,296	306.95	.70	44.596*	398	139	112:6	6.76
Jan., 1914....	61,176	328.08	.53	62,376*	243	43	256	3.05
Feb., 1914....	35,478	243.60	.68	36,178*	262	88	138:44	4.80
Mar., 1914....	52,152	296.33	.56	59,652*	326	56	182:59	4.38
Average....	48,508	$292.88	$0.61	55,642	361	111	161:42	$5.30

* Small cylinders purchased in this period.

The most striking figure of these tables is the drop in the amount of nitrous oxid used per hour from 361 to 161 gallons. This and the corresponding drop in the oxygen figures were caused by two factors developed and installed between the two series. The first was the attachment of meters measuring the gas going to each machine so that the anesthetists could note the comparative amount of gas used in any period. Our gas man repeatedly made minute readings during the anesthetics given by our three anesthetists, until we could recognize the anesthetist from a chart of these readings. We demonstrated the fallacies of the rate of flow dials on the machines, and the inaccuracy of the meter readings themselves on account of the variations in the pressure. The result of this work was a clear understanding by the anesthetists of when and how they wasted gas. The wasting became less. Our meters were secured with difficulty and at considerable expense, because the high pressure required special construction. But since then one firm, at least, has put suitable meters for this use on the market, and makes a gas machine with meters as an integral part. The second fact was the lowering of the pressure in the pipes leading to the gas machines from 35 to 5 pounds. This pressure is, or should be, reduced by the machines to practically atmospheric pressure. One of the makes of machines that we use handled the lower pressure equally well, but the other did not until we enlarged the ports. It was soon noted that the lower pressure was much easier for the patient as well as more economical. The anesthetist can turn on all the gas the patient can breathe without developing tendency toward positive pressure in the lungs. Expiration can take place against the gas flow, checking it without effort, and there is always a sufficient volume of gas available for rapid inspiration without developing a negative pressure and effort. The gas flows freely in inspiration, but is automatically checked in expiration.

TABLE 2.—AMOUNT OF GASES USED, SECOND SERIES

	No. Gallons N_2O Made	Cost of N_2O	Cost per 100 Gal.	Av. No. Gal. N_2O Used per Hour	Av. No. Gal. O_2 Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Nov., 1914......	27,192	$216.85	$0.79	153	85	177:20	$3.97
Dec., 1914......	21,002	221.20	.71	172	53	180:17	3.46
Jan., 1915......	18,424	123.52	.67	153	62	119:26	4.71
Feb., 1915......	18.582	129.52	.69	166	107	111:39	4.81
Mar., 1915......	25,962	169.60	.65	158	54	163:44	3.41
Apr., 1915......	26,071	175.40	.67	162	60	160:43	3.75
Average......	24,539	$172.68	$0.70	161	70	152:12	$4.02

TABLE 3.—DETAIL OF THE COST PER HOUR

	First Series	Second Series
Nitrous oxid	$2.20	$1.12
Oxygen	.25	.16
Anesthetists	2.45	2.50
Incidental items, repairs, etc.	.40	.24
Total	$5.30	$4.02

The increase in the cost of manufacture in the second series is due entirely to the lesser amount made and the constant overhead expense for the salary of the man who runs the plant and for other fixed charges. No items of interest or depreciation, but all repairs and replacements are included. In each series, the cost of ammonium nitrate was the same.

The recent sharp rise in the price of the nitrate is caused by the increase in the cost of nitric acid due to the war.

ADVANTAGES

The advantages of this anesthetic which the patient most highly appreciates are the facts that the gases are not disagreeable or irritating, and that consciousness is lost so promptly. To the patient the starting of the anesthetic is the beginning of the operation, and the sooner consciousness is lost, the better for many reasons. Crile has found that it protects the brain cells from shock more than other anesthetics: especially so, if combined with a little morphin. Following the operation, the patient is not called on to endure patiently discomfort from the irritation of ether in the eyes, throat and bronchial tubes, or on the skin. There are some to whom a greater advantage seems to be the fact that they are not likely to talk or act foolish when coming out from the anesthesia.

In the operating room, gas has an advantage over ether anesthesia because the patient gets under its influence more quickly, saving time, and because at the close of the operation the patient is conscious and can be returned to his room as easily as any conscious patient. The familiar scenes of delirium in the second stage of ether, with orderlies holding the struggling patient on the table and the surgeon trying to boss the job and at the same time keep sterile, are entirely eliminated. The ether patient who starts vomiting in the corridor on the way back to his room or ward made more trouble than we realized. Every one took the distressing scene as an occasional necessity, but it certainly never made it any easier for others to face the ordeal of an operation.

The advantages of nitrous oxid anesthesia are best appreciated in the wards, and it is here that the hospital gets back some of the initial cost. It costs a hospital money to care properly for a noisy vomiting ether case in a side room, not only in the nurses' time devoted to the case, but in the effect on the other patients. Comfortable ward patients are as curious as children, and the full details of the ether room scenes never fail to reach the newest patient, creating in him added apprehension and dread. It costs money to have house doctors and head nurses busy explaining away the apprehensions and dread of an operation, and to keep the courage up even after the surgeon has convinced as to the necessity and comparative safety of the impending operation. The return of a patient to his ward bed conscious and comfortable directly from the operating room gives a very different impression as to an operation from that given by a return after a day or so spent in the side rooms. Every patient knows that side rooms are for things the others must not see. It costs money to keep a private room patient convinced that water is withheld for his own good, and convinced kindly and tactfully enough to dispel the suspicion that it is but a rule and red tape that should not apply in his case.

With pure gases, vomiting is extremely rare: when morphin is used it comes about as must be expected from the use of this drug independent of anesthesia, and it resembles morphin vomiting in type. Pneumonia is apparently much less frequent with nitrous oxid, and the same is true of postoperative shock; but the cause of either of these in any given case is so obscure that it is hard to fix responsibility. Since we began the use of nitrous oxid, there have been many other changes and improvements in the care given our patients which should have an effect on the pneumonia and the surgical shock percentages. We are certainly getting much less postoperative shock and pneumonia than formerly, and nitrous oxid has undoubtedly contributed largely to this change.

Many patients, especially minor operative patients, are able to leave the ward much sooner. Not only is the day in the ether room lost, but it often requires another one in the ward to bring back the expended energy. The cost of many extra days' treatment saved can properly be credited against the gas anesthesia bill.

ADMINISTRATION

Under the administration of nitrous oxid, this paper can mention only a few observations of a skeptical hospital administrator who has watched the development of skill in its use. More than half of nitrous oxid anesthesia was once carbon dioxid asphyxia: blue-black patients were the rule. Now we know that cyanosis at any stage of the anesthetic is evidence either of poisons in the gas or of faulty, incompetent administration. It is not necessary, and is always harmful. Enough oxygen should be given at all times to preserve normal color, but more is a waste. Perfectly normal color can be maintained while the patient is presenting all the symptoms of asphyxia, including convulsions. For this reason, rebreathing to any extent is dangerous, and is not justified by the gas saved. Without the color to guide, the percentage of carbon dioxid in the alveolar air may mount unnoticed to levels dangerous through its effect on the brain centers.

The lesser degree of muscular relaxation in nitrous oxid anesthesia is sometimes annoying to the surgeon. It can be overcome by the mixing of a little ether vapor when the relaxation is needed, and all machines are equipped to do this. The results in the matter of losing the advantages of the nitrous oxid anesthesia are in exact proportion to the amount of ether used.

Proper appreciation of nitrous oxid as an anesthetic and an analgesic has been delayed by the fact that it could be used by the unskilled without horrible results traceable directly to the lack of skill, and by the fact that it was mentally classed by anesthetists with ether, chloroform and ethyl chlorid as an anesthetic, and its effect expected to correspond with that class. Temporary harmless conscious analgesia for dentistry, childbirth and other minor surgery may seem too good to be true, but it is at hand. Analgesia and unconsciousness without a profound or lasting impression on the central nervous system is the ideal for major surgery. Nitrous oxid in skilled hands can produce both, in unskilled hands, neither.

New Possible Source of Vanilla.—According to correspondence from J. F. Boomer, Manila, in *Daily Consular Reports*, a new vanilla-producing plant has been found in the Island of Mindoro, Philippine Islands, called *Vanilla ovalis*. The vanilla of commerce at present is the product of *Vanilla planifolia*. The plant is found both in open ravines and in the deep forest, but is not plentiful. The Bureau of Education of the Philippines is investigating the possibility of propagating the plant and developing it as a source of vanilla extract for trade purposes. The plant has roots similar to those of the amlong, but are superior, as they are pure white and require no bleaching. The roots are used for basket making.

PELVIC INFECTIONS AND THE APPLICATION OF DRAINAGE

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The subject of pelvic infection should not be discussed without emphasizing the fact that the condition is to a very large degree preventable. When it is recognized that the majority of cases are due to gonorrhea, and that the next most common causes are abortion, especially induced abortion, and labor, it is obvious that appropriate education of the laity and the profession would do much to eliminate this complication. We should therefore lose no opportunity to teach the public that gonorrhea is a very serious disease and that the production of abortion is a dangerous practice, and we should try to make the general practitioner realize that labor is a surgical procedure and requires strict asepsis.

While it is true that the gonococcus is the primary cause of the majority of pelvic infections, it must be borne in mind that it is a single infection for a very short time, usually not more than two or three days, and that the nature of the mixed infection is of much importance. When the complicating organism is the staphylococcus or colon bacillus, the outlook is usually favorable, but when it is a streptococcus or pneumococcus a very guarded prognosis is necessary. It is essential, therefore, to the intelligent treatment of these cases that whenever drainage is performed, a culture be made and the exact nature of the infection determined. The identification of the infecting organisms not only aids us in the prognosis, but makes possible the proper application of specific therapy. In cases complicated by the staphylococcus or colon bacillus, an autogenous vaccine, administered daily in small doses, is often of great value. When the streptococcus is present the antistreptococcus serum may be used to advantage. Fifty c.c. should be given every six hours until a favorable reaction occurs. In my observation these measures are too often not resorted to early enough to give us the best results. Particularly in cases in which the abdomen has been soiled by the rupture of a tube in operation it is much wiser to give a large dose of serum as a prophylactic than to wait until an infection has developed.

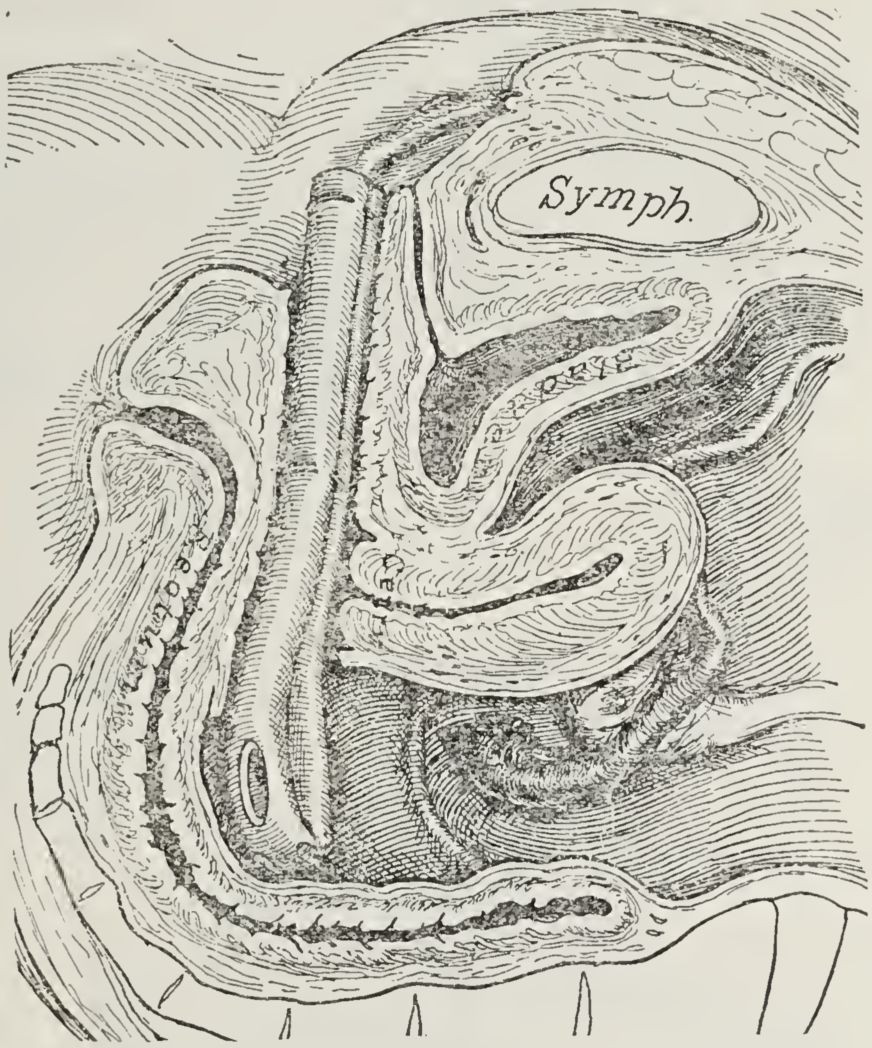

Fig. 1.—Double tube drain in position in posterior culdesac.

As these cases are usually first seen by the family physician, we should, so far as possible, teach him their proper management. In my observation, the medical treatment of acute cases is usually too vigorous. For instance, a resort to frequent and continued purging often defeats Nature's effort to limit the infection by walling it off. In numerous cases I have found the doctor much exercised over the failure of his efforts to produce free catharsis. The abdomen is distended and vomiting is frequent, and he thinks he has obstruction. The fact is that Nature has splinted the intestine to limit the spreading of the infection, and therefore the doctor's medicine is ejected. The use of morphin, particularly before a diagnosis has been made, cannot be too strongly condemned as it checks the secretions, increases the vomiting and obscures the diagnosis. A liberal use of the ice-bag to the abdomen will usually relieve the pain. The stomach should be kept empty of both water and food. If vomiting is present, stomach lavage usually relieves it and puts the intestines at rest. Thirst can be relieved by frequent slow saline enemas. The important thing is to disturb the patient as little as possible.

The chronic cases are, unfortunately, very often subjected by the general practitioner to even more serious mistakes in treatment. The use of tampons, douches, suppositories, posture, etc., gives only temporary relief, and the repeated acute congestions and chronic inflammatory processes lead to gross pathologic changes. The resulting physical distress causes great disturbance of the nervous equilibrium with the development of various neuroses and occasional psychoses. Even after radical operation these conditions may persist for a long time for it is well known that the nervous tissue, being the most highly organized, is the slowest to repair. The probability that an early, careful radical operation would restore these patients to a practically normal condition should prevent persistence in purely palliative treatment.

In the surgical treatment of pelvic infections, the judgment gained in long experience is necessary to the proper application of whatever rules may be formulated. To operate during the storm of acute pelvic infection spells disaster many times. Usually we must give Nature time to limit the infection by protective adhesions and to develop a specific immunity; but if the patient is seen early, and the diagnosis is reasonably positive, it may be good practice to operate immediately. A history of previous attacks will aid materially in determining the best course to pursue. A beginning general peritonitis, as evidenced by rapid pulse, high temperature and general or local abdominal rigidity or tenderness, usually contraindicates early surgical interference.

There are certain principles of drainage which are almost axiomatic and failure to follow them results in injury to the patient, if not death. The most important of these principles is that the lowest level of a cavity should be the highest point for the insertion of drainage. It follows, therefore, that the culdesac should always be the point for drainage in pelvic cases, rather than uphill drainage through the abdominal wall. There are, however, two exceptions to this rule. The first is the insertion of a small wick drain in the abdominal incision as an indicator of hemorrhage following myomectomy. The second is when the infection is walled off in front of the bladder and attached to the anterior abdominal wall. This type will be discussed later.

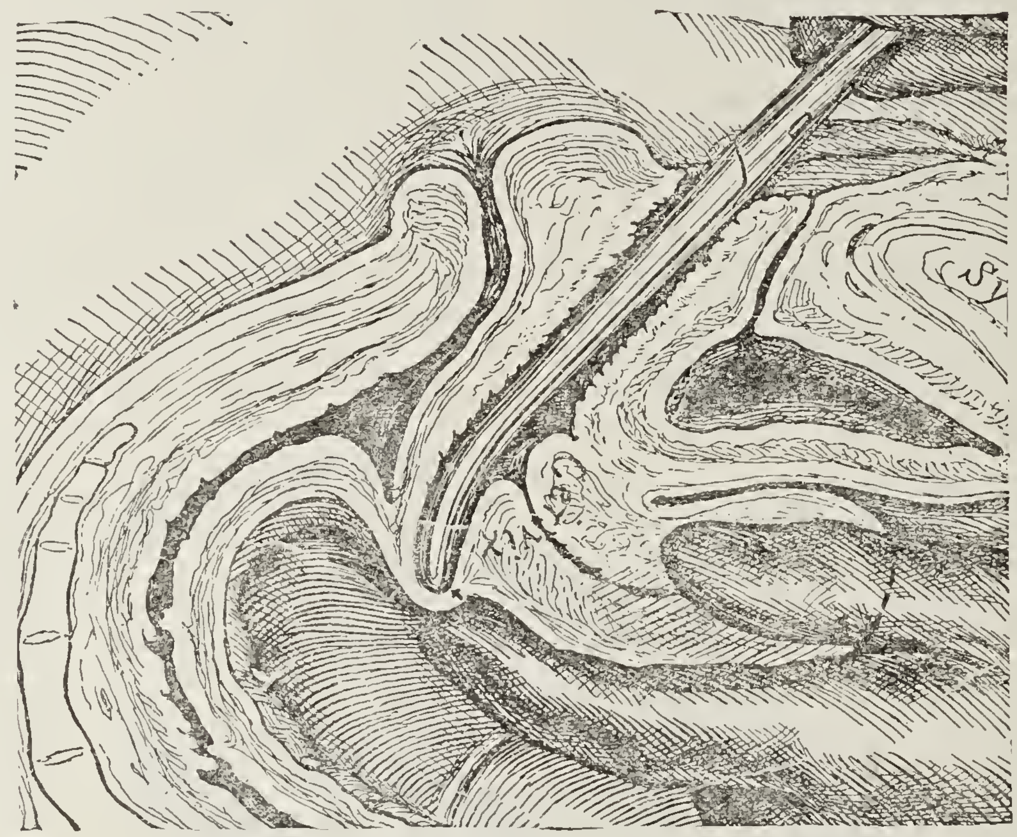

Fig. 2.—Puncture of vaginal fornix, bimanual method.

As has been said, most acute pelvic infections are gonorrheal in origin. As a rule they are best treated in a palliative way, as experience has taught that, within certain limits, they run a definite course. Walling off the infected area and the development of immunity seems to be Nature's way of handling the situation, and early surgical interference may only serve to spread the infection. Those cases which develop cellulitis accompanied by a distended culdesac are best treated by posterior vaginal puncture and the insertion of the double drainage tube for a few days. A rather stiff rubber tube is bent on itself in the middle, a linen stitch is placed near the ends to hold the two halves parallel, and a good-sized opening is cut in the outer side of each half just below the bend. The advantages of this tube are that it has a smooth, blunt end for insertion through the puncture, it gives free drainage and allows irrigation with a return flow. Figure 1 shows this tube in position in the culdesac. It is left usually from five to seven days. In case the culdesac opening becomes clogged or contracts sufficiently to prevent free drainage after the removal of the tube, the opening may be stretched with a uterine dressing forceps and the cavity irrigated with a mixture of one dram of tincture of iodin to a pint of sterile water. A Leonard douche is the most useful and convenient instrument for irrigating the cavity.

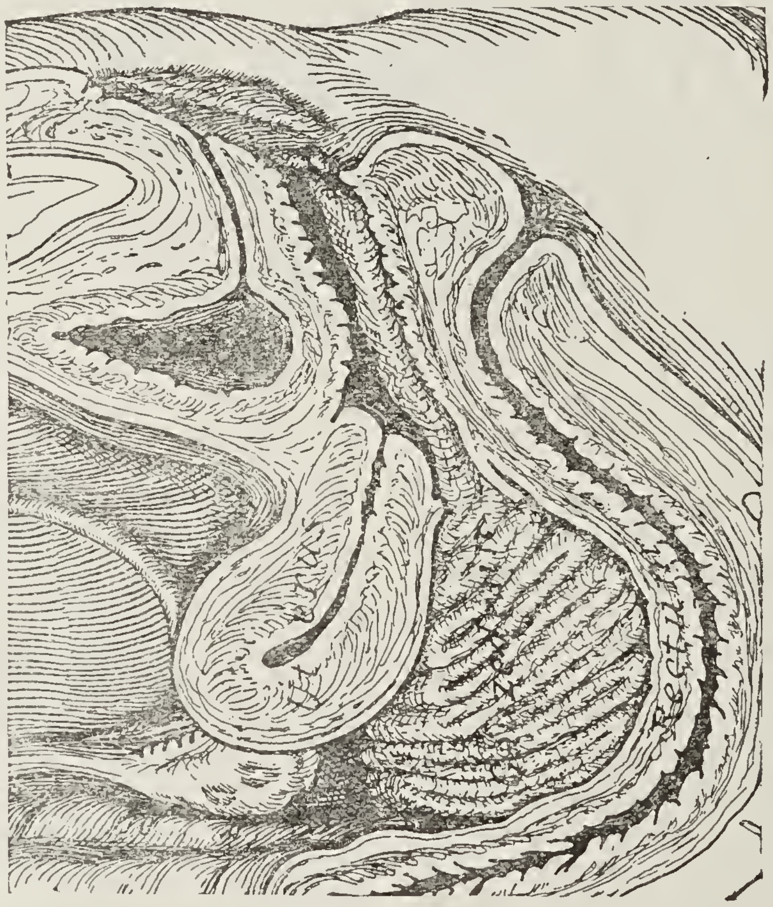

Fig. 3.—Gauze drain in posterior culdesac.

The Fowler position is a very important aid in securing thorough drainage in these cases and should always be employed. When, for any reason, the Fowler position cannot be used, the drainage will be greatly improved by elevating the head of the bed about 10 inches.

One caution should be given for the performance of culdesac drainage in these acute cases. The broad ligament should be explored through the opening with the finger and any adhesions that may be holding pus should be broken up. Frequently on such exploration one finds walled-off pus cavities which, when broken into, will liberate as much pus as the first incision. I have had the experience, when not taking such precaution, of having to return my patient to the operating room because the pulse and temperature did not return to normal. After breaking up the inflammatory wall and liberating the pus which was undoubtedly present at the time of the former operation, the temperature and pulse immediately became normal and rapid convalescence ensued. I feel quite sure that if these precautions are taken, a number of cases will be saved a secondary operation following drainage of the culdesac. I am firm in the belief that free evacuation of every pus focus in the pelvis will give the tube such free drainage at the fimbriated end that it will not be likely to cause trouble later.

Posterior vaginal puncture with tube drainage usually gives immediate relief in the acute cases, without any surgical risk. Most of the cases so treated result in apparent cure and further operative interference is unnecessary, or may be refused by the patient. If there is a history of frequent pelvic infections, more radical measures are called for than culdesac drainage. If the tubes remain enlarged and tender and the patient complains of constant or periodic pains of greater or less intensity, a radical operation is indicated. This operation can be performed more safely during the interval than during the acute attack, unless the patient is seen early. It is generally best to wait from two to three weeks after the subsidence of the acute attack and the return of the pulse and temperature to normal. By so doing time is given for the absorption of the exudate, thereby lessening the amount of adhesion. The inflammatory wall also becomes stronger, thereby minimizing the danger of dissemination of the infection. All of us have had the misfortune of easy rupture of the tubes in the dissection, when probably a few days recuperation would have avoided such a complication. Some operators state that a leakage during a pelvic operation is rarely followed by complications, but in my experience this is not the case. This is shown by the fact that a number of years ago, when pelvic gravity drainage was not so frequently used as at present, we had many more complications and a much higher mortality.

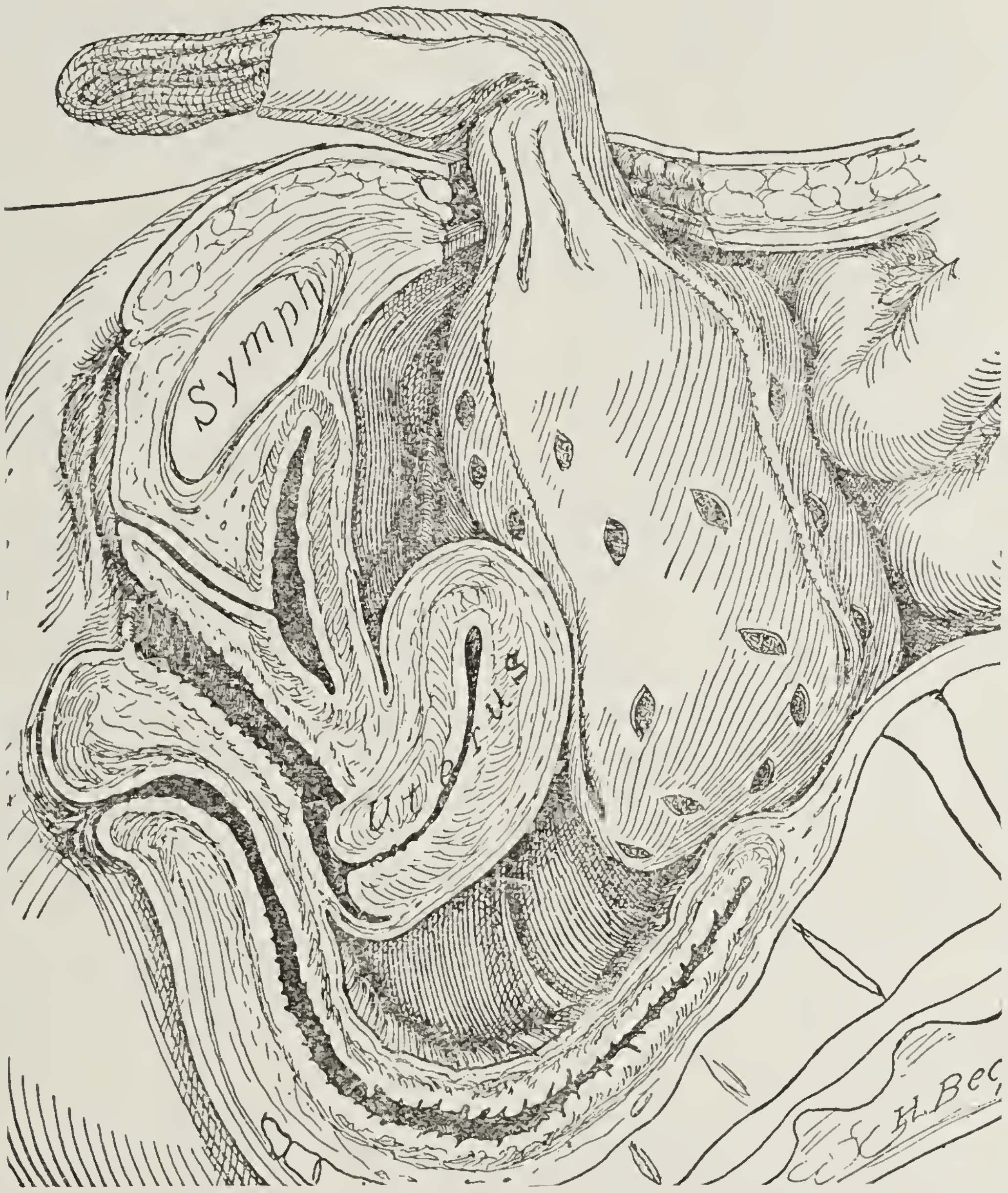

Fig. 4.—Abdominopelvic bunch drain in position.

I advocate most strongly the necessity of a complete salpingectomy in these chronic cases. A number of very good operators still tie off the tube *en masse* at the cornua of the uterus, leaving at least three fourths of an inch of the stump of the tube. These stumps frequently cause as many symptoms of the old salpingitis as were present before the operation. Many times the trouble is not relieved, the large stump causes the formation of new adhesions and the trouble is actually increased. A wedge-shaped piece, including the entire stump of the tube, should be cut out of the cornua and the edges approximated and whipped over. It should be said, however, that in most of the chronic cases there is a metritis requiring a hysterectomy for complete cure. My own experience has been that it has been nearly always the operation of choice.

In cases of pyosalpinx of the chronic type in which there has been no evidence of an acute exacerbation for a long period, and if the patient's condition is good, no drainage is needed in case of rupture during the operation, as the contents of the tubes are usually sterile; but if the patient's condition is below par or if there is the least suspicion of an active infection, it is good practice to insert the culdesac pelvic drain.

In all cases in which drainage is indicated following a radical operation for pyosalpinx, I prefer a silver nitrate or iodoform gauze culdesac drain. The drain should be made by folding a piece of gauze 1 yard wide and 1½ yards long into a 1½ inch strip. In cases in which the drain may be needed, the vagina should be prepared before operation, by scrubbing and thorough rinsing with sterile water, drying and painting, through a speculum, with equal parts of tincture of iodin and alcohol. When the drain is to be introduced, the left hand is encased in a long glove, and the vulva having been surrounded with sterile towels, the operator inserts a long forceps, curved on the flat, into the vagina, and with the right hand in the abdomen, locates the proper point for puncture of the culdesac by bimanual touch, as shown in Figure 2. The puncture is then made by making pressure on the forceps or, preferably, by making an incision over the point of the forceps with a scalpel held in the right hand. The blades of the forceps are then pushed through the incision and the nurse is instructed to hold the handles on the outside and keep the blades open until the end of the drain is placed between them. The blades are then closed and the nurse gently withdraws the forceps until the end of the drain appears at the vulva. The operator then changes gloves and the remainder of the drain is placed in folds posterior to the uterus, as shown in Figure 3. This arrangement of the gauze facilitates drainage and subsequent removal is easy. This bimanual method of introduction enables the operator to make the puncture rapidly and accurately, at whatever point he may elect.

It had been my practice to remove the culdesac drain after five days, at one sitting, but after reading the plan advocated by Wertheim's assistant, I decided to try it and in about fifty consecutive cases have followed his technic. This process was to remove half the drain in five days, one half of the remainder on the seventh day, and the rest on the ninth day. As 90 per cent. of these cases developed an infection of the abdominal wound, I abandoned the method. In my judgment, the infection of the abdominal wound was caused by a collection of exudate above the gauze. As the gauze became saturated with exudate, drainage was impeded or entirely stopped, so that before the gauze was entirely removed, sufficient backing up had occurred to produce the infection. By complete removal at the end of five days, this danger is averted. It was further noted that the cases drained much longer when the drain was removed by the three-step method than when it was entirely removed at the end of five days. Since returning to my usual method of removing the entire gauze drain on the fifth day, I have had in about the same number of cases but one case of abdominal wound infection.

The administration of gas for the removal of the drain is much appreciated by the patient. It saves the patient pain and shock and relieves the operator from the charge of being rough and heartless.

When the infection is anterior to the uterus and attached to the anterior abdominal wall, the bunch drain described by Mikulicz and modified by Rovsing by using a rubber bag covering is very useful. It is applicable sometimes also to cases of pus appendicitis, incompletely walled off, in which the infection extends into the pelvis and in front of the uterus. This method has the double advantage of giving excellent drainage and also of excluding the clean intestine and omentum from the infected area.

This drain is shown in Figure 4 and consists of an oiled silk bag filled with gauze. The bag is 5 inches in diameter when inflated, and 10 inches long. The oiled silk cloth is cut in proper shape and stitched on a sewing machine and then inverted so as to turn the edges inside. The drainage openings are then snipped with scissors at intervals to correspond with the area to be drained. The drain inside the bag is made by folding a piece of gauze 1 yard wide and 3 yards long into a 1½ inch strip. Beginning on the second day, a little of the gauze is withdrawn daily, and the entire bag with the remaining gauze on the fifth day.

CONCLUSIONS

1. Preventive measures should be promoted by instruction of the public and by a better technic.
2. The infecting organism should be determined and specific therapy employed when indicated.
3. The preoperative treatment should not be too vigorous.
4. When drainage is desirable, it should, with rare exceptions, be through the culdesac, and it should be aided by posture.

A Sanitary and Satisfactory Substitute for the Free Lunch.—In some regions of our large cities inhabited by the poorer classes, there are few eating places except those connected with saloons. The food is badly cooked, indigestible and unpalatable, and often the meals served in homes are not much better. Moreover, home cooking done over a hot fire in the kitchen that serves also as a family dining room means acute discomfort to the whole family in summer. The physical and social results are both bad. Public kitchens which dispense good cooked food at low cost have been organized in a few cities to meet the needs of the situation. Holland Hudson describes in the *Modern Hospital* such a kitchen (said to be the first in New York) under the direction of the New York Association for Improving the Condition of the Poor. The longshoreman can now obtain a substantial meal of well-cooked food, served on a table from clean dishes, at less cost than the "pony of red-dog whisky" which accompanies food at the free-lunch counter. Housewives can procure hot cooked food to serve at home. The kitchen is self-supporting. A high sanitary standard is maintained. All employees are compelled to pass a rigid physical examination, and no one is employed who has any communicable disease. The kitchen is well screened from flies, and recently received a score of 100 points from the department of health. A branch kitchen is soon to be established.

THE WASSERMANN TEST IN THE MEDICAL DISPENSARY *

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Any estimation of the prevalence of syphilis in a community by means of clinical symptoms alone is hazardous. The protean manifestations of the disease, the latent type of both congenital and acquired forms, and the denial of a specific history, either through ignorance or wilfully, render its diagnosis extremely difficult in many instances. In recent years, however, the introduction of the Wassermann reaction has aided, in a marked degree, the proper classification of many heretofore obscure conditions.

To be of greatest value in the diagnosis of a disease, the specific test for that disease, whether for laboratory or clinical purposes, must be practically constant. The thousands of Wassermann tests made on patients suffering from syphilis give ample proof that the test is practically constant for this condition. Various estimates give from 60 to 100 per cent. positive reactions in different stages of the disease. Less than 0.5 per cent. of conditions other than syphilis react positively; these usually give a negative reaction in a short time with no syphilitic treatment, or occur in diseases which are easily differentiated from syphilis. Therefore, in the Wassermann test we have a fairly reliable serologic means of estimating the prevalence of syphilis.

Based solely on clinical symptoms there are the oft-quoted figures of Erb, who gives 12 per cent. of syphilis in the adult population of Berlin, and those of Fournier, who states that 15 per cent. of adult Parisians have the disease. In the last three years Wassermann reaction surveys in hospital, asylum and municipal laboratories are giving us a clearer insight into the amount of this disease among certain groups of the community. Churchill[1] found that 28 per cent. of 101 children examined at the Children's Memorial Hospital of Chicago gave a positive reaction. In 111 cases admitted to the Children's Hospital in Boston, Lucas[2] found 31 per cent. infected. Browning[3] found 14 per cent. of syphilitics in 331 children in the outpatient department of a children's hospital of Glasgow. Holt[4] of New York found 6 per cent. of infected children in his series.

Routine Wassermann tests are now made in many insane asylums. A few examples will show the high percentage of positive results on these patients. Of 600 inmates of the Oregon Insane Asylum, Watson[5] obtained a positive reaction in 20 per cent. with only 5 per cent. giving positive histories. Ivey[6] found 29 per cent. of the women and 25 per cent. of men infected in over 700 negro insane of Alabama. In 122 cases of nervous disease in the wards of the Western Infirmary of Glasgow, Browning[3] obtained 41 per cent. positives. In 104 prostitutes and 109 men classified as tramps, Browning found 100 per cent. of infection.

The general medical dispensary affords a medium by which we come in close contact with a certain class of persons in whom, through poverty, deficient education and mental instability, we might expect a higher percentage of syphilis than in the average of the community. For the last several months Wassermann reactions have been made as a routine test on practically every person attending the medical dispensary clinics of the University of Illinois College of Medicine, Chicago. According to the classification employed at this dispensary the patients attending the genito-urinary, gynecologic, pediatric, nervous, dermatologic, or surgical clinics are not included in this list. It embraces only those patients treated in the medical clinic.

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* From the Department of Experimental Medicine, University of Illinois.

[1] Churchill: Tr. Am. Pediat. Soc., 1912, xxiv, 149.
[2] Lucas: Boston Med. and Surg. Jour., 1913, clxix, 423.
[3] Browning: Brit. Med. Jour., 1914, i, 77.
[4] Holt: Am. Jour. Obst., 1913, lxvii, 1228.
[5] Watson: Northwest Med., 1910, ii, 103.
[6] Ivey: Med. Rec., New York, 1913, lxxxiv, 712.

In the technic of the test itself we employed from two to five antigens, never less than two. The antigens were the acetone insoluble fractions of beef and human hearts obtained from several different sources, including three made by myself; also alcoholic extracts of syphilitic liver. No cholesterinized antigens were used. The antigens were titrated in the usual way so that 0.1 c.c. of a one tenth dilution was employed in the test.

Both antichicken and antihuman hemolytic systems were employed, the former in all cases, the latter in about 25 per cent. In all tests in which both systems were used the results were identical. Washed chicken corpuscles were made up in a from 2 to 5 per cent. suspension and to this was added twice the titer of hemolysin. For complement both fresh guinea-pig serums and serums allowed to stand for seventy-eight hours in the ice-box were used. These gave similar results. The serum was diluted to 8 per cent., that is, 1 c.c. guinea-pig serum was added to 11.5 c.c. of sterile normal salt solution, and this titrated before each series of tests. Twice the complement titer was employed in the test.

All patients' serums were heated to 56 C. (132.8 F.) for one-half hour and used in amount of 0.1 c.c. After the patient's serum, the antigen and complement were added to the test tubes, the total volume was made up to 1 c.c. by the addition of normal salt solution and then incubated for one hour, after which 1 c.c. of sensitized chicken corpuscles were added and the whole again incubated for one hour, at which time the readings were made.

In those tests in which human corpuscles were employed we followed the method described by Noguchi.[7]

The Wassermann reaction was performed on 418 patients. These are classified in Table 1.

Fifty-six, or 13.4 per cent. of the total number reacted positively. Twelve were weakly positive or doubtful; eight of these were undoubtedly due to treatment. Omitting those who gave a weak reaction, and presented no history or other symptoms of syphilis, and adding those who reacted negatively but who had had the disease, we have 78, or 18.6 per cent. of this group who have suffered or are now suffering from syphilis. This at first glance is a high percentage, but when we consider that we are dealing with the ailing members of a class of society which are more or less unfortunate in the struggle for existence, the figures will not appear so high.

As to sex, of 89 women, 16, or 18 per cent., gave positive reactions, while 40, or 12.2 per cent. of 329 males were positive. This higher percentage of positives among women might lead one to believe that the disease was more generally prevalent among females than males. This, however, would be a false impression. While the majority of the women having this disease are found in the medical clinic, most of the men having syphilis attend other clinics, especially the dermatologic and genito-urinary.

The difficulty of diagnosis of syphilis in the medical dispensary, as in all other branches of practice, is increased by lack of adequate history and especially by the obscure manifestations of the disease. The vague answers given to questions relative to the history of the infection are of little value. In twenty-eight of the fifty-six positives a definite history was given, and this was obtained in many cases after the reaction was reported positive. On the other hand, many of the negatives gave a history simulating an earlier specific infection. The facts are forcibly presented in an article by Krumbhaar and Montgomery,[8] who, in a series of Wassermanns on 108 dispensary patients obtained forty-eight frank positives, seven doubtful and fifty-three negative. Of the positives, 35 per cent. gave negative histories and a large proportion of positive histories were obtained from those giving negative tests.

TABLE 1.—CLASSIFICATION OF FOUR HUNDRED AND EIGHTEEN CASES IN WHICH THE WASSERMANN TEST WAS PERFORMED

	No. of Cases		Males		Females	
Wassermann negative	350		278		72	
Syphilitic		14		11		3
Nonsyphilitic		336		267		69
Wassermann weakly positive	12		11		1	
Syphilitic		8		7		1
Syphilitic?		4		4		0
Wassermann positive	56		40		16	
Congenital		5		2		3
Secondary		4		1		3
Tertiary		47		37		10
Total	418		329		89	

A more important cause of incorrect diagnosis is the lack of symptoms pointing toward the syphilitic infection. Thus the tentative diagnosis at the first visit was other than syphilis in a majority of the positive cases. As in all first class medical dispensaries the first visit diagnosis is often made before all the laboratory returns are obtained and before a thorough physical examination is completed. Occasionally, for the primary diagnosis, a pronounced symptom, as constipation, myalgia or anemia, was given, until further investigation could prove the cause. But even with a complete physical examination the symptoms often were so vague that the diagnosis of syphilis could not be made from the clinical findings alone. Naturally it is in these cases especially that the Wassermann test is invaluable.

The tentative diagnosis of thirty-two of the fifty-six positives was other than syphilis. Findings similar to these were made by Krumbhaar and Montgomery, who state, "Among the forty-eight positive cases nineteen were tentatively diagnosed under other headings at the first visit, and in a large proportion of the remainder a good deal of uncertainty existed as to the specific nature of the cases."

In Table 2 the tentative diagnosis and the final diagnosis are presented. Frequently but one visit was made by the patient and the result of the Wassermann test could not be followed up. In a few of those cases in which the Wassermann is weakly positive the final diagnosis of syphilis is questionable. In some instances two diseases were actually present, the syphilitic symptoms being either quiescent or the manifestations of the accompanying condition being so prominent that syphilis was not considered; in others the symptoms might have been caused by a variety of conditions but with a positive Wassermann and favorable response to specific treatment they undoubtedly were due to syphilis and are so designated in the final diagnosis.

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[7] Noguchi, Hideyo: Serum Diagnosis of Syphilis, Philadelphia, J. B. Lippincott Company, 1910.

[8] Krumbhaar, E. B., and Montgomery, C. M.: Syphilis and the Medical Dispensary, The Journal A. M. A., Jan. 24, 1914, p. 290.

The value of the Wassermann reaction can best be demonstrated by the citation of a few cases. In Case 3, in a painter, plumbism was confirmed by laboratory findings. It is reasonable to suppose that this condition may produce a plus reaction, but tests in similar cases reacted negatively. In Case 26, the patient being the wife of the patient in Case 3, there was a history of two abortions and a positive test. Case 10, in a man of 50, was recognized clinically to be carcinoma of the stomach with liver metastases until three positive Wassermanns led to the employment of potassium iodid and mercury therapeutically; the patient improved remarkably, the liver decreased in size, the jaundice cleared, and the abdominal tumor in the region of the stomach disappeared. Case 18 resembles Case 10 closely in that several reactions were positive, but the treatment produced only a temporary improvement. The patient succumbed to the disease in another city. We learned that a necropsy was performed and carcinoma of the stomach found, but we were unable to obtain a report of the other findings. The diagnosis was carcinoma and syphilis.

In Case 31, a girl of 22 had an enlarged thyroid, pulse of 140 and other symptoms of exophthalmic goiter. She had been treated for this disease for over two years at various hospitals and dispensaries, with no improvement. Wassermann tests were persistently positive. After being on specific treatment for four months the pulse rate was lowered to 90, the goiter had reduced in size, and the patient has now resumed her work as an office girl. The Wassermann test, however, is still positive. In connection with this case it is interesting to know that a brother (Case 7) had a peculiar train of symptoms which led to several diagnoses. The positive Wassermann led to a final diagnosis of syphilis, or rather of juvenile tabes. I have learned that under specific treatment the boy is now apparently well. Wassermanns made on the mother and two other children were negative. We could not obtain a test on the father, but learned that he had been a drunkard and had a "bad disease," presumably syphilis. The clinicians concluded that both these cases were of congenital origin. I am not attempting at this time to explain the negative reactions of a portion of the family and the positive reactions of the others.

Six of the fifty-six positives had tuberculosis with syphilis. The criticism may be made that tuberculosis is one of the conditions that occasionally give a positive reaction. In this series over thirty patients suffering from tuberculosis reacted negatively. Besides these we have another series of over fifty tuberculous cases in which the tests were negative, so that whenever a positive test was repeatedly obtained in a tuberculous patient the diagnosis of syphilis was made. The same doubt may be expressed with regard to the patients with carcinoma. A large series of malignant conditions have reacted negatively, however, leading us to assume that whenever persistent positive Wassermanns are present in cases of malignant tumors or in those diagnosed as such, either syphilis or syphilis with carcinoma is present.

TABLE 2.—CLASSIFICATION OF POSITIVE WASSERMANN REACTIONS

No.	Tentative Diagnosis	Final Diagnosis*	History of Syphilis	Wassermann Test †
1.	Pulmonary tuberculosis	Pulmonary tuberculosis	..	+
2.	Syphilis		0	+
3.	Lead poisoning	Lead poisoning	0	+
4.	Chronic plumbism, ulcers of leg		0	+
5.	Constipation		0	+
6.	Rheumatism		0	+
7.	Juvenile tabes?		0	+
8.	Arteriosclerosis		0	+
9.	Gastritis	Tabes	0	+
10.	Carcinoma of stomach and liver		0	+
11.	Syphilis		..	+
12.	Syphilis		..	+
13.	Syphilis		..	+
14.	Tuberculous epididymitis	Tuberculosis	0	+
15.	Bronchitis		0	+
16.	Syphilis		..	+
17.	Syphilis		0	+
18.	Carcinoma of stomach	Carcinoma	0	+
19.	Constipation		0	+
20.	Syphilis		..	+
21.	Bronchitis		0	+
22.	Myalgia		..	+
23.	Vertigo		0	+
24.	Endocarditis		..	+
25.	Syphilis		..	+
26.	Syphilis		..	+
27.	Syphilis		..	+
28.	Anemia		0	+
29.	Constipation		0	+
30.	Vicarious menstruation		0	+
31.	Exophthalmic goiter	Exophthalmic goiter	0	+
32.	Bronchitis, neurasthenia		0	+
33.	Pleurisy, myalgia		0	+
34.	Syphilis and tuberculosis	Tuberculosis	..	+
35.	Syphilis		..	+
36.	Bronchitis		..	+
37.	Syphilis?		..	+
38.	Syphilis?		0	+
39.	Syphilis?		0	+
40.	Anemia		..	+
41.	Syphilis		..	+
42.	Bursitis	Bursitis	..	+
43.	Syphilis?		0	+
44.	Syphilis		..	+
45.	Constipation		0	+
46.	Syphilis?		..	+
47.	Syphilis?		0	+
48.	Tuberculosis	Tuberculosis	..	+
49.	Bronchial asthma	Asthma	0	+
50.	Aneurysm of aorta	Aneurysm	..	+
51.	Tuberculosis	Tuberculosis	..	+
52.	Syphilis		..	+
53.	Hiccough		..	+
54.	Tuberculosis	Tuberculosis	..	+
55.	Gastritis		..	+
56.	Syphilis		..	+
57.	Bronchitis		..	±
58.	Syphilitic aortitis		..	±
59.	Malaria	?	0	±
60.	Myalgia	?	0	±
61.	Syphilis?		..	±
62.	Pulmonary tuberculosis	Tuberculosis	..	±
63.	Congenital syphilis		0	±
64.	Constipation	?	0	±
65.	Syphilis?		0	±
66.	Arteriosclerosis		..	±
67.	Anemia		..	±
68.	Tuberculosis	Tuberculosis	0	±

* In each of these cases the final diagnosis was of syphilis. Attendant conditions as noted.

† The sign + indicates Wassermann test positive; ±, weakly positive.

In order to reduce the errors of the test, whenever possible it was repeated. When only one visit was made this could not be done. Tests were made more than once on over half of the sixty-eight strong and weak positives. Repeated tests naturally were of most value in those reacting weakly positive. In some cases a weakly positive reaction when repeated would be negative; others would be frankly positive, and still others would be again weakly positive.

When a history of syphilis was obtained, or specific treatment had been used and the reaction showed but 25 per cent. hemolysis the case is called syphilitic. With no history, symptoms or other manifestations of syphilis and with but one doubtful test the diagnosis of syphilis is questionable. With several negative tests after one doubtful positive the test was classified as negative.

Many cases diagnosed as suspected syphilis reacted negatively. Although the Wassermann test is of great value when positive, still repeated negative reactions are of great service in aiding diagnosis. Included among the conditions reacting negatively are diabetes mellitus, acute articular rheumatism of both streptococcal and gonorrheal origin, endocarditis, arteriosclerosis, gastritis, gastric ulcer, neurasthenia, tuberculosis of lungs, of lymph glands, and of epididymis, epilepsy, myalgia, constipation, icterus, lead poisoning, intestinal parasites, Hodgkin's disease, cholecystitis, exophthalmic goiter, bronchitis, anemia, myocarditis, emphysema, neuritis, carcinoma of breast and carcinoma of stomach.

SUMMARY

A positive Wassermann test is of inestimable value in the diagnosis of syphilis in the medical dispensary.

The unreliability of histories and the protean nature of the disease make it extremely difficult of correct clinical diagnosis in all cases.

Fifty-six positive Wassermann reactions were obtained in the routine examination of 418 patients. Only 50 per cent. of those with a positive test gave a history of having syphilis. Twelve weakly positive reactions were obtained, four patients being tested only once; without history or symptoms the diagnosis of syphilis could not be made in these. Repeated negative tests were of assistance in diagnosing nonsyphilitic conditions in which false histories of previous infections were obtained.

EFFICIENT DISPENSARY CLINICS A REQUISITE FOR ADEQUATE COPING WITH VENEREAL DISEASE *

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Fifteen years ago tuberculosis was prevalent, probably more prevalent in proportion to the population than it is today; but comparatively few persons were thinking and talking about it as a public problem of magnitude. Today venereal diseases are prevalent, probably no less prevalent in proportion to the population than they were ten or fifteen years ago; but the general public is but just beginning to allow us to talk about them as a public problem of magnitude. A suggestive parallel may be drawn between tuberculosis on the one hand and venereal disease on the other, with respect to the growth of public interest in their treatment and prevention. Physicians and others close to the facts have realized for many years how grave and widespread was the problem presented by tuberculosis; but it is only ten years since the campaign against it was organized, nationally, when the National Association for the Study and Prevention of Tuberculosis was formed. A few local antituberculosis committees had preceded this general body. Since 1905 a wonderful development has taken place. A great educational campaign has spread to every corner of the country. Tuberculosis is a name to conjure with; a word to raise money with; $20,000,000 was spent by public and private associations in treating and preventing tuberculosis last year. Even more remarkable has been the increase in facilities providing for diagnosis and treatment.

In 1905, there were only eighteen tuberculosis sanatoriums, providing 673 beds. In 1915, there are over 500 sanatoriums, providing some 30,000 beds. Up to 1905, only eighteen dispensary clinics for tuberculosis had been opened in the United States. In 1915 there were over 400 such clinics and the number is increasing with great rapidity. These vast facilities for treatment have been established within this short period for a disease which is no more prevalent today than it was ten years ago, so that both sanatoriums and clinics are caring for patients who formerly were either cared for by private medical practice or not cared for at all. The establishment of sanatoriums and clinics has been furthered largely by physicians and is still proceeding vigorously, with their support. The conclusion is inevitable that private practice as an influence in dealing with tuberculosis is recognized by the profession as inadequate, that during the last ten years it has been, relatively speaking, a static factor, so far as caring for numbers of patients is concerned; and that the chief means whereby more adequate facilities for the diagnosis and treatment of tuberculosis have been obtained during the past ten years has been by the establishment of public or semipublic facilities.

Consider now venereal disease, which, as has been suggested, is in some ways a parallel problem. The treatment facilities for syphilis and gonorrhea include private medical practice, dispensary clinics and hospitals (chiefly the clinics), quacks, and self-treatment. The fact that large numbers of patients treat themselves, particularly for gonorrhea, with medicines purchased on the advice of drug clerks or friends, and the persistent flourishing of quacks and advertising institutes, indicate that private medical practice and medical institutions taken together do not meet the situation. We all agree that treatment by quacks and self-treatment by patients are undesirable; but quacks persist, though the limitation of advertising and individual prosecution may diminish their numbers substantially and have done so in certain communities. Self-treatment is also prevalent. One may fear that self-treatment too often takes up the slack when the number of quacks is reduced. Doubtless the truth is that quacks and self-treatment can only be driven out when adequate substitutes are provided.

To be adequate, treatment facilities must fulfil six conditions:

1. Skilled Service: The medical service must be well trained in the diagnosis and treatment of these diseases.

2. Equipment: The physician must have at command technical equipment for diagnosis and treatment according to modern medical standards.

3. Organization: Facilities must be organized in proper correlation with the health departments of the

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local community and of the state, and with related social agencies and institutions.

4. Accessibility: The facilities must be available at such places and hours as do not involve undue sacrifice of time, money, or convenience to the persons who need to use them.

5. Cost: The cost of the facilities must be within the means of the patients.

6. Sufficiency in Amount: The amount of such facilities meeting the above conditions must be sufficient to cover 100 per cent. of the need in any community.

Let us consider private medical practice in relation to these six criteria of adequate treatment of venereal disease. As to the first, practically all the existing supply of diagnostic skill is available from men giving part or all of their time to private practice. When, however, we come to the test of equipment, it must be borne in mind that modern medical standards demand fairly elaborate equipment for adequate diagnosis and treatment of these diseases. The cystoscope; various instruments for examination and treatment of conditions in bladder and urethra; laboratory facilities for Wassermann tests; a microscope for the examination of smears; a dark-stage attachment for the diagnosis of primary syphilis; sterilizing equipment; these have all been listed by committees of genito-urinary surgeons and specialists in syphilis in New York as minimum requisites of equipment for medical men working in clinics dealing with syphilis and gonorrhea. Undoubtedly, therefore, they may be regarded as requisites for medical men treating these diseases in their offices. When it is borne in mind that the cost of the instruments alone would run to at least $300, and might easily be double that sum, and that in many localities private practitioners have no local facilities for Wassermann tests, it may well be questioned to what extent adequate equipment for the diagnosis and treatment of syphilis and gonorrhea can generally be found in the private offices of men not specializing in the care of these diseases.

As to organization: The public-health services of a few states have begun to assist private practice by providing laboratory facilities, but, in general, private medical practice remains individualistic, unorganized, so far as relationships to public health or social welfare agencies are concerned. As to accessibility, in the larger communities we find specialists in these diseases whose hours, as a rule, are not such as to be available to the mass of the population, who cannot afford to lose much time from work. Office hours are fixed according to the demands of the clientele from which the specialists draw their main body of patients. The mass of medical practitioners, not specializing, of course have hours which in many instances are accessible to all classes in the community, that is, hours during the evening as well as the day.

Now as to the cost of treatment. Syphilis and gonorrhea are expensive diseases. The period of treatment is not short at the best and may be extremely prolonged. So far as I can ascertain from physicians who are devoting special attention to genito-urinary diseases, they require that private patients with acute gonorrhea, for example, come for treatment three times a week for a period which is at least six weeks, and it may be several months before less frequent visits are allowed. In this statement I am merely referring to the minimum which appears to prevail in the private practice of physicians who are regarded as experts in dealing with gonorrhea, but the office rates on which the following cost estimates have been based are those of the general practitioner, not of these specialists. The cost of such treatment, including also the necessary laboratory examinations, etc., and estimating a very low rate for office visits, would be not less than $100 for the first six months, and might be very much more. Furthermore, a large number of male and female patients with gonorrhea come to the physician in chronic stages, or when complications have arisen, requiring surgical operations. This further adds to the expense. The cost of medicines used for gonorrhea is also a large item, particularly at the usual retail prices levied by drug stores, being hardly less than $2 a week, and often much more.

The treatment of syphilis, while requiring less frequent visits to a physician, often demands several injections of salvarsan, which would cost the patient from $10 to $50 apiece, and always requires a period of treatment such as to cost the patient at least as much, usually more, than has been specified for gonorrhea.

The first infection of gonorrhea usually arises in the case of young men before the age of marriage, or between 17 and 25 years. Fully five sixths of young men at this age, in any community, are working men or clerks, or are starting in business or professions, and their earning capacity is between $400 and $800 annually. The expenditure of such a sum as $100 during a period of six months is a very serious item. In the case of married men, or men with dependents, the annual income among the great bulk of our self-supporting population runs, even in large cities, only between $800 and $1,200. The expenditure of 15 per cent. to 25 per cent. of such an income for the treatment of one of these diseases is out of the question for these persons. They can pay for some treatment, but not for enough or good enough treatment.

The sixth criterion was the question, Are there sufficient facilities in the community, meeting the above conditions, to cover 100 per cent. of the need? Has not the preceding discussion indicated the answer? Private medical practice has already given up attempting to meet the needs of "the poor." They go to clinics in the cities where there are such, and where there are no clinics they, for the most part, go to the drug stores. Those who are above the poverty line, but who have only a moderate income, are, as the preceding discussion has endeavored to show, unable to afford the necessary minimum cost required by modern standards for treatment of syphilis and gonorrhea when this treatment has to be carried on in private offices. In a word, treatment for syphilis and gonorrhea by private medical practice is too costly when it is adequate, and when it is not too costly to meet the needs of the whole population, it is likely to be inadequate.

If ten years ago a similar analysis had been made of the facilities for the medical care of tuberculosis, a similar conclusion might have been reached. Whether such an analysis was ever made I do not know. As has already been indicated, however, the actual history has been that physicians themselves have labored to found sanatoriums and dispensaries for tuberculosis, instead of leaving these thousands of cases within the care of private practice. Physicians have done this because they have recognized that there was a public need to be met, and that sanatoriums and clinics were the only means by which adequate treatment facilities could be provided. The parallel with venereal disease is obvious. Gonorrhea and syphilis are more prevalent than tuberculosis, and their medical treatment is more costly. There is at least as much need to do for venereal disease what began, ten years ago, to be done for tuberculosis.

As yet outpatient clinics have been established chiefly to "help the poor" and also to provide centers for teaching medical students and to increase the knowledge of practicing physicians. The medical service has usually been voluntary on the part of the staff. Can a high standard of efficient treatment be secured in such clinics, or does the organization of a service with considerable numbers of patients to be dealt with within a limited time necessarily mean hasty and slipshod work? Criticism of dispensary clinics for inefficiency has been forcibly voiced within recent years. Unless it can be shown that clinics can be efficient, it is not worth while perhaps that they should be established on a large scale as public health measures for dealing with syphilis and gonorrhea.

While within recent years criticism of dispensary clinics has been in the main justified, this has been an evidence of growth rather than of decline, and, in my opinion, sufficient data have been gathered to show that clinics can be efficient, if certain conditions are met.

The fact that clinic efficiency can be tested and progress thus stimulated, because it can be measured, is, to my mind, perhaps the fundamental point. During the last few years several methods of testing medical efficiency in outpatient work have been devised and applied in certain clinics. The methods are chiefly two:

First, the statistical method, which chiefly tests the amount of inefficiency. If it is found that of 500 patients with acute gonorrhea, 40 per cent. paid only one visit, obviously the clinic's inefficiency was hardly less than 40 per cent. We cannot say that a patient has been given satisfactory treatment even if he has paid thirty visits to such a clinic. We can say that he has been given ineffective treatment if he has paid only one, two, or three visits, unless the clinic can demonstrate that it has sent the patient into other good hands. Thus the mere counting of the percentage of patients paying one, two, or three, four or five visits, and so on up to the high figures, is an extremely useful, though necessarily rough means of testing clinical efficiency and of stimulating progress. Such tests have been conducted at the Boston Dispensary, Lakeside Hospital, Cleveland, Cornell University Medical College, and have been published. The method is clear, the need for increase in efficiency is urgent. Such tests should be routine everywhere. They take little time and pay big returns. It might be mentioned that in the male genito-urinary clinic of the Boston Dispensary the percentage of patients paying only one or two visits has been reduced as follows:

In 1911-1915 this percentage was 47 and the percentage of patients paying more than five visits was only 32.5. In 1914-1915 the percentage of patients paying only one or two visits has been reduced to 40 per cent., and of patients paying more than five visits has been increased to 45 per cent. In the evening work of the same institution, the results have been still better, for the proportion of patients paying one or two visits has been only 24.5 per cent., and those paying more than five visits 50.5 per cent. I do not mention these results as being indications that satisfactory results have been reached, but that improvement is possible, and that progress can be measured.

A more thorough and scientific test involves the actual examination of the clinical records by one of the physicians in charge. Each patient must be judged as cured, improved, pending, lost (one-visit and two-visit patients are usually lost), and the percentages may be stated. In the three clinics previously mentioned, such tests have been made and the percentage of cured patients varied from nine to twelve. You may think this percentage small, and it is small, but gonorrhea is a difficult disease at best, so far as a layman can judge. The comparison is not between the 12 per cent. of cures in a certain clinic and 100 per cent. of cures theoretically possible, but between 12 per cent. in a clinic and the proportion of cures reached in private practice with a similar class of patients. Who knows the latter percentage?

Under certain conditions I believe that outpatient clinics can be efficient. And these general conditions might be formulated as follows:

Skilled medical service is essential and in outpatient clinics we have the advantage over private practice that men who are especially skilled in dealing with gonorrhea and syphilis can take charge of the service, while men of less special experience can work under them and profit thereby. Organizing medical service is a gain, both to the skilled men, who see more patients, and more selected patients, and to the men of less skill, who have an opportunity to learn.

Second, the equipment for diagnosis and treatment: Here the clinic gains over private practice on the economic side, because in a single clinic equipment can be used for many patients which would otherwise have to be duplicated in many private offices with proportionate increase of expense. Pooling equipment is a great saving.

The organization of the clinic in its medical and executive staff is essential to secure the best results for the prompt and careful handling of patients and for the keeping of accurate records. The possibility of relating the clinic to external agents, such as the board of health, has been shown by Dr. Warner of Lakeside Hospital, Cleveland. At the same institution, and at the Boston Dispensary, the Massachusetts General Hospital, and elsewhere, the relation of syphilis and gonorrhea to social agencies and medical-social workers, has been shown. Clinics must be *accessible* to the people who need them. Most syphilis clinics are in the morning or afternoon, although evening clinics have been established in New York, in New Orleans, and in Boston. Perhaps elsewhere there are evening clinics of which I do not know. But any plan for the utilization of clinics as public health measures must include evening clinics. It must also include clinics charging more than nominal fees, for there is no reason why patients who are self-supporting, who are working, should not pay for what they get, provided the fees are such that they can pay them.

At the Boston Dispensary the establishment of evening pay clinics treating syphilis and gonorrhea has been undertaken within the past year. The details of the service have been presented in papers before other societies and I shall not go into them except in a very brief way. An evening clinic for men having gonorrhea, established in March, 1914, treated during its first year 632 patients who paid 6,809 visits

The fees charged have been 50 cents a visit, and prices for medicine somewhat above the cost of the materials. The medical staff has been salaried. The clinic financially has paid all expenses, including an estimated charge for lighting and heating. The income from the clinic was $4,936.34 and the expense $4,622.89. It may be mentioned that the economic facts show the cost of the drugs, bought at usual drug-store prices, would amount to $2 or $2.50 a week. The cost at the clinic to the patient paying 50 cents a visit and getting the same medicines is $2.25 a week. It may thus fairly be said that the clinic does not take money that would otherwise go to the medical profession. It would go instead to the drug stores. The evening syphilis clinic, where the same fee has been charged, and the medical staff salaried, was established at the end of July, 1914, and during the first nine months treated 116 patients, paying 449 visits. The income during the past six months has been $519 and the expense $313.55. It will be seen that this clinic was more than self-supporting, though if charges for rental and overhead supervision had been made the surplus would be much less. Yet, even so, the clinic would meet expenses. The amount of diagnostic and treatment work for gonorrhea and syphilis is so large, the numbers to be reached are so vast, that unless such self-supporting clinics are established, the expense will probably be too heavy to enable these treatment facilities to be provided. Furthermore, it is better that patients should pay and come to a self-supporting clinic, than that the same patients should not pay and should regard themselves, and be regarded, as so-called objects of charity.[1]

A point of the first importance now arises. If clinics are to be developed as public health measures, clearly we cannot proceed on the same basis that we are accustomed to in most existing dispensaries. We cannot expect physicians to give their services. The medical service must be salaried. There is no reason why clinics with volunteer service, especially in connection with teaching institutions, may not continue, but clinics established as public health measures for the purpose of providing adequate treatment for 100 per cent. of the syphilis and gonorrhea patients in any community, must have salaried services. Such clinics would provide a substitute for the quack, and for self-treatment, and would bring under medical supervision great numbers of syphilis and gonorrea patients who now receive no medical care. Out of 200 visiting the evening genito-urinary clinic at the Boston Dispensary, thirty-eight had been treated by quacks and sixty-seven had had only self-treatment. Fifty-two and five-tenths per cent. of the total had had no previous medical attention of a reputable sort for the gonorrheal infection which brought them to the clinic. While these figures are not necessarily representative, they are very suggestive.

In the elaborate volume of testimony taken from experts by the British Royal Commission on Venereal Diseases last year, the need of a great enlargement of treatment facilities is brought out again and again and the increase of dispensary clinics is regarded as the chief means whereby this result may be attained. Incidentally, evening clinics are mentioned by many witnesses at no less than seventeen different places in the volume of testimony.

In establishing such clinics consideration must also be given to the provision of certain facilities at public expense. Salvarsan for syphilis, in infectious conditions, for people who cannot afford to pay for the drug, is a proper matter for public subsidy. Laboratory facilities for the diagnosis of syphilis and gonorrhea have already been provided in several states, in New York and doubtless in other cities, and is a proper subject for municipal or state departments of health or for city hospital laboratories. If we face the facts, if we recognize the enormous amount of syphilis and gonorrhea in the community, if we believe it to be a fact that the mass of these cases do not now receive adequate treatment, that most patients cannot afford adequate treatment, then we must turn to organized medical service in clinics as a resource to provide this treatment. The establishment of outpatient clinics on a large scale, administered as public health measures, for the diagnosis and treatment of syphilis and gonorrhea, is a practicable, necessary, and immediately desirable step in the campaign against these diseases.

A STATISTICAL STUDY OF SYPHILIS

AS SEEN IN THE OUTPATIENT DEPARTMENT OF THE UNIVERSITY OF CALIFORNIA HOSPITAL *

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The following statistics are published for two reasons: First, the Wassermann reaction has so changed our views as to syphilis in the last few years that all statistics collected previous to its use are rendered of little value. Secondly, the present figures represent cases which have been perhaps unusually carefully studied with the possibility of syphilis in mind. This disease is more common in San Francisco than in many other American cities, and for this reason clinicians in this region are constantly on the lookout for it. There are probably few outpatient dispensaries where an equal proportion of the patients have been subjected to the Wassermann reaction. For several years the children's department has observed the rule of a routine Wassermann in each case; the nerve department has demanded the reaction for almost every case, and the medical department for over half. It has recently been decided for the medical department that thoroughness demands the routine Wassermann for each case. Other departments have used this reaction to a less degree, being consulted usually for a given local trouble, and not for the general condition. Any patient who seems to need general investigation, however, is sent for consultation to the medical rooms, the total number of such referred cases being large. For example, most eye patients with conditions other than refractive errors are given the benefit of a systematic examination. The result is that these figures may be taken to represent unusually closely the actual incidence of syphilis among patients in this locality.

The question naturally arises how far these statistics represent average American conditions. San Francisco has long carried the reputation of having an unusually large amount of venereal disease in compari-

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[1] In speaking of the conditions which clinics must meet in order to be efficient, I have gone beyond the useful standards announced by the Associated Out-Patient Clinics of New York. Their standards, however, relate primarily to technical equipment and much more is necessary in organization, follow-up systems, etc., if clinics are to reach a proper standard.

* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.

son with the American average, and this is doubtless true. At the same time we believe that clinicians here are rather more likely to suspect syphilis in every case than are those of some other places, and therefore succeed in demonstrating a larger proportion of the cases which exist. An indication of this appears statistically. For example, over 20 per cent. of our syphilis cases are found to have bone and joint lesions which we believe to be due to the spirochete. The contrast is striking when examination of the annual reports of a number of other clinics fails to reveal any, where the incidence of bone and joint syphilis is not insignificant as compared with the total number of diagnoses of syphilis. The assumption of less syphilis in other communities would not explain so gross a difference in the proportions of its various manifestations.

The diagnosis of skin lesions of syphilis is easy, and such cases are generally recognized, but it is the prime purpose of the following report to show, for a mixed clinic, what a large proportion of the patients with syphilis exhibit their disease in manifestations which we believe often go unrecognized.

It may be added that each of the 7,885 case histories on which this report is based has been reexamined to be sure that the diagnosis was properly founded and that every positive case was recorded. In Table 2 the figures for diagnoses are given as they stand in the card catalogue, including of course some cases in which the diagnosis was not actually proved, but in the more accurate analysis of Table 3 the facts are given in outline on which the diagnosis was based. For this reason the totals of cases as given in Tables 2 and 3 do not agree in all details, though the divergence is nowhere great.

TABLE 1.—CASES OF SYPHILIS SEEN IN VARIOUS DEPARTMENTS OF THE OUTPATIENT DEPARTMENT FROM JULY 1, 1912, TO MAY 1, 1914

Department	Cases of Syphilis	Total New Cases	Percentage of Syphilis Cases to Whole Number, per Cent.
Whole O. P. D.*	544	7,885	6.9
Nerve	82	363	22.6
Medical	370	1,695	21.8
Skin	134	892	15.0
Orthopedic	90	652	13.8
Genito-urinary	57	434	12.9
Eye	121	1,421	8.5
Throat, Nose, Ear	53	1,597	3.3
Children	26	890	2.9
Women's Clinic	21	915	2.3
Surgical	28	1,262	2.2

* The numbers for the various departments added together are, of course, greater than the total number of the whole outpatient department, because many patients visited more than one department.

Little need be said to explain the facts as they appear in the tables. Table 1 gives for the whole outpatient department and for each of its divisions the proportion of cases in which syphilis was diagnosed to the total of new cases seen. The nerve department leads, as might have been expected, with a proportion of 22.9 per cent., and the medical is a close second with 21.8 per cent. The surgical department is last with 2.2 per cent., partly explainable by the fact already mentioned that in most cases the matter of syphilis was not investigated. The percentage for the whole outpatient department is 6.9 per cent.

Table 2 gives the diagnoses from the card catalogue of the various conditions interpreted as syphilitic. The table is inaccurate in one particular, namely, that the figures for skin lesions are too low. It sometimes happened that a roseola or other lesser eruption failed to be mentioned in cases with other manifestations, such as iritis, etc. An unusually high percentage of extragenital primaries is shown (eight out of thirty-one), but the total number is too small to warrant any conclusion except that it may have been due to chance.

TABLE 2.—DIAGNOSES OF SYPHILITIC LESIONS AMONG 544 CASES OF SYPHILIS *

Diagnosis	Number of Cases	Proportion to Total Cases of Syphilis, per Cent.
"Syphilis," not localized, or localization not given	191	**35.1**
Aorta: Aneurysm	8	
Aortitis	5	
Arteriosclerosis	3	
Heart: Myocarditis and myocardial insufficiency	14	
Aortic insufficiency	5	
Aortic and mitral insufficiency	1	
Total circulatory conditions	36	6.6
Bones: Gumma	1	
Osteomyelitis	10	
Periostitis	19	
Joints: Arthritis, infectious type, including destructive lesions	...	
General or multiple	9	
Elbow	3	
Finger	1	
Hip	8	
Knee	3	
Spine	41	
Arthritis, toxic type	18	
Total bone and joint conditions	113	20.8
Eye: Choroiditis and chorioretinitis	17	
Iridocyclitis	26	
Keratitis	14	
Nerve atrophy	21	
Neuritis and papillitis	6	
Ophthalmoplegia	7	
Retinitis	12	
Scleritis	3	
Total eye conditions	106	19.5
Nervous system: Cerebrospinal syphilis	44	
Tabes dorsalis	29	
General paralysis	4	
Total nerve conditions	77	**14.1**
Skin: Alopecia	1	
Gumma	9	
Macular, papular, pigmentary, etc.	47	
Ulcer	5	
Primary	23	
Extragenital	8	
Total skin conditions	93	17.1
Ear, internal	5	
Larynx	5	
Lip	1	
Liver	1	
Lung	2	
Lymph nodes	1	
Mouth	3	
Nose	12	
Pharynx	3	
Parotid	1	
Tongue	7	
Tonsils	1	
Testis	1	

* The totals are greater than 544 because many patients had multiple lesions.

Table 3 is the result of the selection and study of all histories with a given diagnosis, in order to make out in how many of the cases with this lesion syphilis seemed to be a causative factor. The conditions selected for this study were ones generally known to be the result of syphilis, or ones in which our experience seemed to point to a relationship not universally recognized.

The cases are arranged in four classes according to the evidence in favor of a syphilitic basis: positive, doubtfully positive, doubtfully negative, and negative (including presumably negative; that is, cases in which nothing suggested syphilis, but in which the disease had not been definitely excluded). The data on which the diagnoses were based is also indicated in brief. Considerable conservatism has been employed in list-ing cases in these groups, a case being considered doubtful unless the proof was pretty conclusive. Thus, among the doubtfully positive and doubtfully negative cases are listed many old cases treated for long periods as syphilitic, but without Wassermanns, or with negative reaction.

In certain cases the point might well be raised that the coexistence of syphilis with a certain condition does not necessarily prove that the lesion itself is syphilitic. That question cannot here be considered for each group in detail, to the extent of giving pathologic data or notes as to the behavior of the lesions under antisyphilitic treatment. To apply a purely statistical method, however, it is evident that if syphilis is found present in a group of cases in far greater proportion than would be found in a similar group of normal persons, or of patients in general, the presumption is very strong that there is a causal relationship. For example, about 7 per cent. of our patients have syphilis; it must be more than a coincidence that 35 per cent. of our lesions of the aortic valve, and 28 per cent. of our arthritis cases of the infectious type occurred in patients known to be syphilitic.

Several remarks may be made with reference to separate items in this table. The high percentage of syphilis as the cause of aortitis and aneurysm is well

TABLE 3.—PROPORTION OF CASES WITH GIVEN DIAGNOSES FOUND TO HAVE SYPHILIS

Diagnosis	Total Cases	Positive		Doubtfully Positive		Doubtfully Negative		Negative		Percentage of Positive and Doubtfully Positive Cases to Whole Number, %
		No.	Remarks*	No.	Remarks*	No.	Remarks*	No.	Remarks*	
Aorta: Aneurysm	11	7	5 W+ 1 W— H+ 1 W— H—†	1	W— H+?†	3	3 W— H—	0	....	72.7
Aortitis	5	3	1 W+ 1 W— H+ 1 W— H—†	2	2 W— H+?	0	....	0	....	100
Dilatation	4	0	....	2	1 W± 1 W— H+?†	2	1 W— H—† 1 W— H+?	0	....	50
Arteriosclerosis	55	12	7 W+ 3 W— H+ 2 No W H+	5	2 W± 2 W—† 1 No W†	7	3 W—† 2 No W H+?† 2 No W†	31	13 W— 18 No W	30.9
Heart: Myocarditis	41	11	9 W+ 1 W±† 1 W— H+	3	1 W± 2 No W†	6	1 W± 5 No W†	19	13 W— 6 No W	34.1
Disorders of heart beat	22	4	2 W+ 2 W— H+	2	1 W— H+? 1 No W†	3	3 No W†	13	8 W— 5 No W	27.3
Aortic valvular lesions	20	7	5 W+ 1 W± H+ 1 W— H+	0	....	0	....	13	9 W— 4 No W	35.0
Mitral lesions	71	5	3 W+ 1 W± H+ 1 No W H+	2	1 W±† 1 No W†	2	1 W±† 1 No W†	62	28 W— 34 No W	9.8
Eye: Iritis	49	21	14 W+ 3 No W H+ 2 W— Lu+ 2 No W†	4	3 W—† 1 No W†	8	1 W—† 7 No W	16	8 W— 8 No W‡	51.0
Keratitis	27	14	11 W+ 2 W— H+ 1 No W	0	....	5	5 No W	8	2 W— 4 No W‡ 2 No W	51.9
Scleritis	11	3	2 W+ 1 W— H+	0	....	0	....	8	4 W—	27.3
Retinitis	43	11	8 W+ 3 W— H+	1	No W†	8	2 W—† 6 No W†	23	16 W—	27.9
Neuritis, papillitis	14	6	5 W+ 1 W— H+	0	....	2	No W†	6	6 W—	42.8
Nerve atrophy	30	16	7 W+ 3 W— H+ 2 W— Tabes 4 No W H+	2	1 W—† 1 No W†	10	2 W—† 8 No W†	2	2 W—	60.0
Choroiditis, Chorioretinitis	26	14	11 W+ 2 W— H+ 1 No W H+	3	1 W± 1 W— H+? 1 W—†	3	No W	6	5 W— 1 myopia	65.4
Ophthalmoplegia	13	7	7 W+	0	....	2	1 W— H+? 1 W—†	4	3 W—	53.8
Bones: Osteomyelitis	36	7	6 W+ 1 No W H+	5	1 W— H+ 4 No W†	3	No W	21	4 W— 13 ‡	33.3
Periostitis	33	16	16 W+	4	4 No W†	5	3 W—† 2 No W†	8	4 W— 4 No W‡	48.5
Joints: Arthritis, infectious type	236	56	42 W+ 2 W±† 10 W— H+ 2 No W†	10	2 W—† 8 No W (old cases)	21	2 W—† 1 W± 18 No W†	149	89 Tbc. 22 Gonorrh. 34 Ac. infections 4 Rheum. fev.	27.9
Arthritis, toxic type	169	12	12 W+	2	1 W± 1 No W H+	3	2 W± 1 W—†	152	58 W— 94 No W	8.2

* Under the head of "remarks" W+ means Wassermann positive, and the number before it gives the number of cases with this finding. W— means Wassermann negative, W± means Wassermann doubtful or suggestive, and No W means Wassermann not made. H+ is history of syphilis definite. H— No history. H+? History doubtful. † Other lesions present make diagnosis of syphilis probable or possible, or in some cases positive diagnosis made on the character of the lesion in question. ‡ Traumatic lesions.

recognized. The proportion among heart cases is, however, probably considerably higher in San Francisco than in many other places, not only because of the presumed greater frequency of syphilis, but also because rheumatic fever is comparatively a rare disease in this region, a fact which I do not remember seeing in print, but commonly accepted here by the best observers.

The high incidence of syphilis as a cause of eye lesions is in accordance with experience elsewhere, but is a fact not well enough recognized by ophthalmologists — at least not to the extent of their demanding routine Wassermanns in every case of the lesions mentioned below.

The most striking statistical fact here brought out (shown in both Tables 2 and 3) is undoubtedly the large number of joint lesions giving positive Wassermanns, and in our opinion due to the spirochete. This matter has been the subject of a special study by Dr. W. I. Baldwin and me[1] to which reference is made for further discussion.

In connection with certain of the cases of periostitis and osteomyelitis a statement should be made, which also applies to other conditions, such as iritis and keratitis, namely, that a history of trauma by no means rules out the possibility of syphilis. In one very stubborn case of osteomyelitis following a bullet wound the patient was later found to have a positive Wassermann, and promptly recovered under appropriate treatment. Discovery of a syphilitic condition was made in a number of eye cases in which the lesion at first was thought to be evidently on a traumatic or other obvious basis.

CONCLUSIONS

If these figures convey nothing else, they should emphasize the value and necessity of the routine Wassermann examination. For all hospitals this ought to be done on all medical, nerve, and obstetrical cases at least. Where such lavish use of the reaction is not possible, the indications for it should, at any rate, be very broad. Patients who admit a previous syphilis, or who show strong evidence of its presence, and who will probably be given antisyphilitic treatment in any case, need the testimony of the Wassermann, if anything, less than patients who do not otherwise suggest syphilis than by having a disease which may be due to syphilis, but need not necessarily be so. Large numbers of cases could be cited in which the diagnosis has been cleared up by the routine Wassermann in the absence of any suspicion; this has often occurred after long periods of failure to improve on other treatment. We feel that any obscure case of any kind ought to have a Wassermann. This is especially true in cases in which the patient's complaints seem out of proportion to physical findings—in cases in which the diagnosis of neurasthenia is too often satisfactory to the physician.

Of the classes of disease in which the Wassermann seems especially called for, may be mentioned all diseases of the central nervous system, all circulatory diseases, including cardiorenal and renal, all bone and joint diseases, all diseases of the eye involving nerve, retina, choroid, sclera, iris, or lens, all liver diseases, all chronic digestive diseases, all tumors, all cases involving lymphatic enlargement, and all constitutional or metabolism diseases.

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[1] Whitney, J. L., and Baldwin, W. I.: Syphilis of the Spine; Its Frequency and the Value of Its Characteristic Lesions as a Diagnostic Sign of Syphilis, The Journal A. M. A., this issue, p. 1989.

SYPHILIS OF THE SPINE

ITS FREQUENCY AND THE VALUE OF ITS CHARACTERISTIC LESIONS AS A DIAGNOSTIC SIGN OF SYPHILIS *

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There is a general belief that syphilis of the joints is a rare disease. This is the more remarkable inasmuch as the various forms of syphilitic arthritis have been clearly enough described, not only in separate papers, but in textbooks as well. For example, Goldthwaite, Painter and Osgood[1] include in their textbook an accurate description of the various lesions which may occur, and give references to literature, but add, as to frequency, that "there are great differences of opinion," and state of the toxic form (type of arthritis deformans): "This must be rare, we believe, in this country." On the other hand, many observers have believed that the incidence of joint lesions is high, especially in hereditary cases. Von Hippel asserts an incidence of 56 per cent., and Fournier of 40 per cent. O'Reilly[2] contends that this disease is much commoner than is usually supposed.

With regard to the frequency of syphilitic joint lesions in general, we shall here only refer to the paper by one of us (Whitney[3]) in which it was shown that among 544 syphilitics studied in the University of California Hospital, the diagnosis of syphilitic joint lesions was made in 83, or 15.2 per cent. These joint cases are listed in Table 1.

TABLE 1.—SYPHILITIC JOINT LESIONS AMONG 544 CASES OF SYPHILIS

Infectious type (including both synovitis and destructive lesions):	
General or multiple	9
Elbow	3
Finger	1
Hip	8
Knee	3
Spine	41
Toxic type	18

It was further found that of all cases of arthritis seen, 18.7 per cent. gave evidence of being syphilitic Of the infectious type of arthritis 27.9 per cent. were syphilitic, and of the toxic type 8.2 per cent. These figures are striking, and show that syphilitic joints are much commoner than is generally supposed. Even of the arthritis deformans type, syphilis seems to be a causative factor in a very considerable number.

It will be noticed that among the joints involved, the spine is by far the commonest. If the incidentally discovered abnormalities of the spine had been included, which were not considered important enough to be mentioned as a separate diagnosis, the figures would have been far more striking.

We have for some years in the University Hospital recognized as extremely common, and very characteristic, certain lesions of the spine found in syphilitics.

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* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Goldthwaite, Painter and Osgood: Diseases of the Bones and Joints, Boston, D. C. Heath & Co., 1909, p. 441.

[2] O'Reilly: Am. Jour. Orthop. Surg., 1914, xi, 3.

[3] Whitney, J. L.: Statistical Study of Syphilis as Seen in the Outpatient Department of the University of California Hospital, The Journal A. M. A., this issue, p. 1986.

For this view Dr. S. J. Hunkin of San Francisco is primarily responsible, who used to insist on this fact long before the Wassermann reaction gave him the confirmation needed to convince others.

The following study was undertaken to put our strong impressions into the definite form of figures. A series of 100 cases of syphilis was carefully examined for joint lesions, with special reference to the condition of the spine. The cases were those of patients who happened in, day by day, to the medical clinic, and the only selection was in choosing only proved syphilitics, and in rejecting four who, though showing, as we believed, the characteristic spinal lesions, presented also complicating factors (in one case a gonococcus urethritis, in one a rheumatic fever, and in two a history of trauma).

The results of this study were rather more striking than we had anticipated, for out of 100 cases were found only twenty-six with perfectly normal spines (Cases 1 to 26), while six more are classed as doubtful (Cases 27-32).[4] The remaining sixty-eight cases had spinal abnormalities of some kind, and of these all but four were of a type which we have learned to consider more or less characteristic of syphilis.

As to the nature of these arthritic lesions occurring in syphilis, we distinguish, as already indicated, the infectious and the toxic type. The latter form is of the nature of what is often called arthritis deformans, hypertrophic and villous lesions being present, and less often atrophic changes. Usually many joints are involved, the spine being among the commonest. In such a case the spine is more or less uniformly stiff, and the Roentgen ray will usually show the characteristic osteophytes of hypertrophic joint-disease.

Of the infectious type, two forms are easily distinguishable. One is destructive, presumably a gummatous formation in the vertebral body (in other joints at the epiphysis), leading to a picture which closely resembles tuberculosis, and which, we feel sure, is commonly diagnosticated as such.[5]

In this paper we shall not go into a detailed description of the toxic or of the gummatous varieties, since they have been accurately described by many observers.

The second form of the infectious type, however, seems to have escaped almost unnoticed, and deserves more careful consideration. This form consists in a synovitis without destructive change. As occurring not uncommonly in the knees of congenital cases, this lesion has been long recognized; but the main contention of the present paper is its commonness in other joints, especially those of the spine, and its occurrence in acquired syphilis as well as congenital.

In the spine this process attacks the synovia of the various spinal joints, leading at first to lessened motion from spasm, but as the acuteness of the process subsides, adhesions are usually formed which limit motion, and in many cases give complete fixation. As far as can be judged, these adhesions are permanent, and are entirely unaffected by antisyphilitic treatment. They may, however, be broken up by forcible manipulation, a measure which we have often advised when there was enough deformity to give a faulty posture with strain.

When stiffening occurs, either from spasm or from adhesions, there is likely to be a characteristic deformity which may suggest an early form of Pott's disease. This may be either a slight prominence of the spines, a flattened area, or even a shallow depression. The question of whether the deformity is to consist of a forward or a backward bowing is largely dependent on the natural curves at the area involved, and the consequent directions of strain. But the suggestion is here tentatively made that a second factor may be operative, namely, that the flexor spasm may predominate in case the process involves chiefly the intervertebral joints, and the extensor spasm where the articulations of the laminae are the main seat of trouble. The former would tend to produce a convexity, the latter a concavity of the spinal outline. Perhaps the most characteristic single type of deformity is a prolongation of the dorsal curve into the dorsolumbar region, where a concavity is normal, or a flattening at this level. It is also to be noted that deformity may be altogether absent until tests of mobility show an area of more or less complete fixation.

It appears that the spine offers ideal conditions for the formation of permanent adhesions, being composed of a series of joints which interplay and functionate in concert. In case one part of this complex is immobilized by spasm, its function can be completely taken over by neighboring parts, and the affected joints are thus allowed to remain fixed until the adhesions have become permanent. On the other hand, in such joints as the knee or wrist it is impossible to shift function in this way, and feeble adhesions from a low-grade process are almost inevitably broken down.

It is characteristic of this condition that only a limited number of vertebrae are involved as a rule, thus distinguishing this form of stiffness rather sharply from osteo-arthritic changes, which in general are likely to be pretty evenly distributed throughout the back. Reference to Table 2 will show that the stiffness frequently affects only three or four vertebrae, though the commoner occurrence is in from six to eight, and sometimes the whole dorsal region, or even the whole spine is affected. Thirty-six of the 100 cases have lesions rather strictly limited in extent (Cases 33-68); twenty-five have a distinct localization, and in addition a lesser or greater stiffness of the whole spine (Cases 69-93). The localized areas we believe to be always of the infectious type; the general stiffness may be a lesser grade of the same infectious process, or may represent a (toxic) osteo-arthritis of the spine on which is superimposed the infectious local process. Some of the cases (71, 81, 88, 92) have more or less well-marked osteo-arthritis or other joints to suggest that the spinal process is also toxic.

The active synovitis is a relatively early manifestation of the disease. Cases 35, 37, 45, 47 and 68 are examples of this early occurrence. On account, however, of the persistence of the adhesions which so frequently follow, the characteristic deformity and stiffness appear to remain throughout life. For this reason they are found in numerous cases in which the disease occurred years before, the Wassermann is negative, and there is every evidence that syphilis as an active disease is abolished. This fact adds to the value of these lesions in the diagnosis of syphilis, namely, that it is found in old syphilitics, when every other evidence of the disease may be lacking.

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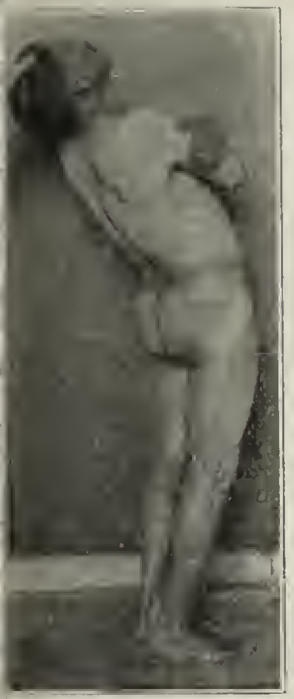
[4] It is suggestive that nineteen of these patients had had early treatment: in two cases indifferent, in seven considerable and in ten vigorous.

[5] Closely allied to this group is the Charcot joint in tabes, which Eloesser of this city has duplicated experimentally by traumatizing a joint whose posterior nerve roots had been cut. We suspect that in some of these cases there may be, on occasion, an actual invasion by the *Spirochaeta pallida*, giving a mixed clinical picture, so that it is at times impossible to be sure whether the lesions are gummatous or purely neuropathic in character.

Pain is usually not a prominent symptom even in the early (active) cases, though we believe that a large part of the backache and "rheumatic pains" of secondary syphilis may be explained on this basis. As compared to tuberculosis, the pain on motion and the sensitiveness, as well as the consequent spasm, are not striking, even in case of destructive lesions. Roentgenograms of the spine in the synovial form are practically negative, showing no appreciable bony change in either early or late stages.



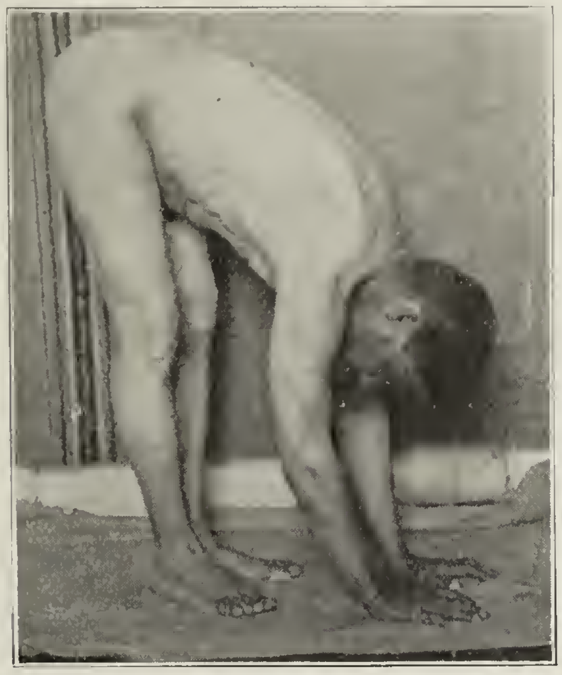


Fig. 1.—Case 90. Tabes. General spinal stiffness, most marked in upper dorsal region. Showing maximum hyperextension possible, also marked hypotonicity (see Fig. 2) which allows patient to put palms to the floor, and even to bend elbows, with knees kept straight.

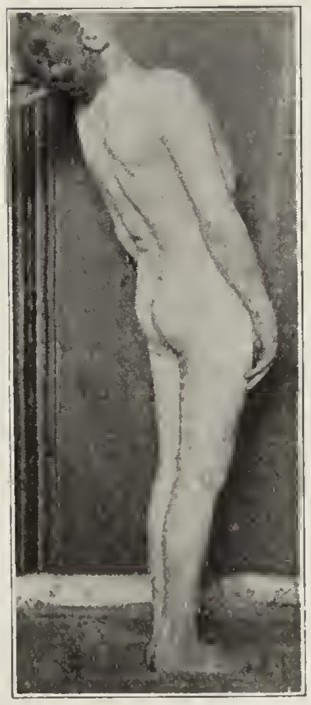
There is one more striking characteristic of these cases. This is a frequently occurring hypotonicity of the ligaments and muscles of the uninvolved portions of the spine, and notably of the sacro-iliac joints and the hips. Out of thirty-six patients with sharply localized processes, but otherwise normal spines, eighteen could touch the floor with their fingers, keeping the knees straight (Cases 51-68). Of twenty-five patients with general as well as localized stiffness, eleven could do the same (Cases 83-93). Of seven patients with evenly distributed spinal stiffness, two could touch the floor (99 and 100). Not a few of these could put palms to the floor, and two or three could then bend their elbows, still with straight knees. The usual tests for sacro-iliac relaxation were invariably positive in these cases of hypotonus.

This hypotonicity was described years ago by Frenkel as a sign of tabes, and it will be observed that several of the present series which had the most marked hypotonus were cases of tabes or cerebrospinal syphilis. But this is by no means exclusively a characteristic of the cases with nerve syphilis. Instead of calling it with Frenkel a sign of tabes, we are inclined to call it a sign of syphilis, which is usually more marked in nerve cases. It is also to be remembered that a considerable degree of hypotonicity, to the extent, at least, of the ability to touch the floor easily, is by no means uncommon in normal people, and therefore cannot, when alone, be considered pathologic.

The characteristic thing is not the hypotonicity alone, but this combined with a stiff back, or with a back showing areas of restricted mobility. This combination of the two findings we have long regarded as almost sure proof of syphilis, and it is one of the points which we especially desire to emphasize in this paper, that in this we have a pathognomonic sign which is of quite as much interest to the general diagnostician as to the orthopedist. The abnormalities here described are easy to demonstrate, especially after a little practice, and we have long felt that the routine examination of the spine as a part of the general examination deserves more general adoption.

In addition to the series of cases of syphilis examined, it was felt that a series of negative controls was also called for. Twenty-five patients were examined, who were thought to be certainly nonsyphilitic, and the lesions which we consider characteristic were found in none of them. At the same time, it was recognized that it is more difficult to assemble a series of known normal patients than one of proved syphilitics. A certain number of cases had to be excluded from both series because syphilis could not be absolutely proved on the one hand, or definitely excluded on the other. Of these rejected cases, a certain number had localized stiffness with or without hypotonicity, but no single patient was encountered with this finding who did not also show some other suggestion of syphilis. The impression gained from our experience with this sign in the last several years is strong that the combination here described is at least rare in nonsyphilitic persons

For the purposes of the present study we felt obliged to consider the Wassermann reaction as the deciding factor in the diagnosis of syphilis, cases being excluded from the positive series if the reaction was negative, unless the other evidence was indisputable. We feel no doubt, however, that we have thus excluded a considerable number of syphilitic cases. O'Reilly[2] agrees with Wysocki that the diagnosis of bone and joint syphilis must depend on the Wassermann test, and this represents the usual teaching. From this opinion we must strongly dissent. Apart from the results of treatment, we believe that a considerable number of cases of bone, and especially of joint, syphilis give a negative reaction. Thus, in the past year one of us (W. I. B.) has seen four cases of tibial osteoperiostitis with repeatedly negative Wassermann, which showed a



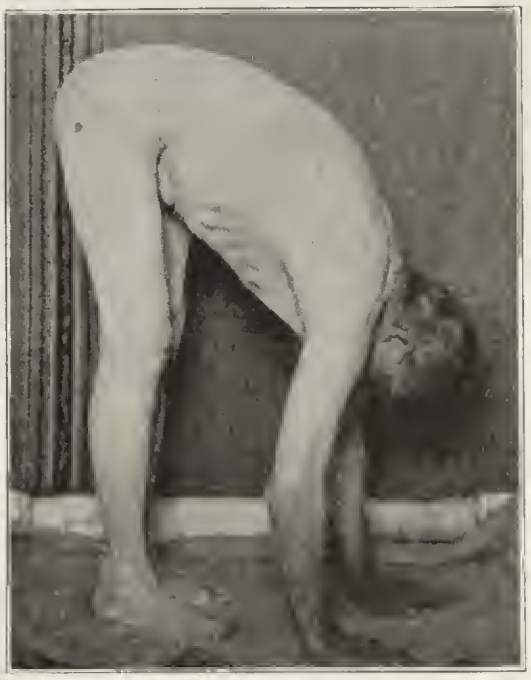


Fig. 3.—Case 66. Tabes. Marked stiffness ninth dorsal to first lumbar; fair mobility elsewhere. Showing maximum hyperextension and hypotonicity (Fig. 4).

TABLE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS

Case No.	Hospital No.	Sex*	Age	Spine†			Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction¶	Remarks
				Cervical	Dorsal	Lumbar						
1	2917	♀	32	0	0	0	0	0	12 yrs.	0	+	Keratitis.
2	505	♂	33	0	0	0	0	0	8 yrs.	++	+	Treated at U. C. H. from start.
3	3567	♂	42	0	0	0	0	0	20 yrs.	0	+	Cerebrospinal syphilis.
4	1513	♂	32	0	0	0	0	0	11 yrs.	0	++	
5	670	♂	32	0	0	0	0	0	7 yrs.	++	+	
6	12464	♀	36	0	0	0	0	0	18 yrs.	0	++	
7	4721	♂	26	0	0	0	0	0	3 yrs.	++	++	
8	13303	♂	26	0	0	0	0	0	6 wks.	++	+++	Primary; treated at once.
9	8286	♂	36	0	0	0	0	0	7 yrs.	Little	+++	
10	14344	♂	28	0	0	0	0	0	3 mos.	+	+++	
11	12013	♂	44	0	0	0	0	0	16 yrs.	+	±	Undoubted history.
12	14035	♂	30	0	0	0	0	0	4 wks.	0	+++	Primary; untreated.
13	11497	♂	29	0	0	0	0	0	14 yrs.	+	+	Pills. Three years.
14	12896	♂	35	0	0	0	0	0	2 mos.	++	+++	Vigorously treated since primary.
15	14001	♂	43	0	0	0	0	0	19 yrs.	+	++	Pills. Three years.
16	12118	♂	38	0	0	0	0	0	15 yrs.	+	+++	
17	6851	♂	31	0	0	0	0	0	2 mos.	++	+	
18	10006	♂	32	0	0	0	0	0	6 yrs.	0	None	Undoubted history.
19	11173	♀	33	0	0	0	0	0	12 yrs.	0	+++	
20	14870	♂	30	0	0	0	0	++	3 mos.	0	+++	
21	10508	♀	32	0	0	0	0	++	18 mos.	+	+++	
22	12583	♂	36	0	0	0	0	+	14 yrs.	+	—	General paralysis.
23	13981	♀	16	0	0	0	0	++	4 mos.	0	+++	
24	1129	♂	23	0	0	0	0	++	3 yrs.	++	±	Treated at U. C. H. from start.
25	10208	♀	30	0	0	0	0	+	1½ yrs.	0	None	Syphilid.
26	10990	♂	48	0	0	0	0	+	27 yrs.	0	+++	
27	13328	♂	38	0	Sl. 8-9	0	0	0	6 yrs.	Little	+	
28	357	♂	36	0	Sl. 4-9	0	0	0	9 yrs.	++	+++	
29	10837	♂	15	0	Sl. 9-11	0	0	0	6 mos.	++	+++	Primary; treated vigorously.
30	11728	♀	21	0	Sl. 8-11	0	0	0	5 mos.	++	+++	Primary; treated vigorously.
31	957	♀	32	0	Sl. 7-12	0	0	0	3 yrs.	0	++	
32	604	♀	47	0	Sl. 2-6	0	0	+	2 yrs.+	0	+	
33	12222	♂	44	0	++ 8D-1L	(2-5) 0	0	0	8 yrs.	0	++	
34	13346	♀	54	0	++ 7-11	0	0	0	20 yrs.	0	None	Gumma of leg.
35	10981	♀	20	0	++ 7-12	0	0	0	6 mos.	0	+++	
36	9554	♂	35	0	+++ 9-11	0	0	0	8 yrs.	0	+++	
37	5513	♂	31	0	++ 3-10	0	0	0	1½ yrs.	+	+++	Salvarsan after primary; nothing since.
38	5115	♀	21	0	++ 3-10	0	0	0	3½ yrs.	0	+++	
39	1415	♂	12	Sl.	+ 3-7 + 12D-1L	(2-5) 0	+	0	Congenital	0	+	Old healed case. Formerly synovitis of knees and destructive lesion of spine. No evidence of activity at present.
40	7212	♂	36	0	++ 6-10	0	0	0	15 yrs.	0	—	Gummata of buttock; rapid healing after salvarsan.
41	2621	♂	56	0	+ 1-6 ++ 6-12	0	0	0	5 yrs.	Little	+++	
42	13184	♂	37	Sl.	Sl. 1-7 +++ 7D-1L	(2-5) 0	Sl. hips	0	14 yrs.	0	++	
43	13411	♂	26	0	+ whole ++ 3-7	0	0	0	9 yrs.	0	+	
44	9630	♂	66	(1-4) 0	++ 5C-3D 0 4-12	0	0	0	50 yrs.	0	None	Late syphilid; undoubted history.
45	14668	♂	19	0	+ 4-10	0	0	0	2 mos.	0	+++	Primary and roseola.
46	12980	♂	13	0	++ 2-8	0	0	0	Congenital	0	+++	
47	13695	♂	25	0	++ 3-11	0	0	0	3 mos.	0	None	Syphilid.
48	14181	♂	22	0	++ 5-10	0	0	0	5 yrs.	0	++	
49	13520	♀	28	0	+ 6-8	0	0	0	?	0	++	
50	2748	♂	50	0	+ 1-6 ++ 6-11	Sl.	0	0	4 yrs.	+	+	
51	10192	♀	41	0	+ 1-12	0	0	++	19 yrs.	0	+++	
52	5057	♂	34	0	Sl. 1-5 +++ 5-11	0	0	+	10 yrs.	0	+++	
53	15029	♂	64	0	++ 5-11	0	0	+	11 yrs.	+	+	
54	1290	♂	48	Sl.	++ 7-11	0	0	+	17 yrs.	+	+++	
55	11842	♂	41	0	+ 1-8 ++ 9-12	+ 1-5	0	++	15 yrs.	0	+++	Cerebrospinal syphilis.
56	12082	♂	29	0	+ whole ++ 6-10	0	0	+	5 yrs.	0	+++	
57	3916	♂	31	0	+ whole ++ 6-10	0	0	++	2 yrs.	++	+++	
58	6665	♂	34	0	++ 5-10	0	0	++	2 yrs.	++	None	Treated U. C. H. since primary.
59	2204	♂	31	0	++ 9-11	0	0	+	14 yrs.	Little	+	Tabes.
60	2403	♀	25	0	+ 1D-2L ++ 2-7D	(2-5) 0	0	+	6 yrs.	0	+++	
61	5227	♀	22	0	++ 4-8	0	0	+	2 yrs.	0	+	
62	1338	♂	45	0	+++ 6-10	Sl.	Sl. hips	+	— yrs.	0	++	Cerebrospinal syphilis.
63	5674	♂	30	0	+ 7D-1L	(2-5) 0	0	+++	11 yrs.	0	++	Cerebrospinal syphilis.
64	14023	♀	27	0	+ 5-8	0	0	++	6 yrs.	0	+++	
65	3489	♀	37	0	+ 7-12	0	+	+	18 yrs.	0	+	Synovitis of knees and elbows.
66	13340	♂	45	0	++ 9D-1L	(2-5) 0	0	+++	16 yrs.	0	+++	Tabes.
67	6276	♀	48	0	++ 4-10	Sl.	0	+	30 yrs.	0	++	
68	11455	♀	26	0	+++ 4-8	0	0	++	15 mos.	0	+++	
69	11827	♀	36	Sl.	++ 1-12	+++ 12D-3L	0	0	14 yrs.	0	+++	Possible early tabes.
70	14971	♂	35	Sl.	++ 1-5 +++ 5-12	+	0	0	7 yrs.	+	—	Undoubted history.
71	3929	♂	49	Sl.	Sl. 1-6 +++ 6-11	+	+	0	13 yrs.	0	+++	Arthritis of almost all joints, most marked of hands.
72	13661	♂	58	0	++ 1-6 +++ 7-12	+	0	0	5 yrs.	Little	—	Undoubted history.
73	9758	♂	40	Sl.	+ 1-5 ++ 6-11	+	0	0	?	0	+	Gumma of clavicle.
74	5417	♂	42	Sl.	Sl. 1-6 ++ 7-12	+	0	0	?	0	++	
75	12572	♂	21	+	+ 1-5 ++ 5-11	++ 1-2 + 3-5	0	0	33 yrs.	Little	+++	Tabes.

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* ♀ means female; ♂ means male.

† In these columns 0 means no abnormality found; + means demonstrable stiffness; ++ marked stiffness, and +++ rigidity at the level of the vertebrae whose numbers are given.

‡ In this column 0 means no abnormal hypotonicity; + means that patient could easily touch the floor with finger tips when knees were stiff; ++, patient could touch floor with knuckles; +++, still greater degree of hypotonicity.

¶ The Wassermann report does not always represent condition at the time of this examination; sometimes it is taken from the record of a considerable time before.

TABLE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS—Continued.

Case No.	Hospital No.	Sex*	Age	Spine† Cervical	Spine† Dorsal	Spine† Lumbar	Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction¶	Remarks
76	9784	♂	46	Sl.	+ 1-4 ++ 5-9 + 10-12	Sl.	0	0	20 yrs.	Little	+++	Tabes.
77	5335	♂	34	Sl.	+ 1-6 +++ 7D-3L	+ 4-5	0	0	11 yrs.	0	+	
78	6577	♀	12	+	+++ 2-6 + 7-12	Sl.	+	0	Congenital	0	—	Roentgen ray shows rarefaction of sacrum and ilia, and destruction of head and neck of left femur.
79	10668	♂	30	++	+	+	0	0	?	0	+	Roentgen ray shows destruction of cervical vertebrae 3, 4 and 5.
80	14300	♂	33	Sl.	+ 5-12	+	0	0	?	0	+++	
81	1564	♀	60	Sl.	+ 1-5 ++ 5-11	+	+	0	— yrs.	0	++	Moderate general osteoarthritis.
82	13852	♂	50	Sl.	++ 1-12	+ 1-3 ++ 3-5	0	0	?	0	+++	Thoracic aneurysm.
83	13160	♀	39	0	+ 1-6 +++ 7-12	+	0	++	9 yrs.	0	+++	Insane.
84	12891	♂	52	+	+++ 1-12	+	0	++	16 yrs.	0	—	Tabes.
85	14644	♂	60	Sl.	+++ 3-10	Sl.	0	+	35 yrs.	++	+	
86	1591	♂	48	Sl.	Sl. 1-4 +++ 5-11	Sl.	0	+	20 yrs.	0	+	
87	37	♂	53	0	Sl. 1-4 ++ 5-10	Sl.	0	+	23 yrs.	+	+	Cerebrospinal syphilis.
88	2006	♂	64	+	++ 1-4 +++ 5-10	+11 D-5L	+	+	— yrs.	0	+	Hypertrophic changes, hips and fingers.
89	12502	♂	56	Sl.	+ 1-5 ++ 6-11	Sl.	0	+++	35 yrs.	0	—	Tabes.
90	6980	♂	56	+	++ 3-9 + 9-12	Sl.	0	+++	35 yrs.	+	+	Tabes.
91	8892	♂	40	Sl.	+ 1-4 ++ 5-11	Sl.	0	+	22 yrs.	0	+++	
92	13139	♂	62	+	+++ 1-9 + 10-12	0	+	+	37 yrs.	0	+	Hypertrophic changes in fingers.
93	784	♂	50	+	+ 1-5 ++ 6-12	+	0	++	15 yrs.	0	None	Tabes.
94	11828	♂	50	Sl. 1-5	++ 6C-2L	+ 3-5	Hips	0	23 yrs.	0	+++	Hypertrophic arthritis of hips.
95	1313	♂	28	+	++	++	0	0	16 yrs.	0	+++	Roentgen ray suggests gumma of fifth lumbar.
96	17	♂	55	0	+	Sl.	0	0	28 yrs.	+	—	Undoubted history.
97	13580	♂	37	++	+++	++	Sl. hips	0	13 yrs.	+	—	Flamboyant case of active synovitis—"poker spine."
98	12411	♀	43	+	++	+	0	0	?	0	+	Probably hypertrophic.
99	710	♂	47	+	+	+	Sl. hips	+	?	0	+	
100	7972	♂	51	+	++	Sl.	0	++	18 yrs.	0	+++	

typical clinical and Roentgen-ray picture of syphilis, and cleared rapidly on antisyphilitic treatment. We are sure, on the basis of many observations, that a not inconsiderable percentage of cases of spinal syphilis of the types here described will give a negative Wassermann. Therefore, as far, at least, as treatment is concerned, we are in the habit of paying attention to local and general findings even in the absence of a positive Wassermann. It is here that a general consultant can often be of great assistance to the orthopedic specialist, since the demonstration of any other suspicious signs amply justifies a course of specific treatment in doubtful cases. A brief summary of the findings in the 100 syphilitic patients is given in Table 2.

Recapitulation.—Among 100 unselected cases of syphilis were found:

Twenty-six patients with normal spines, of whom seven showed hypotonicity.

Six patients classed as doubtful, of whom one showed hypotonicity.

Thirty-six patients with sharply localized stiffness, but otherwise flexible spines, of whom eighteen showed hypotonicity.

Twenty-five patients with localized stiffness, and less marked general stiffness, of whom eleven showed hypotonicity.

Seven patients with uniformly stiff spines, of whom two showed hypotonicity.

Nine patients showing evidence of toxic arthritis in other joints.

Three patients with gumma of the spine.

One patient with destructive syphilis of the hip.

CONCLUSIONS

A localized stiffness of the spine is strongly suggestive of syphilis, being present in over half of this series, and rare in nonsyphilitic cases.

Localized stiffness of the spine in conjunction with hypotonicity of the uninvolved spine and the pelvic and hip joints is almost pathognomonic of syphilis.

It is found in obsolete as well as in active cases.

It is a sign easy to demonstrate.

A negative Wassermann reaction should not be interpreted as excluding syphilis in the presence of other signs which suggest joint syphilis.

University of California Hospital.

ABSTRACT OF DISCUSSION

Dr. H. W. Frauenthal, New York: In a paper I read before this section last year I made the statement that in my experience in examining orthopedic cases uniformly for syphilis, about 15 per cent. of them gave a positive Wassermann, either blood test or from spinal fluid. This has been borne out by other observers in France, Germany and Sweden. I simply want to refer to an interesting abstract of a paper in The Journal, June 19, 1915. The characteristic thing about spinal syphilis is the absence of deformity. The characteristics of Pott's disease are absent, while the Roentgen ray shows the increasing tissue, which is also characteristic of periostitis of the spine, and there is not the rarefied tissue from the absorption that occurs in tuberculosis of the spine (Pott's disease). I think there are a great many cases of tuberculous spines which are syphilitic, that is, a great many syphilitic spines and other joints which are treated as tuberculous; but in an institution in which uniform blood and spinal cord fluid tests are made, syphilitic joint disease is quite frequent. I think that if it were a uniform custom in orthopedic institutions to look for syphilis in supposed tuberculous joints, the positive Wassermann test would be obtained frequently. One of the most important things combined with this is the fact that the men who taught, twenty-five years ago, that syphilis and tuberculosis were antagonistic will find that this does not prevail. There is often a tuberculous infection on a syphilitic base, and in order to cure the tuberculosis, it is necessary also to treat the syphilitic infection. I made this statement about ten years ago in a paper on syphilitic joint disease, before we had blood and serum determinations.

Dr. James L. Whitney, San Francisco: I had the pleasure of collaborating with Dr. Baldwin in the examination of the series of cases here reported, and should like to emphasize two points as seen by an internist rather than an orthopedic surgeon. The first is the value to both of cooperation between the specialist and the general diagnostician. Many patients are doubtless treated as tuberculous, who might, on the basis of a thorough general examination, be shown to be syphilitic. We have seen not a few such cases which, after long and fruitless mechanical treatment, yielded promptly to specific medication.

The second point is the possible value of the spinal condition as an aid in the diagnosis of syphilis in general. Diagnosticians are constantly on the lookout for signs which point toward syphilis. Of such signs I have found slight irregularities of the pupil especially valuable in directing suspicion toward syphilis. It seems to us, on the basis of this work, that the findings in the spine may prove to be equally valuable in this respect. Over half of our cases of syphilis have this localized stiffness of the spine, and over 30 per cent. have this stiffness combined with hypotonicity of spine and pelvis. The latter finding we believe to be found only in syphilitics, and even in the absence of other confirmatory evidence, including the Wassermann reaction, should be a sufficient basis for antisyphilitic treatment.

Dr. D. B. Phemister, Chicago: I should like to ask which portion of the spine shows the localized stiffness, and if Roentgen-ray examination shows bony changes in this region?

Dr. Carl C. Crane, San Francisco: A few years ago it occurred to me that there were many children in the clinics who were returning regularly for braces, splints and various other appliances in whom the diagnosis of tuberculosis had been made. They were not doing well; perhaps they were holding their own; they were pale, thin and inactive. They were given iodids and mercury, and within a fortnight a mother, nearly frantic, came in crying, saying that she could not make Johnny use his crutches any longer; that he was jumping on wagons and walking on his sore hip. The boy, with many others, improved very rapidly, became ruddy, strong and active, and shortly afterward dispensed with his crutches and all other apparatus. This was simply an example of what was observed in many instances of so-called tuberculosis, of the hip in particular, and of other portions of the skeleton in general.

Dr. Walter I. Baldwin, San Francisco: In answer to Dr. Phemister's question, we have statistics of over 100 cases, collected mostly by Dr. Whitney, which show exactly the localization of the stiffness in the spine. I do not have time today to go into all the different phases of the diagnosis between syphilis and tuberculosis, but I have some lantern slides which illustrate this hip density with rigidity. I can say, however, that it is most common in the cervical region.

Sanitary Survey.—In a report submitted by the United States Public Health Service on a sanitary survey of ninety-six industries and trades in Indiana employing women labor, the following recommendations have been made: Ventilation should be improved by forcing fresh air into all parts of the work room; eye shades or suitable curtains should be used where operators are required to face windows continually, and individual drinking-cups and towels, and the providing of liquid soap were recommended.

SUBPERIOSTEAL RESECTION IN OSTEOMYELITIS

A CLINICAL AND EXPERIMENTAL STUDY [*]

D. B. PHEMISTER, M.D.
CHICAGO

It has been known since the time of Galen that the removal of a part or all of the shaft of a bone, which has undergone necrosis in osteomyelitis, may be followed by restoration of the missing portion. Scultetus recorded a classic example in 1634, and a little later Delamatte and Vigarous reported regeneration of missing portions of the tibia. No attempt was made to explain the method of regeneration until after the well-known experiments of Duhamel in 1741, showing the important part played by the periosteum in the formation of callus during the healing of fractures. Subsequently it was attributed to the periosteum which, as was noted, was always detached from the shaft and left behind. Isolated reports of cases continued to confirm this view, but no experimental evidence was offered in its support until the important work of Heine, who from 1830 to 1837 performed, in animals, a number of subperiosteal resections of the various bones of the body, with subsequent regeneration of the shaft in a certain percentage of the cases.[1] Stimulated by this work, Langenbeck, who saw Heine's specimens, Larghi and other surgeons performed a number of subperiosteal resections of portions of diseased shaft, and of the ends of the bones in arthritis with varying degrees of success, as regards restoration of the excised portion.

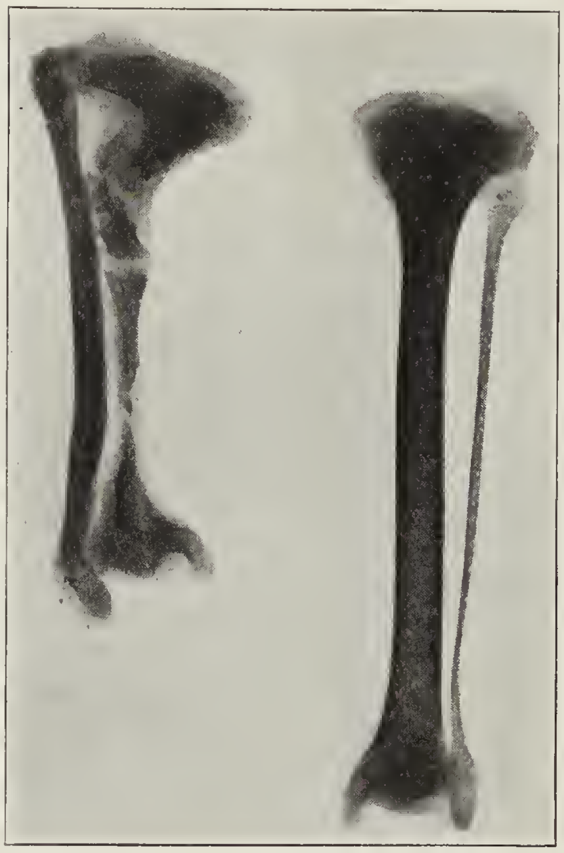

Fig. 1.—Subperiosteal resection 65 days old, and bone of opposite side.

The experiments of Ollier[2] from 1858 to 1867 were the most extensive and important that have ever been made in the field of bone regeneration. He asserted that only the cells of the inner or cambium layer possess osteogenetic properties, and obtained restoration after complete and partial subperiosteal resections of differently shaped and constructed bones, as the scapula, long bones and bones of the face. When the entire length of a long bone was excised, regeneration of the shaft was fairly complete. The epiphyses were incomplete, but sometimes possessed separate centers of ossification, and were separated from the shaft by broad fibrous epiphyseal lines. Where epiphyses alone were subperiosteally resected, regeneration was usually complete.

The bones of the skull afforded a striking exception in that the pericranium and external surface of the dura mater were unable to restore anything beyond very small portions. Infection had different effects according to its extent. If severe, it usually prevented regeneration of the missing portion, but if mild, new bone formation occurred, which was frequently exuberant, owing to the stimulating effects of the infection. Age played considerable part, regeneration being much less constant and extensive in old animals.

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[*] From the Department of Surgery, Rush Medical College.

[*] Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Loosen: Die Resection der Knochen und Gelenke, 1894.

[2] Ollier, L.: Traité expérimental et clinical de la regen des os, Paris, 1867.

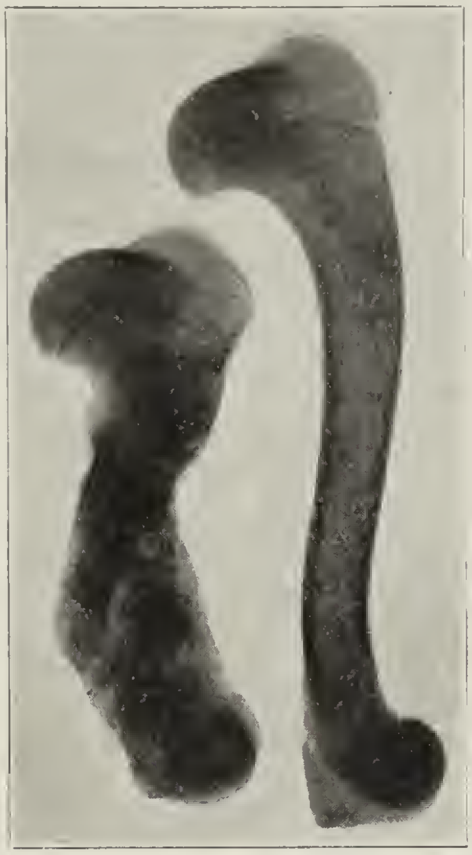

Fig. 2.—Subperiosteal resection of shaft 52 days old, and normal humerus.

Ollier, Syme and others performed many operations on the basis of this work. Nichols[3] of Boston was the first to make a careful study of its clinical application and bring it before the profession in America, where it has since been perhaps more extensively used than in any other country.

Since the appearance of Macewen's work on the growth of bone, in which he asserted that the cambium layer of the periosteum has no osteogenetic function, there has been a great deal of controversy as to the origin of the new bone, not only in the healing of fractures and in bone transplants, but also in inflammatory processes and the restoration of their secondary bony defects. There is a great confusion of ideas as to just what happens. Some believe with Macewen that when a portion of the shaft is missing and the periosteum preserved, the regeneration is from an outward growth of the cells of the ends of the bone into the tube or groove formed by the periosteum, and from any small particles of bone cells which are separated from the shaft and cling to its inner surface. In other words, all of the regeneration is from bone cells. But McWilliams obtained regeneration from the periosteum after subperiosteal resection of entire ribs. Davis and Hunnicutt[4] conclude from their recent experiments that when bone is resected subperiosteally restoration of the defect is by outgrowth from the ends of the shaft, the periosteum acting as a limiting membrane; but if particles of bone are left behind or transplanted into the defect, the periosteum is stimulated by them and takes an active part in the formation of new bone. I believe that bone cells are of importance as a starting point for ossification of the fibrous or fibrocartilaginous callus formed by the proliferating inner layer of periosteum, but the periosteum may also form callus without the presence of bone, being sufficiently stimulated by the demand of the weakened part for bony support.

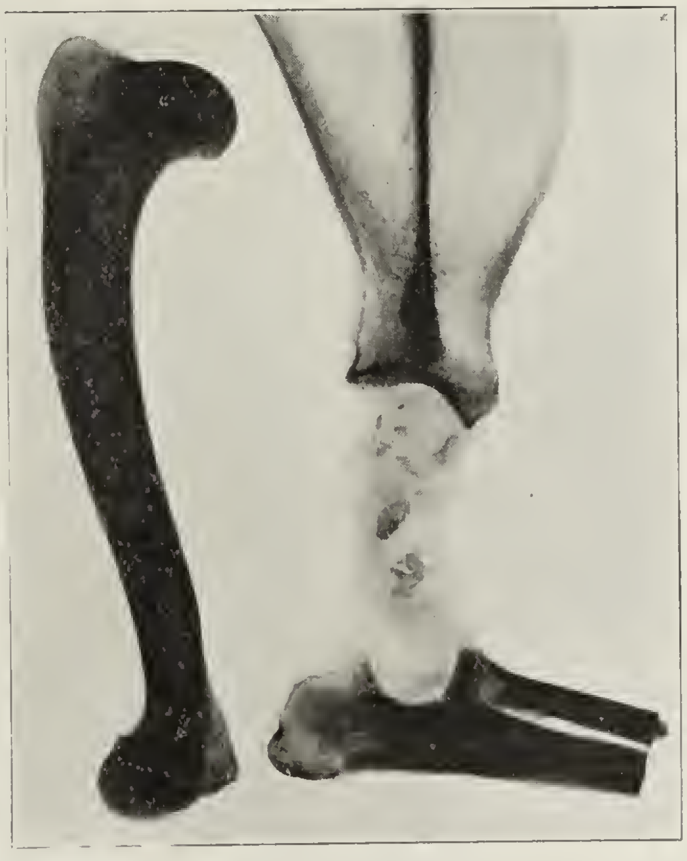

Fig. 3.—Humerus excised subperiosteally in old dog, and regeneration after forty-six days.

There is no uniformity of results after subperiosteal resection either in the healthy bones of animals or in diseased and healthy bones in man. The full explanation for this has not as yet been determined, but there are a number of known factors of importance, chief among which are age, the presence or absence of infection, and the technic of freeing from the bone the periosteum or involucrum which is left behind.

EXPERIMENTAL RESULTS

Regeneration after subperiosteal resection was tested in animals in the following sets of experiments, in which the regions excised correspond to those most often removed in osteomyelitis. The periosteum was removed with a blunt instrument. It comes away from the shaft with ease, but is much more adherent about the ends where the deeper portions are frequently not detached, or chips of bone are removed with it. Separation through the epiphyseal lines was easily performed in very young dogs, but in older ones fragments of metaphyses were usually left behind because of the difficulty of division through the narrow and irregularly curved epiphyseal lines.

1. Subperiosteal resection of the shaft was done in young animals before closure of the epiphyseal lines. Nine operations were done, four on the tibia and six on the humerus. There was a good attempt at regeneration of the tibia in all the animals when they were killed. The youngest was 1 month old at the time of operation. In twenty-six days a small shaft had been restored which was composed of fibrocartilaginous callus with a number of areas of ossification along its course. In a six-months-old dog thirty-one days after resection, a similar regeneration had occurred. The new shaft consisted of a fibrocartilaginous flexible cord, largest toward the epiphyses, with numerous small areas of ossification along its course. These may have started from scattered remaining bone cells, but the columnar mass of callus which was ossifying was so large that it must have formed largely from the periosteum.

Figure 1 is of a specimen from a five-months-old dog sixty-five days after operation in which the entire shaft was removed, and no visible particles of bone were left between the two epiphyseal cartilages, although there may have been a few about the ends. The separate areas of ossification are much larger than in the preceding experiment, and many have already fused. Those remaining are separated from each other by narrow bands of fibrous or cartilaginous callus.

It seems incredible that one should doubt the participation of the periosteum in the formation of the largely ossified middle portion, which has no bony connection with either end, or to assume that this entire mass formed from bits of remaining bone cells too small to be detached at operation.

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[3] Nichols, E. H.: Acute, Subacute and Chronic Infectious Osteomyelitis: Its Pathology and Treatment, The Journal A. M. A., Feb. 13, 1904, p. 439.

[4] Davis and Hunnicut: Am. Surg., 1915, lxi, 672.

One tibial resection in which extensive suppuration occurred showed at the end of twenty-eight days only a small amount of partly ossified callus near the upper end. The fibula in each experiment underwent marked compensatory hypertrophy.

Of the six experiments on the humerus, two were in pups 3 weeks old and were followed by the formation of a small irregular and shortened, largely ossified shaft at the end of thirty-five days. All visible traces of bony shaft were excised. In a 6-months-old animal, all of the shaft was removed except portions of the metaphyses at either end. At the end of fifty-two days there was a newly formed irregular shaft about one-fourth shorter but much greater in diameter than the normal humerus on the other side. (Fig. 2.) Separate centers of ossification are seen which have so fused that the bone is quite firm, thus enabling the animal to regain considerable use of the limb. In three other animals, forty, sixty-eight and eighty days after the resection in which portions of the metaphyses were left, there was marked shortening and little attempt at regeneration. Only a few spicules of new bone were present, with free mobility at the seat of resection.

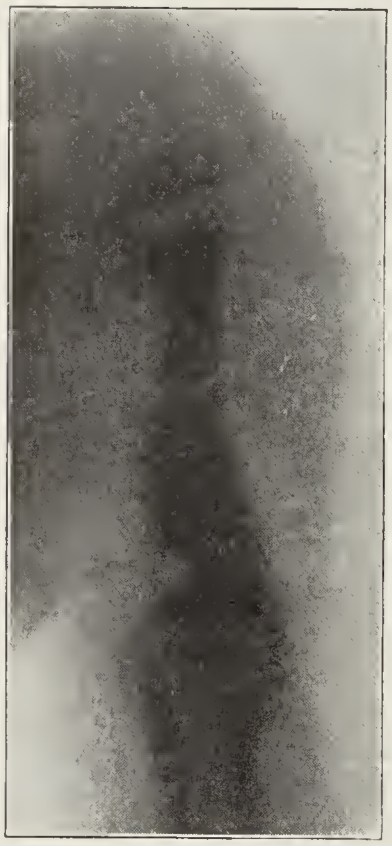
Fig. 4 (Case 1). — Regeneration at end of three months.

It is difficult to explain the differences in results, as infection was either absent or very slight in all of the cases, and the periosteum was always removed in much the same manner. More osteogenetic tissue must have been left in the cases in which regeneration occurred.

2. Subperiosteal resection of the humeral shaft in five old dogs was followed by a failure of restoration of the shaft in every case. The experiments were 21, 39, 54, 65 and 78 days old, and in none was there new bone formation to any extent. The remaining ends came close together, markedly shortening the limbs, and in the oldest experiment were united by partly ossified callus.

3. Subperiosteal resection of an entire bone was performed in two instances. In a 4-weeks-old pup the entire tibia was removed with portions of periosteum about the lower end which were not separated. In twenty-seven days there was a large irregular, partly ossified, newly formed bone filling in the defect, except at the lower end where periosteum was removed. It had no separate epiphysis at the upper end. In an almost full-grown dog in which the humerus was examined after forty-six days, there was a flail limb with marked shortening and only a few nodules along the course of the excised bone (Fig. 3). Mild infection occurred, and a small pocket of pus was present when the limb was dissected.

4. Subperiosteal resection of the shaft with reimplantation of a support into the defect was performed for the purpose of determining the influence of the insert on osteogenesis of the surrounding sheath. When a live transplant was used, as previously demonstrated, there was new bone formation both from the transplant and from the periosteum, which soon anchors the transplant into its new position. In fifteen animals, the shaft of the bone (either tibia or humerus) was boiled and reimplanted, but in every instance there was more or less infection with fistula formation which either killed the animal or necessitated the removal of the too extensive implant in from one to three weeks. Boiled wooden pegs were substituted for the bone in seven cases, but always with resulting infection. Dissection always showed the insert free in a suppurating canal with a thickened wall which on microscopic examination consisted of necrotic inflammatory or granulation tissue without any traces of callus. Two animals in which the infection was less severe at the onset remained alive and were killed at the end of two months. The dead shaft was easily extracted in each case, and the surrounding infected periosteal layer had produced only a few small nodules of bone along its course. Evidently the infection destroys the remaining osteogenetic cells and consequently interferes with the regeneration. In one nearly full-grown animal, about one third of the boiled shaft of the humerus was split off and reimplanted. It healed in without infection in an oblique position with the upper end protruding beyond the epiphysis, and when the animal died at the end of a month there was a well-developed shaft formed about the implant and along the course of the periosteum. If it were not for the extent of the foreign body implanted, which so predisposes to infection, regeneration of the shaft might be hastened by the supporting action which is contributed.

A review of the gross and microscopic findings shows that after subperiosteal resection of the shaft in young animals, the tube of periosteum partly collapses, and is filled with a blood clot. The cambium layer of the periosteum, if removed, usually proliferates and forms an irregular column of callus along the course of the shaft. Proliferation also occurs from any particles of bone that were detached and from the fragments of metaphyses, if they are not entirely excised. Conversion of fibrous and cartilaginous callus into bone proceeds from the bony surface in the healing of fractures, and ossification of the callus, that is, transformation of its cells into bone cells, in these experiments, probably begins about small bits of attached bone; but this does not mean that all the mass of fibrous and cartilaginous cells originated from the bits of bone. Histologic study shows them to come from the periosteum, and the great bulk of them to be transformed into bone cells. It also appears that centers of ossification develop in this cartilage independent of fragments of bone, just as they do in the embryonal cartilage which preforms bone. Sections through some of these areas fail to show the presence of old bone.

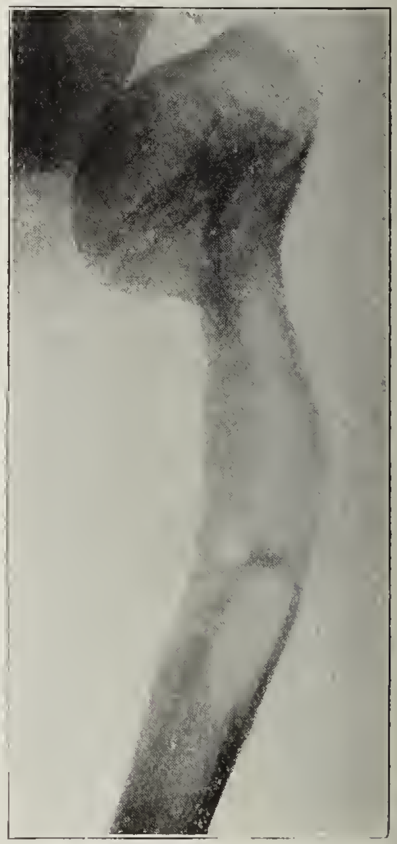
Fig. 5 (Case 1). — Irregular new shaft with its cortex and medullary cavity at the end of two years.

In the light of all the confronting evidence, it is difficult to understand the contention that periosteum is only a limiting and osteoconducting membrane, and that its inner layer of unossified cells does not possess osteogenetic properties. Growth of bone from the ends was impossible in some of the experiments in which all of the shaft was removed, and the ends were limited by epiphyseal cartilage through which growth normally occurs from the shaft in the other direction, increasing the length of the bone by enchondral ossification. Also it could hardly be expected that a tube of fascia lata containing a few bits of bone would give the same results if substituted for the remaining periosteum. Failure of regeneration occurred especially when the degree of infection was severe, as in cases in which the boiled shaft was implanted, owing to destruction of the remaining osteogenetic portions, and also in old animals in which less osteogenetic tissue is present about the periphery of the bone.

CLINICAL OBSERVATIONS

Clinical observations conform to a certain degree with the experimental results, although there is considerable difference between the resection of a shaft in a healthy dog and in human osteomyelitis. Subperiosteal resection of the noninfected shaft in young persons is followed by regeneration from the remaining periosteum and not by outgrowth from the ends of the bone.

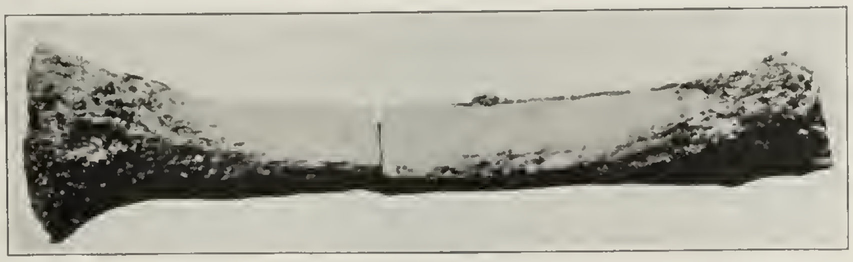

Fig. 6 (Case 2).—Excised tibial shaft, showing necrotic portion.

Case 1.—A girl of 10 had a cartilaginous exostosis of the upper end of the humerus for which a subperiosteal resection of 4 inches of the shaft to the epiphyseal line was performed. A strip of periosteum was removed laterally in the region of the tumor. Figure 4 shows the amount of regeneration at the end of three months. The irregular new shaft was formed from cells of the remaining periosteum, since its upper and lower ends differ little in size, and downward growth from bone at the upper end which was limited by cartilage was impossible.

Figure 5 shows the irregular new shaft with its cortex and medullary cavity at the end of two years.

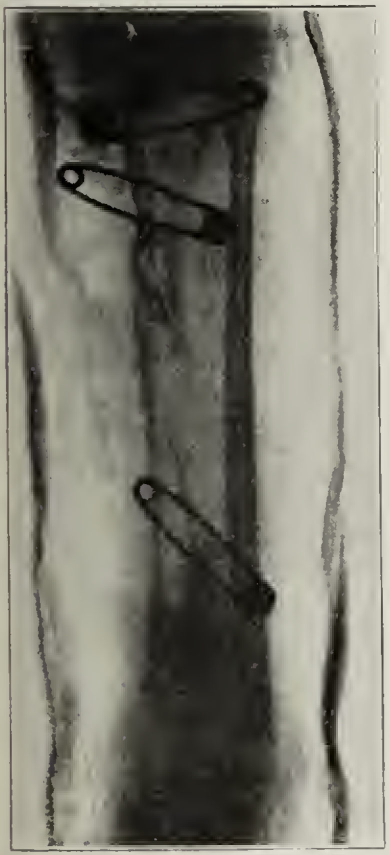

Fig. 7 (Case 2).—Twenty-one days after subperiosteal resection.

Davison[5] reports a similar case in which 4 inches of the fibula which had been resected subperiosteally for use as a transplant was completely regenerated at the end of ten months.

In osteomyelitis, the inflammation, which usually starts in the end of the shaft, results in necrosis of trabeculae and pus formation in the medullary cavity, necrosis and penetration of a variable amount of the length and circumference of the cortex, and subperiosteal pus formation with more or less extensive separation of periosteum and perforation into the soft parts.

These destructive changes are soon accompanied by reparative processes. Proliferation occurs in the medullary cavity at the ends of the involved segment, and from any portions of marrow or cortex along its course which have not been killed by the infection. It also occurs along the surface from the periosteum and bone of the regions in which the cortex is not necrotic, and from some of the periosteum lifted up by the pus *after* it has perforated and escaped into the surrounding soft parts. More or less extensive areas of periosteum may be destroyed by the infection, in which case the underlying dead cortex is left without a covering. This encasing mass of osteogenetic tissue or involucrum is fibrous at first, but soon begins ossification in its deeper portion, in the region where it overlies living bone, and in two or three weeks its inner layer of spongy bone is demonstrable with the Roentgen ray.

In case the entire circumference of cortex is destroyed for a distance of from 2 to 4 inches, the surviving portions of periosteum nearly always form an involucrum about it, subsequent total defects after removal of the dead portion being unusual. Ossification of the newly formed involucrum proceeds rapidly from within outward, and is completed in from six to fifteen weeks, depending on the size of the bone and the duration of the acute inflammation. A little less time is required for sequestration of the necrotic portions.

Every case of osteomyelitis should be treated at the beginning by incision of soft parts down to the bone, and excision of a strip of the diseased cortex to establish drainage of the medullary canal.

After subsidence of the acute inflammation and the appearance of the involucrum, the method of getting rid of the necrotic bone must be decided on. In many mild cases, it is absorbed and no further operating is necessary. In others, the necrotic portion is definitely circumscribed and accessible, so that sequestrectomy is clearly indicated. Only in severer cases, in which the necrosis is extensive, does subperiosteal resection come into consideration. Its advantage is that, if regeneration is successful, the entire necrotic portion is removed, the occurrence of fistula and chronic bone abscess is avoided, and the disease is permanently healed as soon as restoration of the shaft is complete.

Its disadvantages are that (1) there is frequently a failure of regeneration of the shaft, leaving a defect to be treated by subsequent bone transplantation; (2) convalescence is much longer than in favorable cases of sequestrectomy, owing to the greater amount of time required for regeneration of the shaft; (3) when there is only one bone in the extremity, considerable shortening and curvature may be the result; (4) it cannot be used in late cases.

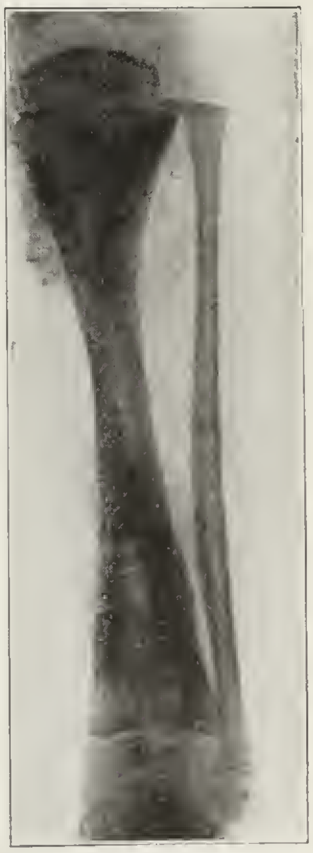

Fig. 8 (Case 2).—One hundred and twenty-three days after operation.

Failure of regeneration, while sometimes difficult to explain, is due chiefly to the fact that an insufficient amount of osteogenetic tissue is left, or to its destruction by the infection. Early removal of the shaft before the formation of the periosteal thickening and during the height of the infection is particularly apt to be followed by failure of regeneration.

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[5] Davison: Tr. Chicago Surg. Soc., 1915.

The most favorable time to perform the resection is between the third and eighth weeks according to the case, after the infection has subsided and the soft involucrum has formed. It should be after ossification has started, but while the involucrum is pliable. As much as possible of its spongy, ossified portion should be removed by means of a sharp chisel, as it hypertrophies and aids in the ossification of the fibrous involucrum, similar to the action of the bone cells and chips along the periosteum in the subperiosteal resections in dogs. However, failure of regeneration after resection during this period is not seldom, as shown by the reports of Clopton and Nicholls.[6]

The following case illustrates the successful use of this method:

Case 2.—A girl, aged 3 years, had been sick for twenty-three days with an osteomyelitis, involving the entire length of the tibia, resulting in pus formation at either end, which was drained at the end of one week. There was still considerable discharge and a temperature of 102 F. A small amount of ossification was present in the periosteal thickening, which extended along the entire length of the shaft. An incision was made from one epiphysis to the other, and the thickened periosteum easily reflected anteromesially where an irregular strip of cortex was necrotic along the entire length of the shaft. Laterally and posteriorly, the involucrum was ossified over the living cortex and was separated with more difficulty. The shaft was sawed in two in the middle and the halves extracted. Drainage tubes were inserted at the ends, and the wound closed.

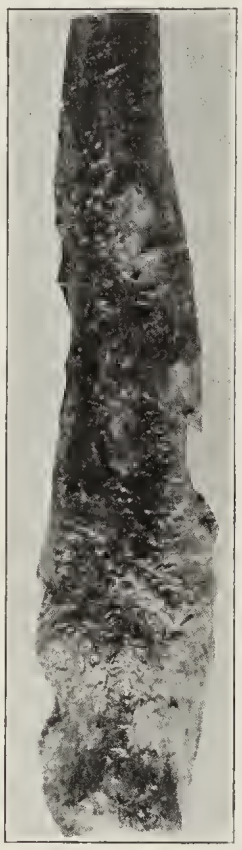

Fig. 9 (Case 3). — Excised portion of shaft.

The excised shaft (Fig. 6) shows the smooth, anterior necrotic portion which is separated from the living bone at its margins by a groove filled with granulation tissue. The living portion is covered by a thin layer of spongy involucrum, which was not all removed by the periosteotome. The medullary canal showed some pus along its course. There was considerable suppuration for a few days following the operation, after which improvement was rapid. Two small fistulas persisted at the upper and lower ends, which closed after curettage at the end of three months. Figures 7 and 8 show the amount of regeneration twenty-one and 123 days following the operation. The child has been walking on the limb since the fourth month, and recovery is complete without shortening at the end of two and three-fourths years.

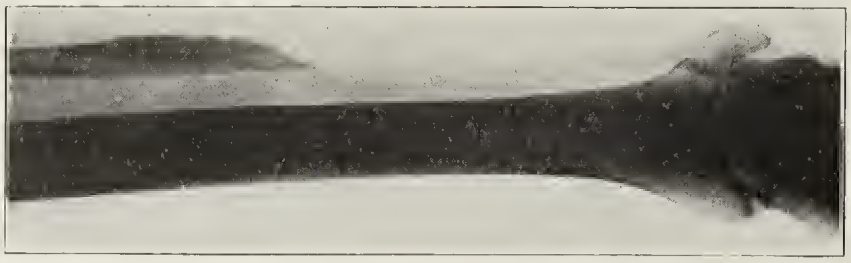

Fig. 10 (Case 3).—Two years after excision.

If resection is attempted late after the involucrum is too thoroughly ossified, great difficulty will be encountered in removing the deeper portion of the periosteum from the roughened surface, and few unossified osteogenetic elements will be left. Consequently, there is very apt to be failure of regeneration, as illustrated by the following case.

Case 3.—A boy, aged 16 years, had osteomyelitis of the lower end of the fibula of nine weeks' standing, with abscess formation which had been opened and drained. At operation the large involucrum was found to be rough and ossified, so that it was difficult to remove much of the periosteal covering, which was gotten off as best possible by means of a periosteotome. About 6 inches of the shaft was removed down to the epiphyseal line (Fig. 9). The wound, which was drained, healed in four weeks with little discharge.

After one month the boy began using the limb, which has since remained well and strong. Figure 10 shows the condition at the end of two years, with a defect of the fibula about 4 inches in length. Fortunately, the malleolus is preserved, and it makes no difference to the patient.

The cause of the failure is easily determined when the excised specimen is examined. Its surface is very irregular and the involucrum is extensively ossified. Microscopic sections from the cortex show that while the periosteum in many places was left, in most places it was removed with the specimen. This was due, to some extent, to the irregularity of the surface; but by vigorous use of a sharp instrument, more osteogenetic tissue could have been left. However, it is a question if such a thin layer, which had already undergone extreme hypertrophy, could have formed a new shaft.

Verifying the results of animal experiments, osteomyelitis in adults is less suited for subperiosteal resection than in children.

Case 4.—A man, aged 45, had pneumonia which was followed by osteomyelitis of the tibia. Four months after the onset a surgeon removed subperiosteally two-thirds of the lower end of the bone, including the epiphysis. The wound had healed except for a small fistula when first seen at the end of nine months. Figure 11 shows the small amount of irregular new bone which had formed along the course of the periosteum. The late date (four months) at which the resection was performed, as well as the age of the individual, was responsible for the failure of regeneration.

In view of the clinical and experimental data now at hand, showing the frequent failure of regeneration, subperiosteal resection should be reserved for selected cases of osteomyelitis in which there is extensive necrosis of bone, and particularly when it is located in areas inaccessible to operation, as the posterior part of the tibia. Its use should be limited to parts of the body in which there is some other bony support, and should almost never be used where there is only one bone in the extremity, as later sequestrectomy gives better results in such cases.

The operation should not be performed too early while the infection is severe, and before a soft involucrum has formed, nor too late after the involucrum is so ossified that an insufficient amount of osteogenetic tissue is removed.

In case of failure of regeneration, the defect can best be repaired by free transplantation of bone, although a missing shaft of the tibia can be remedied by division of the fibula above and below and shifting it into the tibial defect, a method which was first used by Huntington.

122 South Michigan Avenue.

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[6] Clopton, M. B.: The Diagnosis and Treatment of Osteomyelitis. Surg., Gynec. and Obst., 1915, xx, 6.

ABSTRACT OF DISCUSSION

Dr. Thomas W. Huntington, San Francisco: With but a small personal experience, I do not seem to be in accord with prevailing opinions, as set forth by Dr. Phemister. In about 50 per cent. of the cases in which I have attempted subperiosteal resections in osteomyelitis my results have been unsatisfactory. The reason for this has been the presence of infection of more or less severity at the time of operation. In a single case I avoided this procedure by resorting to bone transference, substituting the fibula for the tibia. The case is in the literature, and the method has been followed by several other surgeons with uniform success. In my own case the result is ideal; the young man has grown to adult life and suffers no inconvenience whatever from his former trouble. One feature is of considerable interest, namely, that the transferred fibula, carrying with it its own nutrient artery and receiving an exaggerated nutrition from the remaining fragments of the tibia, hypertrophies rapidly and, ultimately, assumes the dimensions of the normal tibia. The absence of the shaft of the fibula seems not to lower the efficiency of the limb to any degree. At the time I made this effort I supposed that the idea was original, but on further search I find that an Italian surgeon, as early as 1860, resorted to an analogous procedure by transplanting the upper end of the fibula into the lower end of the femur. His result was altogether satisfactory.

Dr. J. P. Lord, Omaha: In the discussion of Dr. Phemister the statement is made that severe infection will destroy the periosteum. That we grant, but it is my experience and observation that a great deal of this injury to the periosteum has been done by too rigorous treatment, for which the surgeon is responsible, namely, in the too vigorous use of the curet and the too thorough application of strong antiseptics. I will not amplify, but I wish that all the younger men would bear this in mind. I have caused damage myself in this respect. I am now more respectful of the tissues, and my later results are better. The other point I wish to make is that in some of these cases we should simply open the bone. When the medulla is reached, guarded use of the curet should be made. There are some who seem to disregard the endosteum and its functions, and its great power for assisting in the regeneration of bone. Another feature of the treatment which I wish to emphasize is this: Many surgeons continue to pack these cavities with gauze, and also dress these cases with undue frequentcy. Their patient will have a rise of temperature every time a dressing of this kind is changed. Sometimes I use gauze to control the hemorrhage for the first dressing, but after that (because of considerable experience with children) I minimize the severity of the treatments. Of course, I use the methods which you all use of enfolding the parts and minimizing the cavity. I use iodized petrolatum, 1:1,000, and I keep these troughs filled up with the petrolatum, and regeneration takes place under it and fills the cavity. You can actually do these dressings with a child smiling, and in a perfectly good humor. Now the parting shot I wish to make is a greater consideration for the regenerative power of the periosteum and endosteum, less surgery, and less vigorous treatment with antiseptics. I think that in simple drainage, and more regard for the tissues, we will better serve Nature in her efforts at repair.

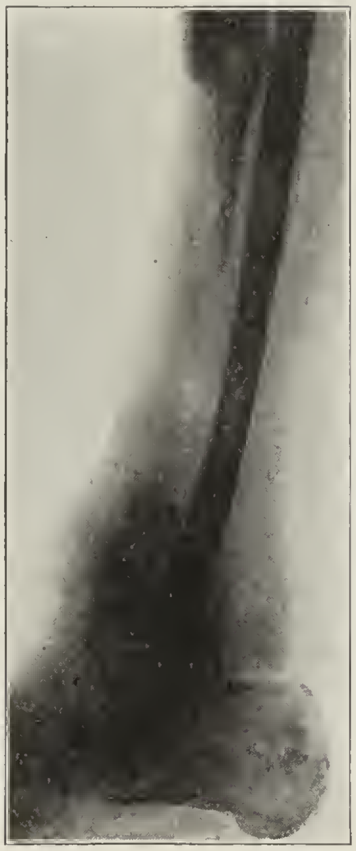

Fig. 11 (Case 4).—Small amount of irregular new bone along the course of the periosteum.

Dr. Leonard W. Ely, San Francisco: The presence of a cambium layer of the periosteum I doubt, on the basis of a great many sections of normal and diseased bones. Instead of a cambium layer of periosteum, we find pockets of marrow here and there under the fibrous layer. These pockets of marrow are continuous by small channels in the bone with the marrow in the central canal. Here we get back to the bone-forming function of the marrow. We say that marrow forms bone, but marrow itself is not essential to the formation of bone any more than is an inner layer of periosteum. In studying embryonic bones, we find a cylinder of cartilage transformed into bone by blood vessels pushing into it, carrying their bone-forming cells, and transforming this cylinder of cartilage into bone. Embryonal bone contains no marrow, nor does cartilage that is being formed into bone. Again, in the epiphyses of bones we see bone forming, as it already has formed in the shaft. We see cartilage changing into the bone; but what changes it? There is no marrow there. If we make serial sections of the epiphyseal cartilage, we find from the periosteum, from the marrow, or from the synovial folds, that the vessels are pushing in to the center. When they reach the center, they begin to form bone. Bone is formed by osteoblasts. The osteoblasts are located, in adult life, in the marrow. We do not know an osteoblast by sight. We cannot identify any particular cell as an osteoblast. We say when we see a peculiar appearing cell in a certain locality, "That is an osteoblast"; but by itself we have no way of recognizing it, and we do not know whence it comes. Here is our problem to solve: What is an osteoblast and whence does it come? The osteoblast, whatever it is, manufactures bone out of one of two tissues, namely, cartilage or fibrous tissue. The osteoblast is the active agent. The cartilage or fibrous tissue is the plastic material out of which bone is made. In a fracture of a bone, these marrow cells, whatever they are, do not bridge the gap immediately and manufacture bone, but they manufacture it out of cartilage on the outside, and out of the fibrous tissue which is deposited by the periosteum between the two bone ends.

Macewen put a ring on the outside of a bone under the periosteum, and he finds that bone does not form over this ring. Periosteum, he says, has no bone-forming function; but it has a "bone-forming function." It cannot manufacture bone itself, but it is so much plastic material out of which bone is formed. When he separates it from the osteoblasts, which are located in the marrow, by putting a ring inside it, there is no bone formed on the outside of the ring, because the active bone-forming agent cannot get at the periosteum to manufacture bone. Stones do not build a wall. The mason builds the wall, but he must have stones with which to build it. The osteoblast is the mason.

Dr. E. W. Ryerson, Chicago: It is impossible to say too much in commendation of the work Dr. Phemister has been doing to bring a little real knowledge out of the chaos in which all of our conceptions of osteomyelitis have heretofore been plunged. I do not know of any subject, except possibly the time-worn subject of the treatment of tuberculous abscesses, in which so many different things and practices have been current in the past. It is evident that to interfere with osteomyelitis successfully requires certain definite knowledge, which in the past we have not had. Dr. Phemister has been endeavoring to establish a time at which, for instance, a sequestrum should be removed, and a time at which a necrosed shaft should be removed. I have had three cases of successful regeneration of the entire tibia, after its complete removal in old osteomyelitis, and evidently I removed the shaft at exactly the right time. I have had a perfectly complete failure of regeneration in a tibia, where the entire shaft was removed, and it is evident that I removed it at the wrong time. We must study and we must learn a little more definitely the exact time at which to do this work.

About the treatment of acute and subacute osteomyelitis I want to endorse some of the things expressed by Dr. Lord. We must not be too radical with our treatment of osteomyelitis, of which we see so many examples. In the shaft of the tibia, for instance, it should not be too radically treated. An opening in the bone should be made practically the full width of the tibia, the entire length of the infected area, and not a bit of curetting should be done, nor any antiseptic treatment, even though the medullary cavity be full of pus. Many of us have treated these cavities just as a dentist treats a cavity in a tooth, but that is not the proper way to do. The cavity in a tooth is an entirely and distinctly different entity from that of an osteomyelitic cavity in a long bone. We should simply drain, and drain by a method which is not ordinarily used. We do not sew up any of these incisions. Let them stay open, and do not put a dressing on them—do not put the dressing on the wound, but put the dressing around the wound, and let the entire wound stay open to the air without any dressing on it at all. When the pus fills it up, roll the leg over and let the pus run off into the dressings, and irrigate it with a little normal salt solution. Do not use any iodin or any other antiseptics. Let the patient stay with the leg stretched out on a chair all during the day, in the sun, with no protection whatever over the wound, except a coarse wire gauze protector. When treated in this way, these cases of osteomyelitis heal up almost magically, and I have been astounded to see the rapidity with which these large cavities fill up with bone in the relatively few cases in which I have used this method of treatment in the last six or eight months. It is easily the best thing I have seen yet, and I reiterate what Dr. Lord has said—do not do too much to your osteomyelitis cases. As to the proper time to remove sequestrums, we have not as yet been able to formulate any definite rule.

Dr. Roland Meisenbach, Buffalo: I have great respect for Dr. Phemister's work, as I have followed it for a number of years. However, I have also great respect for the endosteum when it comes to bone regeneration. I am not at all convinced that the periosteum proliferates enough to regenerate an entire bone. I believe that in many subperiosteal resections there remains some of the endosteum. I have been impressed with the rapidity of the regeneration of the endosteum on several occasions, and I believe that the endosteum proliferates three to one as against the periosteum. I base my opinion on my own observation in animal experimentation in which I have had occasion to section the cortex of the bone of a large number of animals and examine the sections microscopically. I have been impressed with the number of osteoblasts found in the region of the endosteum, and as the endosteum is so closely allied to the bone marrow, it is easy to see why there is a great regeneration at this point rather than at the periosteum. Since viewing the microscopic sections of cortical bone which Dr. Ely kindly demonstrated to us in the laboratory, I am more convinced than ever before that many of the theories of bone regeneration will require modification. I think the practical regeneration of bone is well shown in the cases of osteomyelitis in which most of the new bone comes from the endosteum and creeps along the sequestrum to meet some of the bone proliferated by the periosteum, thereby often forming an entirely new tibia. I think these cases were placed on record several years ago. In cases in which one has removed the gap in the long bone and in which one bridges over the periosteum, I believe that it is the endosteum that forms most of the new bone of the cortex rather than the periosteum. This brings out an important point, that in osteomyelitis one should not be too anxious to remove the sequestrum formed, because it often acts as a bridge for the newly developing bone. I think the stimulating effect of the staphylococcus on the endosteum accounts for the rapid regeneration in some of the cases, even those that are infected with staphylococcus. What I have said can be shown in sections. I have a series of sections with me which demonstrate the proliferation of bone in relation to the periosteum and endosteum, and make a good study. They have a direct practical bearing on bone-graft work, and if one keeps these in mind, one will know why certain cases do better than others.

Dr. Ethan H. Smith, San Francisco: In this class of cases I consider the bone curet a necessary instrument at times, but frequently more abused than any other bone instrument in use. Along with the uterine curet, I think that the bone curet is going to be soon curtailed in its use. In operating on these cases we should do a clean-cut operation, with sharp instruments and see what we are doing, and in removing the damaged tissue do it neatly and carefully, with as little bruising, abrasion or rubbing in of pus or débris in the raw surface as possible. I think that rough methods account for a great many disastrous results. The time at which an operation should be begun in osteomyelitis is a big factor in these cases. The doctrine still obtains that we are warned against interfering too soon in infections of bone and we were cautioned not to meddle with these cases until a sequestrum has separated from the sound bone. This change, recognized by old observers, depends on the virulence of each case. The remarks of Dr. Ryerson about the proper method of opening and draining these cases are particularly timely and good, and I endorse that idea exactly.

Dr. J. T. Rugh, Philadelphia: One point in regard to these grafts which are placed for deficiencies of various types is that the graft itself presents a certain degree of resistance and immunity toward infection. Various forms of infection influence the graft differently, that is, a graft will have a certain degree of immunity toward one type of infection while with another type it will break down and absorb rapidly. Further investigation and work along this line will show us a wider field of usefulness for the bone graft in the presence of infection and that we shall be able to utilize the graft as a stimulant to the proliferation of new bone in many cases in which some of the periosteum has been preserved, as in subperiosteal resection.

Dr. D. B. Phemister, Chicago: My conception of the composition of the shaft of a bone is as follows: It consists of a cortex of more or less compact bone in which are canals containing blood vessels and some connective tissue cells. Its medullary cavity is lined and filled by a loose connective tissue reticulum in which are contained the bone marrow or hemopoietic cells and fat in varying amounts, depending on the age and particular bone. This connective tissue reticulum is known as the endosteum. The bone is surrounded by a connective tissue covering which consists of an outer thicker portion of white fibrous tissue and of an inner layer along the bony surface, of loose richly cellular tissue. This covering is known as the periosteum and the inner layer, which is thickest during the period of growth, as the cambium layer of the periosteum. New bone growth and bone repair occur by the proliferation and ossification of the cells of these three portions, namely, the endosteum, the cells of the canals of the cortex and the cambium layer of the periosteum. They are known as osteogenetic tissues and their cells as osteoblasts. The bone cells, which are situated in lacunae and closely surrounded by an abundance of lime salts, do not multiply to any appreciable extent. To speak as Dr. Meisenbach does of that portion of the osteogenetic tissue lying outside of the medullary canal as endosteum is a misnomer.

I have tried to show in these experiments that the loose cellular layer lying on the bony surface and known as the cambium layer of the periosteum, if left behind in subperiosteal resections proliferates and plays an active part in the regeneration of the shaft. In osteomyelitis the cells of this layer as well as those of the canals of the living portion of the cortex proliferate and form an involucrum about the shaft which at first is soft, but which soon ossifies. In those cases in which a subperiosteal resection seems advisable it is best done not too early, while the infection is severe, and before the soft involucrum has formed; nor too late, after the involucrum has sufficiently ossified that it cannot be stripped away from the shaft. In either case there is apt to be too little osteogenetic tissue left to regenerate the shaft.

Visiting Nurses for Smaller Cities.—To say every city above 5,000 should have a visiting nurse does not imply that they are impracticable for smaller cities. There is no reason why with our new knowledge, the nurse should not supplant the old sanitary inspector, certainly the old time contagious inspector.—Pub. Health Com. Minnesota Pub. Health Assn.

NOTES FROM A GERMAN MILITARY HOSPITAL, WITH OBSERVATIONS ON GAS PHLEGMONS *

L. ELOESSER, M.D.
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SAN FRANCISCO

I arrived in Germany June 2, 1915. After three weeks spent in visiting hospitals and such of my former acquaintances and masters as were not at the front, I succeeded, through letters to the Surgeon General of the XIV Army Corps, in getting an assignment as surgeon to the Reserve Hospital at Ettlingen in Baden. The hospital occupies the buildings of a large new school for noncommissioned officers which were hurriedly completed at the beginning of the war and immediately turned over to the medical department. It contains from 1,020 to 1,100 beds and is well equipped. The local Red Cross, which was under contract to the military authorities to furnish supplies, was exceedingly liberal, equipping a small laboratory with microtome, etc., and granting all instruments and appliances asked for. There was not the slightest deficiency to be felt in any way; even articles that one would imagine to be scant during the blockade, such as absorbent cotton and rubber goods, were not stinted.

On first taking over the service, I found but few cases of surgical interest, the hospital having been used largely for infectious diseases; I had ten days in which to get things into running order for more active surgery, and July 3 we received our first large transport of 244 wounded. They came fresh from the front, some within twenty-four hours after injury.

The impression one gets of war surgery depends largely on one's position and the particular kind of warfare that is being waged at the source of one's material. We got almost all of our wounded from the west front where the troops have been almost entirely under artillery fire since the rapid movements of the first few months of the summer and fall of 1914. Consequently wounds from small arms were rare; most of them were caused by shells and shrapnel.

WOUNDS BY SMALL CALIBER BULLETS

Infantry and artillery fire make quite different kinds of surgery. A man hit by an infantry bullet either falls on the field, or, if brought to the hospital his condition is, as a rule, determined by the importance of the parts injured—he is out of danger or dies quickly. A man struck by a piece of shell is, unless the wound is entirely superficial, a source of anxiety and care for weeks and months to come. It is the accompanying infection or the lack of it that makes the difference.

There are exceptions to these general statements. The modern small caliber bullet by no means always makes a small, smooth wound. The nature of its path is determined partly by the character of the bullet and partly by the parts struck. Whether the bullets are pointed like the English, French and German bullets, or more snubbed like the Russian missiles, does not seem to make much difference as regards the character of the wounds. What does make a difference is whether the points are smooth, or whether they have been notched, dented, hollowed out or otherwise deformed—either by the soldiers themselves, who by nipping the points of their bullets with pliers, or notching them with a knife, can make a dumdum bullet out of regular ammunition, or by more concerted arrangement—for there certainly have been instances in which soldiers were captured with dumdum ammunition that bore the marks of having been machine-made in regular factories. A bullet with a nicked or hollow point no longer pierces; it rends and tears with explosive violence; the resistance at the point is such that the immense force pressing the greater hindermost bulk of the bullet forward causes its rear parts to burst from the casing, scattering the lead at angles to its original path and producing a small wound of entrance with a huge one of exit. Evidence of a dumdum bullet can only be gotten from the unspent bullet itself; the nature of the wounds can lead to a guess, but not to certainty. An ordinary bullet may become deformed by striking a twig or a metal button, or by being deflected by a stone or a wire fence and may act precisely like a dumdum; or it may shatter a bone and hurl the fragments aside and before it, and make havoc as great as any illegal projectile.

The shape of the bullet is again of importance, in so far as those having their center of gravity near the rear tend to turn in their course when the point meets resistance; they tend to turn broadside when they strike, or even ply butt-end foremost, or turn butt-end foremost inside the soft parts, leaving an irregular and destructive track.

Most of the warring powers encase their bullets in a steel or nickel-steel jacket. The French use copper and theirs is perhaps the most humane of the small ammunition. The copper jacket is tough, the bullets are usually little deformed, even when striking bone. One often finds the sharp point bent around like a hook, the bullet still remaining whole. The English bullet is perhaps the worst; the anterior third of its core is of aluminum, the remaining two-thirds of lead; it carries a deep groove toward the rear. It consequently tends to fly asunder at its two weak points, the junction of the aluminum and the lead, and the groove. Its center of gravity lies far back; this makes it prone to take a wavering or deflected course.

The nature of the wound depends not only on the bullet, but on the parts struck; if a bone is shattered with much force, each splinter acts as a projectile in itself and tears its own way through the soft parts. The cases in which a semifluid organ, such as the brain, or a viscus filled with fluid, the bladder or intestines, are struck with explosive effect, are of less interest. The men probably all die on the field.

HEAD INJURIES

Injuries to the skull are of three kinds—tangential, penetrating, and perforating. Most injuries in men arriving at the base hospitals are tangential. Men with penetrating or perforating wounds generally die before they get there. Tangential injuries are generally trephined at the field hospitals; the splinters of the internal lamina that the projectile has driven before it into the brain, and the blood clots, are removed. Although the wounds usually heal kindly, the patients are often permanently incapacitated, from organic or functional brain disturbances—hemiplegias, hemianopsias, deafness, and severe neuroses. Men with such perforating wounds who survive often reach base hospitals for final operation. It is wise to examine roentgenoscopically every fractured skull. One often finds surprises—bullets or deep indentations and splintering of the internal lamina where none were suspected. These skull cases should be watched a long time; they often develop late abscesses. These have made me desperate. They are frequently difficult to diagnose. The men may have a constantly normal temperature. Sometimes there are signs of pressure, and the heavy, stupid mentality and the drowsy stare may allow a guess at the condition. Sometimes the pus shows a round shadow in the Roentgen plate. This is of value. When one opens and drains the abscess one's troubles begin. The man may run a smooth and feverless course for weeks, the prolapse through the trephine opening, however, persisting; then comes a sudden high temperature, a progressive softening reaching far down into the ventricle, and death after one had congratulated oneself on having the man past danger. Meningitis has been favorably influenced by repeated lumbar puncture, and many recover under this treatment. Careful revision of the wound at the first operation and careful removal of all foreign bodies and splinters of bone, even at the cost of some additional trauma to the brain, might prevent some late abscesses. But this is more easily said than done. Carefully to revise a mangled and bleeding brain is usually a consummation devoutly desirable, but unattainable. We should do what we can, however; the brain seems to stand more after a fresh trauma than it does at later operations when we traverse inflamed and morbid gray matter.

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* Reported with permission of the Medical Department, XIV Army Corps.

For defects on the vault of the skull, the osteoplastic closure of Garré with a flap of bone shavings from the outer lamina and periosteum is sufficient. If there is danger of postoperative adhesions between the cortex and the bone, one can turn the flaps over so that the fascial side rests against the brain and the inner periosteal side with the bone-shavings looks outward. This form of closure makes a free transplant of bone unnecessary except where there is a deep defect in the forehead which looks badly unless filled out level with the surface. Here the graft may be taken from the rib in preference to the tibia; the bone of the rib is softer and if one splits it along one edge with a chisel, leaving a periosteal hinge along the other, one can trim it readily to any desired shape with a scissors. If the defect is deep, bits of muscle may be left adhering to the rib, or one may fill out the rest of the hole with fat from the subcutaneous tissue of the chest.

CHEST WOUNDS

Wounds of the chest do not give as little trouble as is popularly supposed. Ritter called attention to this at the Congress of Military Surgeons in Brussels. Shortness of breath and general weakness often last a long time, and the physical signs—lack of respiratory movement, shrunken chest, with several intercostal spaces tender to pressure and retracted, especially on inspiration, dulness, with impaired or wanting breath sounds and weak vocal fremitus — remain unchanged for months, even when aspiration gives no fluid. The hematothorax makes a thick pleura and in shrinking contracts the chest.

Bloody sputum is usually taken as a sure sign of a wounded lung. It is not necessarily so. One sees numerous men whose chest wall has not been perforated, but who have bloody sputum for several days after injury, and who show dulness and impaired breathing over parts of the thorax corresponding to the seat of the wound. If the upper part of the chest wall has been injured, we may find dulness and absent or weak breathing here alone, with the lower chest free, thus ruling out the presence of hemorrhage into the pleural cavity. These are tangential injuries of the chest with contusions of the lung, perhaps merely a local pulmonary congestion due to lack of respiratory movement in tender parts of the thoracic wall.

WOUNDS OF EXTREMITIES, NERVES, VESSELS

Gunshot wounds of the extremities have increased in gravity with the increased power of the modern small arm. *Injuries to the nerves and blood vessels* are more frequent. Nerves and vessels cannot evade the modern bullet. The extent of the injury depends, I think, much on the position of the member when struck. If an elbow is extended with the brachial vessels and the nerves on the stretch it seems reasonable that the bullet itself may make but a small lateral rent, but that the tenseness of the vessels and the sudden jerk of the muscles may complete the tear. If the elbow is bent, the nerves and vessels loose, the damage will not be nearly so great. It is not a question of nerves or vessels evading the bullet, it is a question of their damaging themselves by their own tension under its impact.

The path of the bullet is almost always surrounded by a large, hard and tender infiltrate. Sections show extensive hemorrhage and necrosis of the muscles. What causes the wide necrosis I do not know. The size of the intermuscular and intramuscular clot is often surprising, even where no visible larger vessel has been injured. It may be as big as a fist or the flat of the hand. In a few weeks the clot and the infiltrate shrink to a scar that crunches like bacon rind under the knife, and turns its edge, and in shrinking strangulates the nerves. Palsies begin to appear, particularly radial and peroneal ones, together with agonizing neuralgic pains that are referred to the peripherally innervated parts, the fingers, the hand or the foot. They are severest at night and wear the men out from lack of sleep. One finds atrophied muscles, partial reaction of degeneration, hypesthesias and paresthesias and a locally increased sweat secretion. At operation the nerve is seen to be unsevered, or partly so; the sheath, however, is 2 to 3 mm. thick, red or yellowish-brown, and hard, the scar and infiltrate reaching a hand's breadth or more beyond the path of the bullet. One should not content oneself with dissecting the nerve out of the scar, but should split the thickened sheath and dissect out the separate nerve-tracts according to Stoffel. If this is done thoroughly and carefully (it is not easy) the palsies usually disappear in a few days and the pains cease, these, however, less rapidly than the palsies, I have found.

FRACTURES

Fractures from the small caliber bullet, even where the bone is widely shattered, usually heal promptly, often with an exuberant callus, because of the amount of extravasated blood. I have been struck by several cases that resemble one at the San Francisco City and County Hospital of a burglar who had been shot in the leg and who, besides a comminution, showed a spiral fracture of the tibia that could not have been caused by any form of direct violence. One of these men had a bullet wound of the thigh with a typical spiral fracture of the upper third, without any splintering of the bone; others had comminuted fractures where the bone had been struck by the projectile, and above this pure spiral fractures; or again, there was a comminution below and the upper fragment of the same break ended in a spiral, this being the most frequent. The twist must have been produced by indirect or muscular violence simultaneously with the shattering of the bone lower down, perhaps by the man's fall.

The question of *how to transport fracture patients* is still unsettled. A well-fitting plaster splint with windows for dressings is the best, but is often impossible. There is no time for applying plaster hip splints when the wounded pour in after a battle, several hundred at a time; often the men at the front are not trained in the application of plaster. We must remember that all sorts of medical men are there doing their best — young and old — dermatologists and ophthalmologists — all sorts of men, many of whom have not handled plaster since their student days. Splints as usually applied are more of a balm to the surgeon's conscience than use to the wounded. The number of suggestions for splints and dressings coming out in the journals every week make it evident that this problem has not yet been successfully solved.

WOUNDS BY ARTILLERY PROJECTILES

So much for wounds from small caliber bullets. I have put them in a class by themselves because they *are* a class by themselves. It is the *wounds from shells and artillery projectiles* that make one realize what war is—make one thank God that our country has been spared such scenes.

A man ought to put up with a great deal before inflicting such tortures on his fellow beings, even though he may not care about his own person. Genghis Khan, Tamerlane, the Malayan potentates, Nero, Eogel's old Cossack Tarass Bulba—whatever stands in our eyes for cruelty—had no such thoughts as these. Gouging out of eyes, the Philippine "water-cure," thumb-screws, the rack, these were matters of hours or a few days at most; but gas phlegmons and tetanus and hospital gangrene by which a man rots away for days and weeks in his own filth, where shattered bones stick out through green and quivering muscles, where pus and gangrene travel up by inches, and not even a kindly stupor comes to a man's aid, these have been reserved for modern humanity to inflict.

Not only small arm ammunition but shells have individual differences in structure. Shells seem to burst in three ways according to the steel used in them. Those used at the beginning of the war broke into large, more or less irregular polyhedral chunks, something like lumps of coal. The pieces were often very large, as large as a fist or larger; one sees them rarely now. Another kind also bursts into lumps, but the lumps are smaller and jagged and often full of little blow-holes, like lumps of coke. These are worse than the first kind in that they carry more dirt with them; rags of clothing, etc., bury themselves in the irregularities of the fragments and are caught and entangled by the sharp projections. The third kind, which are of our manufacture, I think (evidence of kindly good will), do not burst into lumps but into jagged slivers with saw edges, some straight, others curled. The small ones are often shaped like Indian arrowheads or flint knives. This is evidently a tougher kind of steel.

Besides the wounds from shells one finds shrapnel wounds, which occupy a position as regards infection midway between small arm ammunition and the shell, wounds from fragments of bombs and those from accidentally exploding percussion caps. The caps, which usually explode while being handled, cause mangling injuries with much tearing and laceration because of the nearness at which they act.

SHELL WOUNDS ALWAYS INFECTED

Every wound from a shell is infected. This may be taken as a rule without exception. The infection may not be severe and the wounds may occasionally heal without suppuration, just as bits of uniform (surely never sterile) often heal in a wound without suppuration. Generally, however, the infections are severe, and every one who has been here since the beginning of the war says that they are becoming graver and graver as the war goes on. Why, I do not know, except that the uniforms are becoming dirtier and dirtier I suppose, and the ground more and more impregnated with the products of decaying cadavers. Tetanus, which was frequent and severe at the beginning of the war, has practically disappeared since all wounded are given prophylactic injections of serum at the first dressing.

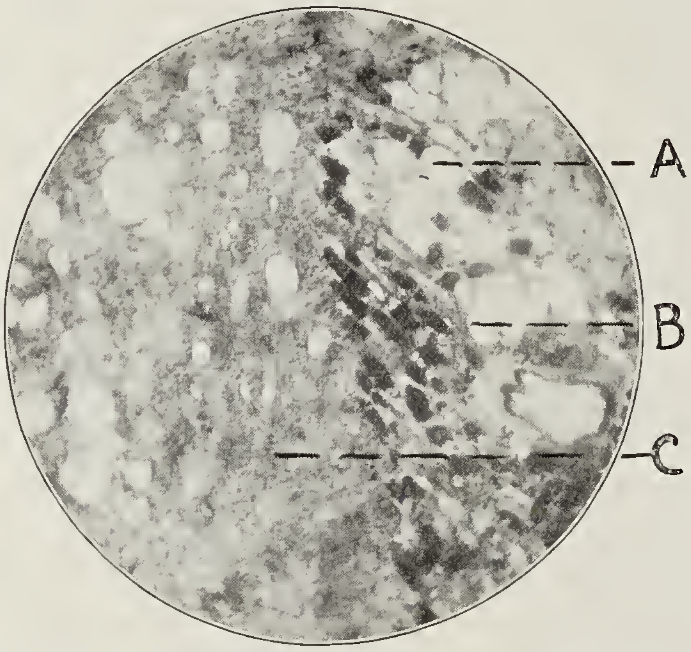
MUST BE TREATED ACTIVELY

The teachings of von Bergmann—the "Hands off"—so great a blessing for gunshot wounds, have been a bane to the treatment of artillery wounds. "Hands off!" "sterile dressings" and "splints" had been so drilled into students, had become so intuitive, that men forgot that there is a difference in wounds of battle—that a smooth shining bullet and a jagged piece of steel carrying dirt and stones, and bits of uniform and underclothing with it are not the same thing. It is only recently that there has been a general awakening to this fact. The mistake has been that artillery wounds have not been treated actively from the first—opened widely, all the nooks and crannies opened, and the dirt removed. These wounds are the most deceptive, and it was the more difficult to arouse field-surgeons to their importance because gas-phlegmons and gangrene do not begin to show from the first. There are usually two or three days of quiet, the wounds are reactionless and the fever which generally accompanies artillery injuries may disappear for a day or two after the first twelve hours. Then the inflammation breaks loose and the phlegmon runs wild. Men are kept a day or two in a field hospital, their condition does not seem to be precarious and they are transferred to the base, out of sight of the field surgeon by the time the phlegmon has really begun, so that his sins of omission may rarely come to his eyes.

GAS PHLEGMON

Gas phlegmons are of several kinds. They are better termed phlegmons than gangrene; the gangrene is not primary, but secondary. In the one kind the whole limb is immensely swollen and tender, dusky brownish-yellow, hard and tense as an inflated automobile tire, and tympanitic on percussion. The wound edges pout and show a dry muscle underneath, covered, perhaps, with a greenish fibrinous membrane; from the wound comes a little thin exudate with an ammoniacal, urinous smell. When incised the muscles burst from their sheaths like a tire from a casing, they crackle under the knife and one can squeeze gas bubbles from them with the fingers as from an edematous lung. They are dusky in color, perhaps greenish; from between them, far up and down the limb runs a watery, stinking pus. The veins are engorged or stopped by black blood clots and steeped in the same thin pus. The outer wound, which may be no larger than a half dollar, shows astonishingly little of the awful destruction beneath it. In fresh cases it is usually easy to find and extract the foreign body; it falls into one's fingers without one's particularly looking for it. The gangrene usually comes later and is a consequence, I think, of the extensive venous thrombosis. If all goes well, the next day sees the muscles that were previously tense to bursting, soft and black but still full of gas; and on the day after, they begin to slough. A huge amount of sloughs comes from the wounds — green ones from the muscles and fascia mixed with bright ochre-colored pieces (what these are I do not know) and much foul pus. Once sloughing begins the wounds clean themselves rapidly; in a week or ten days they are usually covered with healthy granulations and the patient is feverless.

The second kind of phlegmon is more superficial and is characterized by a yellow gelatinous edema with which the subcutaneous tissue is soaked, especially around the veins, which are often thrombosed. Here there is a more extensive moist gangrene of the skin, but the deeper parts are less affected. After a day or two thick green pus takes the place of the yellow edema, and if one runs through the skin along the course of the veins with a pair of scissors one can follow the pus half the way, sometimes all the way, up the limb.



Gas phlegmon of the muscle. A, gas bubbles; B, muscle fibers, mostly necrotic; C, blood clot and purulent infiltrate.

Gas phlegmons should be laid wide open, not incised and drained, but *opened,* so that all the affected parts lie bare and there is nowhere to place a drain. This should be done at one operation. It is often good to cut the muscles square across; the ends retract and leave the wound agape. One cannot make multiple small incisions and wait and follow the pus as it appears. It comes too quickly. The limb becomes gangrenous, or the man dies, or both, while we wait. In order to prevent the pus traveling up along the veins it is often well to cut the main subcutaneous ones across considerably above the wound; in a phlegmon of the leg, for instance, to cut and tie the saphena above the knee. In this way one will often find the perivenous edema high above the wound and cut its further course short. The scar blocks future thrombotic or lymphangitic extensions. In the subfascial phlegmons one should make long incisions along all the veins that are surrounded by pus, often half a dozen from the ankle to the knee. They heal kindly as the edema recedes, if strips of sound skin are left between them.

I have not been able to muster courage to do primary amputations and have lost surely one, perhaps two, men by waiting until the limb was evidently gangrenous. When amputating I have merely cut through the soft parts below the site of fracture leaving long flaps of skin and muscle and have not attempted to amputate in healthy tissue. Part of the flaps slough away, but enough usually remains to make a useful covering for the stump. It has not been necessary to amputate for phlegmons limited to the soft parts without fracture. The most virulent phlegmons are those of the lower extremity; those of the arm are as a rule less dangerous. One hears much talk among the men of "poisoned" ammunition; this is evidently a myth; the fact that the leg and the foot are most severely affected while severe phlegmons of the arm are rare, makes it plain that it is the dirt and dirty clothing accompanying the fragment of shell that produce the infection rather than the fragment itself. The coat of course is rarely as dirty as the trousers and drawers.

The after-care of phlegmons is one of the most difficult problems we have to meet. It is impossible to say when the infection is conquered. For months after the wounds are clean the men will suddenly have fever of obscure origin, develop erysipelas or have recurrences of septic inflammation. Any attempt at complicated plastics, any attempt at clean amputations with closure of the wound is followed by high septic fever, is a most risky thing, and is doomed to suppuration and failure, even long after the wounds are clean and the temperatures normal. One is desperate; the wounds must be brought to a close at some time; one does not know when. When reamputating it is best to disturb the granulations as little as possible, to make a simple straight longitudinal incision, cut off a sufficient length of protruding bone, and let the wound close by granulation, bringing the edges together considerably later with adhesive plaster, not with sutures.

In some cases where one does not have to cut or otherwise disturb the granulating wound, the stumps may be covered by simple plastics, sliding down a bridge flap from the same extremity, or taking a pedicled flap from the other leg, or, in the case of the arm, from the chest. Bearing future difficulties in mind, one should try to save flaps long enough to cover the bone at the first operation — flaps long enough to accomplish closure after they have shrunk and are cleanly granulating and can be laid over the stump.

The late recurrences of fever and suppuration that we find occurring spontaneously or after the simplest operative intervention, are due, I think, to streptococci which have accompanied the gas bacillus in all of my cases, and not to the gas bacillus itself. The sepsis is a streptococcic sepsis in its clinical aspects. I have not been able to make blood cultures, but one case that showed thick gram-positive bacilli with central spores August 25, showed after death September 8, streptococci and staphylococci but no gas bacilli in cultures from the wounds, regional lymph glands and spleen.

PROVISION FOR THE CRIPPLED

September 5 the Ettlingen Hospital was converted into a purely orthopedic institution and run in connection with a school for the one-armed, and an institute for the care and training of cripples. As the war goes on the number of orthopedic cases and cripples multiplies. Other wounded are cured or die, orthopedic cases and cripples remain. There are numerous hospitals for their care throughout Germany—models of wisdom and foresight in coping with the economic problems that will come after the war.

When it is apparent that a man is permanently incapacitated, he is transferred to his home hospital in order that he may get in touch with former employers and friends and look about for suitable work while undergoing hospital treatment. Manual training schools with special courses for cripples, and all kinds of educational opportunities are open to him, and wherever possible the endeavor is made, not to find him another occupation, but so to educate him in his former trade and elaborate his former stock of knowledge that he will be able to do with his brains what he previously had to do with his hands. Thus one-armed bricklayers and masons have been taught mechanical drawing and architecture and are earning more money with their one arm as builders and contractors and foremen than they did before the war with their two hands. This, of course, is not given to every man's talents and industry, but every conceivable contrivance and prosthetic appliance and tool are given the crippled so that they may earn a useful livelihood in spite of their disablement. The neurologic-orthopedic hospital in Mannheim, to which Stoffel is surgeon, is a model. While undergoing treatment and in the free intervals between orthopedic exercises, massage, etc., the men attend classes in bookkeeping, stenography, and other commercial studies; in cobbling, locksmithing and all sorts of trades; in bookbinding and other industrial arts.

Much depends on willingness to work; the certainty of a pension is a drawback in this respect, and I think it quite likely that some law may be found necessary after the war to keep cripples from idleness. There is much here that bears on our own compensation laws and that would be worth investigation.

Karlsruhe, Sept. 22, 1915.

Benefits of Applied Physiology.—The gains in human vitality which we can secure from applied physiology will, I believe, prove as surprising as those we are already securing from applied bacteriology. To this end we need to formulate scientifically what constitutes a wholesome life and to educate the people on what changes from existing customs are necessary to live that life. Furthermore, in the industrial world, we must in some cases compel wholesome mental and physical conditions for our working people. The time has come when science must subdue custom and reason triumph over tradition.—Prof. Irving Fisher in *American Journal of Public Health.*

TOTAL REMOVAL OF THE ORBIT UNDER LOCAL ANESTHESIA

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Having occasion to perform total removal of the orbit in a nephritic woman 81 years old for a recurring suspected melanotic sarcoma I determined on the use of local anesthesia, feeling that the prognosis did not warrant any serious operative risk. Much to my surprise the literature failed to disclose even a case report of this operation performed under local anesthesia injection, although the literature is replete with local anesthesia methods for tenotomy and operations on the bulbus oculi. There are also frequent references to various methods for deep orbital blocking of the trigeminal nerve.

The remarkable facility with which I performed complete removal under local anesthesia without pain or risk to the patient urges me to present what I believe to be an original technic. I wish also to present my avulsion of the supra-orbital and infra-orbital nerves and the contents of the infra-orbital canal and the supra-orbital notch as an original addition to the usual operation.

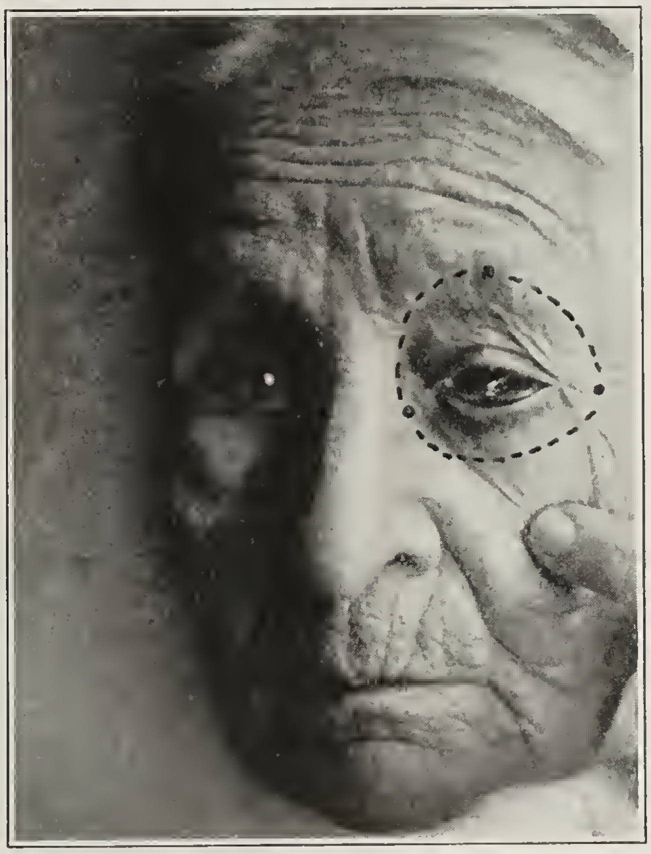


Fig. 1.—Removal of orbit for melanotic sarcoma. Note growth on lower lid. Dots mark points of deep nerve blocking. Dotted line marks superficial infiltration. The dot at the outer angle of the orbit is placed about 2 cm. too far outward.

REPORT OF CASE

Feb. 1, 1915: The patient, a white woman, aged 81, referred by Dr. Blewett of Citronelle, Ala., gave a history of having had a slow growing fungus-like tumor removed seventeen months before. It slowly recurred and was again removed in seven months. It reappeared two months ago and appeared as a slightly nodular, darkly pigmented growth bulging under the conjunctival margin of the lower lid. The growth was fixed to the conjunctiva and the skin margin and was approximately 1 cm. in its long diameter and was not attached to the bony orbit nor the bulbus oculi.

An examination of the fundus disclosed no pigmented growth or other abnormality. A tentative diagnosis of melanotic sarcoma prompted a search for metastatic growths, revealing a small patch of verruca senilis on either cheek, a small red papilloma above the right nipple and one near the seventh cervical vertebra. A small area of verruca senilis had been removed from the left cheek five months before. Otherwise there was nothing even slightly suggestive of a malignant growth. Albumin and casts were found in the urine but no melanogen.

Operation.—A preliminary injection of scopolamin $\frac{1}{200}$ grain and morphin $\frac{1}{8}$ grain was given seventy-five minutes before operation, and scopolamin $\frac{1}{200}$ grain and morphin $\frac{1}{6}$ grain hypodermically, thirty minutes before operation. A line of local anesthesia infiltration was made one-half inch below the lower palpebral margin and carried well down on the malar border. The infiltration was then carried within the orbit and close to the orbital floor. This permitted dissection along the orbital floor where I determined the growth was free from the periosteum.

A heavy needle 5 cm. in length was then passed into the deep orbit following the median bony wall well up toward the orbital apex, the tissues being slowly infiltrated with a 1 per cent. novocain-epinephrin solution along the course of the needle. In this manner the frontal and lacrimal nerves were blocked, with a periosteal infiltration up to the optic foramen, about 5 c.c. of solution being used (after Braun).

Similarly a needle was passed along the lower orbital margin well in toward the foramen rotundum. In this manner I accomplished a perineural infiltration of the infra-orbital nerve and its branches in the sphenomaxillary fissure, using about 3 c.c. of a 1 per cent. solution (Fig. 1).

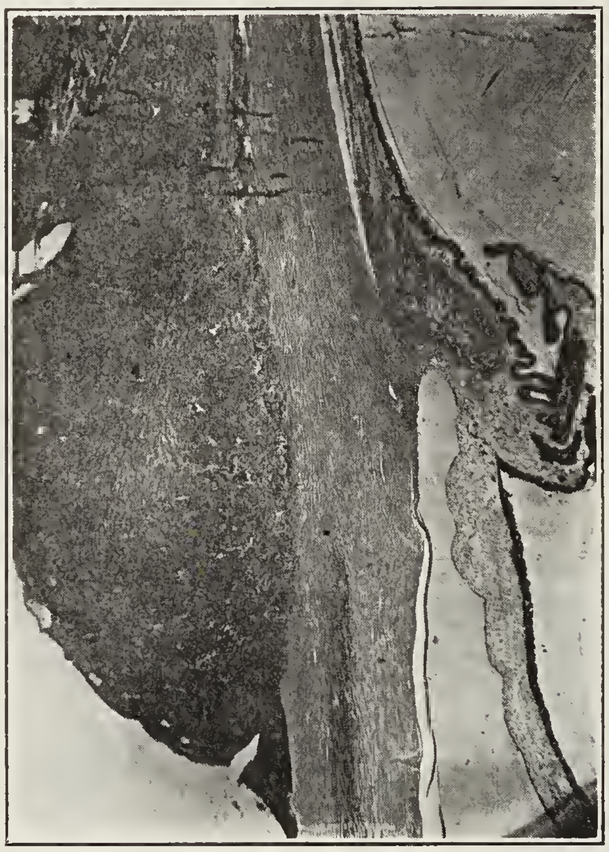


Fig. 2.—Melanotic sarcoma apparently arising in the conjunctiva.

The third needle was passed into the orbit a little to the outside of the supra-orbital notch, following the bony wall well up toward the apex and producing a perineural infiltration of the supra-orbital nerve. The superficial line of skin infiltration was then completed with a 0.5 per cent. solution encircling the external orbital margins. The entire orbital contents together with the periosteum were then removed after the usual method.

In addition I employed an original procedure, so far as I am able to ascertain, by avulsing the supra-orbital and infra-orbital nerves and cleaning out the fatty tissue and periosteum from the supra-orbital notch and the infra-orbital canal, thereby removing a possible source of neoplastic recurrence. The entire operation was performed with the patient conscious and without pain or discomfort. She returned to the ward with a pulse of 80.

Postoperative History.—There was no recollection of the operative period. The patient suffered practically no postoperative pain due to the avulsion of the supra-orbital and infra-orbital nerves. An area of anesthesia presented over the distribution of the nerves. She was at once placed on a regular ward diet, was allowed to be up and about and was sent home in five days, healing occurring by granulation.

On Aug. 23, 1915, the patient returned for examination in apparent good health with a clean and healed orbit. There was a melanotic nodule beneath the skin in front of the left ear and a second nodule below the left clavicle. The latter was removed under local anesthesia and on dissection presented the picture of a typical metastatic melanotic sarcoma. The urine at this and for the first time disclosed the presence of melanogen, indicating the probability of hepatic invasion.

Pathologic Report (By John A. Lanford, M.D.).—The specimen consists of the orbital contents together with the entire lower eyelid and the major portion of the upper lid. A slightly nodular pigmented and semisolid growth 1 by 0.5 cm. by 0.5 cm. in diameter lies in the conjunctiva of the lower lid and does not involve the eyeball or other structures. On section it presents a smooth, firm, deeply pigmented surface. Microscopic section discloses a melanotic sarcoma apparently rising from the conjunctiva.

CONCLUSION

The facility with which removal was performed without pain or risk to this patient bearing such an unfavorable prognosis warrants its further application under similar or more favorable circumstances. The early return of metastasis in this case substantiated our selecting a safe operative procedure.

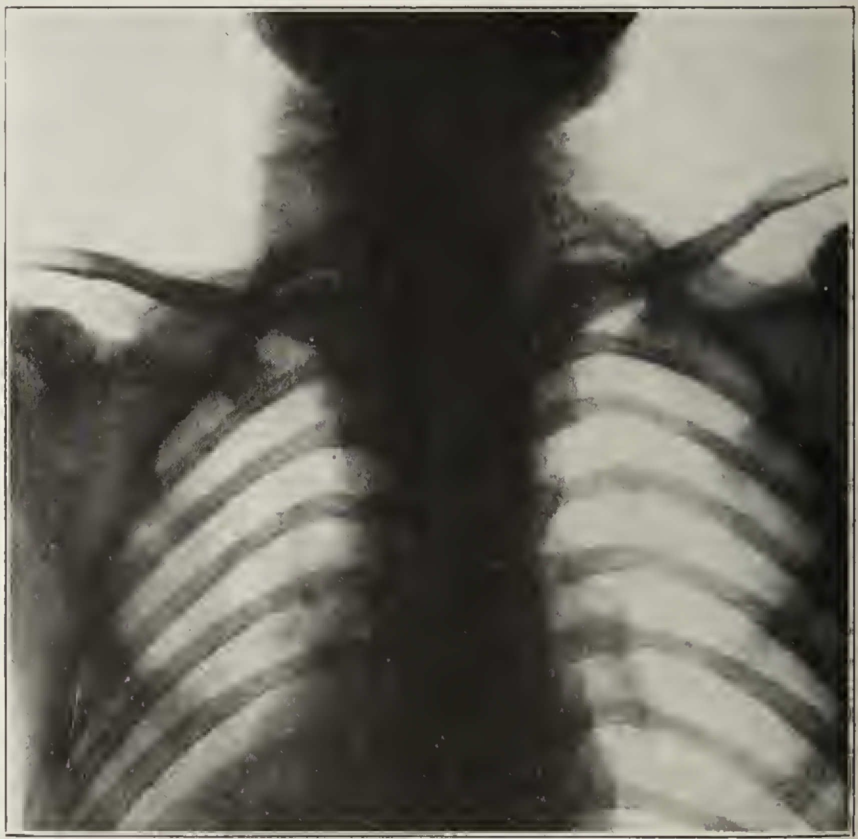
Van Antwerp Building.

REMOVAL OF HALF-DOLLAR AND QUARTER-DOLLAR FROM ESOPHAGUS OF CHILD

H. B. Decherd, A.M., M.D., and W. D. Jones, M.D.
Dallas, Texas

Paul D., white, aged 8 years and 2 months, of Pittsburg, Texas, June 22, 1915, had a half-dollar and a quarter-dollar in his mouth, and "skinned the cat" on a horizontal iron bar. Both coins were suddenly swallowed. His physician gave him salts and castor oil several times during the next few days, as well as olive oil enemas. He vomited quite often for two days; he could swallow no solids—only water, soups and milk, and these not in large quantities. June 28, the boy was brought to us at Dallas, and the coins located as shown in the accompanying roentgenogram. Note that the quarter shows slightly below the half-dollar.

Under anesthesia (ether), and with the fluoroscope over the chest-wall, the coins were easily and quickly removed without the least traumatism. The half-dollar was first removed, it being more easily grasped by the forceps. Both coins were somewhat rusted and caked with food.



Half-dollar and quarter-dollar in esophagus.

Our experience in removing a tack from the left bronchus of a 4-year-old child some months ago, together with this case, demonstrates the great ease of work of this character when done with the aid of the fluoroscope on the chest-wall. Every minute movement of both forceps and foreign body can be observed with the greatest accuracy, and extraction performed in the same way. Even the tyro has nothing to fear if he has a good Roentgen-ray man to depend on. There were no complications, the child returning to his home next morning after eating a hearty breakfast.

Therapeutics

THE ALCOHOL HABIT

According to the Towns-Lambert treatment, patients who have been taking both morphin and alcohol should be treated for the morphin as previously described, and at the same time the alcohol should be gradually withdrawn. Such patients are likely to have a great deal of stomach disturbance and may not well retain their medication or food. Lambert thinks that sodium citrate in doses of from 5 to 10 grains, every hour, best relieves this condition, with or without from 10 to 20 grains of cerium oxalate or 5 grains of Tully's powder [compound powder of morphin], every two hours, for one or two doses.

Sodium citrate should be given in solution. Cerium oxalate is a drug that cannot compare in value with bismuth subcarbonate. The compound powder of morphin treatment, of course, should not be used in patients who have both the alcohol and morphin habit.

Lambert describes in detail the treatment of the alcohol habit about as follows: The belladonna mixture described under morphinism and the five compound cathartic pills and 5 grains of blue mass are given together at the first dose; then the belladonna mixture is continued every hour, day and night. Twelve hours after the initial dose of drugs, the patient is again given from three to five compound cathartic pills, and twenty-four hours after the initial dose he is again given the cathartics, followed by salines if necessary, and again the cathartics and salines are given at the thirty-sixth hour. Some hours after the last dose the bilious stool should appear. Sometimes, Lambert says, it is necessary to carry on the treatment over one or two more cathartic periods with compound cathartic pills and blue mass, at intervals of forty-eight hours.

Elderly or nervous patients, especially if they have been on a long debauch, "are tapered off with 2 ounces of whisky for four or five doses through the first twenty-four hours." Also, if these patients are excessively nervous and cannot sleep, a mixture of "chloral hydrate 20 grains, morphin one-eighth grain, tincture hyoscyamus one-half dram, tincture of ginger 10 minims, tincture capsicum 5 minims, and water one-half ounce," which he thinks is "the best hypnotic for them." After the twenty-four hours, or sooner, if the circulation requires it, these patients should receive strychnin and digitalis.

If the patient has the cocain and alcohol habit combined, as in the treatment of the cocain habit alone, no cocain is given at all, but strychnin must be given from the beginning.

This seems like pretty serious medication. Although the value of free catharsis is recognized, some less complicated cathartic drugs and preparations will doubtless act as well. In weak and elderly patients, as emphasized by Lambert, support of the heart will be urgently needed, and in patients who have not the combined morphin and alcohol habit, but only the alcohol habit, morphin is often good treatment to quiet excessive cerebral excitation. It is much better to combine the morphin hypodermic treatment with a hypodermic dose of ergot. The ergot should be given intramuscularly, best into the deltoid muscle, an hour before the morphin is administered. The ergot will strengthen the heart, raise the blood pressure, act as a mild sedative to the central nervous system, and accentuate the quieting effect and the soporific effect of the morphin that is given an hour following. Hence the dose of morphin need not be so large as it otherwise must be, as any individual with cerebral excitation may be irritated and not quieted by a small dose of morphin.

As stated by Lambert, many of these alcoholic patients have gastritis, and any such combination as the hypnotic mixture above described is likely to be immediately vomited. The use of ginger and capsicum is the old method of causing an irritation of the stomach not unlike that of clear whisky. These spices have been given for years to prevent the stomach craving for its usual alcohol dose. Therefore there is nothing new in this part of the treatment. The small dose of tincture of hyoscyamus can play a very small part in the quieting action of the hypnotic mixture described. If atropin is advisable, or scopolamin is needed, it had much better be given hypodermically to get the desired effect.

Chloral hydrate is a most valuable hypnotic, and, if the heart is not too weak and the stomach will retain it, it should be the hypnotic of choice. But it is urged that it should not be combined in the same prescription with the ingredients suggested. The absorption of the dose of morphin may be greatly delayed when so combined. Very active drugs, in serious conditions such as the prostration from the treatment of chronic alcoholism or of delirium tremens, should be given hypodermically, as they not only may be vomited, but they may not be absorbed and may remain in the stomach for hours.

It would seem that the Sceleth treatment of morphinism, modified to fit the alcoholic patient, would be much simpler than the Towns-Lambert treatment. The cathartic treatment is not so severe, and the drugs used are much more simple, and the prostration cannot be so great.

DELIRIUM TREMENS

This condition so frequently occurs, and the symptoms and treatment are so well understood, that it is only necessary to refer to some of the newer discoveries in regard to conditions present in this alcoholic condition of the brain.

Hirsch[1] finds a profound disturbance of the suprarenal glands in those dying from alcoholic poisoning. Kaiserling and Orgler, in 1902, were the first to note the presence of liquid crystals or droplets in the cortex of the human suprarenal glands. Hirsch says that nearly all investigators agree that these doubly refractive droplets are esters of cholesterol or lipoids. Somewhat similarly refractile globules have been found in the liver when there is fat or cloudy swelling, and in diseased softened parts of the central nervous system in certain conditions.

Hirsch states that Dr. E. R. Le Count of Chicago has constantly found alterations in the cortex of the suprarenals in individuals dying of delirium tremens. The most important changes are the diminution of the yellow color of the cortex and the presence of doubly refractive droplets. It has also been chemically determined that the cholesterol content of the suprarenals is diminished in delirium tremens. In fact, it may also be stated from these postmortem findings that if these changes are not found in the suprarenals, the patient died of some other cause than delirium tremens, and Hirsch found that in chronic alcoholics without delirium tremens these refractive lipoid droplets were not increased in number, but were even diminished, showing that the suprarenals were subjected to some other kind of toxin. Acute toxic processes have been shown to diminish the refractive bodies of the suprarenals.

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[1] Hirsch, E. F.: A Morphologic and Chemical Study of the Double Refractive Fats of the Adrenals in Delirium Tremens, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2186.

Hirsch quotes Landau as stating that the suprarenals "are not concerned with lipoid formation, but rather the adrenal cortex contains an increased lipoid content under different conditions which have in common only a retention of the lipoids, or are characterized by an abnormally increased lipoid formation, the opposite holding true in conditions accompanied by a lipoid-poor cortex."

It would seem that when the heart is weak and the blood pressure low, as it generally is in delirium tremens, whatever other treatment was used, epinephrin would be of value.

This disturbance of these suprarenal glands may account for the development of the "between toxin" mentioned by Steinebach.[2]

Steinebach has found that when the pupils in delirium tremens do not react to light, the pressure of the cerebrospinal fluid has been increased, as shown by spinal puncture; and after some of the fluid in the cerebrospinal canal has been allowed to drain away, the patient may drop to sleep without any drug. Steinebach has used lumbar puncture in eighteen cases of delirium tremens, and his results have confirmed his belief that abnormally high cerebrospinal pressure is responsible for some of the symptoms of delirium tremens. Although alcohol has been found in the cerebrospinal fluid in alcoholic poisoning cases, Steinebach thinks that it is not the alcohol that irritates the meninges to cause an increased secretion of fluid, but that probably the alcohol generates a sort of toxin (which he terms "between toxin"), which can cause an increased production of cerebrospinal fluid. He therefore thinks that spinal puncture not only will relieve pressure, but also will remove some of this irritant toxin and aid in saving the patient.

Though alcoholic cerebral edema is probably due to a toxin acting on the vessels of the meninges, we must not forget that serous meningitis due to an infection may occur in an alcoholic patient.

Alcoholic wet brain is discussed by Sceleth and Beifeld.[3] These observers see annually about 2,500 cases of alcoholism; consequently, their ability to give important data concerning delirium tremens is unquestioned. They state that the longer the history of alcoholism, the more frequent will be the attacks of delirium tremens, and the more likely is the patient to develop wet brain, and the greater the number of attacks, the more likely does cerebral edema follow the delirium. It never precedes it. In other words, alcoholic wet brain is a late symptom of delirium tremens and part of the toxic effect of alcoholic poisoning. They also find that a long period of overuse of alcohol must precede the condition of real delirium tremens, namely, from seven to ten years, which may be termed the "incubation period." It has long been recognized that chronic alcoholic patients have so long maltreated their stomachs, intestines and livers, to say nothing of their kidneys, that they are unable properly to destroy toxins, perhaps quite largely from the injury done the "Pasteur filter" of our bodies, namely, the liver.

Added to the disturbed metabolism caused by sclerosis, or chronic inflammation, of the glands is the inability of the organism to care properly for waste products, to detoxicate them, so to speak. Also the delirium tremens patient so frequently has gastritis, with vomiting, during his attack, that starvation adds its element to the production of an acidosis, and acidosis plays quite an active part in his serious condition, and may cause his death.

Sceleth and Beifeld find that an acute infection like pneumonia, and a serious injury like the fracture of a bone, and even a mental shock, is very frequently the predisposing cause of delirium tremens.

Delirium tremens may occur in several degrees of intensity. There may be the simple "touch of the horrors," which means the patient is much nervously excited, disturbed by the least noise, and may have hallucinations, more or less, of sight and hearing, as well as sleeplessness. He is also pretty sure to have tremor. These investigators find the incipient period of a severe attack to be about two or three days, during which period proper treatment and good sleep may forestall the actual development of the condition of delirium tremens. As is well known, delirium tremens may be accompanied by subnormal temperature, cold skin and general prostration; or, in a strong individual not seriously diseased, there may be some fever, flushed face, and increased blood pressure, with a strongly acting heart. It is obvious that these two types of delirium tremens require very different treatment. The first type must be supported; the second type may be depleted. Both, Sceleth and Beifeld find, require strychnin in place of their alcohol.

The average length of time that delirium lasts is about five days. It may terminate sooner; it quite frequently lasts longer. These observers find that the comatose or wet brain symptoms will occur in from 10 to 15 per cent. of the cases. If cerebral edema is to occur, the patient's delirium becomes of the low, muttering type; he may have a slight rise in temperature, and the pulse becomes more rapid and weak; the tongue becomes coated, the breath foul, the teeth covered with sordes; and albumin often appears in the urine. In other words, the cerebral irritation has become one of cerebral pressure. With this pressure Sceleth and Beifeld say that vomiting does not occur. Kernig's sign is always more or less present, and when there is much rigidity of the muscles, especially of the back of the neck, the prognosis is bad. The deep reflexes are at first increased during the cerebral irritation period, and later, with wet brain symptoms, are first sluggish and then may be absent. "The pupils are usually small, equal, regular, responding sluggishly to light; they dilate somewhat if the patient can be aroused, narrowing down once more as he relapses into coma."

Contrary to the observations of Dana and of Steinebach just quoted, Sceleth and Beifeld do not find the cerebrospinal fluid under much pressure. In an uncomplicated case of alcoholic wet brain there is no special abnormality in the cerebrospinal fluid.

In numerous necropsies performed by Dr. E. R. Le Count on patients who have died of delirium tremens, he has not found signs that the fluid in the meninges and ventricles of the brain was under increased pressure before death.

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[2] Steinebach, R.: Deutsch. med. Wchnschr., 1915, xli, No. 13; abstr., The Journal A. M. A., May 8, 1915, p. 1620.

[3] Sceleth, C. E., and Beifeld, A. F.: Am. Jour. Med. Sc., 1915, cxlix, 881.

In making a diagnosis of a patient who is brought to the hospital comatose, Sceleth and Beifeld urge that trauma should not always be looked on too seriously. The history of an injury may cause the alcoholic condition to be overlooked. On the other hand, a fracture at the base of the skull, when no serious external injuries are in evidence, may be diagnosed by bleeding from the ears or nostrils; by finding cerebrospinal fluid exuding from these regions; by slowly developing ecchymoses over the mastoids or about the eyes; by paralysis of the muscles of one or more extremities, and by spinal puncture showing blood in the cerebrospinal fluid.

An acute meningitis with sudden coma may be diagnosed by the appearance of the fluid in cerebrospinal puncture, and by its bacteriologic examination. Uremic coma is difficult to separate from the wet brain of alcoholism. In uremia, convulsions are likely to occur, and there may be exaggerated knee jerks, while the deep reflexes are generally absent in coma of wet brain. Apoplexy, cerebral embolism, and cerebral thrombosis generally give localized paretic symptoms.

The wet brain of alcoholism lasts, on an average, about three weeks, and there may be symptoms of this condition for many more weeks; but the mortality, according to Sceleth and Beifeld, is nearly 75 per cent. Death is generally hastened in these cases by a coincident, or later developing, bronchial pneumonia. Cardiac failure, and denutrition from inability of the patient to take nourishment, are serious factors in the downward tendency of alcoholic wet brain.

In the treatment of this condition, every effort should be made to get some nourishing liquid into the patient, even if it is necessary to pass a nasal tube or give rectal feeding, though such methods are not very satisfactory. The bowels should be moved as often as seems advisable. Cardiac tonics are certainly in order. Sceleth and Beifeld have not found spinal puncture of value, contrary to the findings of Dana and Steinebach, quoted above. While they find that ergot is of value in the sthenic type of delirium tremens, they have found it harmful in alcoholic wet brain. This malaction of ergot is difficult to understand; provided that indications for ergot are present, namely, if the blood pressure is low and the heart not too weak, and with more or less paralysis of the intestines, with possibly distention with gas, and with low fever it would seem that ergot would be indicated. If the heart is so weak as not to withstand the increased peripheral resistance caused by ergot, and if the blood pressure is not low, ergot would not be indicated. Ergot, to be of value in such conditions, must be given intramuscularly, and not too frequently.

Neurasthenia and the War.—A fact of importance which we may mention is that neurasthenia and other neurotic conditions are apparently becoming much less common, in spite of the anxiety and strain resulting from the war. This is not difficult to understand, as the experience of most people who have been accustomed to the treatment of nervous conditions indicates that it is not so much the great tragedies of life which are apt to upset the equilibrium of the nervous system but small daily worries persisting for long periods of time, and above all lack of occupation and interest in life.—Dr. W. H. B. Aikens, address before Toronto Academy of Medicine.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

EURESOL (See N. N. R., 1915, p. 268).—The following dosage form has been accepted:

Euresol pro Capillis.—Euresol perfumed to render it suitable for scalp lotions. Manufactured by Knoll and Co., Ludwigshafen a. Rh., Germany, and New York (Merck and Co., New York).

POLLEN EXTRACT.—Pollen Vaccine.—A solution of pollen protein.

Actions and Uses.—Pollen extract is employed for the relief or prophylaxis of a common type of hay fever or pollinosis. Pollen extract prepared from the pollen of one plant (for instance, ragweed) is not primarily intended for use in cases due to pollen from other plants, as grasses and goldenrod, though persons subject to autumn catarrh frequently react to the pollen of more than one species. The patient's susceptibility may be tested by rubbing a small quantity of the pollen vaccine into a scratch of the skin; if the patient is sensitive to that particular pollen, an urticarial wheal results. To avoid systemic disturbance, it is recommended that no therapeutic injections be made until the reaction from this cutaneous test has subsided completely. Treatment with pollen extract has seemed to give a varying degree of relief in a number of cases. In some cases the psychic element seems to play a part, and in such instances it is difficult to determine to what degree the good results are due to suggestion. The immunity from symptoms conferred by treatment is apparently not permanent, and in most cases does not last longer than a year.

Dosage.—It is regarded as important that the individual dosage should be determined by testing each patient's susceptibility, as sensitiveness varies greatly and an overdose may cause disagreeable and alarming symptoms or possibly even death. A method used for such test is to make a series of scratches on the patient's skin (it is important that these should be made at some distance from the scratches of the first test) and to apply to these scratches 25 per cent., 10 per cent., 1 per cent. or even weaker dilutions of the vaccine. From 5 to 10 drops of the dilution which fails to produce a definite skin reaction may be injected subcutaneously as the first dose. Injections, increasing by a few drops at first, and later by the use of a stronger dilution, may then be given at intervals of a few days or a week.

H. K. Mulford Company, Philadelphia.

Hay Fever Vaccine, Mulford (Autumnal).—Prepared by extracting the proteins from the pollen of ragweed (*Ambrosia artemisiaefolia*) and standardizing the solution by estimating the amount of protein contained in it. Preserved with trikresol. Marketed in packages of four syringes containing, respectively, 0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg. of pollen protein; also in separate syringe packages containing 0.02 mg. of pollen protein.

The pollen, after being dried, is ground in a ball mill to destroy the cell membrane. It is then extracted with physiologic salt solution. This extract is precipitated with acetone; the precipitate is dried and finally extracted again with physiologic salt solution. The soluble proteins being brought into solution, a nitrogen determination is made of this extract, and it is then standardized according to (nitrogen) protein content.

MERCURIC SUCCINIMIDE (See N. N. R., 1915, p. 201).—The following non-proprietary preparation has been accepted:

Mercury Succinimide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MORPHINE MECONATE (See N. N. R., 1915, p. 209).—The following non-proprietary preparation has been accepted:

Morphine Meconate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

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SATURDAY, DECEMBER 4, 1915

THE PRICE OF QUININ

We in this country are inclined to feel that the scarcity of certain drugs is a local hardship. As a matter of fact, as indicated in articles abstracted recently,[1] the war has produced a stringency in the drug market everywhere. Among the drugs now expensive and difficult to obtain is quinin, the exportation of which from Germany has been forbidden for several months, and on which an embargo was lately imposed by Great Britain. When the British embargo was declared no German, Dutch or Javanese quinin salts had been obtainable on the New York market for some time. American manufacturers were reported to have withdrawn from the market and to be holding their dwindling stocks and inadequate output to fill previous contracts. Such contracts were being filled at 50 cents an ounce for hundred-ounce tins; but consumers obliged to purchase on the open market, at last accounts, were paying middlemen from $1.25 to $1.50 an ounce for quinin sulphate, while a little earlier prices of $2.10 and $2.25 were quoted.

Only once or twice since the Civil War (when $6.50 an ounce was paid in some instances—in depreciated currency to be sure) have these prices been equaled or exceeded. Between 1880 and 1884 there was a period of high prices, which stimulated an attempt to corner the supply of cinchona bark.[2] The breaking of this corner and the consequent dumping on the market of accumulated supplies, the increased cultivation of the plant and the increased alkaloid content of the bark produced by cultivation are held responsible in varying degree for the subsequent downward tendency of prices. Ten years ago the price quoted by domestic manufacturers was 24 cents an ounce in hundred-ounce tins. From 1910 to 1912, inclusive, it was 19 cents, but in January, 1913, and January, 1914, it was 25 and 30 cents, respectively.[3]

It is perhaps worth while to glance at the world situation with respect to quinin, in an effort to discover if any other factors beside the war are helping to produce the present high prices. Many of the market conditions are obscure, but the following appear to be the leading facts: Cinchona bark is produced in Java, India and Ceylon; only a comparatively small amount still comes from South America, and some is grown in Africa, Jamaica and a few other countries.[4] According to Kraemer,[5] about 80 per cent. of the bark of commerce is produced in Java. One of the leading countries in the manufacture of quinin is Germany, and other manufacturing countries include France, Great Britain, Holland, Italy, the United States, Java and India.[6] Not all of these countries manufacture quinin in an amount sufficiently exceeding domestic needs to affect the foreign market. Thus, India, a large producer of cinchona, is said to use virtually her whole crop of bark, and also to require some Javanese bark for the domestic manufacture of quinin, which alkaloid is all or practically all consumed within the country.[7] The world's market depends for cinchona bark chiefly on Java, and for quinin mainly on Germany.[6] The United States is Germany's largest customer, besides being the heaviest consumer of quinin among all the countries of the world.[8] The effect of any disturbance in the world's supply of quinin would therefore be felt most acutely here. The war, of course, has affected the supply by causing an increased demand for quinin for the use of the armies, by interfering with the free movement in commerce of the bark and the manufactured alkaloid and salts, and in other ways, both direct and indirect.

Certain other elements, however, enter into the situation, and some of these antedate the war. The shipments of bark from Java had been gradually rising, until in 1910 they reached a total of nearly 8,000,000 kg.[8] In July, 1913, it is understood that the planters formed an agreement to maintain prices by restricting the output. This agreement (to which European manufacturers are believed to be parties) has since been maintained with modifications necessitated by the war; and the downward trend of exports is indicated by the fact that the total shipments of bark from Java to Europe for the first nine months this year reached only 3,776,810 kg., as against 5,531,500 and 6,686,450 kg. for the same periods of 1914 and 1913, respectively.[9] The price quotations from American and British quinin manufacturers given above showed a rising tendency even before the time of this agreement. A fire which damaged a portion of the Javanese bark fields early this year probably did not affect the situation seriously.[10] A somewhat significant straw in the wind, possibly, is the report that the quinin factory at Bandoeng, Java, has declared a dividend of 28.5 per cent. for last year, as against 17.5 per cent. for the previous year.[9]

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[1] Miscellany, The Journal A. M. A., Nov. 20, 1915, p. 1840.

[2] National Standard Dispensatory, 1909, Article Cinchona, p. 447.

[3] A table of prices for quinin sulphate from 1890 to 1915 (Chem. and Drug.) shows a similar movement of prices in Great Britain, namely, from 1 shilling 5 pence to 1 shilling, 1890 to 1905; 8½ pence 1909 to 1911, inclusive, and 9½ pence, 1 shilling and 1 shilling 3½ pence for 1912, 1913 and 1914, respectively.

[4] King's American Dispensatory, 1905, Article Cinchona, p. 538.

[5] Kraemer, Henry: Scientific and Applied Pharmacognosy, 1915, p. 738.

[6] Information supplied by the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

[7] Roeder, George: Tropenpflanzen, 1909, xiii, 473, quoted in Digest of Comments on the Pharmacopeia.

[8] Tunman, O.: Ap.-Ztg., 1910. p. 565; also information from the Bureau of Foreign and Domestic Commerce.

[9] Oil, Paint and Drug Reporter, Oct. 25, 1915, p. 45.

While some of the factors in the situation were operative previously, it would seem that the recent abrupt rise in the price of quinin is due chiefly to causes connected with the war. The present extremely high prices, therefore, may be temporary. Moreover, there is said to be a probability of increased output from the Amsterdam factories.[11]

RECTAL FEEDING REINVESTIGATED

The limitations of rectal feeding as a mode of introducing true nutriment into the organism, in the sense of furnishing calories of protein, fat and carbohydrate, have frequently been pointed out in The Journal. The practice of injecting nutrient enemas into the lower bowel has largely been given up, at least in the manner in which the procedure was carried out a generation ago. Nevertheless there are practitioners who continue to assume that a poorly digested mixture of milk and other partly soluble food products can experience some absorption and utilization from the colonic regions into which they are introduced, especially if the administration is slow, as is necessitated by the drop method of introduction employed by Murphy for saline solution.

The essential difficulty in the conventional plan of rectal feeding lies in the fact that practically all foodstuffs need to be digested very completely before they can be utilized from the alimentary tract. The lower bowel contains no satisfactory ferment equipment for accomplishing the essential digestive changes. Therefore, unless special and specific precautions are taken to furnish all of the nutrients in a completely digested form they are, theoretically at least, of little avail for rectal alimentation. In practice it is almost impossible, or at any rate impracticable, to obtain any of various foodstuffs, with the possible exception of sugar, in a suitable condition of digestion. Water and salts are, of course, readily absorbed from an enema; and because of the relief to a patient who has been unable to retain ingesta of any sort administered by way of the mouth, an apparent benefit is ascribed to the nutrients dissolved in the introduced fluid. The disappearance of water from the latter does not assure the absorption of the food therein as well.

How futile the rectal feeding of peptonized milk may be, even when it can be continued for days without discomfort (which is rarely the case), has been shown in actual metabolism experiments by Adler[12] of the University of Maryland. In order to ascertain the extent of absorption of food administered by this method, the colonic intakes of nitrogen for from four to six days were compared with the output in the urine and the return loss by rectum. Patients with gastric and duodenal ulcers, but without abnormality of nutrition, were employed as subjects. The largest amount of nitrogen that Adler was able to supply daily by rectal feeding was 3.9 gm., of which 2 gm. were returned with the stools. In no case was there a disappearance of more than 50 per cent. of the protein supplied; in some cases the apparent absorption was as low as 30 per cent. The average amount of nitrogen absorbed in these cases was 1.14 gm. per day, equivalent to 7.1 gm. of protein.

From a practical standpoint and in consideration of the usual duration of such attempts at rectal feeding of protein, the results are practically negligible. Adler remarks that when the amount of nitrogen actually lost by the individuals is compared with the amount that it is possible for them to absorb by colonic feeding, one must realize how little is accomplished. It should be noted, however, that the human organism can experience very considerable losses of protein without permanent damage. Starvation experiences extending over several weeks testify to this. It would seem more rational, therefore, if rectal feeding is to be attempted at all, to concentrate the effort on that type of foodstuff which is most likely to be absorbed and promptly utilized. Glucose belongs in this category.

THE SOURCE OF ENDOGENOUS URIC ACID

The successive changes in the conceptions held by scientific men regarding the sources and formation of the uric acid excreted in the urine are indicative of a steady progress in our knowledge. Not long ago, uric acid was still looked on as an intermediate stage in the metabolism of simple proteins—a step in their transformation to urea. Modern knowledge of the chemistry of the purins turned a new light on the problem, and indicated the direct chemical relationship between nucleoproteins and their derivative purins on the one hand, and uric acid on the other. The leukocyte hypothesis of Horbaczewski, postulating a direct relationship between the disintegrating nucleated colorless blood corpuscles and uric acid production, likewise had its vogue, until it was clearly demonstrated that leukocytosis and uric acid elimination are by no means necessary concomitants.

Some years ago Burian furnished a helpful suggestion by pointing out that the excreted uric acid of man appears to have a twofold source. One, the exogenous, is clearly related to the food supply, and is directly referable to the purin-yielding substances or free purins present in the diet. Uric acid is the metabolic end-product of these compounds. The urinary output of uric acid can, as is now generally appreciated, be markedly increased or diminished by the expedient of augmenting or decreasing the supply of purins in the ingesta. The other, or endogenous, source of uric acid has not been so clearly ascertained. It represents the origin of that small yet ever present fraction of the usual output which is realized even in the absence of all purin-yielding foods from the ration. Evidently its origin is to be sought in tissue sources.

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[10] Oil, Paint and Drug Reporter, Feb. 1, 1915, p. 43.

[11] Chem. and Drug., Nov. 6, 1915, p. 49.

[12] Adler, Harry: Value of Rectal Feeding, Am. Jour. Med. Sc., 1915, cl, 562.

Hypotheses regarding the endogenous uric acid have not been wanting. Its formation has been attributed to actual synthesis from simpler compounds. It has been looked on as the end-result of the metabolism of the cellular nucleoproteins, representing the wear and tear of the nuclear materials of the organism. This has, in fact, been a widely taught view, particularly at a period when the endogenous output of uric acid was believed to be a constant quantity for the individual.

According to a view offered some time ago by Mares, the activity of the digestive glands is peculiarly concerned in the production of that fraction of the uric acid output not accounted for by ingested purins. This theory, that endogenous uric acid may arise from glandular activity, has received some substantiation from recent experiments by Mendel and Stehle[1] at Yale University. These show that materials free from uric acid precursors are not necessarily entirely devoid of influence on the uric acid output. Conditions which tend to stimulate the alimentary secretory glands seem to augment the hourly output of uric acid while the provocative influences last. Proteins, for example, which induce a more copious flow of digestive secretions than do fats or carbohydrates, tend to promote a larger output of endogenous uric acid than do latter foodstuffs in the course of their digestion. Beside the effect of these food stimuli in bringing about an increased elimination of uric acid, a comparable one is produced by the administration of pilocarpin, which is known to stimulate the digestive glands. Atropin, which inhibits secretory activity, was found to suppress the uric acid output normally noted to follow the ingestion of certain foods. The passage of indigestible, bulky agar-agar through the digestive tract did not cause the effect which would be expected if the mere work of the intestinal musculature were a significant factor in endogenous uric acid production.

If this view, supported by Mendel and Stehle, that a portion at least, of the endogenous uric acid may originate from the activity of the alimentary secretory apparatus proves tenable, several hitherto obscure facts can be explained. It becomes evident why the output is lowered notably in starvation, when the alimentary tract is not functioning. The often noted apparent constancy of the endogenous uric output (on purin-free dietaries) is then merely the expression of an unforeseen uniformity in the degree to which the digestive processes are involved by the diets in question. On the other hand, a varying endogenous output no longer offers an unsolvable puzzle.

THE TRAGEDY OF UNPREPAREDNESS IN MEDICINE

A recent number of a periodical published in the interest of osteopaths contains a number of references to the death of a boy from diphtheria. A death from any cause and even one from diphtheria would not usually have caused so much comment, but this boy happened to be the son of the editor, who is an osteopath. The reports show that the disease was not recognized until a physician—a graduate of a Class C medical college—was called in, and he thought lobelia was better than antitoxin. The editor is now mourning the death of his son, regrets that antitoxin was not used, and has started a campaign among osteopaths urging the use of antitoxin in diphtheria. Pathetic as are the statements of this heart-broken father, they show unquestionably how slight was his knowledge of the simplest fundamentals of medicine. They show also that the admission to practice of any one who is tied down to a theory, a cult or a fad, who has not previously been trained in the underlying medical sciences, is a menace to the public. Some of the editor's statements follow (the words in brackets and the italics are ours):

> Billie had diphtheria four days before we knew what he had. . . . I had *never seen a case of diphtheria before; never even thought of looking at his throat.* . . . Dr. ——— was called the fourth day and diagnosed the trouble at once. He is an M.D.; has had wide experience; has had the training so many of us have not had.

Here is, indeed, a frank acknowledgment. In another paragraph he says:

> For many years I have been interested in diphtheria; have tried to figure out what I could do if my boys ever got it. Talked with ——— [named two osteopaths] and many others *in re* antitoxin. They usually *didn't believe in it.* I suggested using it on Billie when Dr. ——— [the M.D. referred to in the foregoing paragraph] was sure it was diphtheria. He thought lobelia best.

Unfortunately, the "graduates" of some low-grade medical colleges are deplorably lacking in their medical training. The editor continues:

> I don't understand antitoxin; I can't understand how a poison can cure disease or neutralize poisons. Yet when the death rate is cut from 50 per cent. to 10 per cent., isn't it best to be a physician first, an osteopath second?

And in another paragraph:

> Billie depended on his father. I in a way failed him. While I lived up to the best light I had, still *my osteopath's training obscured my sense of fairness;* I think now I made a mistake. I did not give him the best care that his generation afforded.

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[1] Mendel, L. B., and Stehle, R. L.: The Rôle of the Digestive Glands in the Excretion of Uric Acid, Jour. Biol. Chem., 1915, xxii, 215.

This periodical also prints an editorial reproduced from another osteopathic periodical which is likewise advocating the use of antitoxin in diphtheria. Extracts from this editorial show that other osteopaths are likewise seriously ignorant of the simplest facts of bacteriology, of infectious diseases and of the methods of preventing their spread. For example:

> Much ignorance regarding and much unreasoning opposition toward the administration of antitoxin for diphtheria still exist in our profession.

Again:

> Some who criticize antitoxin have never treated a case of diphtheria. Others have never seen [possibly never recognized] a case. Some admit freely they would refuse to treat diphtheria *if "they knew what they were getting into."* They explain that they "do not cater to that kind of practice." They "do not like contagious diseases."

Another osteopath is quoted as saying:

> How many of us ever saw a case of diphtheria during our student days? Even if we used antitoxin how many of us would know how to use it? Personally, I believe in it but I regret to say, *I doubt if I would know a case of diphtheria if I saw it;* was not trained to know it. . . . Two days ago I talked to a 1915 graduate who has never seen a case of measles, scarlet fever, diphtheria, erysipelas, typhoid fever, or a single obstetrical case. He knew all about mumps as he had them himself during his senior year.

The paragraphs quoted show the fallacy of the belief, which appears to be prevalent in some states, that an individual may be safely permitted to practice a single branch of medicine, or make use of a single method of treatment, without first undergoing a complete course of instruction in the fundamentals of medicine. If the editor of the paper quoted, before specializing in osteopathic methods, had obtained a complete medical training, it would have enabled him not only to recognize diphtheria in its earlier stages and possibly prevent the death of his son, but also to understand why antitoxin has reduced the death rate in diphtheria "from 50 per cent. to 10 per cent." An important question — as far as the public is concerned — is: How many other children have lost their lives in his practice and in that of the thousands of others who have assumed the rôle of physicians, but who are unable to "know a case of diphtheria if they saw it" or who cannot "understand" or do not "believe in" antitoxin? And diphtheria is only one of the many diseases, contagious or otherwise, which for their most favorable treatment require a positive and early diagnosis. While urging other osteopaths to make use of antitoxin in diphtheria, therefore, this editor at the same time might well urge that all practitioners of osteopathy and other cults enter some good medical school and complete their medical education so they may give their patients the benefit of the researches of Pasteur, Koch, Klebs, Flexner and others, which have done so much to reduce the death rate from contagious diseases and saved untold thousands of lives by the prevention of epidemics. If the death of this small boy will lead to such a reform, he will not have died in vain.

THE STATES RELATIONS SERVICE

The interdependence of medicine and a large number of the natural sciences is being recognized more forcibly today than it was a few years ago. To cite a single illustration, it is not long since entomology was regarded as something quite foreign to the practice of medicine; but the growing recognition of the very important rôle of insects in the transmission of disease has created a demand for detailed information of the life habits of various species, such as the mosquito, the fly, the body louse and the flea. Instances of this sort could easily be multiplied. It is in harmony with these modern mutual relationships in science that the work of the U. S. Department of Agriculture has frequently been of immediate interest to the medical world. Indeed, this is true to an extent which the casual observer might not easily suspect; for various activities of the department, such as those related to the enforcement of the Food and Drugs Act, to the investigations of the Bureau of Chemistry, and other branches of this service have no peculiarly logical connection with agriculture more than with other aspects of governmental management.

Under the plans adopted by the last Congress for the reorganization of the federal Department of Agriculture, the States Relations Service was formally established by Secretary Houston, and began its activities July 1, 1915. This new organization developed on the foundation of the Office of Experiment Stations, which it will include. Of further interest from a medical point of view is the establishment of the Office of Home Economics, which will include investigations relative to foods, clothing, and household equipment and management.

The Office of Experiment Stations, which remains an integral part of the new and larger organization, was organized in 1888 under the directorship of the late Prof. W. O. Atwater. In 1894 the state experiment stations were specifically authorized by Congress to include the study of the food of man in their inquiries and report their progress to the department. At this time an appropriation of $10,000 was made for investigation, under the direction of the Office of Experiment Stations, of "the nutritive value of the various articles and commodities used for human food." Subsequent to this came the numerous contributions of technical and popular data which have done so much to extend knowledge of the science of nutrition in the United States. Some of the work, notably that involving the development of the respiration calorimeter and the measurements of the metabolism of matter and energy in the human body, has become fundamental in the science of physiology. The extensive compilations of the composition of food products—analytic records which are used everywhere for purposes of instruction and research—as well as the popular expositions of the uses of foods, and their composition and preparation for the home, have interested thousands. A total of 132 nutrition publications have been issued, of which sixty-two are technical bulletins. The publications as a whole, including the often misnamed "Farmers' Bulletins," have been much in demand, the total distribution amounting to millions of copies. Now the scope of the work is to be increased to include studies of agricultural products in their relation to clothing and other uses in the home. Anything which seems likely to lead to some progress in the long neglected field of the hygiene of clothing will surely be welcomed by the medical profession.

From an initial staff of three persons, the number of employees has grown, in the Office of Experiment Stations, to more than 250; the fund for its maintenance rose from $10,000 in 1888 to $1,930,780 in 1915. We shall expect continued efficiency from the new States Relations Service.

Current Comment

STATISTICS OF HEALTHY DIPHTHERIA CARRIERS

Two years ago the United States Public Health Service conducted an investigation at Detroit with the purpose of ascertaining the distribution of diphtheria carriers. The determination of the percentage of carriers was made shortly after a time of greatly increased prevalence of diphtheria. The conditions under which the study, which has just been reported,[1] was carried out differ from most previous investigations along similar lines in that it was not confined to groups in institutions or selected portions of the community. It represented rather the incidence of diphtheria carriers determined by cultures taken indiscriminately from healthy persons of all classes. Out of about 4,000 healthy persons, thirty-eight, or nearly 1 per cent., were found to harbor the *Bacillus diphtheriae* as revealed by cultures made from the throat, from the nose, or both. Out of nineteen cultures isolated from nineteen carriers, two were found to be virulent, suggesting a possible 0.097 per cent. of the individuals examined as carriers of virulent bacilli. Twenty-nine of thirty cultures of *Bacillus diphtheriae* from clinical cases were virulent, and all thirty were acid producers. Comparison of the value of different types of single cultures for the detection of carriers shows that the throat culture gives the lowest, and the combined nose and throat the highest results. The latter, however, is but slightly higher than that from the nose alone. The combined results of a throat and of a nose culture give markedly better findings than those of any single culture. These results are believed to be a fair index of the proportion of carriers among the population. Based on the total number of inhabitants, it means that in a city of half a million persons there are about 5,000 carriers of diphtheria bacilli. The bacteriologists of the Public Health Service point out that the Detroit statistics are low compared with those obtained by the majority of workers in this field. According to the literature cited, results above 2 per cent. are found more often than results below this figure. The data cited for a group of persons examined at the time of the epidemic of diphtheria at the Johns Hopkins Medical School and Hospital[2] in 1911 indicated forty-five carriers among 1,290 persons, or 3.48 per cent. All reliable facts of this sort are of great value in the prosecution of epidemiologic studies in the interests of the public health.

BACK-FIRING

To many who have read the much over-written case of the Chicago infant who recently came into and went out of this world with certain deformities, the question doubtless occurred: What would the followers of Mrs. Eddy do in such a case? Logically the followers of this cult would have done just what happens to have been done by the physician in charge: Nothing. And the result, of course, would have been the same. Possibly because this line of thought is rather obvious, the *Christian Science Monitor* devotes over a column to the case. Under the sonorous title *"Ave Medicus Imperator,"* this journalistic champion of Mrs. Eddy's doctrines belabors the medical profession, charging that "the place of Caesar as a dispenser of life and death is to be taken by the modern physician," and, further, that "the hospital is to usurp the position of the arena." The article, of course, is wholly in the nature of a back-fire. The poor human mite, whose short but tragic life and equally tragic death have proved such a boon to the sensational newspapers and such a grief to the thoughtful, really "passed over" strictly according to the tenets of Mrs. Eddy's disciples. We assume, naturally, that even the most rabid of that sect would hardly claim that thought-waves, either long or short range, would remedy a congenital deformity. The baby died because "treatment" was "absent."

MISTAKEN ECONOMY AND THE TREAMENT OF THE CHRONIC INSANE

One hindrance to the adoption of improved methods in the care of the insane not infrequently is a mistaken idea of economy in the governing bodies of institutions. An average layman's idea of the economic principle underlying the care of the chronic insane probably is (at least, unless he has a personal interest in some member of this unfortunate class) that, within limits of decency, the less spent the better. Of course, for sheer humanity's sake, the insane must have food, clothing and adequate housing accommodations; they must be restrained from doing violence to themselves or to others, must receive necessary personal attention and must not be subjected to abuse. But, since the hopelessly insane are a total loss to themselves and to society, why spend money in any further attempt to improve their condition? Such, it is not unfair to surmise, is the unformulated feeling which puts obstacles in the way of individualized work with deteriorated patients. Dr. E. A. Foley, in the last issue of the *Institution Quarterly*, reports the results of experiments which indicate that, quite apart from the humanitarian aspect, such work is worth while from the purely economic point of view. Two of the apparently most hopeless patients in the Jacksonville (Ill.) State Hospital were selected for experiment. Both had records of destructiveness, filthiness and most violent impulses; both had been expensive patients on account of the amount of clothing, bedding, furniture, etc., which they destroyed, and both were deteriorating. The patients were placed in charge of an especially patient and tactful attendant. At first hydrotherapy was employed; then the patients' interest was aroused by means of games and light work. Destructiveness and filthiness diminished; the patients became less vulgar and abusive; they became friendly to physicians and nurses. Of course, cures are out of the question, but the contentment and well-being of the patients have been vastly enhanced. From the financial point of view, there is a double gain. Not only are the patients now no longer destroying property: they are to some degree producers. So far as this experiment goes, such work appears to be of value from all points of view.

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[1] Goldberger, Joseph; Williams, C. L., and Hachtel, F. W.: Report of an Investigation of Diphtheria Carriers, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915, p. 29.

[2] Ford, W. W.: The Recent Epidemic of Diphtheria in Johns Hopkins Hospital and Medical School: General Procedures Adopted, Bull. Johns Hopkins Hosp., 1911, p. 357. Moss, W. L.: Diphtheria Bacillus Carriers, Tr. XV Internat. Cong. Hyg. and Demography, 1913, iv, Part 1, p. 156.

STREET DIRT, UNPROTECTED FOOD AND DISEASE

Prof. C. H. La Wall, chemist of the Pennsylvania dairy and food commission, is said to have found the following assortment of objects and substances in raisins exposed for sale on a Philadelphia street: pieces of prunes; beans and rice; strands of human hair and cat fur; cotton and wool fiber; straw and bits of bran; insect wings and legs; cigar and cigaret ashes, and a yellowed cigaret paper. While it does not appear that any of these unappetizing accessories were exactly proved to be carriers of contagion, the findings strongly suggest the possibilities of infection from food sold from uncovered pushcarts and stands.

The Potash Problem.—The scarcity of potash, which is used both in medicine and in manufacturing and agricultural processes, on account of the European war, bids fair to be abolished. According to *Commerce Reports*, several new methods of increasing the supply of American potash have been devised. One of these is a Canadian method for obtaining potash from ordinary feldspar. This consists in heating the feldspar with limestone and iron oxid at a temperature of about 2,200 F., producing a partly fused mass that is easily decomposed by a weak acid. From this product the potash salts can readily be extracted for further purification. It is said that 106 tons of potash are wasted daily by the twenty-five or more distilleries in this country that subject molasses to a process of fermentation. A New Orleans company has planned to install the process of saving the potash from distillery waste which was recently brought to attention by the United States Bureau of Foreign and Domestic Commerce. Experiments to extract potash from seaweed both in this country and in the Philippine Islands have been noted heretofore. It is stated that seaweed yields about 15 per cent. of potash.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

DISTRICT OF COLUMBIA

History of Surgery.—An interesting exhibit of books and pictures illustrating the history of surgery has been prepared by Dr. Arnold C. Klebs at the invitation of Lieut.-Col. Champe C. McCulloch, Jr., M. C., U. S. Army, librarian of the surgeon-general's office, and may now be seen in the Library Hall of the Army Medical Museum.

Eulogize General Sternberg.—At a meeting of the directors of the Washington Association for the Prevention of Tuberculosis, November 6, resolutions were drafted paying tribute to the unselfish character of General George M. Sternberg, late president of the association, to his valuable contributions to preventive medicine and to his personal philanthropic work.

Personal.—Dr. Philip Newton, who went to Russia in charge of a Red Cross unit, is said to have been appointed surgeon of the sixth army corps with the rank of general. ——Drs. Arthur M. Zinkhan and Paul H. Zinkhan, Washington, have returned after a years' service in the war zone.——Dr. William C. Rives, Washington, has been elected president of the Citizen's Relief Association.——Dr. Thomas W. Jackson, Washington, who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia, has returned from abroad.

Honor Magruder.—The Medical Society of the District of Columbia held a meeting November 10 as a memorial to Dr. Ernest P. Magruder, formerly superintendent of the Emergency Hospital, Washington, who died from typhus fever in Serbia, April 9. The work done by Dr. Magruder in combating typhus was described by Dr. Ethan F. Butler, late director of Serbian Unit No. 2, of the American Red Cross, and tributes to Dr. Magruder were also paid by Major Robert U. Patterson, M. C., U. S. Army, medical director of the American Red Cross, and by Dr. George M. Kober, dean of Georgetown University.

ILLINOIS

Matteson School Closed.—The public school of Matteson was closed November 20 and ordered fumigated on account of diphtheria among the pupils.

New Hospital for Highland Park.—At a recent meeting of the board of commissioners of Highland Park a committee was appointed to take up the matter of a local hospital and to report at the next meeting.

Personal.—Dr. Marion C. Dale, McLeansboro, is reported to be seriously ill as the result of a cerebral hemorrhage. ——Drs. Grant Houston, Herbert S. Worthley, James A. Clyne and Philip Le Sage have been elected members of the medical staff of St. Joseph's Hospital, Joliet.

Hospital Addition Dedicated.—On November 17, the chapel and addition to St. Mary's Hospital, Streator, were dedicated by Father Shaunion, vicar general of the diocese of Peoria. After the dedicatory exercises the Sisters of St. Mary tendered a banquet to the physicians of Streator and its environs, over which Dr. Eley E. Perisho presided as toastmaster. The new addition, consisting of four floors and a basement, increases the capacity of the hospital to 125 patients.

Correction.—A statement was published in The Journal of November 6 regarding a scarlet fever epidemic in Decatur that the spread of the disease was due to a lack of cooperation on the part of local physicians. Dr. Herbert L. Wright, health officer, writes that this statement is incorrect and that he has observed no lack of cooperation, but that on the contrary, he has been requested by eight or ten local physicians to see suspicious cases with them and that their cooperation has been all that could be desired.

Chicago

Health Crusade Proclamation. — Mayor Thompson, on November 26, issued a proclamation designating December 10 as Children's Health Crusade Day.

Diphtheria.—A medical student living in Hitchcock Hall, University of Chicago, became ill with diphtheria November 24, after having been engaged in studying diphtheria germs.

The head of the department of bacteriology is making an investigation to ascertain whether there is any carrier among the students.

Personal.—Dr. Philip S. Chancellor, who went to Europe last May as medical director of the Chicago unit, sails from France on his return on December 25.——Dr. Arthur Dean Bevan, on November 27, was elected president of the Clinical Surgical Society at its meeting in Washington.——Dr. Gottlieb A. Lurie has reached France on his return home from Serbia.

First Aid Classes.—A first aid class is being held on Wednesday afternoons at the residence of Mrs. E. R. Cox, 1529 Astor Street, in charge of Dr. Charles Adams.——Mrs. Arthur A. Small has organized a class of women to become trained nurses and later to affiliate with the National Red Cross of America. The first meeting of the class took place at St. Joseph's Hospital, November 29.

Millions Needed for Health.—Health Commissioner Robertson estimates that his department should have $4,907,561 to spend in 1916. Of this little more than one-half is to be devoted to health, sanitation and hospital work and the remainder to the disposal of city wastes. For the entire department the appropriation for 1915 was $1,507,444 and for next year his estimate has been reduced to $1,356,461.

INDIANA

Schools Closed on Account of Disease.—The schools of Amboy, Miami County, have been closed on account of diphtheria.——The schools at North Grove, which had been closed on account of scarlet fever, have been reopened.

Personal.—Dr. George W. Willeford, Washington, started November 20 on an extensive trip through the west.——Dr. Henry C. Davisson, Hartford City, is reported to be seriously ill at his home.——Dr. and Mrs. Emanuel P. Masgana, Vincennes, have returned to France where Dr. Masgana will take service with the French Red Cross.

IOWA

Personal.—Dr. Fred W. Sallander, Fort Madison, has returned after two months in England.——Dr. Albertus J. Burge, formerly a member of the faculty of the University of Iowa, Iowa City, has been appointed surgeon to the new Catholic Hospital, Mason City, and will soon move to that place.——Fire at Hawleyville, November 8, destroyed the office of Dr. Jesse D. Elliott.

Smallpox.—At Fort Madison, November 18, it was reported that the smallpox epidemic was practically under control, there being about twenty cases in the city. City Health Officer Joseph M. Casey declared that the rapid spread of the disease was due to the lack of vaccination and the reporting of cases when they first appeared. A census of the public and parochial schools of the city showed approximately 1,200 children who had never been vaccinated.

Tuberculosis Notes.—The Free Dispensary for Tuberculosis Patients, established by the Visiting Nurses' Association, at 410 Century Building, Des Moines, was opened November 18. The clinic days will be Thursday and Saturday of each week and the association offers free examination and medical advice to those financially unable to pay.——The Iowa Association for the Prevention of Tuberculosis has recently been organized and on the organization committee are the following physicians: Drs. Murdoch Bannister, Ottumwa; Frank M. Fuller, Keokuk; John E. Luckey, Vinton; John H. Peck, Des Moines, and Herbert V. Scarborough, Oakdale.

KANSAS

Epidemic Diseases.—On account of the prevalence of diphtheria the Ingalls School, Kansas City, has been closed.——The prevalence of diphtheria has caused the closing of the public school at Dunkirk.——The schools of Little River are under rigid quarantine on account of the presence of several cases of diphtheria and scarlet fever.

Personal.—The Kansas Supreme Court has decided that Dr. Chilton W. McLaughlin, health commissioner of Kansas City, is entitled legally to his office under the civil service law and cannot be ousted because of a mistake made by the civil service commission.——Dr. Owen G. Hutchinson has been appointed city physician of Wichita, vice Dr. Leon Matassarin, removed.

Medical Department of State Library.—The state library at Topeka has nearly 1,300 volumes in its medical department and under the terms of the Stormont Endowment Fund several hundred dollars a year are spent for new medical books and under the Sheldon Endowment Fund, $100 a year for the same purpose. The library also receives about twenty medical magazines a month but the librarian states that there is no record of a physician having utilized this division of the library.

KENTUCKY

Eye, Ear, Nose and Throat Clinic Opened.—The Scott County Health and Welfare Association announces the opening of a clinic for the treatment of the eye, ear, nose and throat, to be in charge of Dr. Edward C. Barlow, Georgetown.

Babies in Pediatric Service.—Following a precedent established by the University of Minnesota, the University of Louisville has included in its pediatric service all newborn babies. As soon as the cord is cut the baby is transferred to the pediatric service.

Health Officer Closes School.—The development of six cases of diphtheria among the children attending the George Rogers Clark School, Crescent Hill, Louisville, caused Dr. W. Ed. Grant, Louisville, city health officer, to direct the closing of a portable structure which is used by a class of about forty of the younger pupils of the school.

Personal.—Dr. Arthur T. McCormack, Bowling Green, has been appointed a member of the Kentucky Conference of Charities and Corrections.——The office of Dr. Alvis P. Ryan, Albany, was destroyed by fire November 6, with a loss of $1,000.——Dr. Frederick P. Strother, Madisonville, has been elected vice president of the Hopkins County Public Health League.

Warning.—The board of the Jefferson County Tuberculosis Hospital has issued a warning to the public that imposters are soliciting funds for the Waverly Hills Sanatorium. These men have not yet been identified, but are salesmen of soap and toilet articles who claim that part of the receipts from the sale of their wares accure to the Waverly Hlils Sanatorium.

MASSACHUSETTS

Diphtheria Closes Schools.—The Lynhurst Primary and Grammer School, North Saugus, was closed from November 12 to November 28, because of an epidemic of diphtheria in that district.——The ninth grade of the Maple Street School, Danvers, was closed on advice of the board of health, November 18, on account of the prevalence of diphtheria.

Gives Hospital to Town.—Mr. and Mrs. Richard T. Crane, Jr., Chicago, have notified the Ipswich Society of their intention to give the town a hospital to be known as the Benjamin Stickney Cable Hospital in memory of their friend who was killed recently in an automobile accident. The building is to be of fire-proof construction and will have accommodation for eighteen patients.

Strong Lectures on Typhus.—Dr. Richard P. Strong, professor of tropical medicine at Harvard Medical School, made his first public lecture, November 20, on his experiences as head of the International Committee to combat typhus fever in Serbia.——On December 6, Drs. Charles A. Porter and Robert B. Osgood discussed the work of the physicians and nurses in their party during the past summer.

Personal.—Dr. William Hall Coon, Haverhill, state medical inspector for the northeastern health district, has resigned to assume new duties as medical officer with the Fisk Rubber Company at Springfield and Chicopee. Dr. Lyman A. Jones, North Adams, health officer of the Berkshire District, has been transferred to Haverhill to succeed Dr. Coon.——Dr. Mary T. V. Moore has been appointed a member of the staff of school physicians of Boston.

Value of Bacterial Vaccine in Typhoid Fever.—The Evans Memorial for Clinical Research, Boston, is desirous of communicating with as many physicians as possible who have used bacterial vaccine in the treatment of typhoid fever, that they may collect statistics regarding the efficiency or non-efficiency of this method as a therapeutic measure. Dr. Frank C. Richardson, clinical director, requests that any physician who has treated with the method will communicate with Dr. William H. Watters, 80 E. Concord Street, Boston, when blank forms will be sent that uniform reports may be made.

NEVADA

Personal.—Dr. Sidney K. Morrison, Reno, has resigned as physician of Washoe County.——Drs. Martin A. Robison and Henry Bergstein, both of Reno, have resigned from the City Board of Health.

Scarlet Fever.—November 9, a meeting of the mayors of Reno, Sparks and some other towns with the county commissioners and state and local boards of health was held to consider measures to prevent the spread of scarlet fever which was epidemic in the state. There had been some laxness in reporting cases to the local authorities and physicians were warned that such reports must be made in accordance with the quarantine laws of the state.

NEW YORK

A New Step in the Care and Cure of Insanity.—The State Hospital Commission announces that it has decided to establish additional mental dispensaries in connection with the state hospitals for the insane and will employ additional field agents.

Another Death from Anthrax Reported.—A death from anthrax has been reported from Endicott, the correctness of the diagnosis having been confirmed by the city bacteriologist of Binghamton. It is believed that the victim became infected in the Endicott tannery where he was employed.

Resolutions Regarding Dr. Trudeau.—The medical staff and patients of the Workmen's Circle Sanatorium, Liberty, have adopted resolutions regretting the death of Dr. Edward Livingston Trudeau, who had for thirty-one years worked untiringly and unselfishly in the interest of the consumptive workingmen and women, and expressing their appreciation of his work by conferring on the hospital building of the Workmen's Circle Sanatorium, the name "Trudeau."

New York City

Personal.—Dr. Cecile L. Greil was one of the survivors of the *Ancona*, sunk by a submarine in the Mediterranean. ——Dr. Luvia M. Willard, Jamaica, is the first woman to be appointed a member of the staff of the Jamaica Hospital. ——Dr. Edgar L. Gilcreest has returned from service with the American Red Cross in Europe.

Medical Society of the County of New York Elects.—At its one hundred and tenth annual meeting the Medical Society of the County of New York elected the following officers: president, Dr. Frederick E. Sondern; first vice president, Dr. J. Benton Squier, Jr.; second vice president, Dr. Charles H. Peck; secretary, Dr. John Van Doren Young; assistant secretary, Dr. Daniel S. Dougherty; treasurer, Dr. Charles H. Richardson; censors for two years, Drs. Howard C. Taylor, Willy Meyer and Floyd M. Crandall.

Plan for Great Medical Center Receives Setback.—Announcements have been made from time to time with regard to the project of consolidating the College of Physicians and Surgeons of Columbia University and the Presbyterian Hospital and some months ago an option was secured on the American League Baseball Grounds, a tract of land comprising 10½ acres, with the understanding that the university would contribute $1,000,000 when the time came to take up the option. The Presbyterian Hospital was to contribute a like amount. Columbia University has been unable to secure the amount of money required so that the purchase of this particular site will have to abandoned, but it is understood that the plan for consolidation has not been abandoned but has only received a setback.

PENNSYLVANIA

Society Donates Sterilizer.—The members of the Elwood City Medical Society have presented the Elwood City Hospital with a sterilizer for use in the operating room.

Rabies Patient Bites.—Under date of November 26 it was reported from Pittsburgh that a rabies patient who escaped from the Allegany General Hospital had bitten fourteen persons. Eleven of the victims were said to have been sent to the Mercy Hospital to undergo the Pasteur treatment. Among those bitten were Hospital Superintendent Herbert Beamer and four staff physicians. The patient was captured and returned to the hospital, where he died.

Philadelphia

Personal.—Dr. Edward H. Bedrossian has been appointed assistant medical inspector and Dr. Charles M. Strotz, assistant hospital physician at the Hospital for Contagious Diseases, and Dr. Frederick C. Chirinos, outdoor physician in the Bureau of Charities.

Correction Uplift.—The director of the Department of Public Safety has appointed an advisory board whose especial functions shall be the improvement of the housing and medical service in hospitals and other municipal institutions for the care of public charges. The staff includes: Drs. Ella B. Everitt, J. Leslie Davis, Charles H. Frazier, Elijah H. Siter, Thomas H. Fenton, T. H. Weisenburg, Horace Phillips, and James M. Anders.

Questionable Nurse Directories Here. Another Warning.—Physicians of Philadelphia and environs are again being circularized by so-called nurse directories. Ethical private homes or directories for registered and "experienced" nurses are known by their absence of preposterous claims but quite the contrary is true of the unscrupulous variety, those managed "for profit only" if not worse. The safe plan for practitioners is to rigidly avoid these trick concerns, and unless sure of the private nurse homes, to depend only on nurses from a recognized hospital or the Nurse Directory of the College of Physicians. The latter supplies "years of experience" attendants as well as registered trained nurses.

Hospital Contract Awarded.—The contract for the erection of New Misericordia Hospital, at 53d and Cedar Avenue, was awarded November 17. The building will be of the Italian Renaissance style of architecture and of fireproof construction. The main building will stand in the center of a big plot; will be 45 feet wide and 179 feet long. From the ends of the building will extend wings so arranged as to make every room an outside one, with plenty of air and sunlight. To the rear of the hospital will be a building to house the employees of the hospital and the mechanical plant. To the east will be the nurses' home and to the west the convent for the sisters. The second and third floors will be occupied by rooms and suites for private patients.

Aid for Drug Victims.—Acting under the suggestion of Francis Fisher Kane, United States District Attorney, a committee has been formed of well-known citizens of Philadelphia, headed by Edward W. Bok and C. H. Ludington, to employ and direct a skilled social worker to investigate and aid habitual users of narcotics, more especially those addicted to heroin, morphin and cocain. More than $1,000 has already been raised to be used in working out this drug problem. The committee is anxious to obtain at least $3,000 to defray the expense of the first year's work. It hopes to raise this sum before the United States District Court convenes on December 6, when more than eighty drug cases will be called for the court's consideration. Many of these persons are habitual users. The committee will not confine itself to cases referred to it by the Federal courts, but will take up recommendations made by the State courts and the various societies and agencies throughout the city, in an effort to effect a reform in any case that is deserving. The duty of the agent will be to investigate the facts, and when the case is not hopeless, follow up the individual, obtaining the necessary medical assistance and later, if needed, an opportunity of obtaining employment.

WISCONSIN

Dispensary Association Formed.—The Milwaukee Dispensary and Hospital Association, with a capital stock of $10,000, was incorporated, November 6, by Frederick Westwood, B. F. Muehecke and Eugene Shapf.

Sanatorium for Marathon County.—The county board of Marathon County decided by a vote of 44 to 19, November 10, to appropriate the sum of $35,000 for the construction and equipment of a county sanatorium for tuberculosis.

Inquiry Into Industrial Conditions.—Through the agency of the Wisconsin Industrial Commission, Surgeon-General Rupert Blue has assigned Surgeon Joseph W. Schereschewsky and P. A. Surg. Robert Olesen, U. S. P. H. S., to the Wisconsin field and they began their work in Milwaukee, November 15.

Sanatorium Dedicated.—At the dedication of Muirdale, the new Tuberculosis Sanatorium for Milwaukee County, November 19, Dr. Hoyt E. Dearholt, Milwaukee, presided, and addresses were made by Drs. Theodore B. Sachs, Chicago, and Louis F. Jermain, Milwaukee, president of the Wisconsin State Medical Society.

Personal.—Dr. Arthur J. Patek, Milwaukee, underwent an operation for appendicitis, November 12.——The state board of control announces that it has asked for the resignation of Dr. Norman F. Hoffman, superintendent of the State Tuberculosis Sanatorium, Wales.——Dr. Frank S. Wiley has been elected chief of staff of St. Agnes' Hospital, Fond du Lac. ——Dr. John D. McRae, Chippewa Falls, has been appointed physician for the Paint Creek Dam.

Antitoxin and Vaccines.—The health officer at Milwaukee is endeavoring to get through the city council an ordinance requiring the reporting to the health department of all sales of antitoxins and vaccines, and that the name of the person on whom the antitoxin or vaccine is to be used must be in the hands of the department within twenty-four hours. The object is to secure a more complete record of infectious diseases. A fine is provided in the proposed ordinance for failure to make proper reports.

CANADA

Tuberculosis Diminishes in Ontario.—The reduction in the death rate from tuberculosis in Ontario continues, it having dropped to 85 persons per 100,000 of population. Eleven years ago the rate was 148 persons per 100,000.

Syphilis Spreads.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, estimates from his weekly mental clinic that syphilis is spreading in Ontario. Heretofor general paralysis has been rare among children in Ontario, but it is now increasing. Dr. Clarke states he deals with thirty cases of mental defectives and imbeciles on the average each week at his clinic and that conditions are getting so serious that radical measures will soon have to be taken in that province.

Antityphoid Inoculation.—At the outbreak of the war the Board of Health of Ontario offered to supply free of charge to the Canadian government all the antityphoid vaccine required for Canadian troops, as well as for those sent from Newfoundland. This offer was accepted. All the vaccine has been manufactured in the laboratory of the Ontario Board of Health in Toronto. Excellent results have been achieved in the prevention of typhoid fever in the Canadian troops.

Diphtheria Antitoxin.—Prior to May, 1914, diphtheria antitoxin was not manufactured in Canada. The cost of this product, including other serums annually imported into Canada, was $120,000. In May, 1914, an arrangement was made with the University of Toronto whereby antitoxin is supplied to druggists and boards of health at a very much reduced cost. The cost of the product previously often prevented large doses. For example, in the year 1913 the death rate from diphtheria in Toronto, apart from the cases in the Isolation Hospital, was 16 per cent.; but where the dosage was large and prompt, 6 per cent. Nearly all the provinces of the Dominion now avail themselves of the product of the Ontario Board of Health.

Low Death Rate in War Hospitals.—Last month the Canadian hospital at Le Touquet, France, was removed to Outreau, near Boulogne, and Col. Adam T. Shillington, Ottawa, was given a week's absence in London. Colonel Shillington visited the new Ontario hospital being erected at Orpington, which will probably be opened in January. During the eleven months Colonel Shillington has been in command of the hospital at Le Touquet, more than 8,000 patients have been handled, only about 500 of whom were Canadians. The total deaths which occurred at that hospital in the eleven months have only been forty-four. Colonel Shillington estimates that the death rate in the field has been about 20 per cent. of those hit, and that the wounds of a large proportion of the soldiers are not of a serious nature. He says that the medical branch of the Canadian army has done splendid work. They have never been short of any supplies and no branch is doing its work better than the medical branch. He has been very much impressed with the way the women turned out to work in France.

Personal.—Dr. Kenneth D. Panton, Vancouver, B. C., who went to France with the first Canadian contingent, has been placed in charge of an ambulance section and given the rank of lieutenant-colonel.——Nothing has lately been heard in Ottawa of the Hon. Dr. Henri S. Beland, St. Joseph, Que., ex-postmaster-general in the Laurier government. It is known that he is a prisoner in Germany, but recent inquiries, both through the British War Office and at Washington, have failed to elicit any information.——Col. Adam T. Shillington, Ottawa, formerly commanding No. 2 Stationary Hospital at Le Touquet, France, has been appointed assistant director of medical services at the Canadian camp in England. Major Henry C. S. Elliott, Cobourg, Ont., has been transferred from No. 2 Stationary to No. 2 Canadian General Hospital.——Col. Herbert S. Birkett, Montreal, officer commanding McGill University Base Hospital in France, has cabled to Montreal stating that the hospital is to be moved to another situation, but its destination was not mentioned.——Dr. Edmund P. Lewis, who has been acting as assistant superintendent of the Toronto General Hospital during the absence of Dr. Alfred K. Haywood at the front, has resigned his position to qualify for overseas service.

GENERAL

National Examination Day.—Wednesday, December 8, has been named by the various antituberculosis associations and also by the Life Extension Institute, as National Medical Examination Day, on which it is suggested that everyone undergo a physical examination with special reference to tuberculosis.

Red Cross Seal for Next Year.—As a means of stimulating originality of designs for the Red Cross Christmas seals for 1916, the American Red Cross has decided to conduct a competitive contest and to offer prizes taken from the expense fund set aside for the antituberculosis campaign. Five prizes will be given valued at $100, $50, $25, $15 and $10, respectively. Further particulars and specifications may be obtained by communicating with the American Red Cross, Washington, D. C. All designs submitted must be in the hands of the Red Cross not later than Feb. 1, 1916.

Interstate Society Organized.—The Montana-North Dakota Medical Society whose membership is composed of physicians of northwestern North Dakota and northeastern Montana, was organized at a meeting held in Williston, November 20, and the following officers were elected: president, Dr. Melverton E. Trainor, Stanley, N. D.; vice president, Dr. Edward J. Hagen, Williston, N. D.; secretary, Dr. Frank W. MacManus, Williston, N. D.; and directors, Drs. Loyd B. Dochterman, Williston, N. D., and James H. Drake, Mondak, Mont., and Dr. Frank O. Brigham, Stanley, N. D.

Deaths Abroad.—Henry Charlton Bastian, M.R.C.S., England, 1860; F.R.C.P., London, 1870; aged 78; a well-known English neurologist and biologist; a champion of the theory that life is a form of energy capable of spontaneous growth and author of several works advocating this theory; professor of pathologic anatomy and principles and practice of medicine and professor emeritus in University College, London; censor of the Royal College of Physicians and consulting physician to the National Hospital for the Paralysed and Epileptic, London; died at his home in Fairfield, Chesham Bois, Buckinghamshire, England, November 17.

States Guard School Sanitation.—Forty of the states of the union have taken legal action toward safeguarding the sanitation of public school buildings. In thirty-eight states there are legal requirements regarding the school site; in nineteen states the laws prohibit the location of the school building within a specified distance of houses where liquor is sold, or other disreputable resorts or factories; thirty states have taken up the regulation of the water supply of public schools and in thirty-six states some form of protection against fire and panic has been provided.

Tri-State Physicians Meet.—The thirty-second annual meeting of the Tri-State Medical Association of Mississippi, Arkansas and Tennessee was held in Memphis, November 16 to 18, under the presidency of Dr. William P. Hicks, Earl, Ark., and the following officers were elected: president, Dr. Arthur G. Hudson, Raines, Tenn.; vice presidents, Drs. Samuel D. Robinson, Clarksdale, Miss.; Robert E. Bradsher, Marmaduke, Ark., and John W. Morris, Somerville, Tenn.; secretary, Dr. James L. Andrews, Memphis (reelected), and treasurer, Dr. James A. Vaughan, Memphis (reelected).

Railway Surgeons Meetings.—The twenty-first annual convention of the Big Four Railway Surgeons' Association was held in Indianapolis, November 18, and the following officers were elected: president, Dr. Clayton W. Russell, Springfield, Ohio; vice presidents, Drs. S. H. Nelson, Cleveland; John T. Montgomery, Charleston, Ill.; and Austin S. McKitrick, Kenton, Ohio; and secretary-treasurer, Dr. Leonard A. Ensminger, Indianapolis.——At the fourth annual meeting of the Surgical Association of the Chicago and Alton Railroad Company held in Bloomington, Ill., November 19, Dr. William E. Guthrie, Bloomington, was elected president; Dr. H. Parrish, Vandalia, Ill., vice president; and Dr. Miles B. Titterington, St. Louis, secretary.

Personal.—Surgeon-General Rupert Blue, U. S. P. H. S., after a visit to the meeting of the Southern Medical Association at Dallas, inspected the quarantine station at New Orleans.——Asst. Surg. Gen. Henry R. Carter, U. S. P. H. S., who recently went to Porto Rico to investigate a fever supposed to be yellow fever, has been seriously ill with dengue but is now reported to be out of danger.——Dr. Ferdinand Shoemaker, assistant medical supervisor of the United States Indian Service, Washington, is making an inspection tour to isolated colonies of Indians who are in charge of L. D. Creel, special agent in Utah. The reason for this inspection is the recent appearance of trachoma among the Indians.

Impostor Swindling Physicians.—Physicians throughout the country have been victimized recently by an individual under various aliases. Complaints have come from Dr. Burnett W. Wright and Dr. Arthur McCormack of Bowling Green, Ky., that their names have been falsely used. The individual was confined in the county jail at Bowling Green on the charge of forgery. It is stated that since his release he has been making skilful pleas to physicians, securing money from them under false pretenses, referring among others, to Drs. Wright and McCormack. He is described as a slender person, with light sandy hair, small blue eyes, of good physique, rather pleasing address, and about 5 feet 7 inches in height. Any information concerning him should be forwarded at once to either of the above-mentioned physicians, who will take steps to have his activities stopped.

Bequests and Donations.—The following bequests and donations have recently been announced:

James Walker Memorial Hospital, Wilmington, N. C., an annex to be used as a maternity ward and hospital for infants and children, to cost about $30,000, as a memorial to their deceased daughter, by Mr. and Mrs. James Sprunt, Wilmington.

To found a free medical dispensary in Milwaukee, $300,000, by the will of Mrs. Antoinette A. Keenan.

Evanston Hospital Association, a tract of land valued at $15,000, by James A. Patten, Evanston.

Allegheny General Hospital, Pittsburgh, for the erection, equipment and endowment of a research laboratory at a cost of $400,000, donated by the children of the late William H. Singer, Pittsburgh, in his memory.

Grandview Hospital, Philadelphia, a donation of $25,000, by two Philadelphia manufacturers, and $1,000 from a New York business man, on condition that the hospital shall be so located as to provide the greatest convenience for and be accessory to the largest number of the population of the Sellersville-Perkasie-North Penn section of the city.

War Against Mosquitoes.—War against the mosquito colonies of New York, New Jersey and Connecticut has been declared. At a conference of experts representing the United States Public Health Service and the health departments of these three states, a committee of ten was appointed which will have power to draft the proposed legislation and to carry on an educational campaign against the mosquito under the direction of the Public Health Service. The committee consists of Dr. Haven Emerson, health commissioner of New York; Surgeon Charles P. Wernenbaker, U. S. P. H. S.; Dr. L. O. Howard, chief of the department of entomology of the Department of Agriculture; James T. B. Boles; Dr. Charles F. Bolduan, director of the Bureau of Public Health and Education of the New York Department of Health; John E. Weier, park commissioner of Queens County; Dr. Edward H. Codding, New Rochelle; Dr. Alvin W. Klein, health officer of Greenwich, Conn.; John T. Sprague, Stapleton, N. Y., and James L. Laidlaw.

Psychiatrists Meet.—A meeting of the Interstate Psychiatric Association was held on November 23, at the Sheppard and Enoch Pratt Hospital, Towson, Md. A constitution was adopted which specified that residents of the states of New Jersey, Pennsylvania, Maryland and Virginia and the District of Columbia, who were interested in neurology or psychiatry, were eligible to membership, and that physicians in other states might by vote of the association be elected to associate membership. The object of the association is to bring together men who are working in special institutions, in general hospitals, or are in private practice, and who are devoting special attention to the care and treatment of mental and nervous diseases. The following officers were elected to hold office for three years: president, Dr. Henry A. Cotton, medical director of the New Jersey State Hospital, Trenton; vice president, Dr. Edward N. Brush, superintendent of the Sheppard and Enoch Pratt Hospital, Towson, Md., and secretary, Dr. Samuel T. Orton, clinical director of the Pennsylvania Hospital, West Philadelphia. Meetings will be held twice yearly.

Tetanus Following Vaccination.—Recently there has been an epidemic of smallpox in Hammond, Ind., and in West Hammond, Ill. There have been between thirty-five and forty cases of smallpox in this vicinity during the last two months. A general voluntary vaccination followed the outbreak of the disease, and approximately 2,300 persons have been vaccinated since the recognition of the disease in the community. On November 23 a boy about 9 years old died of tetanus, and on November 26 a boy about 7 years old died from the same disease. The former had been vaccinated about seventeen days preceding the recognition of the first symptoms of tetanus; in the case of the second boy the time elapsed between the date of vaccination and the onset of the first symptoms is rather indefinite but was either fifteen or twenty-two days. The doubt exists owing to the fact that two series of vaccination were made on the children in the school which the boy attended. No other persons of those vaccinated have shown symptoms at the time of this writing, December 1. Both cases occurred in West Hammond, Ill. One patient was transferred to a hospital in Hammond, Ind., where he died. Thirteen hundred persons where vaccinated in West Hammond, Ill., the vaccinations all being made with vaccine points from the same source. The period which elapsed between the dates of vaccination and the development of the symptoms was at least fifteen days.

The Nobel Prize in Medicine.—According to cable despatches R. Bárány of Vienna has been selected as the recipient of the 1914 Nobel prize in medicine, as already mentioned, for his research on physiology and pathology of the cochlea and vestibule of the ear. One of his principal works was on the nervous disorders of the internal ear, published in Lewandowsky's "Manual of Neurology" in 1910, but his chief service to science has been in the line of topical diagnosis of cerebellar affections by means of internal ear disturbances. He is privat-docent of otology at the University of Vienna but has been a prisoner of war at Merw, in the Trans-Caspian district of Russia, since the fall of Przemysl. He is not yet 40; owing to a stiff knee he was not called to the colors but volunteered his services, and is said to have been busily pursuing his special research as long as opportunity offered in the care of the wounded. The latest news from him was to the effect that he had contracted malaria in his captivity.

This is the first Nobel prize in medicine to go to Austria. The other recipients have been Behring, Ross, Finsen, Pawlow, Koch, Cajal and Golgi, Laveran, Ehrlich and Metchnikoff, Carrel and Richet. Germany has thus received the price four times, and France three, and England, Denmark, the United States, Spain and Italy, Switzerland, Sweden, and Russia once each, unless Metchnikoff and Carrel should be credited to Russia and France respectively, instead of to Paris and New York where they reside.

The awarding of the Nobel prize in medicine for 1915 has been adjourned till 1916, and petitions have been received urging that the other prizes for 1914 be reserved in the same way till 1916.

FOREIGN

Distinguished Chemist Dies.—Raphael Meldola, eminent chemist of London, who discovered many new coal tar products and who has been for the last three years professor of organic chemistry in the University of London, died in London, November 16, aged 66.

WAR NOTES

Ambulance Donated.—Mrs. W. A. Velie, Moline, Ill., has donated an ambulance to be placed in the service of the American Red Cross in Europe.

Supplies for Harvard Unit.—The Surgical Dressings Committee has shipped ten cases of dressings consisting of sponges, cotton pads and bandages to France to be used by the Harvard Medical Unit. In addition the workers of the committee have threaded with black silk 1,000 needles, which, sterilized and carefully protected, will be delivered to Dr. Edward B. Towne to be used in brain surgery.

American Hospital Opened in Petrograd.—The American Hospital, Petrograd, was formally opened November 14. Hon. George T. Marye, American Ambassador, delivered the principal address and a portrait of Grand Duke Alexius was presented to the hospital by Russian friends. The institution was opened in 1914 with twenty beds and now has doubled its facilities.

Cesarean Section by Bomb Shell.—During the bombardment of Rheims the lying-in department of the public hospital was transferred to the cellars and the service went on without a break and without fatal infectious complications. Henrot reports that a new-born child, a fine specimen, was brought in alone and when he inquired for the mother learned that on the way to the maternity she had been killed by a shell which had torn open the abdomen and the child had only to be lifted out.

Appeal for Red Cross Contributions.—President Wilson, November 25, issued an appeal to the American public to increase their efforts to alleviate the suffering in the war area of Europe by liberal contributions. The American Red Cross thus far has received about $1,600,000 and has sent in the zone of war and maintained nearly 400 surgeons, nurses and sanitarians; has given financial aid to hospitals and other Red Cross institutes, and has purchased and transported nearly 4,000,000 pounds of hospital supplies and equipment. The resources of the American Red Cross are now reduced to less than $50,000 with which to reach the great demands of the approaching winter. Contributions may be forwarded to any state or local headquarters of the American Red Cross or to the national headquarters, Washington, D. C.

The New Food Regulations in Germany.—The *Deutsche med. Wochenschrift* in commenting on the regulations which went into effect November 1, deplores the delay in official regulation of the food supply. "The authorities," it says, "have procrastinated from the first in this matter, notwithstanding the evil experiences of last year. The new regulations restrict the consumption of meat and lard. On Tuesdays and Fridays no meat, fresh or dried, and no meat dishes can be sold to consumers. On Mondays and Thursdays the restaurants and hotels, etc., are not to serve any kind of meat, game, poultry, fish or other dishes which are cooked with fat or bacon, and lard cannot be sold. On Saturdays no pork is to be sold to consumers. Abstention from meat and from the use of lard and other fats on the specified days has not been decreed for private households as it is expected that the well-to-do will voluntarily conform to the same restrictions. The aim of the decree is essentially to ensure the distribution to all in the most equitable manner of the supply of meat which in itself is ample. Circumstances may render it unnecessary to enforce these decrees after the consumption of meat has once been regulated. The census of domestic animals taken October 1 shows a gratifying increase in the stock of hogs. To prevent this restriction in regard to meat leading to extortionate prices for game and fish, and further to combat the excessive prices already demanded, the senate has empowered the imperial chancellor to establish maximum prices for fish and game at wholesale in the Berlin market, after conferring with experts. These wholesale rates are to prevail throughout the empire unless certain districts modify them to conform to local market conditions. When the settled prices have been thus established, communities with over 10,000 inhabitants are to set a maximum retail price. The senate has also empowered the chancellor to establish maximum prices to the producers for potatoes. These producers' prices range from 61 to 75 marks (2.75 to 3.05 marks—about 70 cents—per hundred pounds). All communities with more than 10,000 inhabitants are required to set a maximum retail price and other communities are empowered to do so. The maximum price charged by the producer in the same district as the potatoes are sold at retail must not surpass 1.3 mark. The wholesale price must be regulated according to local conditions. A decree provides further for the expropriation if need arises of all potato fields more than one hectare (about 2½ acres) in extent."

LONDON LETTER

London, Nov. 12, 1915.

Serious Financial Position of the National Health Insurance Scheme

The difficulties of the working of the insurance act in consequence of its socialistic nature, which encourages extravagance, have been pointed out from time to time in previous letters. The government estimates have been exceeded in several directions with the usual result—an increased drain on the taxpayer. At the present moment the huge cost of the war, estimated at $25,000,000 a day, prevents any increased contribution from the state being entertained. The position is well described by Mr. Kingsley Wood, a member of the National Insurance Advisory Committee and vice chairman of the Faculty of Insurance, in an address given to that body. He said that the insurance scheme for the present year would cost nearly $125,000,000. The state would have to pay nearly $35,000.000, and employers and workers the balance. The cost of central administration by the respective commissions was officially estimated at nearly $2,500,000 and stationery, printing and office accommodation would cost nearly $1,500,000 more. The government actuaries' original estimates of the state subsidy for the current year seemed likely to be exceeded by $8,500,000. In spite of these huge commitments, many urgent financial questions have arisen. There is a large deficiency in connection with women insurers. Before the war, $2,500,000 had been set aside in an endeavor to meet the situation, but this amount had to be used for other purposes. The deficiency had since increased largely on account of the great influx of women workers as a result of the present labor conditions. If a parliamentary grant was impossible—and the present insurance minister had some time ago publicly stated that at the present time it would be futile to apply for extra grants—in certain societies the male members were liable to foot the bill, while in others the whole amount would have to be borne by women insurers alone. It was a wasteful policy to allow this matter to drift, and it was unfair to old and new compulsory insurers alike. It was well worth consideration whether it would not be better now to face either the raising of the contributions or the reduction of benefits. The state of the sanatorium funds also demanded attention. Certain insurance committees had long waiting lists of consumptive insurers—there were 200 in London, for instance—but committees perforce had to reduce the number of beds, while others were limiting the amount of extra nourishment for insured persons. Even the famous cod liver oil treatment was now threatened. Again, $25,000,000 a year was being paid for medical treatment. A case has been cited of a Scottish physician who had received, under the present system, $380 in respect to a solitary patient on his panel list, and who during the year had required no medical treatment. Many thousands of persons had not yet chosen a physician, and the shortage of physicians and drugs accentuates the problem. Advocates alike of a state medical service or of the old friendly society system of medical treatment have a case on the score of economy alone. The financial arrangements with pharmacists are also admittedly unsatisfactory. Some are overpaid, and others underpaid, and recourse is now advocated to the old system of stock mixtures. The whole administration of the act cries aloud for simplification. Persistent demands are being made for an immediate and impartial inquiry.

Failure of an Attempt to Charge a Physician for Extravagant Prescribing

Another example of the chaotic condition of the insurance act is the expenditure on drugs. From the fees of physicians having no direct interest in economy, there are powers to deduct expenditure which can be shown to be extravagant. The trouble often is to show this. Recently the insurance committee of the Borough of Leicester deducted $150 from a physician's account for this cause, but he succeeded in obtaining an injunction against them in the law courts. His case was that he ordered such drugs as were requisite. The pharmaceutical committee reported to the general committee that too many drugs had been ordered by the panel physicians, and that the drug fund was insufficient to pay for the drugs ordered. An arrangement was made by which $1,000 was transferred from the medical fund to the drug fund, and this sum was allocated among the physicians on the panel by calculating the average quantity ordered by each, and requiring each physician who had ordered drugs in excess of the average to make a contribution in proportion to his excess. For the physician in question the sum was $150. The judge granted an injunction against this deduction on the grounds that the pharmaceutical committee did not investigate the question of extravagance but simply made the deduction because there was a deficit in the drug fund.

Portuguese Help for the British Wounded

Portugal is arranging hospital accommodation for wounded from the Dardanelles and from Serbia. Seven spas have been selected as suitable for the reception of our wounded. The government has offered to make structural alterations of any buildings offered by private generosity in order to fit them for hospital purposes. Hotels, sanatoriums and hospitals are being inspected in order to determine their suitability for such conversion. In addition to this, it has been proposed in the Portuguese parliament that all the public sanatoriums and grounds in the island of Madeira be handed over to the British Red Cross for the duration of the war, and that there shall be a suspension of import duties on all necessary stores and supplies. These generous proposals emphasize the traditional amity between Portugal and this country.

PARIS LETTER

Paris, Nov. 4, 1915.

Death of Professor Bouchard

Dr. Bouchard, formerly professor of general pathology and therapeutics at the Faculté de médecine de Paris, has just died after a long illness, at Lyons, aged 78. In 1879, he became professor of general pathology and therapeutics. He was elected a member of the Académie de médecine in 1886 and a member of the Académie des sciences in 1887. He became president of the latter academy as well as of the Societé de biologie.

In Professor Bouchard disappears one of the great figures of French medicine. He was both a laboratory man and a clinician. Bouchard published a large number of works on anatomy, physiology, pathology, clinical medicine, medical chemistry and the history of medicine. He is known especially for his theory of diseases due to retardation of nutrition, his works on autointoxication, etc. In 1882 he published a "Treatise on Diseases of Nutrition," in 1892 a work on "Pathogenic Microbes," and he edited an important "Treatise on General Pathology," in five volumes, containing the work of several of his pupils. He was also editor of the *Journal de physiologie et de pathologie générale*.

Bouchard was not very popular with the medical profession. This was due, in part, to the fact that certain of his ideas, especially on the subject of the reform of the *agrégation* were not in favor and in part to the fact that he was of too authoritative a temperament to be popular.

The War

MALINGERING IN THE ARMY

At a recent session of the Société de chirurgie de Paris, Dr. Hartmann, professor of the surgical clinic in the Faculté de médecine de Paris and surgeon of the hospitals, reported some observations made by Dr. Reynès of Marseilles on several cases of phlegmon caused by injections of gasoline under the skin. The characteristic of these phlegmons, according to Reynès, is the appearance of the line of incision, which shows tissues thickened, hardened and board-like, alternating with somewhat softened, purulent points; also bands of reddish, inflammatory fungosities alternating with yellowish zones of disintegrating tissues. In other cases there is a mixture of acute phlegmon and eschar. Finally the wound exhales an unmistakable odor of gasoline, which may last for several days.

Professor Pozzi with Dr. Agasse-Lafont has observed a case of this kind. These phlegmons have a large number of differential characteristics which may be classed in the order of their importance as follows: (1) suspicious clinical symptoms such as absence of ecchymosis and grumous appearance of pus, which contains fragments of slough tissues; (2) signs showing the caustic and nonmicrobic origin of the suppuration (sterile pus unless there was contamination at the time of puncture or a secondary infection after the incision); (3) chemical signs which determine the diagnosis. One reservation should be made, however. The possibility should be kept in mind that the patient may have used for therapeutic purposes a liniment or external application, for in some cases the external use of turpentine oil may produce real phlegmons.

At a recent session of the Réunion médicale de VI-e armée, Drs. Natalelli and Henri Roger, professor of experimental and comparative pathology at the Faculté de médecine de Paris and physician of the hospitals, read an interesting paper on erythema of the face produced to simulate erysipelas. In an erysipelas service they observed, from February to June, eleven cases of erythema of the face characterized by bloating and a diffuse redness of the skin, generally less intense than in erysipelas and without peripheral swelling and by vesicles of the size of a pinhead, much smaller than the erysipelatous phlyctenae and situated as much toward the periphery and outside as in the center of the swelling. These vesicles dry rapidly, producing fine yellowish crusts of a smaller size and of shorter duration than those of eczema of the face. These erythemas are localized especially on the cheeks, forehead, submaxillary and mastoidian regions and more rarely on the nose. They are rarely accompanied by any rise in temperature or by any disturbances of the general condition. They reach their height almost at once and, if they are carefully watched, recover in a few days without any treatment. They are caused, as a few malingerers have finally confessed, by friction of the face with a rubefacient or vesicant substance, especially with a chapsia or so-called deadly carrot. Besides these sufficiently characteristic clinical data, the suspected antecedents of the subject may aid in the diagnosis, as in a case in which convalescent leave had been refused after an attack of diphtheria. As soon as punishments or threats of punishment were employed the number of cases diminished greatly.

THE FLARING UP OF LATENT INFECTION IN WOUNDS OF WAR DISTURBED BY SURGERY

A paper by Dr. Phocas gave rise to an interesting discussion on this subject during two sessions of the Société de chirurgie de Paris. After a very insignificant traumatism as well as after a major operation, infection may flare up, apparently without external cause, in a wound which appears to have recovered from the original infection. Such cases of auto-infection, which have sometimes been explained as due to latent germs, have become in recent years almost negligible in current surgical practice. They have again become a practical question in connection with wounds of war, after which they are often observed. Wounds which are granulated and no longer produce a rise of temperature again begin to cause fever on being made to bleed. A knee wound which had been drained for a long time no longer caused fever; the evening after the drains were disturbed the fever appeared. An old traumatic osteomyelitis after surgical operation became lit up again with an erysipelatous eruption and pyocyanic pus. A patient who had a limb amputated for gaseous gangrene and a reamputation performed at the end of two months on a chronically suppurating stump had another severe attack of gaseous gangrene to which he succumbed.

These facts have considerable importance. One is compelled to admit reinoculation from germs which doubtless are imprisoned and latent in the tissues, but which suddenly make irruption into the circulation after a surgical operation. These reinfections have this characteristic: They become more serious than the original infection, they suggest increased virulence, a more favorable soil, a mass inoculation and perhaps also other unknown factors of which anaphylaxis may give us a comparative idea.

Dr. Bazy, surgeon of the hospitals of Paris, thinks that what characterizes latent infection is the reproduction of the same complications under the influence of the same or analogous conditions. This is not true of at least one of the cases reported by Phocas. Bazy had previously performed an operation on a patient for a limited gangrene of the leg probably due to a ligature of the femoral artery in its lower portion. After a reamputation performed by Phocas the patient succumbed to a fulminating gaseous gangrene. When, after an operation, one observes infectious complications it is wiser, more reasonable and more practical to look to one's self, one's assistant, one's instrument, dressing, etc., for the cause rather than to the patient.

Dr. Phocas replied that it is equally possible that gaseous gangrene at the outset may have assumed a benign form, especially since gaseous gangrene does not seem to be so distinct a pathologic entity that it cannot take both benign and serious forms.

Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris considers absolutely erroneous Bazy's assumption that a latent infection can be postulated only if the secondary manifestations are like the original ones. Germs of the same species may produce very different manifestations. Phocas has done well to call attention anew to such facts, for it is quite certain that we are exposed at present to special danger from latent infections. Secondary operations on patients after complete cicatrization, especially operations on the bones, give rise to manifestations to which we have not been accustomed.

Professor Quénu observed a soldier in whom the first two phalanxes of a finger had been destroyed three weeks previously. The wound was in excellent condition. The finger was amputated and the operation was followed by cicatrization by first intention, but tetanic complications developed, at first without fever, and finally caused the death of the patient.

Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, performed, under operative conditions which left nothing to be desired, a great number of reamputations of stumps which had once suppurated but which had been cicatrized for several months. He was convinced by repeated evidence that there exist in the depths of these stumps infectious agents capable of being reactivated by a new operation and capable of producing serious results. In one case gas developed under suture.

Dr. Chaput, surgeon of the hospitals of Paris, has also observed several cases of lighting up of previous infections by surgical operations. Accordingly, especially in alcoholics who have had attacks of erysipelas, he is very sparing with secondary operations.

Dr. Delbet declared that he was not surprised at the case of tetanus observed by Quénu. He had at the time in his service two patients who had had tetanus infection in their wounds. He gave them, from time to time, injections of tetanus antitoxin and they have up to the present presented no symptoms of tetanus but it is very possible that after recovery there may be tetanus bacilli in their tissues (it is known how resistant this bacillus is in its sporulated form) and a later operation might possibly cause operative tetanus.

Dr. Schwartz, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, saw a few months ago a patient who had ankylosis of the shoulder after fracture of the articulation by a projectile. The joint had been mobilized and the patient was attacked with tetanus, which seemed to be due to latent infection and which took on a chronic form.

GLOVES FOR USE IN ROENTGEN-RAY WORK

Dr. Mauclaire, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, showed the Société de chirurgie de Paris some gloves which are very pliable and are impermeable to Roentgen rays. The solution, which is easily removed with benzine, is composed as follows:

Solution of caoutchouc	50 gm.
Benzine	50 gm.
Lead carbonate	100 gm.

The gloves, after receiving four coats of this solution on their inner side, are sterilized by being placed for an hour in alcohol. This does not alter the coating.

MASKS FOR PROTECTION AGAINST ASPHYXIATING GASES

There are for sale numerous forms of apparatus for protection against asphyxiating gases which are offered to the public without any official control. In the interests of the soldiers, the minister of war has decided that it shall be strictly forbidden for families to send such apparatus to soldiers and that the packages containing them shall be returned to the senders.

BERLIN LETTER

Berlin, Oct. 26, 1915.

Feeding Prisoners of War

The feeding of the large number of prisoners of war has been the source of much worry for those in charge of military affairs. The drill fields which it had been proposed to use for prison camps were being used by the volunteers. Therefore, many thousands of prisoners had to be sent to any available open field, which was hurriedly converted into a camp. Tents and buildings were especially provided for shelter, and food of every sort was supplied, as well as primitive cooking facilities. Contractors were found who were willing to feed the prisoners for 60 pfennige (15 cents) per day, exclusive of bread. The authorities accepted this bid because their time and attention were taken up with other affairs. Naturally, these contracting caterers were not aware of the particular demands that might be made by the many different nationalities found among these prisoners; hence, it is easily understood that, in spite of the efforts made by the German war authorities, complaints of every sort were made. In the course of a few months these complaints became much louder and much more numerous, mainly, however, because the number of prisoners was increasing. This led to a thorough investigation and a resulting regulation of the whole question.

Professor Backhaus, referee for the "feeding of prisoners," appointed by the ministry of war, investigated the matter and published his results in the *Hamburgischen medizinischen Uebersecheften*. His report shows clearly that the criticisms made were at variance. Some maintained that the prisoners had not been fed enough, whereas others, equally insistent, claimed that they were being fed too much, that food was being taken from the civil population as well as from the German troops and given to the prisoners, and that the public treasury was being depleted thereby. It was also said that many of the contracting caterers were enjoying huge profits. On the other hand, it must be admitted that in many prison camps no fault could be found with the care given the prisoners.

After the number of prisoners had exceeded a million, that is, more than the full strength of the army in time of peace, the Prussian ministry of war, aided by the war ministers of Bavaria, Saxony and Wurtemberg, undertook to regulate the matter. A normal feeding basis was laid down to take the place of the rules previously made, calling for sufficient nourishment or for three meals a day. This normal feeding basis was made effective for all prison camps, for those supplied by contracting caterers as well as those looked after by the government itself. In view of the fact that because of the war Germany was importing 28 per cent. less albumin and 42 per cent. less fat, a saving had to be made in these two food elements. The total diet called for consisted of 2,700 calories; that is, 85 gm. of albumin, 40 gm. of fat and 475 gm. of carbohydrates, the latter a quantity somewhat larger than that given as normal. It will be noted that the total quantity as well as the nutritional value of this menu is somewhat lower than the normal physiologic requirements of an adult man engaged in light labor. It was found, however, that this diet was sufficient for the prisoner after he had recuperated somewhat from the strenuosity of the campaign. Such prisoners as were engaged in physical labor received a 10 per cent. increase on this diet. It was taken for granted that in no case could the work done be considered hard labor. Such prisoners as were doing hard labor were receiving pay for it, and to them could be extended the privilege of enlarging on this diet by purchases made at the post store.

Besides laying down this so-called normal diet or menu, cognizance was taken of the fact that proper and suitable combinations of foods were required. To encourage the scientific construction of a menu, and also for the purpose of controlling the proposed plan through a central authority, those in charge of the prison camps were required to submit regularly to the war ministry, for investigation and approval, menus for the succeeding month. The first time such lists were submitted, many errors were discovered such as poor combinations of foods and improper division of the food elements for the various meals, unnecessary foods and tasteless combinations of foods. Gradually these menus improved. An investigation of 300 menus leads to the conclusion not only that the prisoner of war is being fed properly, but also that food is not being wasted. Furthermore, it is shown by these menus that in spite of the high prices of food, the organization in charge of the feeding of these prisoners has been able to reduce the cost from 60 pfennige (15 cents) to 52.2 pfennige (13.5 cents) per day, exclusive of bread.

In some prison camps the nationality and the individuality of the prisoners must be considered in constructing the menu. Experience has shown that it is impossible to provide a menu that will please both the Russian and the Frenchman. These "national" differences must be taken into consideration, and finally also whether the prisoner is well nourished or not, sick or well, working or idle, how he is housed and how he is clothed. The humanitarian and the economic aspect of this matter also had to be considered. Two things had to be kept in mind: first of all, to conserve such foods of which there was a shortage in Germany or which were needed for the troops or the civil population and therefore had to be diverted first to these channels, and second, to keep the cost within certain limits. It was found that it was cheaper and better for the government to feed these prisoners than to deal with contractors. Therefore, all contracts were abrogated. The principal difficulty was to secure the right people to place in charge of this work. To meet this exigency, two courses, each of a week's duration, were given in Frankfort-on-the-Oder and Darmstadt for kitchen subalterns, and during the week of June 22-25, a course was given in Berlin for commissary stewards. The lectures delivered during these courses and the description of excursions made were published, constituting a comprehensive review of the subject of the feeding of prisoners. As stated above, it was necessary to consider what kinds of foods were available and the prices at which they could be obtained. This, naturally, excluded many foods. Of much greater importance than variety was the nutritional value of these foods. Investigation brought to light many curious conditions. It was thought that there was a scarcity of foods because the prices had been increased. Investigation showed, however, that enormous quantities of several foods were being kept off the market by speculators who were endeavoring to raise the prices. These deposits of food were attached by the authorities and placed on the market at normal prices. This also had its influence on other food substances. The dealers sold food in large quantities at prices which, though lower than before, still gave them a good profit.

The smaller, more isolated prison camps also made complaint at this time because of the difficulty of securing certain raw materials. The war ministry was compelled to establish a central market or depot where the most important staple foods for the use of these prison camps could be housed. Although only a short time has elapsed since these depots were established, it can be stated that the German Empire is saving 100,000 marks ($25,000) daily because it is able to supply the necessary food substances at from 15 to 20 per cent. less than formerly. At the same time the quality of these foods is under absolute control and only suitable foods are distributed.

Marriages

Abram Lee Van Meter, M.D., Roxbury, Boston, to Miss Elva Von MacFarlin of Parsons, Kan., at Brookline, Mass., November 10.

John Christopher Woodland, M.D., Jessups, Md., to Miss Margaret Stewart Owings, at Sparrows' Point, Md., November 17.

Knox Emerson Miller, M.D., Washington, D.C., to Miss Noxie Bliss Miller of Berksville, Ky., October 29.

Marvin Spears White, M.D., Hamilton, Ala., to Miss Annie Mae Long of Tupelo, Miss., November 22.

Charles William Henney, M.D., to Miss Margaret Elizabeth Tirney, both of Portage, Wis., October 28.

Herbert Handy Howard, M.D., to Miss Ruby G. White, both of Somerville, Boston, November 10.

James Weir Robinson, M.D., to Miss Mary Herbert Howe, both of Philadelphia, November 20.

Deaths

Hon. Walter Humphries Montague, M.D. University of Victoria College, Coburg, Ont., 1882; L.R.C.P. Edinburgh, 1882; aged 56; for several years a practitioner at Dunville, Ont.; for fifteen years a member of the Canadian Parliament from Ontario; a member of the Privy Council without portfolio in 1894 and a year later minister of agriculture; who removed to Winnipeg, Manitoba, in 1908 and there became a member of the Executive Council of the Province and later minister of public works; died in his apartments in the Royal Alexandra Hotel, Winnipeg, from cerebral hemorrhage, November 13.

Thomas Ayars Jones, M.D. New York University, New York City, 1880; aged 65; a Fellow of the American Medical Association, and president of the Luzerne County Medical Society in 1885; local surgeon at Ashley, Pa., for the Central Railroad of New Jersey, Wilkes-Barre-Wyoming Valley Traction Company and Lehigh and Wilkes-Barre Coal Company; one of the best-known practitioners of the Wyoming Valley; died at his home in Ashley, November 10, from heart disease.

Oswald Wayne Smith, M.D. Washington University, St. Louis, 1902; aged 39; formerly superintendent of the Washington University Hospital and Dispensary, and the O'Fallon Dispensary, and assistant registrar of his alma mater; later superintendent of the St. Louis City Hospital and then called to the superintendency of Harper Hospital, Detroit; an acknowledged expert on hospital management; died at his home in Detroit, November 12, from cerebral hemorrhage.

Charles Granville Stone, M.D. University of Maryland, Baltimore, 1872; aged 69; a member of the Medical Association of the District of Columbia; formerly a dentist; from 1896 to 1908 chief surgeon of the Washington Railway and Electric Company; surgeon to the Baltimore and Ohio Railway Company Relief Association and a director of the Casualty Hospital; died in his apartment in Washington, November 11, from the effects of a nervous breakdown.

Grace Wolcott, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1884; aged 57; a Fellow of the American Medical Association and a member of the council of the Massachusetts Medical Society; consulting physician to the Trinity Dispensary and one of the founders and senior physician to the Vincent Memorial Hospital, Boston; who established an occupational camp for nervous patients at Heath, Mass.; died in that place, November 9.

Samuel Garland Slaughter, M.D. New York University, New York City, 1883; aged 54; a member of the Medical Society of Virginia; physician and surgeon to the Marshall Lodge Home and Retreat, Lynchburg, Va.; surgeon of the Lynchburg Home Guard and assistant surgeon to the Norfolk and Western Railroad; died at his home in Lynchburg, November 17, from the effects of Roentgen-ray burns received several years before.

Francis L. Galt, M.D. University of Pennsylvania, Philadelphia, 1854; aged 83; assistant surgeon in the United States Navy and later surgeon in the Confederate Navy during the Civil War and on duty on the the cruiser *Alabama;* a member of the party headed by Admiral Tucker which first explored the headwaters of the Amazon River for the Peruvian Government; died at his home, Woodside, near Upperville, Va., November 17.

Rush Wilmot Kimball, M.D. Long Island College Hospital, Brooklyn, 1890; aged 53; a Fellow of the American Medical Association; visiting physician to the W. W. Backus Hospital, Norwich, Conn., and physician to the Rock Nook Children's Home; one of the most prominent physicians of Eastern Connecticut; medical examiner of New London County; died at his home in Norwich, November 15, from angina pectoris.

Tiffin J. Shackleford, M.D. College of Physicians and Surgeons, Baltimore, 1882; aged 60; a Fellow of the American Medical Association; president of the Indiana Thirteenth District Medical Association in 1913 and formerly president of the Kosciusko County Medical Society; formerly health commissioner of Warsaw, Ind., and Kosciusko County; died at his home in Warsaw, November 17, from cerebral hemorrhage.

William Virgil Newsom, M.D. College of Physicians and Surgeons, Baltimore, 1887; aged 67; a member of the Florida Medical Association and for several years president of the Marion County Medical Association; local surgeon at Ocala, Fla., for the Seaboard Air Line Railway; visiting physician and director of the Marion County Hospital; died at his home in Ocala, November 11.

Robert Emmett Austin, M.D. Missouri Medical College, St. Louis, 1897; aged 43; a Fellow of the American Medical Association; surgeon of the Tenth U. S. Cavalry during the Spanish-American War with service in Cuba; for nine years a resident and roentgenologist of San Diego, and once president of the City Board of Health; died at his home November 13, from septicemia.

Richard Harrington Ashby, M.D. Cooper Medical College, San Francisco, 1886; aged 54; formerly a Fellow of the American Medical Association and a surgeon in the British Service; a member of the Medical Society of the State of California; died at his home in Roseville, Calif., November 16, from heart disease.

Robert Harold Mitchell, M.D. University of Pennsylvania, Philadelphia, 1898; aged 41; a Fellow of the American Medical Association and a member of the gynecologic staff of the Lucy Brinkley Hospital, Memphis, Tenn.; surgeon to the Juvenile Court and visiting physician to the Home for Incurables; died at his home in Memphis, November 14, from heart disease.

Katherine McIlheny Kollock, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1887; aged 70; a Fellow of the American Medical Association; at whose suggestion the Philadelphia Board of Education instituted the present system of medical inspection of students in the High School for Girls in 1893; for thirteen years supervisor of inspection in that school; died at her home in Philadelphia, November 17.

Jasper Moss Wells, M.D. Eclectic Medical Institute, Cincinnati, 1877; aged 69; formerly a member of the Kentucky State Medical Association; for many years county clerk of Lewis County, Ky., and for thirty-seven years a practitioner of Vanceburg, Ky.; died at his home in Vanceburg, October 27, from intestinal obstruction.

Major Albert Veeder, M.D. University of Buffalo, N.Y., 1883; aged 67; a member of the Medical Society of the State of New York and said to have been the first to demonstrate the transmission of typhoid fever by the fly; a veteran of the Spanish-American War; died at his home in Lyons, N. Y., November 16.

Valentine Browne, M.D. New York University, New York City, 1875; aged 83; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; consulting physician to St. Joseph's Hospital; died at his home in Yonkers, N. Y., November 19, from angina pectoris.

James Madison Wood, M.D. Columbus (Ohio) Medical College, 1879; aged 62; a member of the Ohio State Medical Association; for many years a druggist and postmaster of Larue and later a practitioner of Hepburn, Ohio; died at his home near Hepburn, November 11, from carcinoma of the stomach.

John William Morris, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1902; aged 39; a member of the Oklahoma State Medical Association and vice president of the Sequoyah County Medical Society; died at his home in Sallisaw, Okla., September 30, from lobar pneumonia.

William Edward Warner, M.D. Western Reserve University, Cleveland, Ohio, 1881; aged 58; a Fellow of the American Medical Association; formerly of Aberdeen, S. D.; a member of the Board of Health and quarantine physician of Spanish Fork, Utah, died at his home in that place, November 20.

W. H. H. Woland (license, Ohio, 1896); aged 74; for forty-four years a practitioner of Sandusky County, Ohio; for twenty years in practice at Lindsey, and for the same length of time at Fremont, Ohio; died at his home in the latter city, November 17, from cerebral hemorrhage.

Anna Groff Smith, M.D. University of Michigan, Ann Arbor, 1892; aged 54; a Fellow of the American Medical Association; for twenty-three years a practitioner of the East Side, Toledo, Ohio; died in Flower Hospital, Toledo, November 15, two days after a surgical operation.

Marion Elizabeth Blackman, M.D. University of Michigan, Ann Arbor, 1909; aged 37; a member of the Medical Society of the State of New York, and a member of the staff of the Rochester, N. Y., State Hospital; died in Buffalo, September 3, from interstitial nephritis.

Thomas A. Wasson, M.D. Homeopathic Hospital College, Cleveland, 1886; aged 61; a member of the Medical Society of the State of New York, and health officer for the township and village of Elizabethtown, N. Y.; died at his home in Elizabethtown, November 12, from endocarditis.

William Henry Shields, M.D. New York Homeopathic Medical College, New York City, 1910; aged 41; a practitioner of Astoria, L. I., up to three weeks before his death, when he moved to Ogdensburg, N. Y.; died at his home in that city, October 24, from heart disease.

Samuel Newell Hamilton, M.D. Indiana Medical College, Indianapolis, 1875; aged 70; a Fellow of the American Medical Association; a veteran of the Civil War; once coroner of Fayette County, Ind.; died at his home in Connersville, Ind., November 18, from heart disease.

Uriah Campbell Jones, M.D. Drake University, Des Moines, Iowa, 1885; a member of the Iowa State Medical Society; aged 72; a veteran of the Civil War; a well-known practitioner and druggist of Breda, Iowa; died at his home in Breda, November 5, from carcinoma.

Terrell L. Fuller, M.D. Eclectic Medical Institute, Cincinnati, 1911; aged 27; formerly of Mayfield, Ky., but later on duty in a government hospital at Oroyo, Peru, South America; died in that place, November 3.

Willis W. Brown, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; a member of the Oklahoma State Medical Association; died at his home in Cameron, Okla., about November 5, from pneumonia.

John A. Reese, M.D. Medico-Chirurgical College of Philadelphia, 1883; aged 65; of Philadelphia; was struck by an automobile while crossing a street, November 11, and died at his home from his injuries.

Emmett Daniel Boaz, M.D. University of Virginia, Charlottesville, 1877; New York University, New York City, 1878; aged 60; of Covesville, Va.; died suddenly, November 8, while driving near Covesville.

John Morgan, M D. College of Physicians and Surgeons, Keokuk, Iowa, 1867; aged more than 70; for more than half a century a resident of Neosho Falls, Kan.; died in Spokane, Wash., about November 6.

Maximilian Broening, M.D. New York University, New York City, 1868; aged 75; formerly secretary of the Clinton County (Ill.) Medical Society; died at his home in Carlyle, Ill., November 3.

John R. Papin, M.D. Missouri College, St. Louis, 1878; aged 58; for many years a practitioner of St. Louis; died in St. John's Hospital, St. Louis, November 11, from rheumatism.

George W. Delo, aged 91; for many years a practitioner of Missouri, but who retired more than forty years ago; died at his home in Springfield, Mo., October 25, from senile debility.

John H. Hammond, M.D. Hahnemann Medical College, Chicago, 1887; aged 55; died at his home in Anderson, Ind., November 12, from cerebral hemorrhage.

James Marshall Lewis, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 51; of Birmingham, Ala.; died in an infirmary in that city, November 6.

Harvey J. Ault (license, Arkansas, 1903); aged 58; died at his home in Pinnacle, Ark., about November 1.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

PROPRIETARY DIGITALIS PREPARATIONS

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following expression of its views. W. A. Puckner, Secretary.

It is becoming increasingly apparent that the tincture of digitalis produces the full therapeutic effects of digitalis, and that when it is properly made it is as stable as any liquid preparation of digitalis now available; and that the tincture has the systemic side actions of digitalis, including the emetic, in no greater degree than the various proprietary preparations of this drug to be found on the market.

While in itself the market price of a valuable therapeutic agent is of comparatively little moment, the fact remains that the high price at which many of the proprietary preparations of digitalis are sold — often 100 times that of an equivalent amount of the drug — serves as a constant stimulus to the exploitation of these with extravagant claims, and it is commonly sought to enhance their reputation by exaggerating the disadvantages of the official drug and its preparations.

The Council especially emphasizes the fact that this statement is not intended to lessen the efforts that are being made to find new and better preparations of digitalis; its protest is against the deliberate misrepresentations of those manufacturers who seek to magnify the difficulties in the use of digitalis, by therapeutic exaggeration on the one hand, and by an exaggeration of the side actions of digitalis and the instability of its preparations on the other.

Strophanthin and crystalline ouabain are now available in sterile solution in ampules, and afford a convenient means of promptly securing the cardiac action by intramuscular or intravenous injection.

DR. PIERCE'S PLEASANT PELLETS

"Dr. Pierce's Pleasant Pellets" are made by the World's Dispensary Medical Association, Buffalo, the same concern that exploits "Pierce's Golden Medical Discovery," "Pierce's Favorite Prescription," "Pierce's Compound Extract of Smartweed," etc. The Pierce nostrums are advertised under the shibboleth, common to the "patent medicine" maker, that their products contain only vegetable ingredients. Pierce's Pleasant Pellets are recommended to the public on the claim that:

> "Being entirely vegetable in composition, these pellets operate without disturbance to the system, diet or occupation."

Elsewhere in the same advertising leaflet the public is warned against "harsh drastic pills, composed, as most of them are, of jalap, aloes, scammony, croton oil, gamboge and elaterium"—all of them, it should be noted, products of the vegetable kingdom. Some day, possibly, the public will learn that some of the most deadly poisons known to science are "purely vegetable"; when that time comes the "patent medicine" makers will probably discard the "vegetable" talking point!

No longer is the direct claim made—at least in the trade package, which is subject to federal regulation—that "Dr. Pierce's Pleasant Pellets Cure Constipation." In common with a great deal of the "patent medicine" advertising of today, the direct falsehood of the former Pierce claims has given place to the inferential falsehood. The advertising of one Pierce nostrum is used for the purpose of exploiting another. Thus the leaflet that accompanies the trade package of Pierce's Pleasant Pellets recommends the "pellets" for "suppressed menstruation"—from "taking cold"—coupled with the use of a hot sitz bath—and a "full dose of Dr.

Pierce's Compound Extract of Smartweed." The Smartweed nostrum, by the way, according to labels in our files, contains, in addition to 40 per cent. alcohol, eight tenths of a grain of opium to the fluid ounce. The "Pleasant Pellets" are also recommended in "very obstinate cases of Tetter, Salt-Rheum, Erysipelas, Eczema, Boils, Carbuncles, Scrofula, and Eruptions caused by Infectious Blood Poisons"—in connection with "Golden Medical Discovery."

"Pierce's Pleasant Purgative Pellets" were examined in the Association's laboratory, and while no exhaustive work was done, the chemists reported:

> "After removal of the coating, the inner pill responded to tests for emodin and aloin. Alkaloids, mercury or phenolphthalein were not found. Whether or not other emodin-bearing drugs besides aloin were present was not determined. Essentially, Pierce's Pleasant Purgative Pellets appear to be an ordinary laxative pill."

That the active principle of aloes was found in the pills is of interest in view of the fact, already referred to, that the leaflet advertising Pierce's Pleasant Pellets warns the public against the use of purgatives composed of aloes.

Correspondence

The Case of the Bollinger Baby

To the Editor:—As Commissioner of Health of the City of Chicago I gave testimony before the coroner's jury on the subject of the right of the Bollinger baby to live.

I fear that some of the published expressions have been hastily uttered and not as the result of mature judgment. All of those who have expressed themselves have been laboring under the impression that this baby was so mentally and physically defective that were it given an opportunity to live it would become a charge on its parents and later, perhaps, on the community, and those who spoke favoring the judgment of Dr. Haiselden believed that on account of the alleged mental and physical defects it had forfeited its right to live.

When I visited the German-American Hospital eight hours before this baby died and made an examination of it and viewed the Roentgen-ray pictures, I was startled to observe that this was not the defective baby that I had expected to see. At that time the baby was dying as the result of intestinal obstruction.

The defects were an imperforate anus, a deficiency in the skin around the shoulder and neck and the absence of the right external ear. The right kidney was fused with the left and connected with the bladder by one ureter. (The bladder was full of urine which was easily expressed through the urethra.) There was also absence of the coccyx. There was nothing to indicate that this child would have been mentally defective except that which would come from the absence of the sense of hearing on the right side.

The defect that caused the death of the child was an imperforate anus, the rectum extending down to within one-half inch of the outside. The making of an artificial opening was the "simple operation" which was spoken of so frequently in the press which might have saved the baby's life. In this connection I desire to state that this operation is not quite so simple as people have been led to believe and the results are not always satisfactory.

These being the facts in this particular case, a question of tremendous importance is at once raised as to whether the right of any child to live should rest wholly on the judgment of any physician. I do not want to be understood as questioning the right of any physician to act as his conscience or judgment in any particular case would dictate, and to operate or not operate in accordance therewith.

But at the same time, the life of every child should be so safeguarded by the community that it would not have to depend on the judgment of any one physician.

If we are going to depart from the recognized duty of the physician to save life regardless of what that life shall be afterward, then the state must provide some tribunal similar to that of ancient Sparta, which questioned the right of every child to live until it had been passed on by such a tribunal. Were this case to be made a precedent for future action by the physicians of our land it might lead to the loss of many valuable lives.

Ages long will tell the story old
Of triumphs wrought unending
By humans and things once held as naught.

Then, again, we must remember that it would open up the way to criminal neglect. I do not believe that anybody will argue that a human life is comparable with that of the lower animals, and, while I favor eugenics so far as it tends toward the betterment of the race, no human life should ever be considered on the same basis as that of the lower animals.

The command "Thou shalt not kill," either by the sins of omission or commission, is embodied in our statutes as well as in our religion, and should never be abandoned as a fundamental principle on which to stand. And while it is true that mental and physical defectives have been a burden on society and will continue to be such, who can say that the love and care bestowed on these defectives have not enriched the minds and hearts of those who have worked with and for these unfortunates, so that in the end the world is repaid for all the trouble they have caused us?

The civic conscience of a community is an indication of the height to which its civilization has attained, and this is nowhere more manifest than in the way in which it cares for its mental and physical defectives.

The safeguards of human life must not be torn down; they have been none too strong in the past, and the case under discussion should not be used to make them any weaker.

John Dill Robertson, M.D., Chicago.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POISONING FROM PRESERVED CORN

To the Editor:—On a recent morning a woman, who was enjoying at least fair health, opened some preserved corn. The package was one of three jars of the ordinary Mason type. The first and second jars were evidently bad and were discarded at once. The woman tasted of the third jar, which appeared to be a good one. It was after tasting the second or third mouthful that she decided it was no good. She did not put it on the table, and forbade any one else in the family to taste it. The contents of the three jars were thrown to the chickens, of which forty out of forty-two died after eating the corn. On the afternoon of the same day the woman complained of slight headache. The next day she took a laxative pill, and another pill was taken at night. She had some diarrhea, and the next morning felt a tightening at her throat. This continued and acted like a paralysis up to the time of her death. The bowel distress was not marked at any time. She seemed to have complete gastro-intestinal paralysis at the time of death.

What was the cause of death? Is there any literature bearing on this point? In what way did the corn, or what elements in the corn—good or bad—could have caused her death?

Leon W. Hyde, M.D., Hillsboro, Ore.

Answer.—Assuming that the corn in question was free from poison introduced from without, such as metallic and other poisons, there is only one reasonable explanation of the occurrence related in this instance, namely, that it concerns an instance of food poisoning from canned corn, the poisons having been produced by micro-organisms in the corn. It is possible also that the organisms in the corn may have been infectious for human beings and animals. In the chapter on food poisoning (Modern Medicine, Ed. 1, 1907, i, 223) Novy points out that the same micro-organisms that cause meat to be poisonous may produce exactly the same effects when they are introduced into vegetable food. He describes the poisoning of twenty-one persons who ate of bean salad; eleven of these persons died. The beans when opened had a peculiar odor, but showed no marked decomposition. The symptoms came on from twenty-four to thirty-six hours after eating. Novy also cites the instance of poisoning from oatmeal described by Ohlmacher. There have recently been reported several epidemics of botulism from eating home-canned beans, home-canned pears and home-canned apricots. This subject has recently been discussed by Dickson (Botulism an Experimental Study, The Journal, Aug. 7, 1915, p. 492). The symptoms described by Dr. Hyde in this case suggest botulism. They are not of such a character, however, as to allow a specific deduction as to the particular form of poisoning that took place. The fact that so many chickens died and that the one human being who ate of the corn also died points directly to the corn as the source of the fatal agent, but, of course, the exact nature of the agent could not be determined without bacteriologic and other examinations.

NOSE-IONS

To the Editor:—The enclosed circular regarding "Nose-Ions" is one of many. Have you any data regarding it? Claims are extraordinary.

P. M. Foshay, M.D., Montclair, N. J.

To the Editor:—I should be glad of some information about the claims made by the Nose-Ions Company, New York.

David W. Wells, M.D., Boston.

Answer.—These notes of inquiry were referred to the Association laboratory for a reply. In answer the laboratory reported:

"Nose-Ions circular matter referred to is a crude attempt to impose on a scientifically trained profession with pseudoscientific patter about ions, ionic dissociation and the positive and negative charges of ions. The only intimation regarding the composition of Nose-Ions is found in a small circular wrapped around a sample package. Here it is stated that 'Nose-Ions is composed of chemically pure Na-ions of sodium chloride, Camphor and Menthol, combined with the base, Vaseline.'

"Were the matter deserving of scientific consideration it would be interesting to inquire just how the positive sodium ion was separated from the negative chlorin ion of sodium chlorid, and how the sodium ion was kept in the ionized condition while isolated. But since every positive ion exists, as such, only along with a companion negative ion, such inquiry is superfluous.

"A qualitative examination was made. From this examination it appears that Nose-Ions is essentially an ointment consisting of a petrolatum base containing some odorous principles such as camphor, menthol and eucalyptus with some salicylic acid, and some quinin, probably in the form of sulphate. 'Sodium ions,' if present at all, are present in traces only."

CHRISTIAN SCIENTISTS AND DEATH CERTIFICATES

To the Editor:—Please publish the names of the states in which Christian Science practitioners are authorized by law to sign death certificates.

J. W. R.

Answer.—There is no state in which Christian Scientists are specifically authorized to sign death certificates. In a few states the law may, by implication, authorize this indirectly. For example, in Maryland, Christian Scientists are regarded as practicing medicine when treating for pay, and hence would be considered as physicians and as authorized to sign death certificates as such. See *Bandel* v. *Health Department,* 193 N. Y. 133; 85 N. E. 1067. The amendment to the Ohio medical practice act for 1915 included Christian Scientists, but they are regarded as limited practitioners and not physicians. They could not be permitted to sign death certificates under this construction. Most states specifically exempt Christian Scientists from the application of the medical practice act. In these states, Christian Scientists could not sign death certificates.

DIPHTHERIA AND THE BURNING OF LEAVES

To the Editor:—The idea is prevalent in this and some surrounding towns that the burning of leaves in the fall is responsible for outbreaks of diphtheria. A few physicians are making the same claim. The assertion seems absurd to me. Is there any foundation for it?

W. H. Henry, M.D., Hamden, Ohio.

Answer.—There appears to be an old superstition to the effect that the burning of leaves in the fall causes diphtheria. This superstition is probably based on the rise in the diphtheria morbidity which occurs during the fall season. The only basis for this belief would be an increased irritation in the throat which might appear coincident with the inhalation of the pungent smoke. Of course, to ascribe a direct etiology to burning leaves in diphtheria is absurd.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

California: Los Angeles, December 14, and Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 52/ Forum Bldg., Sacramento.

Colorado: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

District of Columbia: Washington, Jan. 10, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Indiana: Indianapolis, Jan. 10, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Minnesota: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

New Hampshire: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

North Dakota: Grand Forks, Jan. 4-7, 1916, Sec., Dr. G. M. Williamson, Grand Forks.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Oklahoma: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

Oregon: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

Rhode Island: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

South Dakota: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Washington: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Idaho October Report

Dr. Charles A. Dettman, secretary of the Idaho State Board of Medical Examiners, reports the practical and written examination held at Wallace, Oct. 5-7, 1915. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas Medical College, Topeka		(1913)	83
Tufts College Medical School		(1907)	80
Columbia University, College of Phys. and Surgs.		(1905)	88
Cleveland College of Physicians and Surgeons		(1898)	82
Medical College of Ohio		(1893)	75
University of Pennsylvania		(1914)	91
University of Virginia		(1897)	84

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Gross Medical College		(1902)	Utah
Jefferson Medical College		(1914)	Utah

Vermont July Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 1-3, 1915. The total number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 27, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1915)	86.1
Temple University		(1915)	87.2
University of Vermont		(1894) (1904) (1915)	85.2; 91.7; 76.2, 77.7, 77.7, 82.3, 82.9, 83.7, 84.4, 84.4, 84.6, 84.8, 84.8, 85, 85.8, 86.1, 86.4, 86.6, 86.9, 87, 87.1, 87.2, 87.9, 88.8, 90.5.

Book Notices

The Gold-Headed Cane. By William Macmichael, M.D. With an Introduction by Sir William Osler, B.A., M.D., F.R.C.S., and a Preface by Francis R. Packard, M.D. Cloth. Price, $3 net. Pp. 261, with 21 illustrations. New York: Paul B. Hoeber, 1915.

The coming of the holiday season is marked by the publication of a number of books especially prepared to serve as gifts or remembrances for physicians. The history of medicine and the biographies of great physicians are becoming of increasing interest to the medical profession. Among such is that delightful biographical phantasy "The Gold-Headed Cane." It is an autobiography supposedly written by a gold headed cane carried successively by Radcliffe, Mead, Askew, Pitcairn and Baillie, and presented by Dr. Baillie's widow to Sir Henry Halford, who in turn presented it to the College of Physicians of London. An introduction to the present issue of the book written by Sir William Osler calls attention to the fact that this year marks the two hundredth anniversary of the death of Radcliffe, and gives a short appreciation of the biographies contained in the book. The note by Dr. Packard is a short history of the book and its author. This edition has been prepared in a decorative binding and follows the style and illustrations of the second edition.

Ophthalmoscopic Diagnosis for General Practitioners and Students. By George W. Jean, A.B., M.D., Instructor in Ophthalmology, in the School of Ophthalmology of the New York Eye and Ear Infirmary. Cloth. Price, $1. Pp. 123, with 68 illustrations. New York: E. B. Meyerowitz, 1915.

The methods of ophthalmoscopic examination and the various pathologic appearances of the fundus are briefly described and profusely illustrated in this book. So far as black and white wood cuts can be of value, those used are as good as any found in the average textbook; but any attempts to illustrate the fundus of the eye, unless reproduced in the natural colors, are apt to be misleading. The beginner, for whom this book is particularly interesting, is liable to receive wrong impressions if he depends too much on the illustrations. For example, the illustration of retinal hemorrhages might be mistaken for deposits of black pigment, or even for retinitis pigmentosa; the illustration of glioma gives absolutely no clue to the striking appearance seen in this condition, and the difference between the clear-cut white spots of an old choroiditis and the yellowish-white appearance of recent exudates is not clearly defined. The pathology and treatment of certain conditions are merely mentioned.

Obstetrics. Edited by Joseph B. DeLee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School, with the Collaboration of Herbert M. Stowe, M.D. Practical Medicine Series. Cloth. Price, $1.25. Pp. 230, with illustrations. Chicago: Year Book Publishers, 1915.

The volume on obstetrics is one of the best representatives of this useful series, which gives a résumé of a year's progress in medicine. The editors of this volume evidently spent considerable time in the selection of abstracts and in their consideration. Practically every page contains a few notes from the editors, calling attention to fallacies or important points in the various articles which are considered. The following is an example of the practical nature of these comments. It refers to Abderhalden's test in the diagnosis of pregnancy:

> From this maze of opinions what are we to decide? I believe that, like other blood serum tests, Abderhalden's has only relative value—though this particular one is very high. It requires very careful laboratory technique and many precautions or the result is open to question. In deciding in a given case it would be a little risky to attach absolute certainty to it, yet it is very valuable in the differential diagnosis.

Of particular interest are the sections devoted to puerperal sepsis and "twilight sleep."

Exercise in Nervous Disorders.—As a prophylactic against nervous disorders, the value of exercise can hardly be overestimated. Brain workers are better for moderate exercise, but do not need much; and after 25, severe intellectual work can rarely be done by persons in athletic training.—Dana.

Medicolegal

Requirements in Attending Childbirths—Regular Physicians as Witnesses Against Others—Nonexpert Evidence as to Treatment

(Yard vs. Gibbons (Kan.), 149 Pac. R. 422)

The Supreme Court of Kansas affirms a judgment for $2,418 damages in this action for malpractice in the treatment of the plaintiff in a case of childbirth. The court holds that the petition, in which the plaintiff alleged, in substance, that the defendant was employed as a physician to care for her in her confinement, and that he negligently produced a premature delivery, causing a laceration, and also failed to advise her of her condition and to carefully and skilfully treat her after the birth of her child, by all of which she was severely injured, stated a single cause of action. It was not necessary to treat the negligence of the defendant before and after the birth of the child as separate causes of action, any more than to have treated his neglect at each call or visit as separate causes of action. There was a single employment, and any failure to treat the plaintiff with due skill and care during that period, whether before or after the birth of the child, afforded but one cause of action. A physician employed in an obstetric case is required to care for and aid the patient, not only during her confinement and the delivery of the child, but it is his duty to make a careful examination of the patient and give reasonable and proper attention to any lacerations or injuries resulting from the delivery, and if he fails in this respect or to inform the patient or those caring for her as to her condition, or to give them instructions so that they may act intelligently in the further care and treatment of the patient, he is guilty of negligence and liable for the resulting injuries.

Nor does the court think that because the defendant was an osteopath there was any error in physicians of the regular school having been permitted to testify as to the progress and condition of labor in an obstetric case, the methods of delivery, and the proper treatment of the mother after the birth of the child. It is true that, where a physician or surgeon is charged with malpractice, his treatment and advice are to be tested by the standards of the school to which he belongs. But where there is practical uniformity in the rules of practice and treatment, regular practitioners of any school are competent witnesses as to the proper diagnosis and treatment of a given case; or where a person, who holds himself out as a medical expert or healer, has no fixed rules of practice, he is still bound to treat patients with ordinary and reasonable skill and care, and competent physicians, regularly engaged in practice, are competent witnesses as to whether the treatment administered in the case was properly or negligently performed.

Ordinarily only physicians and surgeons of skill and experience are competent to testify as to whether a patient has been treated or an operation performed with a reasonable degree of skill and care, but testimony as to many matters connected with the treatment of a patient, such as the statements of the physician or surgeon, as well as the external appearances and manifest conditions, which are observable by any one, may be given by nonexpert witnesses. However, the mere fact that the witness, who was the plaintiff's mother, spoke to the defendant about attending her daughter, or performed some other friendly act in that regard, would not make her subsequent statements competent against the plaintiff, for whom the service was performed.

An instruction is approved which told the jury, among other things, that the defendant could not be heard to charge the plaintiff with contributory negligence in not having proper attention given to her injuries, if the jury believed from the evidence that, by the exercise of reasonable diligence he could and should have informed himself of the nature and extent of her injuries, and that he negligently left her in ignorance of their extent or seriousness, or he led her to believe a surgical operation unnecessary.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

The President, C. H. Lavinder, in the Chair

The Prevalence of Pellagra: Its Possible Relation to the Rise in the Cost of Food

Mr. Edgar Sydenstricker, Washington, D. C.: Published in *Public Health Reports,* Oct. 22, 1915, p. 3132, and commented on in "Studies of Pellagra," editorial, The Journal, Nov. 20, 1915, p. 1818.

DISCUSSION

Dr. J. F. Siler, Washington, D. C.: The speaker has emphasized the fact that the income of cotton mill families in the South is 20 per cent. lower than that of families in New England mills: $820 per annum in the South, against $1,000 in New England. If analyzed, this difference is, to a great degree, apparent rather than real. When the winters of South Carolina are contrasted with those of New England, we can realize that an appreciable proportion of the 20 per cent. difference in annual income must be expended for coal and extra clothing. Living conditions are in other respects quite different. The monthly rental for tenements amounts only to from $1.50 to $3 in the South. In a few mills investigated by us in the South there were no rental charges for tenements. Rents in the New England mill districts are much higher. In the South frequently street car fares do not enter into the problem. The open season is much longer than in New England, and a large proportion of families have gardens from which vegetables are grown which are available from May to late fall. These factors should be considered before we attempt to draw any sweeping conclusions relative to differences in the wage scale. It is my belief that the cotton mill operative in the South is, after all, in about as good condition economically as the New England operative. Bureau of Labor statistics showed that for the five-year period 1907-1912, the wage rate for mill workers had increased only 5 per cent. In the Spartanburg district our investigations show that the average increase between 1900 and 1914 must have been about 50 per cent. In March, 1904, in one mill the average daily wage of spinners in one room was 37 cents. February, 1911, the average daily wage in this room had increased to 86 cents per day. In September, 1914, the average daily wage in the spinning room had again increased from 86 to 99 cents. These figures show that the average daily wage in 1914 was almost three times that in 1904. The productive capacity had doubled in the ten-year period, and the rate of pay had increased, while the working hours had decreased from eleven to ten per day. The wage for day labor was about 75 cents in 1900, while in 1914 it had advanced to from $1.10 to $1.20. Most operatives, however, are "piece" workers, and averaged in 1914 between $1.25 and $1.50, and some of the more efficient $2 and even $2.50 per day. In 1900, children were paid from 25 to 40 cents per day. In 1914, children from 12 to 14 years of age earned from 60 to 75 cents a day, and those from 14 to 16 usually earned from 90 cents to $1 a day. The trend in wages from 1900 to 1914 has been steadily upward. Whether or not the increase in wages has kept pace with the increase in food prices is open to argument. I feel that they get about as much for their money now as fifteen years ago. It was unusual with us to find a village in which less than 30 per cent. of the families owned their own milch cows; usually the proportion ranged from 40 to 60 per cent.

There is no doubt that the people in these villages have an excess of carbohydrates in their diet, and the amount of fresh meat consumed should be increased. Most of them are fond of hog products, which enter quite extensively into their dietary during the hog killing season, December to March. Within the past six or eight years most of the company stores have added a meat market to their equipment. In some villages fresh meat is on sale daily, and in most of them daily from September to April. The income of a cotton mill family in the Spartanburg district ranges from $40 to $175 per month, the average being between $60 and $75. We were unable to convince ourselves that pellagra had any particular predilection for families with the minimum incomes, and we encountered it with about equal frequency in families with a monthly income of $50 and those of from $90 to $150.

Dr. George C. Mizell, Atlanta, Ga.: There was a time in the South when economic conditions were very much worse than now. In 1891 and 1892, a great many suffered from want of food, but the diet of Southern people is a great deal better today than ever before. Others besides the inhabitants of mill villages have pellagra. I practice and do much investigating in mill villages, and except for the fact that there are more people in very ordinary than in well-to-do circumstances, I cannot see any difference in the incidence of pellagra, so far as the money-earning power of the family is concerned. In the suburbs of Atlanta we have many mills of which the wages are very low. It is a fact that in recent years pellagra has greatly diminished in those villages, as Griffin, Ga., where there is a high-class mill, the people are paid well and are looked after from every standpoint, both morally and physically, and pellagra has not diminished there so far as I can determine by inquiry throughout the village, without taking complete figures. Cold storage and canned meats have undergone deterioration before they reach the consumer. They bring about a condition which I think plays a part in the production of pellagra. Mr. Sydenstricker states that there is a greater consumption of lard in the South than in the North, according to population. I do not believe these are facts. I should like to ask him when he says "lard" if he does not mean lard and lard substitutes.

Mr. Edgar Sydenstricker, Washington, D. C.: The statistics which I used are based on several actual investigations, not of the rural population, but of workingmen's families in the South and in other sections of the country. These investigations were made in 1901 and 1909, and also in 1907 and 1908. They cover generally the Southern states, and they cannot account for any specific variation in any particular locality. By "lard" is meant the amount of lard used in the workingman's family during the year, whether used in cooking or for any other purpose. The same is true of meats and everything else included in the list of articles of food, so far as accurate statistics could be obtained. The kinds of lard included in the data are simply classed as "lard" by the authorities who made the investigations. Nearly all of the investigations, however, were made before lard substitutes of the kind mentioned came into common use.

The wages statistics were not taken from any one factory, but from a large number of localities and mills all over the United States. They show that there has been an increase of not over 25 per cent. in the wage rates in the period from 1900 to 1913, while in many industries and instances there has been an increase of less than 5 per cent. since 1907 and 1908 in the South.

The statistics of retail food prices regularly secured by the same authority show that there has been a 60 per cent. increase in the average of prices since 1900. Between 1890 and 1900 there was an actual decrease in retail food prices for several years, and the level was practically the same in 1900 as it was in 1890. There was a fairly rapid increase in food prices from 1900 to 1907, but a very much more rapid increase after 1907 up to about the present time. The statistics were secured regularly from a large number of retail stores in over forty different localities, and are for foods ordinarily sold to workingmen and their families.

No data have been gathered in the South or from any other section, so far as I know, showing the substitution of vegetable protein foods for animal proteins.

I do not think we ought to try to draw too definite a conclusion for any specific locality from general statistics, or too general a conclusion from specific instances or localities. What we need at this stage of our study of this phase of the question are definite data relating to the actual food supply of a given community and the character of the diet toward which the actual diet of the wage-earning family is tending, whatever may be the causes or the governing conditions.

(To be continued)

SOUTHERN MEDICAL ASSOCIATION

Ninth Annual Meeting, held at Dallas, Texas, Nov. 8-11, 1915

The President, Dr. Oscar Dowling, Shreveport, in the Chair

SYMPOSIUM ON PELLAGRA

Report of Committee on Prevention and Treatment of Pellagra

Dr. H. Leslie Moore, Dallas, Texas: We have come to the conclusion that the ideas advanced by Dr. Joseph Goldberger of the U. S. Public Health Service are the most plausible, and that his is probably the only theory that has come anywhere near being proved. Nearly all cases of pellagra occur in persons who are not able to get the best nourishing food. Very few cases occur in the well-to-do. Dr. Goldberger observed that in certain orphanages in Mississippi in which there were probably 200 cases of pellagra, after an additional diet was prescribed, only one case recurred the following spring. He concludes that pellagra can be prevented by appropriate diet without any change in environment, whether it be hygienic or sanitary. In other words, there was no change made in the environment in any of these cases except the addition of the diet. No attention was paid to the sanitary condition.

Report of Committee from the State at Large

Dr. W. L. Allison, Fort Worth, Texas: Pellagra has spread rapidly through the South since 1907, until now each of the Southern States can number its cases by tens of thousands. While it is true that in Europe the disease was largely among the poorer classes, this does not hold true in this country, and especially is it not true in Texas. We have no such poor in Texas as are found in Italy, and the disease is frequently found here among the well-to-do. We have every reason to believe that the disease is not directly contagious. It is a significant fact that with few exceptions, nurses and doctors handling these cases in the various institutions in which pellagra is treated have not contracted the disease. As in many other diseases, a low diet and a lowered resistance seem to be predisposing factors. That the disease is purely a dietary one is advocated by many, but this theory will not account for all the cases, nor will it explain its sudden incidence and rapid increase in this country. Many persons have developed the disease with whose diet no fault could be found. Corn as a dietary factor seems to be losing favor. The occasional failure of mild cases to respond promptly to a well-balanced diet would seem to discredit any dietary theory. The theory of Alessandrini and Scala that "pellagra is nothing more than a mineral acidosis," due to an excess of silica or alumina in the water, has met little favor and does not seem to be supported by facts. That the disease may be an infection seems to be gaining favor and has much to support it. The Thompson-McFadden Pellagra Commission points to the significant fact that no new cases developed in those mill villages having a water carriage sewerage system. This commission also reports that close connection with a previous case existed in 80 per cent. of their cases. There is nothing to show that the disease is hereditary. Morphin habitués seem fairly susceptible. The incubation period of the disease seems to be from two to six weeks. All animal inoculation experiments have been negative, with possibly one or two exceptions. The greater prevalence of the disease among women between the ages of 20 and 45 makes it appear that the causative agent is to be found about the home in the daytime. The symptoms of the disease are all in the nature of an intoxication more or less chronic in its course. When the disease first appeared in this country, 67 per cent. of the patients died, while today probably of these 80 per cent. get permanently well. The prognosis for complete recovery diminishes with age, being very unfavorable in old age, although even the old recover. In view of the rapid increase of pellagra, more attention should be paid to the prophylactic treatment. Everything should be done to improve the sanitary and hygienic conditions about the home. A well balanced and nourishing diet will do much to increase the individual resistance and prevent the disease, even if it be of infectious origin. A sanitary water carriage sewerage system is certainly a step in the right direction. Active treatment of a case of pellagra should be begun by placing the patient in bed for at least a few weeks, depending on the severity and progress of the case. This of itself lessens the force of most diseases and conserves body energy. Hydrochloric acid should always be supplied where it is diminished or absent. Of the many remedies, thymol, quinin hydrobromid, picric acid and the arsenical preparations, especially sodium cacodylate, are apparently the most popular.

Pellagra in Texas

Dr. K. H. Beall, Fort Worth, Texas: The state government has done very little to check the ravages of this new enemy. Last year this disease killed 500 of our citizens and made invalids of many thousand more. Statistics show that women are much more frequently attacked with the disease when of certain age than men of certain age, or when they become much less resistant to its ravages.

Drugs in Pellagra

Dr. W. T. Wilson, Navasota, Texas: Up to Nov. 1, 1915, I treated 190 cases of pellagra, and I have data on 310 cases treated by other physicians. Of this number thirty-five patients died, of whom fourteen were reported as having been treated with picric acid; ten were terminal cases and of the typhoid type, and the patients died within fourteen days after treatment was begun; four had tuberculosis associated with pellagra. Two had nephritis complicating. Thirty-seven with severe mental symptoms are reported recovered. My report is not complete on the number of patients improved or not improved. I failed to ask for these data, but from conversation with many physicians I do not think the percentage in either case will exceed 7 per cent., if it even runs that high. The disease does not become very serious before the middle of May. Most of the thirty-five deaths reported occurred during the months of July, August and September. In pellagra of recent origin, picric acid is of no value, that is, when used internally and as a gargle. In severe types or those with malarial symptoms, quinin hypodermically should be used first, the picric acid following. In the chronic forms, picric acid and sodium cacodylate should be alternated or given at the same time, and also some sodium bicarbonate at intervals. Several physicians report good results from the use of thymol in the treatment of this disease.

Blood in Pellagra

Dr. Beverly Young, San Antonio, Texas: The red cells, hemoglobin, and hemoglobin index vary greatly. Taking the peripheral blood as an index, the small mononuclear leukocytes are markedly increased, while the other cells, except the polynuclears, are slightly, if at all, affected. Some cases show slight eosinophilia, but this was variable, and in every case in which the eosinophilia was marked, I was able to find the ova of intestinal parasites. A high lymphocyte count is usually of good prognostic import. This high count usually persists not to the same extent, but above normal, for weeks and sometimes months after the acute symptoms subside and the patient is in excellent physical condition. The cases developing after admission to the hospital, with two exceptions, were among those who were fairly well nourished and eating a well-balanced diet, and several patients observed during the same period of time who persistently refused nourishment of any kind did not develop pellagra; while the lymphocytes were increased in these cases, they were neither so markedly nor so persistently increased as in the pellagrins. Two of these cases were particularly important for comparison since the patients were so persistent in their fast that they died of exhaustion in spite of forced feeding.

Etiology of Pellagra with Reference to Amebic Invasion

Dr. W. A. Dearman, Long Beach, Miss.: While Goldberger is of the opinion that pellagra is caused by the lack of a well-balanced ration; that as a prophylactic as well as a curative measure individuals should be encouraged to eat liberally of peas, beans and other legumes, and that the whole solution of the pellagra problem depends on this principle, is not supported in toto by the end-results of the Thompson-McFadden Commission. I have been able to demonstrate the presence of amebas in the centrifuged urine of about 50 per cent. of pellagrins that came under my observation. About 40 per cent. showed pyuria. The amebas were large and small, and they were very sluggish in their movements. Sometimes a cell resembling an encysted ameba would have to be recognized and kept under close observation in order to observe motility; some were actively motile. While I have no evidence at hand to prove conclusively that amebic invasion is responsible for pellagra, the symptomatology, the clinical course and the postmortem findings run parallel with the depredations often observed in a profound amebic invasion.

Discussion on Pellagra

Dr. Allen W. Freeman, Washington, D.C.: The evidence is strong that there is a definite relationship in many cases between the incidence of pellagra and certain deficiencies in the diet. Dr. Goldberger does not claim, and does not pretend to prove, that diet is the only factor in pellagra, but he has produced pellagra so clean cut that we must either totally disprove his findings or attempt to put the regimen he recommends into effect.

Dr. Stewart J. Roberts, Atlanta: The one thing we most need in this country at present in regard to the etiology of pellagra is absolute honesty in realizing that we do not know the cause of the disease because we cannot prove it. By the cure of the disease I understand that a patient who has had the disease is absolutely free of it forever unless reinfected. It is one thing for a pellagrin to recover from an attack of pellagra, and quite a different thing for a pellagrin to recover from the disease which we call pellagra.

Dr. O. M. Marchman, Dallas, Texas: Last August our city society decided to hold a pellagra clinic, and we had at this clinic twenty-five or thirty patients in different stages of the disease. Physicians of our county and surrounding counties have used every available remedy, and not only the patients at the clinic but others treated in the various institutions were relieved in a like manner by all of these various treatments with a generous diet. We have had probably 100 cases of pellagra in Dallas since last August, an increase of 100 per cent. over previous years. These pellagrins were from the poorest class and were fed a one-sided or limited diet. Many of these patients were put on a generous diet, without any medical treatment whatsoever, and recovered as rapidly as those treated by various shotgun prescriptions.

Dr. Allan Eustis, New Orleans: I have heard no evidence as yet to counteract Goldberger's ideas. I do not believe any of us are able to pass on Goldberger's results until we see the published details of his investigation. Dr. Goldberger does not claim that he has found the cause and a cure for pellagra, but I believe the condition can be remedied in great part.

Dr. John E. Stinson, Chickasha, Okla.: I believe that pellagra is infectious. The symptoms of the disease are hard to combat by any method of treatment. I do not believe any true case of pellagra has ever been cured.

Dr. James A. Hayne, Columbia, S. C.: In South Carolina, up to the present time we have had 1,200 deaths from pellagra. The death rate from tylhpoid fever in South Carolina is only twenty-six per hundred thousand. It is about equal to the death rate from tuberculosis. It is a little less than the death rate from the circulatory diseases, such as heart and kidney disease.

Dr. John L. Jelks, Memphis, Tenn.: In cases of infection of the intestine, such as we have in pellagra, certain diets are very good, while others are very bad. Patients with amebiasis will manifest the same train of symptoms as those encountered in cases of pellagra. Note the number of cases of amebiasis and the number of cases of pellagra in which there is pain in the back of the neck. Note the number of cases of pellagra in which you will find marked melancholia. I believe that pellagra is an infection which takes place primarily in the intestine.

Dr. J. R. Lehmann, Dallas, Texas: It has been shown that we carry in our mouths the organisms of pneumonia, and yet not all of us get pneumonia. But when conditions are ripe, we develop pneumonia. Is it not possible that similarly in pellagra, when conditions exist which favor a lowering of the resistance, the disease develops?

Dr. A. A. Herold, Shreveport, La.: I believe diet is the principal causative factor in pellagra. In Catto Parish, agricultural and mineral oil regions are side by side. There is practically no difference between the people who live there. In the mineral oil districts, sanitation is more imperfect; flies and mosquitoes are more numerous in the oil region, and insect-borne diseases, such as typhoid and malaria, are much more common in the oil districts than in the agricultural; yet not one case of pellagra has been reported from the oil fields, but 200 cases have been reported from the agricultural regions. There is one explanation for that. The usual ration of the farmer is fat meat, cornmeal and some syrup. On the other hand, the workers in the oil regions will not stand for poor rations. They live on a thoroughly mixed and varied diet and do not develop pellagra.

Dr. E. H. Martin, Hot Springs, Ark.: It has been an axiom with me for several years that an absolute preventive of pellagra is a bank account. A man who has money and who is well nourished will not get pellagra, and the man who has pellagra, who gets well nourished, will recover.

Dr. A. L. Levin, New Orleans: A study of the intestinal tract is most important in making a diagnosis of pellagra. There is a class of cases of pellagra in which the skin symptoms are lacking. Involvement of the nervous system is not present, and the only symptom is the involvement of the gastro-intestinal tract. Patients will complain of stomach disturbance; they have symptoms of heaviness and fulness and pain, with slight cramps and loose bowels. The fact that pellagra is on the increase is due to the fact that we are not sufficiently expert as yet to differentiate those cases which are pellagra from those which are not.

Dr. Charles W. Garrison, Little Rock, Ark.: Every speaker, representing either the infectious or opposite theory of pellagra, has admitted that diet is one of the most essential and important factors in prevention and treatment of the disease.

Dr. Frank H. Clarke, Lexington, Ky.: Lexington is a splendid agricultural district; it is a short-horn and Jersey cattle country, and a fine race horse country: many wealthy people have settled there, and yet pellagra has appeared among the rich as well as among the poor.

Dr. Bruce, Alabama: I recall two patients who returned from the Johns Hopkins Hospital, who were treated there for amebiasis with secondary anemia. These patients came under my observation during this year with the later symptoms of pellagra. The skin symptoms had shown up and the severe nervous symptoms. In the beginning, these cases were incorrectly diagnosed and were treated as instances of amebic dysentery, but since developed all of the later symptoms of pellagra.

Dr. Louis Leroy, Memphis, Tenn.: Whenever there is a lesion in the intestinal mucosa, there is a possible port of entry for pellagra. When one case occurs in any locality, if there are open earth closets, if there is ground infection, more cases can be looked for pretty soon.

Dr. William Krauss, Memphis, Tenn.: With reference to the open closet, until very recent times, we had no pellagra originating in the city of Memphis; but recently we have seen many cases of the disease which originated there, and we have no open closets in our city. Something was said about personal cleanliness, and consequently one might infer from that that only persons who are filthy in their habits contract pellagra; and yet we have an increasing number of cases of the disease in Memphis among the best people who live in the best surroundings, who take two baths a day, and eat good, nourishing food.

Dr. Thompson Frazer, Asheville, N. C.: I have seen from seventy-five to 100 cases of pellagra, but in the last two years only a few, which I find is in keeping with the history of the disease, which has tended to spread from one section to another.

Dr. C. B. Bowyer, Stonega, Va.: In the coal mining district we have never seen a case of pellagra in a miner. Dr. McCormack says that pellagra, so far as he knows, has never deevloped in miners in Kentucky.

Dr. W. L. Allison, Fort Worth, Texas: I now agree with Goldberger that diet stands as a predisposing factor. When you feed pellagrins good, nourishing food, many of them recover. It is not true in Texas that pellagra occurs only among the poor.

(To be continued)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Forty-First Annual Meeting, held at Lexington, Ky., Oct. 19-21, 1915

(Concluded from page 1943)

Etiologic Relationship Existing Between Gastric Ulcer and Gastric Cancer

Dr. Frank Smithies, Chicago: It seems to have been shown that benign gastric ulcer can be produced in a multitude of ways, the method of production having only relative effect on the ulcer resulting, pathologically. It seems that in a given gastric ulcer it is impossible to prognosticate its course, duration or type of termination. Free excision of all chronic gastric ulcers should be performed whenever such procedure is mechanically possible.

DISCUSSION

Dr. Charles G. Lucas, Louisville, Ky.: None of us are competent to give a statement as to when an ulcer may become malignant, nor how long it will continue. I have in mind a patient who had a tumor of six months' standing before seeking consultation. A laparotomy was done and the tumor was found to be inoperable. Patients with ulcer of the stomach should be placed in bed as soon as they come under the care of the internist, and they should then be treated carefully for from four to five weeks. They should report often and submit to frequent examination. If, after six or seven weeks of effort of this kind, no results are obtained, then a surgeon should be called. These cases should be treated by both the internist and the surgeon working together, and finally they should come back to the internist.

Dr. Willard J. Stone, Toledo, Ohio: I should like to ask Dr. Smithies what percentage of cases of gastric and duodenal ulcer in his experience shows a positive Wassermann reaction?

Dr. Chauncey Dowden, Louisville, Ky.: If conditions incidental to appendicitis cause ulcer, then obstipation and constipation become important etiologic factors. If appendicitis will cause gastric ulcer, why will not chronic obstipation bring about a like condition? In my opinion it may even produce pyloric spasm. If we have a condition that will produce pyloric spasm, we also have a condition which will in time cause gastric ulcer. I should like to impress on the internist the importance of treating the ulcer patient before the condition becomes ulcer. The majority of patients who come to us showing a condition of hyperacidity are in all probability ulcer patients. This is the time when they need proper attention and, in all probability, the right treatment administered at this time would prevent the development of duodenal or gastric ulcer.

Dr. Frank Smithies, Chicago: In our proved ulcer cases, the ratio of positive Wassermann was 1:300. One of the first points in the cure of disease is to remove all the foci of infection in the mouth, throat and nose, and we should also look out for an infected appendix or an infected gallbladder. If we let these organs pass by unnoticed we are simply locking the door after the horse has escaped.

The Heart and Blood Vessels in Tuberculosis

Dr. Francis M. Pottenger, Monrovia, Calif.: Tuberculosis may affect the blood vessels either from within or from without, and the lesion may be of all degrees of severity from that of every slight trauma to necrosis. Sometimes an infection is followed by an opening in the vessel wall and hemorrhage; at other times an exudation results which goes on to repair, and again an endarteritis with obliteration of the lumen occurs. It seems probable that many of the hemorrhages in tuberculosis, particularly those in which only small amounts of blood are expectorated, may be due to the injury of the vessels resulting from the action of toxins, or the formation of tubercles in the walls of the vessels. The capillaries are most commonly affected, while small veins and arteries are less commonly so. Tubercles may be found in the walls of any vessels of the body, including the aorta. This being true, it is surprising that miliary tuberculosis is not a more common infection than it is. That it is not is probably due to the fact that the vessel is often occluded by the inflammatory process so that bacilli do not get into the blood stream, and protective cell sensitization and antibodies reduce the virulence of or destroy the bacilli which gain entrance to the blood stream before they find lodgment in the tissues, in those patients in whom infection has been present long enough to build up a specific immunity.

For the heart muscle itself I have great confidence in digitalis and citrated caffein. If the early symptoms are recognized and the patient is put in the recumbent position and given digitalis in proper doses, the crisis can often be averted. Digitalis strengthens the heart's contractions, and in this way probably affords better nutrition to the organ. If digitalis is to be used, it should be used in doses sufficiently large to produce an effect. I use a standardized tincture in doses of from 10 to 15 minims three times a day until the pulse improves or the physiologic effect is reached. I then discontinue the remedy for three days and repeat again, giving the remedy three or four days and then withholding it for a like period. If the case is urgent, I often give digitalis intravenously in 15 minim doses three times a day until the effect is produced. Citrated caffein can be given in 3 grain doses every four hours and continued as long as necessary.

The patient should be fed nourishing food in concentrated form. The bowels should be kept free to relieve any toxins that can be removed through the alimentary canal. The important thing in the handling of these cases is to recognize them early, and to treat them properly. These degenerative changes in the heart muscle may threaten the patient's life and yet the heart may recover itself as the patient improves.

Spasmophilia

Dr. J. P. Sedgwick, Minneapolis: In the acute and subacute cases under 1 year, with high electrical reactions, the results obtained with large doses of calcium chlorid are brilliant. In the more chronic and very severe cases, calcium is of definite value. I have also used subcutaneous injection of 20 c.c. of a 0.125 per cent. solution of magnesium sulphate. The results with this method have also been satisfactory, but the injections are painful and frighten the older children. The electrical reactions give us a means of diagnosing this condition whether active or latent, thus distinguishing it in its various manifestations, such as the convulsions from epilepsy and the laryngospasm from inflammatory croup. Laryngospasm, general convulsions, tetany in children, spasmodic apnea, and the Chvostek and Trousseau phenomena are manifestations of the same diathesis or condition. The condition is closely related to some metabolic disturbance, probably of the calcium salts, and is markedly benefited by a carbohydrate, cow's milk free, or a breast milk diet. Phosphorus and cod liver oil are of value by the effect on the calcium retention. Calcium and magnesium give quicker and more definite results. The prognosis is usually good, in the cases in which treatment is begun early.

Diagnosis of Renal Infections

Dr. John R. Caulk, St. Louis: Of 182 cases, only 17.7 per cent. appeared with a diagnosis of kidney disease. It is striking that not a single case of pyonephrosis came in with a diagnosis of renal infection, and it was confused with malaria in a high percentage of cases. The average duration of symptoms in this series has been three years and six months, so long in many cases as to deprive the individual of satisfactory chances of recovery. Renal pain was present in 40.9 per cent., was most common in pyonephrosis and nephrolithiasis, about 70 per cent., and least common in tuberculosis, 17.6 per cent. Fever was present in 15.7 per cent. As to faulty diagnosis, appendicitis appears in 6.6 per cent. of all the cases; it is most commonly confused with nephrolithiasis, 26.5 per cent., and 6.5 per cent. in pyelitis. It was not confused with pyelonephritis, pyonephrosis or tuberculosis. Bladder trouble was diagnosed in 60 per cent. of all cases, most common in tuberculosis, 93 per cent., and least in nephrolithiasis, 30 per cent. Pus was present in 93 per cent., casts in 7 per cent., most of these in pyelonephritis, 35 per cent. The general average is extremely low.

The colon bacillus was found in 57 per cent. of the cases, the staphylococcus in 23.5 per cent.; 17.5 per cent. were mixed. Tuberculosis was present in 9.4 per cent. of all cases. The functional test was diminished in 68.7 per cent. of the cases. It showed its most marked diminution in pyonephrosis, and its slightest in pyelitis. The Roentgen ray was positive in 30.4 per cent. of all cases. Cystoscopic examination showed changes in the bladder wall in 58.9 per cent.

Mechanics of Renal Infection

Dr. Edward L. Keyes, Jr., New York: Renal colic is an acute stoppage of the ureter, the cause of which is usually a small stone or a slight kink. On being called to such a case, we should immediately administer morphin to the point of relieving pain, not only for the purpose of consoling the sufferer, but also for the purpose of curing the condition, for if we can relieve the pain, and thereby relax the spasm, we actually relieve the retention, and permit the unfolding of the kink for the passage of urine about the stone, or even the passage of the stone itself. In the second place, we have here a clue to the mystery that surrounds irrigation of the renal pelvis. Much of the benefit attributed to this treatment is undoubtedly due to the passage of the ureteral catheter, for it is to be noted that many cures attributed to this treatment follow the first or the second washing. Such cures are due to mechanical relief of slight obstructions. I have several times relieved acute renal infection by ureteral catheterization, and Dr. Howard Lilienthal some years ago recorded several striking illustrations of the therapeutic effect of ureteral catheterization in acute renal infection.

Prolapse of Bladder and Uterus

Dr. Thomas J. Watkins, Chicago: The pathologic changes in the part of the bladder wall which is attached to the vaginal wall have not received sufficient attention. These changes are due to stretching of this part of the bladder wall, and produce vesical symptoms. The urethra is usually displaced downward, and disturbs continence of urine. The pathologic changes in the uterus result mostly from circulatory disturbances, such as congestion, edema, varices and hyperplasia. The following operations are advised, the choice depending on the amount of prolapse, and the age of the patient as regards future pregnancies: (1) an advancement operation; (2) fixation of the round ligaments to the anterior vaginal wall and fascia, and (3) the transposition operation, transposing the relative position of the bladder and uterus. This is also called the interposition operation. Partial excision or amputation of the cervix is done with all of these operations as may be indicated, and a perineorrhaphy is made. The advancement operation consists chiefly in advancing the vaginal wall, including the submucous connective tissue, on the cervix. This operation gives excellent results in cases of a moderate amount of prolapse, and does not interfere with subsequent pregnancies. Vaginal attachment of the round ligaments into the vaginal wall is done in conjunction with the advancement operation in cases with a greater amount of prolapse, during the child-bearing period, and in cases of retroposition of the uterus. The transposition operation is the one of election after the menopause. The fundus of the uterus is attached to the connective tissue and vagina sufficiently low to make recurrence of the bladder hernia impossible. I have had no recurrence of cystocele after this operation, which I have been doing for seventeen years. The uterus is never in obstruction in the vagina when so sutured. Modifications of the operation are given for cases of very large uterus and for cases of complete prolapse with a very small uterus. The cavities of the uterus and vagina may be completely closed in very extensive cases of prolapse in elderly women in whom there is no objection to occlusion of the vaginal canal.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

November, LXXII, No. 5, pp. 769-944

1 *Present Tendencies in Gynecologic and Obstetric Practice. C. L. Bonifield, Cincinnati.
2 *Local Anesthesia in Herniotomy. J. H. Jacobson, Toledo.
3 *Case of Gallstone Causing Intestinal Obstruction and Volvulus. R. B. Hall, Cincinnati.
4 *Cholecystectomy vs. Cholecystostomy. L. W. Swope, Pittsburgh.
5 *Unusual Contents of Inguinal Hernia; Report of Case. C. W. Moots, Toledo.
6 Surgery of Appendix. J. W. Keefe, Providence, R. I.
7 *Prognostic Sign in Acute Suppurative Peritonitis. H. O. Pantzer, Indianapolis.
8 *Rare Congenital Abnormality of Sigmoid. B. Van Sweringen, Fort Wayne, Ind.
9 Postoperative Ureteral Fistula. H. D. Furniss, New York.
10 *Mesenteric Thromboses; Report of Two Cases. W. E. Darnall, Atlantic City, N. J.
11 Remove Uterus Instead of Ovaries for Incurable Cases of Menstrual Disorders. J. H. Carstens, Detroit.
12 Use of Sodium Citrate for Direct Blood Transfusion. C. B. Schildecker, Pittsburgh.
13 Newer Conceptions of Intestinal Stasis. G. W. Crile, Cleveland.
14 "Gas-Pains." G. K. Dickinson, Jersey City, N. J.
15 *Use of Luteum Extract in Treatment of Menstrual Disorders. A. P. Leighton, Jr., Portland, Me.
16 *Present Status of Twilight Sleep in Obstetrics; Study of Over Two Thousand Cases. A. J. Rongy, New York.
17 Acute Appendicitis in Children. K. H. Aynesworth, Waco, Texas.

1 and 10. Abstracted in The Journal, Oct. 2, p. 1213.
2 and 3. Abstracted in The Journal, Oct. 2, p. 1211.
4, 5, 7 and 8. Abstracted in The Journal, Oct. 2, p. 1212.
15 and 16. Abstracted in The Journal, Oct. 2, p. 1213.

Annals of Surgery, Philadelphia

November, LXII, No. 5, pp. 513-640

18 Mesenteric Thrombosis; Report of Cases. E. Eliot, Jr., and J. W. Jameson, New York.
19 *Case of Splenectomy. C. L. Scudder, Boston.
20 *Diagnosis of Appendicitis in Early Typhoid. R. Winslow, Baltimore.
21 Typhoid Perforation. J. H. Gibbon, Philadelphia.
22 Frequency of Chest Complications Among Wounded. K. Taylor, Paris.
23 *Transverse Abdominal Incision. W. Meyer, New York.
24 Closure of Mucocutaneous Fecal Fistula. E. Beer, New York.
25 Anatomic Study of Femoral Hernia. T. T. Thomas, Philadelphia.
26 Clinical Status of Autograft. A. A. Law, Minneapolis.
27 Fractures of Femur. C. R. Steinke, Philadelphia.
28 End Results in Fractures of Both Bones of Leg. R. L. John, Philadelphia.

19. **Case of Splenectomy.**—Scudder records a case of splenic anemia which terminated fatally following splenectomy. A thrombosis occurred in a vascular system of the mesenteric

not directly connected with the vascular system of the spleen. At the second operation the gangrene of the small intestine was found definitely localized and had occurred independently of any plugging thrombosis of the splenic vessels proximal to the ligatures placed at the time of the splenectomy.

20. **Appendicitis in Early Typhoid.**—Winslow reports four cases occurring in the same hospital at almost the same time and treated by several different surgeons. From the appearance of the appendixes at the time of operation, and from the subsequent course of the case, he says, it is evident that unnecessary operations were done during the active period of a dangerous disease. The first patient was taken suddenly ill, with headache and pain in the right side, while at work. She had been in good health up to this time. The second patient appears to have had a general diffuse tenderness exaggerated on pressure in the appendical area on admission to the hospital. Apparently the disease began five days previously with chilly sensations followed by fever, and not with pain. The third patient was taken sick with abdominal pain, headache and a stiff feeling of the abdomen. There is no history of preceding fever. The fourth patient was taken with pain and slight elevation of temperature. In three of these four cases pain appears to have been the symptom that first attracted the patients' attention and not fever. Chilliness and fever was the prominent feature of the onset of one case. Headache was noted in two cases as one of the initial symptoms, and nausea and vomiting in two patients. The leukocyte was 8,200, 8,000 and 10,000 in three cases, and in one case the polynuclears were 74 per cent., small mononuclears 22 per cent. and large mononuclears 4 per cent., but the leukocyte count was not recorded. One patient had continuous pain in the right iliac region, with tenderness and muscular rigidity at McBurney's point. A second had diffuse abdominal tenderness with distinct muscular spasm on deep pressure over the appendical region. A third had pain in the right side of the abdomen, tenderness but not much rigidity. In none of these cases was the Widal reaction positive at the time of the operation, but became so in each subsequently. Rose spots also do not appear at such an early period of typhoid. In all these cases the appendix was somewhat congested, possibly thickened, but not acutely inflamed, while the large and small intestines were also more hyperemic than normal. The mesenteric and prevertebral chains of glands were also markedly enlarged in most of the cases.

Winslow believes mistaken diagnosis of appendicitis in early typhoid is by no means uncommon. The leukocyte count is probably the most reliable diagnostic sign, and it is usually low in typhoid and markedly increased in appendicitis, though at times there may be a low leukocyte count in serious and even fatal appendicitis. There is less muscular rigidity and tenderness in these typhoid cases than in cases of genuine appendicitis.

23. **Transverse Abdominal Incision.**—Meyer has tried the transverse abdominal incision of Braunschweig and Perthes in eight cases and has been so favorably impressed with it, that he feels it should be used more frequently.

Archives of Internal Medicine, Chicago

November, XVI, No. 5, pp. 693-892

29 *Carbohydrate Utilization in Diabetes. E. P. Joslin, Boston.
30 *Renal Function as Measured by Elimination of Fluids, Salt and Nitrogen and Specific Gravity of Urine. H. O. Mosenthal, Baltimore.
31 *Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Disease. W. J. Stone, Toledo.
32 Treatment of Cardiac Insufficiency by New Method of Exercise with Dumb-Bells and Bars. T. B. Barringer, Jr., and J. Teschner, New York.
33 *Resistance of Red Blood Cells to Hypotonic Salt Solution in Various Anemias. L. W. Hill, Boston.
34 *Study of Case of Auricular Flutter. S. A. Levine and C. Frothingham, Jr., Boston.
35 Sino-Auricular Heart Block; Report of Case in Man. J. A. E. Eyster and J. S. Evans, Madison, Wis.
36 *Clinical Studies on Respiration; Effect of Carbon Dioxid in Inspired Air on Patients with Cardiac Disease. F. W. Peabody, Boston.
37 *Poisoning by Mercuric Chlorid and Its Treatment. S. W. Lambert, and H. S. Patterson, New York.
38 *Coagulation Test for Syphilis, as Devised by Hirschfeld and Klinger. H. N. Cole and S. Eng-Kiu Chiu, Cleveland.

29. **Carbohydrate Utilization in Diabetes.**—Joslin closes his article as follows: It is gratifying to be able to record that the recent experimental evidence confirms the old clinical view that the severe diabetic still retains power to utilize a portion of the carbohydrate of his diet, small though it may be, and that herein lies renewed hope for the success of treatment.

30. **Renal Function.**—The nephritic test meal, as suggested by Hedinger and Schlayer, and elaborated by Mosenthal in this paper, has not only proved itself to be an admirable test for renal function, but also in many cases has been of great value in diagnosing cardiac, renal and other conditions. The test is a qualitative one of the mode of urinary function as measured by the specific gravity, salt, nitrogen and water excretion in two-hourly periods during the day, and for a twelve-hour period at night. In chronic diffuse (parenchymatous) nephritis, the condition of renal function is characterized by its variability. In these instances, the results of the test meal have proved to be extremely valuable in giving an idea of the status of salt, nitrogen and water excretion, besides the picture of renal efficiency as a whole. The findings in myocardial insufficiency vary according to the activity of the heart. Distinct differences are found with myocardial decompensation and the accumulation of edema, the period of eliminating edema, and subsequently, when cardiac compensation is again fully established, it requires some time before the kidney resumes its normal activity. This intervening period is indicated by a tendency to a low, fixed specific gravity and a nocturnal polyuria. During the period of full myocardial decompensation the results of kidney activity are characteristic, the specific gravity is markedly fixed at the level of about 1.020, the salt output is diminished, that of nitrogen is high, in marked contrast to the salt, and there is oliguria. When chronic nephritis and cardiac decompensation coexist, as they so often do in hypertensive nephritis, the urine may exhibit the characteristics due to either lesion. The determining factor is probably to be found in the chronic nephritis which may or may not be so far advanced as to present an unchanging barrier to the influence of renal congestion.

31. **Differentiation of Cerebral and Cardiac Types in Vascular Disease.**—Stone urges that the determination of systolic and diastolic pressures by the auscultatory method should supplant the palpatory method. The pulse pressure measures the energy of the heart in systole in excess of the diastolic pressure. For clinical purposes it represents the load of the heart. Under normal conditions, it is approximately 50 per cent. of the diastolic pressure. Since the diastolic pressure represents the constant pressure between systoles, it is a better index of peripheral resistance and of hypertension than the systolic pressure. A sustained diastolic pressure of 105 to 110 or above signifies hypertension, irrespective of the height of the systolic pressure. The diastolic is less influenced by physiologic factors than the systolic pressure. In arterial hypertension incident to myocardial and valvular lesions, the pulse pressure and heart-load are increased as a rule, the overload factor averaging 46 per cent. in the twenty-four patients of the cardiac hypertension group.

In the cerebral hypertension group the diastolic pressure is persistently high, from 120 to 160. This group comprises the nephritic cases, so-called, with symptoms of polyuria, albumin, casts and edema. The pulse pressure is not so greatly increased, as a rule, and the heart-load percentage is within normal limits of 40 to 60 per cent. The term cardiorenal disease applied to patients with cardiac manifestations in nephritis, Stone says, is a misnomer. Cardiac symptoms are many times present in such cases but the manifestations and terminal events of vascular disease associated with disturbed renal function are more cerebral than cardiac. If any compound name is applied descriptive of the condition, the term cerebrorenal would be more approximate. The term vascular disease, however, covers the ground more completely. In acute circulatory failure due to shock, including hemorrhage, in an individual with a strong acting heart, the diastolic pressure is decreased, while the pulse pressure is increased, since the heart is exerting all its force in an endeavor adequately to supply the periphery with blood. In circulatory failure due to cardiac dilatation or myocardial degeneration incident to acute or long continued illness, the systolic pressure falls and tends to approximate the diastolic pressure, with the result that the pulse pressure is decreased.

In acute infections a sustained pulse pressure warrants a more favorable prognosis, as a rule, than a low pulse pressure, other things being equal, although the change from normal to low pulse pressure in circulatory failure may occur rapidly. As a rule, the lower the pulse pressure, the greater the danger of circulatory failure. Measures directed to the reduction of blood pressure by diet, habits, venesection and vasodilators are usually indicated in the cerebral hypertension group because of the high diastolic pressure, but are rarely indicated in the cardiac hypertension group. The high systolic pressures in the cardiac hypertension group are compensatory measures and rest; digitalis, strophanthin, camphor or caffein are indicated when the heart muscle shows signs of fatigue.

33. **Resistance of Red Blood Cells.**—Hill found that the resistance of normal blood to hemolysis by hypotonic salt solution is fairly constant. The figures for pernicious anemia and for secondary anemia are practically the same. In any given case of anemia, whether primary or secondary, the resistance may be high, normal or low; there is no such constant finding as there is in normal blood. In general, in both pernicious and secondary anemia, hemolysis is likely to begin sooner and end later than it does in normal blood. The hemoglobin content of the cell seems to bear no relation to its resistance. Arsenic definitely increases the resistance of the red cells and tends to inhibit hemolysis. Splenectomy increases the maximal resistance; it may decrease the minimal resistance.

34. **Case of Auricular Flutter.**—Auricular flutter was observed by Levine and Frothingham twice in a man with organic disease of the aortic valve consisting in stenosis and slight regurgitation. Opportunity was given to study him during and between attacks by means of the electrocardiograph and also by tracings from the jugular vein and brachial artery, taken simultaneously with the electrocardiogram. In this man the auricular rate during flutter varied at different times from 350.5 per minute to 324.7 per minute. The ventricles were beating most of the time during the attacks at half that rate showing a 2:1 block. During the attack of flutter the auricles were practically independent of vagus control, although a slight effect on the auricular rate could be produced by deep breathing. The ventricles could be inhibited by pressure on either the right or left eye, but the auricles could not be inhibited. During the attack of flutter there was slight pulsus alternans as shown in both the electrocardiogram and brachial tracings. This disappeared when the heart returned to its normal rhythm. Roentgenograms showed no appreciable difference in the outline of the heart during the attack, and the pulse pressure, which was small normally in this case, diminished during flutter.

36. **Effect of Carbon Dioxid on Patients with Cardiac Disease.**—Experiments are described by Peabody in which normal subjects and patients with cardiac or cardiorenal disease have breathed air containing increasing amounts of carbon dioxid. The inspired air was analyzed for its carbon dioxid content, and the total ventilation of the subject per minute was measured at frequent intervals. Thus the increase in ventilation caused by a given rise of carbon dioxid in the inspired air could easily be determined. It was found that normal persons respond to carbon dioxid in a fairly constant manner, and that their total ventilation is doubled when the carbon dioxid is between 4.2 and 5.4 per cent. Cardiac and cardiorenal patients whose circulation is compensated, and who have no evidence of an acidosis as shown by the carbon dioxid tension of the alveolar air, behave in an exactly similar manner. Cases, however, with decompensation and with a grade of acidosis sufficient to lower the alveolar carbon dioxid tension react much more quickly to carbon dioxid, and may double their ventilation when the carbon dioxid is only 2 to 3 per cent. of the inspired air. Dyspnea is therefore much more easily produced in the patients with acidosis than in those without acidosis. That the increased sensitiveness to carbon dioxid does in fact depend on the acidosis was especially clearly demonstrated in two cases. Although the results reported relate only to the dyspnea caused by the inspiration of air containing carbon dioxid, Peabody believes it is wholly logical to assume that the same effect would be produced by acids which entered the blood stream from the body cells. The presence of an acidosis would thus render the organism more sensitive to the carbon dioxid or other acids formed during muscular work; and the amount of muscular work sufficient to cause dyspnea would be less than under normal conditions.

37. **Poisoning by Mercuric Chlorid and Its Treatment.**—The treatment, as it is formulated by Lambert and Patterson, for cases coming under observation early, is as follows: The first indication is to give the patient the whites of several eggs and then wash out the stomach thoroughly. This has usually been done before the patients are admitted to the hospital. On admission, the stomach contents are expressed and examined for mercury, the stomach is thoroughly washed and a pint of milk introduced. If no stomach contents are obtained before lavage, then the lavage water is examined for mercury. Urine passed spontaneously, or that obtained by catheter, is examined for mercury. The metal appears in the urine in from three to twenty-four hours after it has been swallowed. If more than a day has elapsed since the poisoning occurred, a stool should also be examined for the poison. If the first lavage does not allay the nausea and vomiting, it is repeated after an hour, and the following routine is begun as soon as the stomach will permit: 1. The patient is given every other hour 8 ounces of the following mixture: Potassium bitartrate, 1 dram; sugar, 1 dram; lactose, one-half ounce; lemon juice, 1 ounce; boiled water, 16 ounces. Eight ounces of milk are administered every alternate hour. 2. The drop method of rectal irrigation with a solution of potassium acetate, a dram to the pint, is given continuously. The amounts of urine secreted under this treatment are very large. In Case 8, 269 ounces were passed in twenty-four hours on the fourteenth day of treatment. 3. The stomach is washed out twice daily. 4. The colon is irrigated twice daily, in order to wash out whatever poison has been eliminated in that way. 5. The patient is given a daily sweat in a hot pack.

The authors emphasize the necessity of keeping up the treatment with the colonic drip enteroclysis day and night without interruption. In cases in which one single dose has been taken, after two negative examinations of the urine, on successive days, it seems legitimate to stop the treatment. For the less severe cases, a week may be a sufficient time for treatment. When large or successive doses have been taken, or when there is a preexisting kidney lesion, or when treatment begins several days after the poison is taken, longer periods of treatment, up to three weeks, are necessary.

38. **Coagulation Test for Syphilis.**—Cole and Chiu tested fifty-one specimens of spinal fluids from different patients. In quite a few cases the Wassermann has given negative results while the coagulation test has been positive; in fact, of the fifty-one cases, the coagulation test gives eleven more positive than the Wassermann, making a difference of 21 per cent. more positives for the coagulation test. The authors believe that the spinal fluid, inactivated at 58 C. (136.4 F.) for half an hour and used in dose of 0.4 c.c., gives good results with this test.

Boston Medical and Surgical Journal

November 18, CLXXIII, No. 21, pp. 759-794

39 Midwife Problem. A. K. Paine, Boston.

40 Pregnancy Clinic and Midwife; Comparison. J. L. Huntington, Boston.

41 *Clinical Records in Relation to Teaching and Research; Plan to Promote Conservation and Utilization of Material. E. S. Kilgore, San Francisco.
42 Nomenclature and Classification of Diseases in Use in University of California Hospital. J. L. Whitney, San Francisco.
43 *Gummatous Cervical Adenitis; Its Relation to and Mistaken Diagnosis for Tuberculous Cervical Adenitis. W. P. Coues, Boston.
44 Local Anesthesia in Radical Cure of Hernia. A. Ehrenfried, Boston.
45 Elimination of Voice Defects Following Adenoid and Tonsil Operations. W. B. Swift, Boston.

41. **Completeness and Accuracy of Clinical Records.**—Experiences are reported by Kilgore in the cooperation of a university hospital, medical school and training school for nurses to promote accuracy and completeness of clinical records. To the same end of recording certain data. In addition to the usual diagnosis index (which should be made to include many more of the secondary diagnoses), a plan is described for indexing many clinical facts which cannot be included among the diagnoses.

43. **Diagnosis for Tuberculous Cervical Adenitis.**—Coues urges that cases of cervical adenitis supposed to be tuberculous, yet not quite characteristic, should be regarded as possibly gummatous, and careful study should be made to prove or disprove this supposition definitely. The clinician must fall back on consideration of the case with an exhaustive history pertaining to possible syphilis, to arrive at a correct diagnosis.

Bulletin of Lying-In Hospital of City of New York

September, X, No. 2, pp. 79-130

46 Extraperitoneal Cesarean Section; Report of Three Cases. J. W. Markoe, New York.
47 Report of Work of First Division of Hospital. M. K. Smith, New York.
48 Fissure-Fracture of Vault of Skull in Newborn. E. D. Truesdell, New York.
49 *Practical Experience with Obstetric Chair. J. W. Markoe, New York.
50 Three Cases of Congenital Anomaly of Kidney. J. R. Losee, Brooklyn.
51 Hygiene of Pregnancy. G. W. Kosmak, New York.
52 Case of Primary Carcinoma of Appendix. J. W. Markoe, New York.

49. **Experience with Obstetric Chair.**—Markoe's experience with his obstetric chair has been favorable in more than 10 per cent. of the cases; labor lasted only one hour or less after the patient was put in the chair. In one case apparently fifteen minutes sufficed, though here the cervix was four fingers dilated at the time, while in three cases in which the cervix was only two or three fingers dilated, from thirty to forty-five minutes was required. In eleven cases in which conditions anatomically might have necessitated operative interference, spontaneous delivery occurred; in other words, in 33.3 per cent. of the cases the obstetric chair apparently obviated the necessity of any other artificial aid. Of these eleven patients, eight were in the first stage of labor and three in the second stage. In two cases the patient was kept in the chair for five and six hours, respectively, while in another one hour sufficed to effect delivery, in five cases, two hours and in three cases three hours were necessary for spontaneous delivery. The average duration of the entire labor in these cases were twenty-two and one-half hours, while the average time in the chair was three and-one-third hours. Of the seven multiparas with normal pelves, all were delivered spontaneously, the average time in the chair being two and one-half hours. Of six multiparas with abnormal pelves, in only one case of those spontaneously delivered was the patient in the chair for more than two hours.

Georgia Medical Association Journal, Augusta

November, V, No. 7, pp. 149-170

53 Tumor Formations of Unusual Interest. E. C. Davis, Atlanta.
54 Principles and Practice in Treatment of Cancer. M. B. Hutchins, Atlanta.
55 Uncertainty of Roentgen Ray Shadows of Lungs in Tuberculosis. A. Elkin, Atlanta.
56 Spinal Anesthesia in Surgery; Report of Nine Hundred and Twenty-Seven Cases. G. Y. Massenburg, Macon.
57 Probable Cause and Logical Treatment of Epilepsy. J. C. Pate, Valdosta.
58 Preventive Treatment of Pellagra by Injections of Bad Maize Extracts. H. F. Harris, Atlanta.

Journal of Biologic Chemistry, Baltimore

November, XXIII, No. 1, pp. 1-411

59 Biochemistry of Iodin. Distribution of Iodin in Plant and Animal Tissues. A. T. Cameron, Manitoba, Canada.
60 Influence of Electrolytes on Diffusion of Potassium Out of Cell and Into Cell. J. Loeb and M. Cattell, New York.
61 Measurement of Toxicity. W. J. V. Osterhout, Cambridge, England.
62 Synthesis of Normal Tridecylic and Tetracosanic Acids. P. A. Levene, C. J. West, C. H. Allen and J. van der Scheer, New York.
63 *Metabolic Relationship of Proteins to Glucose. Glucose Formation from Human Proteins. N. W. Janney and N. R. Blatherwick, New York.
64 *Determination of Reducing Sugars. Volumetric Method for Determining Cuprous Oxid Without Removal from Fehling's Solution. F. M. Scales, Washington, D. C.
65 *Acid-Base Equilibria in Blood After Parathyroidectomy. D. W. Wilson, T. Stearns and M. DeG. Thurlow, Baltimore.
66 *Excretion of Acids and Ammonia After Parathyroidectomy. D. W. Wilson, T. Stearns and J. H. Janney, Jr., Baltimore.
67 Rôle of Electrolytes in Diffusion of Acid Into Egg of Fundulus. J. Loeb, New York.
68 Relation Between Configuration and Rotation of Epimeric Monocarboxylic Sugar Acids. P. A. Levene, New York.
69 *Effect of Ingested Purins on Uric Acid Content of Blood. W. Denis, Boston.
70 Apparent Change of Osmotic Pressure of Cell Contents with Osmotic Pressure of Surrounding Solution. J. Loeb and H. Wasteneys, New York.
71 Salicylates. Methods for Quantitative Recovery of Salicyl from Urine and Other Body Fluids. T. W. Thoburn and P. J. Hanzlik, Cleveland.
72 Nature of Dietary Deficiencies of Rice. E. V. McCollum and M. Davis, Madison, Wis.
73 *Essential Factors in Diet During Growth. E. V. McCollum and M. Davis, Madison, Wis.
74 *Cause of Loss of Nutritive Efficiency of Heated Milk. E. V. McCollum and M. Davis, Madison, Wis.
75 Effective Apparatus for Evaporating Aqueous Extracts by Means of Current of Air. T. B. Aldrich, Detroit.
76 Xanthophyll, Principal Natural Yellow Pigment of Egg Yolk, Body Fat, and Blood Serum of Hen. L. S. Palmer, Columbia, Mo.
77 Behavior of Some Hydantoin Derivatives in Metabolism. H. B. Lewis, Philadelphia.
78 Complex Carbohydrates and Forms of Sulphur in Marine Algae of Pacific Coast. D. R. Hoagland and L. L. Lieb, Berkeley, Calif.
79 Experiments on Fate of Ingested Sodium Nucleate in Human Subject. M. H. Givens and A. Hunter, Ithaca, N. Y.
80 Determination of Ammonia Nitrogen in Steer's Urine. D. C. Cochrane, Washington, D. C.
81 Studies on Blood Fat. Fat Absorption and Blood Lipoids. W. R. Bloor, Boston.
82 Configuration of Some of Higher Monosaccharids. G. Peirce.
83 Relative to Total Nitrogen and a-Amino Nitrogen Content of Pepsins of Different Strengths. T. B. Aldrich, Detroit.
84 Identity of Proteins Extracted from Wheat Flour by Usual Solvents. C. H. Bailey and M. J. Blish, St. Paul, Minn.
85 Effects of Certain Electrolytes and Lipoid Solvents on Osmotic Pressures and Viscosities of Lecithin Suspensions. A. Thomas, Worcester, Mass.
86 *Abderhalden Reaction. D. D. Van Slyke, M. Vinograd-Villchur and J. R. Losee, New York.
87 Micromethod for Gasometric Determination of Aliphatic Amino Nitrogen. D. D. Van Slyke, New York.

63. **Metabolic Relationship of Proteins to Glucose.**—The authors state that the ratio 3.60 : 1 may be accepted as representing the relation between the nitrogen contained in human muscle protein and the glucose originating from the same in metabolism. It may on these grounds be properly concluded that the proteins of the human organism collectively may yield a maximum of about 58 per cent. of glucose in diabetic metabolism. In the fasting human diabetic the severest type, when glycogen and possible sources of glucose other than protein are exhausted, the urinary G : N ratio of 3.4 : 1 may therefore be accepted as an average value.

64. **Reducing Sugars.**—A new volumetric method is described by Scales for the determination of cuprous oxid in Fehling's solution. The cuprous oxid without filtration from the solution is converted into cuprous chlorid and then pipetted into a known quantity of a dilute iodin solution. The iodin which is not reduced is then titrated with sodium thiosulphate solution. The data indicate that the method will

give results as accurate as those obtained with the gravimetric method. Dextrose, maltose, lactose, invert sugar and no doubt other reducing sugars may be estimated by this procedure. This method yields results in one quarter of the time required to obtain them by the gravimetric method. The method may also be used for the quantitative determination of copper.

65. **Acid-Base Equilibria.**—According to Wilson, Stearns and Thurlow, after parathyroidectomy a condition of alkalosis may develop which is neutralized by acid products formed by the muscular activity incident to tetany. An acidosis condition may result after periods of acute tetany. Periodic variations in the "nonvolatile" acid-base equilibrium seem to accompany the periodic attacks. The acidosis condition resulting from acute tetany or the injection of acid is associated with relief from tetany. Calcium salts, when injected into animals in tetany, lower the value of the dissociation constant of oxyhemoglobin and the alveolar CO_2 pressure, an effect similar to that brought about by the introduction of acids. The above conclusions were reached from a study of the variations of the values of the dissociation constant of oxyhemoglobin, the alveolar CO_2 pressure and the hydrogen-ion concentration of the blood from dogs subjected to parathyroidectomy.

66. **Excretion of Acids.**—After parathyroidectomy in dogs, there is usually a sudden diminution in the excretion of acids and ammonia and a decrease in the ammonia ratio and the hydrogen-ion concentration of the urine. With the development of tetany, the elimination of acids and ammonia increases, accompanied by increased values of the ammonia ratio and the hydrogen-ion concentration of the urine. These variations the authors believe may indicate that an alkalosis condition results after parathyroidectomy, but is neutralized by the tetany which develops. After acute or chronic tetany, an acidosis may occur.

69. **Ingested Purins and Uric Acid of Blood.**—Results are presented by Denis showing the effect of purin free and of high purin diets on the uric acid content of the blood of normal men and of persons suffering from various chronic diseases. In normal men no increase in the circulating uric acid is produced by the ingestion of large quantities of purin. In persons suffering from renal insufficiency a more or less marked increase in the uric acid content of the blood is produced by high purin feeding. It is, therefore, concluded that when the determination of uric acid in the blood is undertaken as a diagnostic test the insistence on a preliminary period during which no purin-containing foods are consumed is unnecessary except in cases in which kidney insufficiency exists, or perhaps in the case of persons who habitually consume extremely large quantities of purin-containing foods.

73. **Essential Factors in Diet.**—McCollum and Davis conclude that certain at present unidentified substances aside from protein, carbohydrates, fats and salts are indispensable for growth or prolonged maintenance, and furthermore, that there is a class of such accessories soluble in fats and another soluble in water and alcohol. From the data available it seems highly probable that, while the amount of accessory substances of either of these classes which is required to induce growth is small, the evidence points to the belief that a certain quantity must be present before any growth can take place, and that above this amount growth seems to be in some measure proportional to the amount of accessories present. It is obvious that in the study of the relative values of isolated proteins fed with mixtures of purified food substances comparable amounts of these two classes of accessories must be supplied. Otherwise no safe interpretation can be put on the results.

74. **Loss of Efficiency of Milk.**—McCollum and Davis found that skim milk powder which has been wet and long heated in a double boiler or heated for a period of one hour in an autoclave at 15 pounds pressure, no longer supports growth as does the unheated product. When heated, milk powder also loses its property of supplementing certain rations made up of polished rice, plus salts and butter fat; namely, rations which require both protein and water-soluble, accessory to make them support growth. Wheat embryo, which is as efficient as milk powder in supplementing such rice rations, can be heated for one hour in an autoclave at 15 pounds pressure without manifesting any deterioration in this respect as does milk. Skim milk from which the casein has been removed (whey) can be heated in an autoclave at 15 pounds pressure for one hour without noticeable loss of its nutritive properties. It still supplies the water-soluble accessory in active form. Whey from which the albumin has been removed by coagulation can be kept at the boiling temperature for six hours without any appreciable loss in its activity so far as the water-soluble accessory is concerned. Also lactose which has been heated in an autoclave for one hour at 15 pounds pressure, still behaves as does the unheated product in supplying to rations the water-soluble accessory. Heating casein in a moist condition for one hour in an autoclave at 15 pounds pressure destroys its biologic value as a complete protein. Heated casein or heated milk powder are shown to have little if any toxicity. The deterioration is due to a loss of value of the protein fraction of the ration through changes wrought in the casein.

86. **Abderhalden Reaction.**—In the experiments recorded by the authors practically every serum, whether from a pregnant or a nonpregnant individual, showed protein digestion when incubated with placenta tissue prepared according to Abderhalden. The range of individual variation in proteolytic activity was wide. The range covered by most of the normal serum was, however, identical with that covered by the majority of the pregnant serums. There is a tendency for the results from the pregnant serums to average somewhat higher than those from the nonpregnant. The difference, even in the averages, is not great, however; and the individual variations of both pregnant and nonpregnant serums make the results from both overlap so completely as to render the reaction, even with quantitative technic, absolutely indecisive for either positive or negative diagnosis of pregnancy. Further evidence of nonspecificity is seen in the fact that carcinoma tissue was digested to about the same extent as was placenta. It appears that nearly all human serums can digest certain coagulated tissue proteins to some extent, but that the source and significance of the proteolytic agents, and the influences that cause their fluctuation, remain undetermined.

Journal of Outdoor Life, New York

November, XII, No. 11, pp. 341-370

88 Four Essentials of Sanatorium Treatment. S. Coolidge, Middleborough, Mass.
89 Arrows of Sun. E. Cummings, Hinton, W. Va.
90 Two Morality Interludes for Children. G. M. P. Baird, Pittsburgh.
91 Method of Dealing with Tuberculosis in Public Schools of Toronto, Canada. F. S. Minns, Toronto, Canada.

Kentucky Medical Journal, Bowling Green

November, XIII, No. 12, pp. 507-582

92 Legal Status of Physician and Surgeon. F. Forcht, Jr., Louisville.
93 Relation of Physicians to Public; to Each Other and to Patient. J. W. Kincaid, Catlettsburg.
94 Plea for Uniformity of Treatment in Undoubtedly Surgical Diseases. J. G. Gaither, Hopkinsville.
95 *Pneumonia in Children. J. Martin, Cynthiana.
96 *Lobar Pneumonia. B. W. Wright, Bowling Green.
97 Blood Pressure in Diseases of Eye, Ear, Nose and Throat. J. H. Thorpe, Owensboro.
98 Hip Joint Disease. W. L. Mosby, Bardwell.
99 Puerperal Eclampsia. W. H. Strother, Owensboro.
100 Case of Cholelithiasis Simulating Gastric Ulcer. C. C. Turner, Glasgow.
101 Why We Should Attend County Medical Meeting. E. G. Thomas, Benton.
102 Significance of Albumen in Urine. J. T. Dixon, Owensboro.

95 and 96. Abstracted in The Journal, October 16, p. 1397.

Lancet-Clinic, Cincinnati

November 13, CXIV, No. 20, pp. 425-444

103 Physician; His Profession. E. O. Smith, Cincinnati.
104 Some Medical Problems. F. T. Murphy, St. Louis.
105 Conditions of Efficient Research in Dementia Praecox. B. Holmes, Chicago.

Medical Record, New York

November 20, LXXXVIII, No. 21, pp. 857-902

06 *Prognosis in Cardiovascular Diseases. T. E. Satterthwaite, New York.
107 Clinical Psychology in Its Relation to School and to Social Medicine. J. V. Haberman, New York.
108 *Significance of Presence of Acid-Fast Bacilli in Feces of Patients Suffering from Joint Disease. H. Keller and A. J. Moravek, New York.
109 Symptomatic Psychosis of Renal Type; Report of Two Cases. E. S. Brodsky, Westport, Conn.
110 Subdeltoid Bursitis; Report of Cases. S. Kleinberg, New York.
111 Inebriate Hospitals; Historical Note. T. D. Crothers, Hartford, Conn.

106. **Prognosis in Cardiovascular Diseases.**—Satterthwaite emphasizes the fact that no matter what the nature, location and extent of a valvular disease, the prognosis does not depend so much on the valve affection itself as on the condition of the myocardium. Complications must be taken into account. Among the most important considerations are the station in life occupied by the patient, his temperament, his occupation and his environment. The method of treatment has an important bearing on the prognosis. Blood pressure has much to do with the prognosis. A high blood pressure is a bad sign, even in the absence of interstitial nephritis. When the high pressure can be relieved by an appropriate dietary, laxatives and suitable medication, the danger to life is lessened, but even if the pressure has been reduced to the standard for the individual, it is still not a guarantee against arterial hemorrhage, though the expectation of life is improved. In all persons subject to high pressure, there is especial danger of cerebral hemorrhage or heart failure; for, even if the coronary arteries are not involved, increased pressure indicates that the heart is doing more than its normal quantum of work. So far as interstitial nephritis is concerned, Satterthwaite says, it need not necessarily be a bugbear. The most important sign of the approaching end is cardiac weakness that cannot be controlled by ordinary dosage with the group of remedies of which digitalis is the chief. The conditions of the arterial system must always be taken into account in making a prognosis.

108. **Presence of Acid-Fast Bacilli in Feces.**—As a result of their experimental and clinical investigation lasting over a year, Keller and Moravek believe (1) that the acid-fast bacillus found in the feces resisting the decolorization with 25 per cent. nitric acid, water solution, followed by alcohol (80 per cent.), is a tubercle bacillus and nothing else; (2) that the same acid-fast bacillus is viable, able to grow on culture media, and (3) that when those cultures are injected into guinea-pigs they produce tuberculosis. The result of this investigation was as follows: Active tuberculosis of joints, 42; tubercle bacilli in feces, 30; tubercle bacilli in urine, 2. Cured cases of joint tuberculosis, 6; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. Dubious cases of joint tuberculosis, 9; tubercle bacilli in feces, 1; tubercle bacilli in urine, 0. Of the dubious cases 3 turned out to be luetic infections; 1 was found to be suffering from a gonorrheal arthritis; 1 was shown to be an ordinary sprain of the knee joint; 2 cases are still doubtful; 1 case was lost sight of. The patient in whose feces acid-fast bacilli were found turned out to be suffering from tuberculous (active) arthritis of right hip. Control cases, 18; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0.' The above figures show that under normal conditions there are no acid-fast bacilli in the feces, also that only in active cases of joint disease are they present in the alvine discharges, and not in cured cases, and therefore the finding of the acid-fast bacilli in the feces in cases suffering from an active disease of a joint, and no active tuberculosis of any other part of the body, is of great significance in reaching a diagnosis in an obscure case.

New Jersey Medical Society Journal, Orange

November, XII, No. 11, pp. 533-584

112 Bone Grafting and Arthroplasty. G. H. Sexsmith, Bayonne.
113 Epilepsy with Special Reference to Heredity. D. F. Weeks, Skillman.
114 Institutional Care of Epileptics. D. S. Renner, Skillman.
115 Palinphrasia in Epilepsy; Report of Cases. L. F. Robinson, Skillman.
116 Difficulties Attending Treatment of Fractures in Epileptic. H. M. Chandler, Skillman.
117 What Dentistry Means to Epileptic. R. D. Ribble, Skillman.
118 What Field Worker Does and What She Finds. D. L. F. Brown, Skillman.

New York Medical Journal

November 20, CII, No. 21, pp. 1025-1072

119 Study of Drug Action. T. J. Mays, Philadelphia.
120 Lymphatic Obstruction. A. L. Benedict, Buffalo.
121 Parapsoriasis. F. Wise, New York.
122 Case of Kerion Complicated by an Abscess. J. Grossman, New York.
123 Artful Acarus. W. P. Cunningham, New York.
124 Proliferating Tuberculous Cystitis; Report of Three Cases. M. Laverrière, Lyons, France.
125 Chronic Urethritis, Gonorrheal and Postgonorrheal. A. Strachstein, New York.
126 Case of Acute Otitis Media in Seventeen Months Old Child. C. H. Smith, New York.
127 Potassium Permanganate in Examination of Cerebrospinal Fluid. A. I. Rubenstone, Philadelphia.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 30, II, No. 2861, pp. 629-664

1 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
2 Functional Murmurs and Irregularities of Heart. J. F. Goodhart.
3 Recruit's Heart. A. Morison.
4 *Effect of Exertion on Circulation. J. M. Macphail.
5 *Rapidity of Pulse Dependent on Persistent Disturbance of Vasomotor Mechanism. K. Boney.
6 Escape of Ventricle, in Association with Cerebrospinal Fever. J. D. Windle.
7 Successful Early Operation in Wound of Small Intestine. J. H. Stephen.
8 Some Cases of Head Wounds. H. H. Taylor.
9 Manufacture of Aseptic Hospital Furniture. J. L. Stretton.

4. **Effect of Exertion on Circulation.**—Exertion, according to Macphail, causes a rise in systolic pulse pressure, though a general vasodilatation may nullify this effect. There is always a lowering of diastolic pressure. In heart disease with failing compensation the fall in diastolic pressure is most pronounced; and there is often an almost complete absence of the predicrotic wave, pointing to a diminished systolic pulse pressure.

5. **Rapidity of Pulse.**—Twenty patients examined by Boney when first seen all presented the same general characters—a tired, listless expression, fatigue on walking a few yards or after a few simple exercises, and in one or two cases undue shortness of breath after any such slight exertion. In no case was any complaint made of pain, palpitation, or other subjective symptom. With possibly one exception there was no evidence of dilatation of the heart in any of them. None presented signs of hypertrophy. In every patient the position of the apex beat was within the nipple line. The cardiac impulse was not forcible or heaving, in fact, in some cases it was so weak as to be difficult of localization. The heart sounds were normal in character and correctly spaced. Accentuation of the pulmonary second sound was absent and no reduplication was observed. No form of irregularity was present.

With regard to the character of the pulse, in every patient except one the rate was normal while lying down. The volume was good, and no irregularity in rate or force could be detected by the finger. The tone of the vessel wall appeared good, but as a certain number of them showed thickening of the vessel wall (in five of them it was marked, although no cardiac hypertrophy was present) it is difficult to generalize about this. Blood pressure in the radial measured by a Riva-Rocci manometer varied from 120 mm. to 140 mm. Hg. In no case was there any dicrotism. On slowly assuming the erect position, in six patients only did the pulse keep within what was considered normal limits. In the remaining fourteen the rate was enormously increased, in some cases going up to 130 or even 140—in one case to 155. In the six cases to which exception was made on standing up the rate was increased by 15 to 25 beats a minute. There was a trace of albumin in one specimen of urine only. Other evidence of vasomotor instability was to be found in various circulatory disturbances exhibited in some cases. Cold hands and feet, even when warmly wrapped up in bed, were commonly noted, and in two patients flushing of the face was so marked as to be spontaneously remarked on by an independent observer. A "tache" could be obtained in two cases. Boney believes that everything points to a central lesion of the controlling nervous mechanism.

Edinburgh Medical Journal

November, XV, No. 5, pp. 305-384

10 Dangers of Artificial Pneumothorax. H. de C. Woodcock.
11 Roentgenography of Thorax in Children. J. S. Fowler.
12 Analysis of Sixteen Cases of Chorea and Motor Tic. J. E. Middlemiss.
13 Case of Congenital Desmoid Tumor of Rectus Sheath in Infant. D. M. Greig.
14 Two Cases with Multiple Intracranial Complications of Chronic Suppurative Otitis Media; Recovery After Operation. J. S. Fraser and W. R. Logan.

Indian Medical Gazette, Calcutta

October, L, No. 10, pp. 361-400

15 Report of Lady Hardinge Hospital, Brockenhurst, England, January 20 to June 15, 1915. F. F. Perry.
16 St. John Ambulance Association. O. St. John Moses.
17 Treatment of Kala-Azar by Tartar Emetic Intravenously and Inunctions of Metallic Antimony. L. Rogers.
18 Treatment of Kala-Azar with Tartar Emetic. E. Muir.
19 Outbreaks of Epidemic Dropsy in Mofussil. S. L. Sarkar.
20 Cholera Experiences. R. Bryson.
21 New Method of Gastro-Enterostomy. D. John.
22 Case of Hydrophobia with Incubation of One Year. K. K. Das.

Lancet, London

November 6, II, No. 4810, pp. 1009-1062

23 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
24 Nervous Affections of Sixth and Seventh Decades of Life. (To be continued.) J. M. Clarke.
25 *Experiences in Operative Treatment of Gunshot Injuries of Nerves. F. Eve and R. S. Woods.
26 *General Surgery of Gunshot Wounds of Nerves. W. Trotter.
27 Cavernous Angeioma in Wall of Left Auricle. R. F. Manifold.
28 Case of Optic Neuritis Following on "Gassing." G. Finch.
29 Experiences in Serbia, 1914 to 1915. J. T. J. Morrison.

25. **Operative Treatment of Gunshot Injuries of Nerves.**—Twenty-eight patients were operated on by Eve of which twenty-one were due to bullet and six to shrapnel or shell wounds. As regards the distribution of the lesions, five were injuries of the brachial plexus, eight of the musculospiral nerve, one of the posterior interosseous nerve, five of the ulnar, two of the median and ulner nerves together, and seven of the sciatic or external and internal popliteal nerves. In six cases the injured nerve or nerves were completely divided. The sciatic nerve was divided three times; the other nerves divided were the median and ulnar together in one case, and the musculospiral and posterior interosseus once each. In one instance the sciatic nerve was perforated with incomplete division of the external popliteal portion. The period elapsing between the receipt of the wound and the operation was often considerable. This period in all but four cases was three months or over; of the remainder, the shortest period was seven weeks. In the absence of evidence of improvement, and if the electrical reactions indicate a severe injury of the nerve, the authors are of the opinion that an operation should be performed as soon as the condition of the wound permits of its being carried out aseptically.

The chief point in the operative treatment of these nerve lesions is to determine whether simply to separate the injured nerve from the surrounding tissues or to resect it, and this is of greater importance owing to the fact that anatomic division is comparatively rare. In cases in which doubt exists as to the advisability of resection, an indication of the amount of damage may be sometimes furnished by blunt dissection of the nerve bundles from above into the cicatrix, to ascertain if they are continuous across it.

26. **Surgery of Gunshot Wounds of Nerves.**—So far as experience seems to show us at present the most important points in the technic of nerve resection, Trotter says, are free excision, exact coaptation, careful insulation, and perfect asepsis. Muscular relaxation before and after the operation is, perhaps, equally important.

Practitioner, London

September, XCV, No. 3, pp. 281-448

30 Value of University Training as Professional Asset. T. C. Allbutt.
31 How Is Medicine as Profession for Women Affected by War? J. Walker.
32 Professional Secrecy. W. A. Brend.

November, XCV, No. 5, pp. 589-728

33 An Appeal for More Extended Use of Whole Milk in Artificial Feeding of Infants. C. W. Vining.
34 *Gastric Roentgenoscopy in Children. L. Willox.
35 Recent Work in Diseases of Lungs. A. J. Jex-Blake.
36 Cerebrospinal Fever. T. H. C. Benians.
37 *New Operation for Relief of Pruritus Ani. I. Back.
38 Practical Hints on Removal of Tonsils and Adenoids. D. Guthrie.
39 Value of Blood Examination in Acute Disease. J. F. Rey.
40 Some Practical Hints on Removal of Superfluous Hair by Electrolysis. L. W. Bathurst.
41 Tragedy of Glycosuria. K. Robertson.
42 The Thyroid. H. R. Unwin.
43 Three Cases of Gallstones, Rarity of Condition in Trinidad, B. W. I. R. Seheult.

34. **Gastric Roentgenoscopy in Children.**—Willox found that the shape of the stomach with contents in children is not a fixed one, but presents many differences during the process of digestion; the same stomach may show different forms at different times. As a rule, in infants the shape is more or less globular, becoming elongated as the child grows older; so that in many cases in the older children the stomach, when examined immediately after the ingestion of a meal, is somewhat "F" shaped, and has some resemblance to a Dutchman's wooden shoe. The foodstuff of which a meal is composed does not in itself seem to have much, if any, effect on gastric motility. The important thing is the degree of fluidity of the meal; the more fluid a meal is, the more quickly it will pass through the stomach. The stomachs of older children empty quite as quickly, on an average, as those of younger children, if a meal similar in bulk and consistence is given. Practically as soon as the meal has been taken, while in others there seems to be a resting stage before peristalsis commences. The average time for the stomach to become empty was three and three-quarter hours, and the majority emptied in from three to four hours.

37. **Operation for Relief of Pruritus Ani.**—Back makes the same incision on each side of the anus, as in Ball's operation, but instead of dissecting up a flap he cuts down into the tissues of the ischiorectal fossa, and divides the inferior hemorrhoidal artery. One point in technic Back regards as important—to unite the cut edges with Michel's clips. Remove the clips on the fourth day; do not give a purge until the clips have been removed, in order to minimize the risk of infection of the wound.

Sei-I-Kwai Medical Journal, Tokyo

October, XXXIV, No. 10, pp. 49-52

44 Treatment of Ulcer of Stomach, Especially of Hemorrhage. Y. Miura.
45 Cure of Syphilis and Its Recurrence. K. Asahi and G. Murasawa.
46 Present Conditions of Treatment of Suppurative Meningitis. K. Kuribayashi.
47 *New Treatment of Acute Gonorrheal Epididymitis. Y. Murata.
48 Two Cases of Rat-Bite Treated by Salvarsan. Z. Oda.

47. **Treatment of Gonorrheal Epididymitis.**—Murata injected 30 gm. of calcium salt solution intravenously with success. After injection, pain disappeared and no hard induration was left behind.

Archives des Maladies du Cœur, etc., Paris

October, VIII, No. 10, pp. 317-360

49 *The Causes, Direct and Indirect, of Insufficiency of the Heart. H. Vaquez.

49. **Causes of Heart Insufficiency.**—Vaquez' long article reviews the numerous causes which may modify the circulation beyond the power of the heart to overcome, especially with preexisting organic trouble. He cites a few clinical examples to illustrate the various types described. Acute

insufficiency after extreme exertion is probably due to acute dilatation. The question whether overexertion can bring on acute dilatation is particularly important on account of legislation on workmen's compensation. It has been claimed that overexertion entailing acute dilatation merely exaggerates the phenomenon normally induced by ordinary effort. Vaquez insists, however, that this is not the case. Physical effort tends rather to reduce than to increase the size of the heart. He agrees with Raab that dilatation following physical exertion occurs only when the resisting power of the heart has been weakened by preceding infection or intoxication or an organic lesion. When angina pectoris develops suddenly after exertion, or cardiac insufficiency such as Da Costa observed in young soldiers of the Civil War, or exhaustion of contractility such as Münziger discovered in woodchoppers, syphilis or the strain of a military campaign or excessive beer drinking can usually be incriminated. Organic lesions in the left heart are particularly liable to acute insufficiency. He recently witnessed acute pulmonary edema develop in a young physician with a lesion of the aorta, perfectly compensated hitherto, after violent efforts to crank his automobile.

Errors in diet are also liable to bring on acute insufficiency of the heart, but not by solid food. An overhearty meal may cause palpitations and transient discomfort, but not actual cardiac insufficiency. This, however, can be induced by drinking large amounts of fluids. This is frequently the cause of serious mishaps in persons whose kidneys are not working properly at the time. It occurs mostly with mitral lesions and during asystolia. Reduction of the intake of fluids is an important factor in the management of such cases, and is even more indispensable with generalized lesions of the arterial system or high blood pressure with renal sclerosis. The danger from drinking too much fluid is particularly serious in these cases. It may entail sudden distention of the heart. Until physicians at watering-places learned to caution their patients not to drink too much of the waters, acute pulmonary edema was of comparatively frequent occurrence among those drinking glass after glass of the waters.

Salt is liable likewise to bring on acute pulmonary edema, especially with both heart and arterial affections, as the kidneys are usually more or less impaired in these cases. With simple valvular lesions, the immoderate use of salt may bring on the cardiac insufficiency more gradually, but in time the whole picture is presented. This may occur with the patient in bed and not exposed to physical exertion. After transient exhaustion of contractility of the left ventricle conditions may right themselves and the kidney eliminate salt as in normal conditions. But unless certain of this, the intake of salt should be regulated.

Heat and cold are not borne well by persons with unduly high blood pressure. Cerebral hemorrhage and acute dilatation of the heart, with pulmonary edema, are most common and most fatal in the winter in persons with arterial hypertension. Extreme heat, Turkish baths, are liable to elicit the first manifestations of heart disease or bring on fatal aggravation. The rapid heart action under the influence of fear or anger imposes extra work on the heart, but Vaquez remarks that cases in which emotional factors alone have brought on cardiac insufficiency are quite exceptional. He reviews, further, the extracardiac affections liable to induce insufficiency on the part of the heart. In fact, he says, there is no organ that may not influence the heart in some way. Recent research has shown infiltration of fat in the region of the bundle of His in cases of permanent bradycardia, thus confirming the assumption of Adams (1827) and Stokes (1846) that fat deposits might be responsible for the pathologically slow pulse.

Archives de Médecine des Enfants, Paris

September, XVIII, No. 9, pp. 461-516

50 *Orthostatic-Lordotic Intermittent Albuminuria in Children. (L'albuminurie posturale de l'enfance.) L. Jeanneret.
51 Treatment of Tetanus by Subcutaneous Injections of Antitetanus Serum. J. Comby.

50. **Intermittent Albuminuria in Children Usually Brought on by Keeping Still.**—Jeanneret remarks that Stirling was the first to call attention to intermittent albuminuria in children in connection with the position of the body, and he styled it "postural albuminuria." Jeanneret declares that this is the best name for it, as neither the orthostatic nor the lordotic attitude ever induce it except in the predisposed. The extreme lordosis which is induced by Rollier's pillow in heliotherapy of Pott's disease was borne by children at Leysin over long periods without their developing albuminuria. Jeanneret has also examined numbers of children with spontaneous extreme lordosis and no albuminuria was observed in them at any time. In still further tests, he had all the children in the Children's Hospital at Basel lie on Rollier pillows but albuminuria was scarcely ever observed from the extreme lordosis thus induced.. This was the more remarkable as the children in the hospital were all more or less debilitated. On the other hand, 20 per cent. of the children in school present intermittent albuminuria. Numerous tests were made in different cases. One child of 11 had no albumin in bed on a milk diet, none in bed on a mixed diet, none in three hours of extreme lordosis induced with the Rollier cushion, none playing in the garden, and none during half an hour standing erect but stepping from leg to leg or otherwise exercising the legs. Albumin, however, appeared in the urine in three minutes after the child stood erect in extreme lordosis and kept perfectly still. There was 1 per cent. the third minute; 2 per cent. the fifth; 3 per cent. the fifteenth, and 10 per cent. by the thirtieth minute.

Further tests confirmed the importance of the factor, keeping still, in the genesis of intermittent albuminuria, when this factor was superposed even on moderate lordosis. Of the 204 children examined, albuminuria could be induced by lordosis alone in only 3 per cent., and by a change from the seated to the erect posture (orthostatism) only in 1.3 per cent. Both together, the children not keeping still, induced albuminuria only in 1.6 per cent. But the combination of lordosis, orthostatism and muscular immobility induced more or less albuminuria in 49 per cent. The findings in the various groups are listed in detail in twelve tables. They show that the restlessness of children responds to a physiologic demand, and that children should not be expected to sit still in school. The school desk should be arranged to avoid inducing lordosis. The "negative" distance between bench and chair gave albuminuria in 34.4 per cent. of the children. He declares that the "zero distance" is the ideal for desk and bench, thus protecting against malposition of the spine and not inducing albuminuria. He explains the anatomic and physiologic conditions, with illustrations, which are liable to start the albuminuria when the normal play of muscles and the local circulation are checked in children by keeping motionless.

Bulletin de l'Académie de Médecine, Paris

October 5, LXXIV, No. 40, pp. 341-376

52 *Sodium Hypochlorite in Abortive Treatment of Infection of Wounds. Carrel, Dakin and others.
53 * Mumps Plus Epidemic Meningitis. (Oreillons et méningite cérébro-spinale.) P. Sainton and J. Bosquet.

October 12, No. 41, pp. 377-428

54 Formation of Blood Corpuscles from Hematoblasts in Pigeons and Poultry. (De la formation du sang sur les cellules vasoformatives des oiseaux.) G. Hayem.
55 *Serotherapy of Acute Poliomyelitis; Thirty-Two Cases. A. Netter.
56 Suture of Completely Severed Spinal Cord. (Note sur un cas de retour partiel de la motilité volontaire survenu après suture de la moelle épinière complètement sectionnée par un éclat d'obus—intervention pratiquée 130 jours après le traumatisme.) Lortat-Jacob, E. Girou and Ferrand.

52. **Abortive Treatment of Wounds.**—This method of treating wounds has been described in these columns recently, October 2, p. 1221. The work issues from the Rockefeller Foundation laboratory and hospital at Compiègne. Carrel states that with it infected wounds were completely sterilized and could be closed like an aseptic wound. For this, however, the hypochlorite must reach every remotest crevice of the

wound. Even when this has not been realized, the infection is considerably diminished by the applications.

53. **Mumps and Meningitis.**—In the case described, the clinical picture of the mumps was unmistakable when, the seventh day, meningitis developed. It was regarded at first as merely the involvement of the meninges in the mumps process, but meningococci were cultivated from the spinal fluid and antimeningitis serum soon cured the patient. The fluid drawn by lumbar puncture was nearly clear, which seemed to confirm the assumption that the meningeal symptoms were due to the mumps. Certain cases reported as such in the literature must have been in reality cases of the combination of the two diseases.

55. **Epidemic Poliomyelitis.**—Netter devotes six pages to tabulation of the details of thirty-two cases of epidemic poliomyelitis with the modifications induced by intraspinal serotherapy. These and the return of symptoms when it was suspended too soon, demonstrate the efficacy of the measure, he reiterates.

It not only arrests the progress of the paralysis but makes it retrocede to a complete cure, as a rule, on condition that the serotherapy is applied early enough, that is, from the first to the fourth day of the paralysis. The serum was derived from persons who had had the disease within six weeks up to twenty-nine years; the average interval was five years. The serum seems to retain its specific properties for more than thirty years. He sterilizes the serum by tyndallization, and injects from 5 to 13 c.c. into the spinal canal for eight days in succession, on the average. It is better tolerated by the spinal canal than horse serum, but still it evokes an inflammatory reaction, with sometimes transient fever and pains. In his 32 cases the cure was complete and rapid in 6; improvement approximating a cure in 3; 7 were very much and 5 considerably improved. In 5 others the influence of the serum was questionable, and in 3 no modification was apparent. In 7 cases the bulb was involved and these all terminated fatally, as also one other case. It is possible that monkey serum may prove to answer for therapeutic purposes, although the disease seems to be more serious in them even than in man, and they are liable to succumb early to it.

Paris Médical

V, No. 14, pp. 245-260

57 *Potato Bread in France After the French Revolution. (Pain économique; pain de pommes de terre; pain K.) E. Maurin.
58 Autoregulating Extension Device for Compound Fracture of the Femur. L. Senlecq.
59 *Phenol Treatment of Gas Gangrene. Mencière.

Nos. 15-16, pp. 261-304

60 *Orthopedic Surgery for the Wounded. A. Mouchet.
61 Artificial Legs on the Market; Amputation of Half of the Thigh. (Etude critique des appareils français pour amputations de cuisse à la partie moyenne.) Ducroquet.
62 Open Plaster Casts with Extension. (Les appareils platrés à anses pour le traitement à l'ambulance des fractures ouvertes et arthrites suppurées.) M. Lance.
63 Peritoneum Sheath (from Herniotomies) to Isolate Nerves and Tendons. L. C. Bailleul.
64 Vocational Training for Crippled Soldiers. (De la réadaptation et de la rééducation au travail des blessés et des mutilés de la guerre.) Borne.
65 Training Crippled Soldiers to Regain Use of Their Limbs. (La rééducation des mouvements chez les blessés de guerre.) P. Kouindjy.
66 Repair of the Jaws After Mutilating Wounds of the Face and Jaws. (Prothèse restauratrice.) L. Frey.

No. 17, pp. 305-320

67 Exercises for Stiff Joints. (La mobilisation; applications au traitement des blessures de guerre.) H. Somen.
68 Fulminating Perfringens Septicemia After Small Shell Wound. Lévy, Cotte and Latarjet.
69 Minor Wounds of the Skull. (Embarrures et lésions dure-mériennes.) J. Fievez.
70 Heliotherapy for the Wounded. (Cure de soleil et chirurgie de Guerre.) P. E. Morhardt.

57. **Potato Bread.**—Maurin quotes from an old French work directions for making bread of half wheat and half potato flour. A very palatable bread can be made, he says, by following the directions given, baking small loaves, and using less heat than for ordinary bread. This admixture of potato was recommended for reasons of economy during the years of poverty that followed the French revolution.

59. **Phenol Treatment of Wounds.**—Mencière pours phenol freely into the wound and then rinses it out with alcohol, and is convinced that this heroic measure has saved many men in his charge not only from amputation but has saved lives as well. He has seen it arrest gas gangrene already under way, and he advocates "phenolization" as a life-saving measure when the wound is deep, soiled and of a bad aspect. The phenol works down deeper than other antiseptics. After rinsing out the phenol with alcohol, he applies an embalming mixture of 10 gm. each of iodoform, guaiacol, eucalyptol and 90 per cent. alcohol, with 30 gm. Peruvian balsam and 10 c.c. ether. He uses 9 parts phenic acid crystals dissolved by 1 part alcohol—only just enough to liquefy them. He fills the wound up with this, and with small tampons works it into all crevices. After one minute, or a minute and a half in gas gangrene, he rinses it out with alcohol, using three or four liters, and then applies the embalming fluid or the same with ten times the amounts of ether and alcohol.

60. **Orthopedic Surgery in War.**—This entire number is devoted to orthopedics and protheses for wounded soldiers and training to "uncripple the cripples," that is, to enable them to be self-supporting. Each article is profusely illustrated.

Presse Médicale, Paris

October 25, XXIII, No. 51, pp. 417-424

71 Fractures of the Lower Jaw in War; Anatomic Conditions. L. Imbert and P. Réal.
72 Gelose-Glucose-Lead Culture Medium Differentiates Typhoid and Paratyphoid A and B Bacilli. P. P. Lévy and P. Vallery-Radot.

October 28, No. 52, pp. 425-432

73 Treatment of Psychoneuroses in the Active Army. (Psychonévroses de guerre.) Grasset.
74 Early Sterilization of Wounds with Superheated Air or Oxygen. H. L. Reverchon, Vignat and Vaucher.

Berliner klinische Wochenschrift

October 25, LII, No. 43, pp. 1105-1128

75 Causes and Cure of Itching. (Entstehung und Beseitigung des Juckens.) P. G. Unna. Commenced in No. 42. Continued.
76 *The Viscosity of the Urine. C. Posner.
77 Clinical and Bacteriologic Findings in Dysentery Plus Typhoid. (Mischinfektionen von Ruhr and Typhus.) M. Soldin.
78 Infectious Diseases in the Active Army. (Meine Kriegserfahrungen über Infektionskrankheiten.) Grundmann. To be concluded.
79 Roentgen Localization of Foreign Bodies. (Zur Methodik der Fremdkörperlokalisation.) R. Fürstenau. (Erwiderung.) W. Salow.
80 Medical Aspects of War: Historical Sketch. (Historisches zur Kriegsmedizin in Frankfurt a. M.) W. Hanauer. Commenced in No. 42.
81 Legal Decisions Affecting Physicians. (Aerztliche Rechtsfragen.) H. Lieske.

76. **The Viscosity of the Urine.**—Posner remarks that it is a comparatively simple matter to determine the viscosity of the urine in comparison to examining that of the blood. Neither sugar nor albumin in the urine seems to affect its viscosity in the least, but the blood corpuscles display a marked tendency in this respect, especially the whites, and tube-casts even more than the blood cells. The viscosity increases with the concentration of urine, and measures to increase diuresis not only ward off production of concrements by rinsing out the kidney and urinary passages, but have a still further beneficial action by reducing the concentration of the urine. The benefit in lithiasis from courses of alkaline mineral waters is explained by the lowering of the viscosity of the urine under their influence.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 23, XLV, No. 43, pp. 1345-1376

82 *Extrapleural Pneumolysis, Supplemented by Injection of Paraffin; Three Cases. (3 Fälle von extrapleuraler Pneumolyse mit sofortiger Plombierung nach Baer.) F. Oeri.

82. **Pneumolysis Plus Injection of Paraffin.**—Oeri has applied in three cases of pulmonary tuberculosis Baer's method of compressing the lung by injection of paraffin. The

lung is first detached from all connection with the wall, working through the small hole made by partial resection of a rib. The pleura is separated with the lung, the pneumolysis thus being done between the costal pleura and the endothoracic fascia, over the cavity in the lung. The cavity wall is then pushed in to close it up completely and the space left between the costal pleura and the chest wall is filled in with a paraffin mixture which is still kneadable at body temperature. The incision is then sutured. The aim is practically the same as that of artificially induced pneumothorax, but the filling technic can be applied when conditions prevent effectual therapeutic pneumothorax. The operation and filling are done under local anesthesia; there is too much danger of aspiration of crushed lung tissue for general anesthesia to be used. Among the advantages are the exact dosage, the limiting of the compression directly to the cavity area, and the fact that no repeating is necessary. The experiences were all favorable in the three cases reported, and Oeri thinks that this should outweigh the theoretical objections to this technic. The three cases are described in detail, with illustrations. One patient was a delicate young woman who for four years had had an apical process with cavity, profuse expectoration, slight hemorrhage and periods of fever. Since the paraffin was injected, fifteen months ago, she has regained her earning capacity, and except for a brief set-back in the winter, has been free from fever and almost free from sputum. The second patient was a young man with signs of pulmonary tuberculosis since 1909. As the cavity was obliterated and held compressed by the paraffin, the drain on his health from the suppuration was arrested and with it the effects of toxic action, the fever and the cyanosis subsiding. Both lungs had cavities but by obliterating the one large cavity conditions were materially improved, and the lung processes have shown no progress during the twenty-one months since. In the third case, the large cavity was in the lower lobe and had not shown much if any benefit under a year's treatment in a sanatorium. The man of 27 was subject to hemorrhages, increasing in severity, with fever and much expectoration. He has now apparently regained his earning capacity and is free from all disturbances. No damage seems to have resulted from the filling in any case. In each instance an ineffectual attempt had been previously made to induce a pneumothorax.

Münchener medizinische Wochenschrift, Munich

October 19, LXII, No. 42, pp. 1417-1452

83 *Colorimeter in Quantitative Analysis. (Ueber kolorimetrische Bestimmungsmethoden: die quantitative Bestimmung von Harneiweiss. X.) W. Autenrieth and F. Mink.
84 *Roentgen Treatment of Venereal Bubo. K. Kall.
85 Slight Hematuria with Sound Kidneys Before Onset of Spasmodic Stage in Four of Five Cases of Whooping-Cough. (Befund von Erythrozyten und Erythrozytenzylindern im Harn bei Keuchhusten vor Ausbruch des spasmodischen Stadiums.) F. Kornmann.
86 Swallowed Tooth Plate Ejected under the Influence of Subcutaneous Injection of an Emetic. (2 Fälle von verschlucktem Gebiss, geheilt durch subkutane Apomorphininjektion.) Gerstein.
87 Progress in the Physics of the Roentgen Rays. A. Sommerfeld.
88 Wounds of the Skull. (Richtlinien in der Behandlung der Schädeltangentialschüsse.) M. Wilms. (Ueber den zerebellaren Symptomenkomplex in seiner Bedeutung für die Beurteilung von Schädelverletzten.) K. Goldstein.
89 Heart Disturbances in Soldiers. (Die Herzkrankheiten und Herzstörungen der Soldaten im Felde.) E. Schlesinger.
90 Broad Cotton Rings Veiled with Gauze for Open Treatment of Wounds. (Offene Wundbehandlung mit Zellstoffmullringen.) Lörcher.
91 Orthopedic Appliances for the Wounded. III. (Arbeitsschiene für Radialislähmung.) A. Heymann.
92 Treatment to Loosen Up and Counteract Cicatricial Contracture. (Ueber erweichende Behandlung.) J. Fränkel. Commenced in No. 41.

83. **The Colorimeter for Determination of Albumin in Urine.**—In this tenth communication on colorimetry, Autenrieth and Mink give the quantitative findings in regard to the albumin in the urine in eleven cases as tested by various technics. With the gravimeter and the colorimeter the figures were respectively 2.812 and 2.86 per thousand; 1.16 and 1.15; 3.86 and 3.88; 2.8 and 2.8; 3.22 and 3.43; 0.962 and 0.91; 0.392 and 0.35; 1.24 and 1.26; 0.424 and 0.47; 4.36 and 4.47; 2.08 and 2. These figures confirm the precision of the colorimeter technic. They give the minute details of their technic as adapted for the general practitioner. They refrain from boiling the urine directly, but heat it for five minutes in boiling water. A number of minor points are mentioned that facilitate the test.

84. **Treatment of Venereal Bubo with Roentgen Rays.**—Encouraged by the benefit from roentgenotherapy in tuberculous glandular disease, Kall has been applying it in treatment of venereal bubos during the last eighteenth months. The results have been so good that he urgently advocates this method in their systematic treatment, especially in the early stages before much inflammation has developed. The treatment is more successful before there is suppuration; the pain subsides and the patient is able to go about without disturbances of any kind from this source. Even after fluctuation has set in, the leukocytes are destroyed by the Roentgen rays and all are apparently absorbed. The fluctuation, the pain and the redness all disappear, and the infiltration gradually retrogresses, but the spot is left pigmented. Even indolent syphilitic bubos respond promptly to the Roentgen ray. Developed abscesses have to be evacuated with an incision, but the secretion ceases and the abscess heals quicker under exposures afterward. Doses of 10 or 20 X are ample for the purpose, with a 0.5 mm. aluminum filter.

Wiener klinische Wochenschrift, Vienna

September 30, XXVIII, No. 39, pp. 1049-1072

93 Experiences with Typhus. (Flecktyphus.) L. Detre.
94 *Spontaneous Agglutination of Blood Corpuscles in Malaria. (Spontane Hämagglutination.) R. Biglieri.
95 The Urochromogen Reaction a Valuable Differential Sign of Typhoid. (Die Urochromogen-Reaktion Weiss im Harne bei Typhus abdominalis.) V. Svestka.
96 Technic for Production of Bacterial Vaccine. (Bakterienimpfstoff-Herstellung.) O. Löwy.
97 *Disturbances in Micturition After Getting Chilled. (Versuch einer Analyse der Miktionsanomalien nach Erkältungen.) O. Schwarz.
98 Detection of Simulation of Deafness by Mouth-Reading Exercises. (Entlarvung von Taubheit und Schwerhörigkeit Simulierenden.) J. Kindlmann.
99 Emergency Extension Device Made from Four Guns for Fracture of Femur. (Ein transportabler Streck-Hänge-Verband für Oberschenkelschussfraktur.) H. H. Schmid.

October 7, No. 40, pp. 1073-1100

100 *Vascular Erythema. (Eine bisher nicht beschriebene Dermatose: Erythema vasculosum.) B. Lipschütz.
101 *Contusion of the Abdomen; Three Cases. N. Moro.
102 Subcutaneous Granulomas Secondary to Wounds. K. Wagner.
103 Acute Poliomyelitis in Austria. (Vorkommen der spinalen Kinderlähmung in Oberösterreich in den Jahren 1909 bis 1913.) G. Stiefler.
104 How Cholera Was Stamped Out in Three Days. (Bekämpfung der Choleraepidemie im provisorischen Kriegsgefangenenlager zu K.-S.) L. Detre.
105 Improvised Pasteboard Splint. (Eine Hohlschiene aus Pappendeckel zur Selbstanfertigung geeignet.) C. Springer.

October 12, No. 41, pp. 1101-1128

106 Bacteriologic Diagnosis of Dysentery. G. Salus.
107 "Typhus" in Galicia True Typhoid. (Zur Frage des Flecktyphus auf dem galizischen Kriegsschauplatze.) W. Spät.
108 Roentgen Localization of Foreign Bodies in the Tissues. V. F. Hess.
109 Harmless Pumpkin Seeds More Effectual Than Male Fern in Treatment of Tapeworm. (Ueber Bandwurmkuren.) L. Stefanowicz.
110 *Twenty-Five Cases of Foreign Bodies in Larynx, Trachea or Bronchi. K. Kofler. Commenced in No. 40.
111 Experiences While a Prisoner in Russia and During the Escape Through Turkestan. R. Strisower.
112 Prophylaxis of Venereal Disease at Close of the War. Brandweiner.

94. **Spontaneous Agglutination in Malarial Blood.**—Biglieri reports from the Malaria Laboratory at Tucuman (Brazil) that spontaneous agglutination was noted in 158 of 600 malaria cases. The test was positive in 56 per cent. of the 113 tertian malaria cases and in 55 per cent. of the 55 quartan, while it was positive in 63 per cent. of the 103 cases of malaria of the tropical type. The findings were also positive in 54 other cases with symptoms of malaria but no parasites to be found in the blood. This spontaneous agglutination was noted likewise in puerperal septicemia and also in the pregnant women examined. In tuberculosis and

typhoid the response was negative, as in healthy blood. The test was made with Ross' drop method; instead of the drop of blood drying evenly, there is clumping of the blood corpuscles in a few seconds if the phenomenon occurs.

97. **Disturbances in Micturition After Getting Chilled.**—Schwarz has encountered a number of cases of painful or scanty urination or enuresis in soldiers on active service exposed to the vicissitudes of the weather. No organic trouble could be discovered, but the jet was exceptionally powerful. The painful type of disturbances resembled the dysuria with enlarged prostate; in two cases there was complete retention. Analysis of the various cases suggested a probable peripheral infectious nervous affection as the cause of the trouble in some cases. This entailed either hypertony of the detrusor nerve, with consequent incessant desires to urinate and forcible expulsion of the urine, or it entailed paresis of the detrusor and depressed sphincter functioning, thus preventing the normal voiding of the bladder.

100. **"Vascular Erythema."**—Lipschütz discovered among the soldiers in his charge at Przemysl twenty cases of an acutely developing skin affection which was new to him. Red spots appear on the skin resembling the roseola of syphilis, but the minute vessels in the area are extremely dilated and congested. This circumscribed erythema lasts from one to several days; it appears mainly on the chest and back, and displays a marked tendency to recur. One man related that he had had this affection return again and again during the last few years. There was no break in the epithelium, as would have been the case if the efflorescence had been the result of an insect bite. The dermatosis, Lipschütz adds, is most certainly not an inflammatory process nor what is generally called a circulatory disturbance.

101. **Contusion of the Abdomen.**—Moro reports a case of a pseudocyst in the pancreas with recovery after the walls of the cavity had been sutured to the skin to facilitate drainage. The operation followed in about a month after the contusion. Pains in the pancreas region developed after healing of the fractured ribs and arm. The pseudocyst contained 1.5 liters of fluid and continued to secrete profusely for three weeks but recovery was finally complete after cauterization of the fistula. In the second case the spleen had been torn across down into the hilus by the contusion and it was removed. The muscular defense and the free fluid in the abdominal cavity called for the laparotomy. A not long preceding scarlet fever had predisposed the spleen to a rupture as it was nearly twice the normal size and abnormally soft. Seven months later the boy was apparently in perfect health but the leukocytes numbered 12,300 and the lymphocytes formed 30 per cent.; the eosinophils 16 per cent., showing a certain influence on the blood picture from the lack of the spleen.

In the third case there was muscular defense on the right side of the abdomen after the contusion but there were no signs of free fluid and no spontaneous pain except between the shoulders. No vomiting, no urinary derangement, and the shock was transient. The pulse was normal, but this must be regarded as an abnormally slow pulse as after such a contusion the pulse usually runs up. The liver was found crushed and torn, three large and several small pieces having been pried off from the liver by the contusion. Suture was impossible and the man died the seventeenth day after presenting jaundice from the second day.

110. **Foreign Bodies in the Air Passages.**—There was no mortality in the twenty-five cases reported from Chiari's service in the last five years. One patient was a young man into whose throat a coin had slipped over five months before. There was slight coughing at first, but after that not the slightest disturbance, neither in breathing, speaking or swallowing, smoking or singing. A roentgenogram taken the same day showed no trace of the coin and it was supposed to have passed into the stomach. Five months later his throat was painted with iodized glycerin several times as he complained of laryngitis; after a few days there was pain on swallowing. Roentgenoscopy then revealed the edge of the coin visible between the vocal cords where it had evidently been impacted for nearly six months. The first roentgen examination had evidently shown the coin (a *Krone* piece) from the side alone, as a straight line on the median line, and its shadow had been overlooked. As there were no further disturbances from its presence, the suspicion of a foreign body was abandoned. The patients were seen soon after the foreign body had been aspirated in all but eight cases. In one of the latter group a two-teeth piece of a set of false teeth had been in the bronchi for seven years, inducing disturbances ascribed to other causes as the false teeth had been assumed to have passed into the stomach.

The foreign bodies were in the right twice as often as in the left bronchus. In some of the five cases of a foreign body free in the air passages, it could be heard hitting against the vocal cords. In one case the cough was ascribed to recurrence of whooping cough. Direct upper bronchoscopy was applied in twenty-four of the cases but in one the swelling of the bean rendered tracheotomy at once imperative. The extraction was always found easiest with the patient in the dorsal decubitus, possibly with the upper part of the trunk lowered. The suggestion is made that hard smooth foreign bodies, such as glass beads, which it is sometimes so hard to grasp, might drop out of themselves if the patient was under the influence of a general anesthetic and then turned with the head downward. Reflex contraction prevents the dropping out of the foreign body when this is done without general anesthesia, but with the muscles relaxed it might be worth a trial before starting on tracheo-bronchoscopy. Large quantities of phlegm or pus interfered with the extraction in some of the older cases; this was combated by injection of morphin and lowering the head in some of the cases. In one case the tip of the instrument was bent so that it could be introduced into the hole in a bead which kept slipping out of the extracting forceps. The patients were not allowed to talk after extraction of the foreign body, to spare the larynx, and cold was applied externally to the neck, and the food given was all fluid and cold. In five cases tracheotomy became necessary a few hours later, on account of swelling of the mucosa of the subglottic space, and large amounts of secretions were voided through the cannula, after which healing proceeded rapidly. Kofler remarks in conclusion that an elliptical shape for the tubes used in tracheobronchoscopy and esophagoscopy permits a much more spacious lumen than a round tube, especially for children. The curve of an elliptical tube also permits better inspection of the field.

Zentralblatt für Chirurgie, Leipzig

October 23, XLII, No. 43, pp. 769-784

113 *Apparatus for Extension Permitting, from the First, Passive or Automatic Movements of the Joint. (Streckverbandapparat mit passiven Gelenkbewegungen und Streckverbandapparat mit automatischen Gelenkbewegungen.) Ansinn.

114 *Ekehorn's Operation for Prolapse of the Anus. J. Becker.

113. **Extension Apparatus Permitting Exercise from the First.**—Ansinn states that the stiff knee and atrophied muscles encountered so often after a fractured femur has healed, demonstrate the need for exercising the knee from the start. To meet this he has devised an apparatus with a T splint which applies extension to both thigh and leg, leaving the knee free and balanced so that it is easy to raise and lower the part controlling the thigh. The attendants can thus exercise the joint from time to time or the patient can do it himself with a rope and pulley, or it can be kept up day and night by connecting the apparatus with a small electric motor. In the thirty cases in which he has applied this apparatus to date the effect realized has surpassed the highest anticipations, the fracture healing without a trace of ankylosis or muscular atrophy while consolidation was complete exceptionally early.

114. **Ekehorn's Operation for Prolapse of the Anus.**—The technic for this operation was described in The Journal, June 12, 1909, p. 1966. It was devised for children, but Becker was much gratified at the prompt and permanent cure in the man he has treated with it. A stout silk thread is passed around the anus, just under the mucosa, the ends drawn up

and tied over the sacrum. The thread was left for twenty days, the tampon frequently renewed, and the thread drawn along each time. The aim is to induce an irritation in the passage bored by the curving needle passed around the anus, and kept open by the thread. The slight irritation causes production of enough cicatricial tissue to hold back the prolapse.

Zentralblatt für Gynäkologie, Leipzig

October 23, XXXIX, No. 43, pp. 747-762

115 *Hirschsprung's Disease Preventing Delivery. (Megakolon als Geburtshindernis.) R. T. Jaschke.

115. **Megacolon Impeding Delivery.**—The apparently healthy young woman was at the tenth month of her first pregnancy when she applied for relief from obstipation. A large tumor was found almost filling the small pelvis, and assumed to be an impacted cervical myoma. Under castor oil and enemas the bowels moved daily and the patient seemed in the best health with good appetite. When labor set in the child was delivered by cesarean section, and the tumor was found to be the sigmoid flexure, measuring 60 cm. in circumference, the entire large intestine enormously distended with thickened walls. The patient seemed to be doing well under measures to clear out the megacolon but collapsed the sixth day with symptoms of severe intoxication. Necropsy showed ulceration throughout the colon, but no peritonitis. The suture in the uterus was intact. Notwithstanding the extensive ulceration in the large intestine and the quantities of feces extracted or voided spontaneously, no blood had been visible in the stools; Jaschke thinks that there must have been some chemical decoloring process at work. Whether the megacolon was congenital or acquired is not known, but there was a history of one severe illness in childhood with no movements of the bowels for eight days.

Grèce Médicale, Athens

June 1-15, XVII, Nos. 11-12, pp. 21-24. French Supplement to Iatriki Proodos

116 *Typhoid Pyonephrosis. P. Soubeyran and S. N. Oeconomos. Concluded in No. 13.

August-September, Nos. 15-18, pp. 29-32

117 *Treatment of Parasyphilitic Affections. J. Cecikas.

116. **Typhoid Pyonephrosis.**—Soubeyran and Oeconomos report the case of a youth of 17 who developed right seropyelonephrosis during convalescence from severe typhoid. The kidney was drained with two tubes and conditions apparently righted themselves. Three months later, however, high fever and pyuria, alternating with retention, compelled nephrectomy. The kidney was found distended with pus. The walls were so thin and degenerated that the organ looked like a pig bladder full of pus. The patient promptly recovered after its removal. Records of only six cases of the kind were found in the literature, all but one in men. The pyonephrosis became manifest the thirteenth day in one of the cases, during convalescence in most of the others, and from one to several months later in the rest.

117. **Treatment of Tabes and Paralysis.**—Cecikas relates a few striking cases from his practice to emphasize his statements as to the clinical cure possible in tabes and general paralysis when they are detected early and given vigorous treatment. The increasing proportion of mild and abortive types of these affections may be credited, he remarks, to the more energetic treatment we are now giving syphilis. We know, he continues, "that mercury stored in the tissues gets into the circulation again in waves of elimination, hence its capricious reappearance in the urine, often after prolonged eclipses. Secondary lesions, refractory during the course of treatment, may retrogress during this flux of mercury into the blood, and gradually disappear entirely." He says of salvarsan that as it is precipitated by body fluids, the greater portion fails to have any action until it gets dissolved again. In order to augment the action on the parasites without increasing the toxicity, he advocates combining salvarsan, mercury and arsenic. The very gradual elimination of the two latter renders the treatment with the three practically successive, even when they are given together. The main point in treatment is to suspect possible tabes or paresis in every case of nervous trouble, even mere neurasthenia, insomnia, vertigo or pains, and any tendency to weakness or anemia or loss in weight in an old syphilitic. The serum should be examined for the Landau and Wassermann reactions and its power to digest brain tissue, and the cerebrospinal fluid should be examined for its albumin and cell content and its power to deviate complement.

Policlinico, Rome

October 24, XXII, No. 43, pp. 1437-1468

118 Purification of Vaccine. (Sulla purificazione del vaccino Jenneriano.) L. M. Spolverini.

119 *Gonorrheal Keratosis of the Penis. (Cheratosi blenorragica del glande.) G. C. Sanfilippo.

119. **Gonorrheal Keratosis.**—In the case reported the man was being treated for acute gonorrhea with involvement of one knee when circinated lesions of keratosis developed on the penis, commencing around the urinary meatus. They were the characteristic gonorrheal horny patches, and all subsided as the gonorrhea yielded to treatment, thus confirming the gonorrheal nature of the affection. It was the young man's second experience with gonorrhea after an interval of five years.

Riforma Medica, Naples

October 16, XXXI, No. 42, pp. 1149-1176

120 Technic for Making Antityphoid Vaccine. (Alcune norme di tecnica per la preparazione dei vaccini del tipo antitifico. Coltivazione dei germi e dosaggio dei vaccini.) F. Porcelli-Titone.

121 Three-Day Fever at Naples. C. Martelli.

October 23, No. 43, pp. 1177-1204

122 Classification and Treatment of Arrhythmias. (Sulla terapia delle cardiopatie. I.) G. Rummo.

123 Metabolism of Nitrogen in Exudates. (Ricerche cliniche e sperimentali sul metabolismo dell'azoto negli essudati.) F. Alzona. Commenced in No. 42.

Brazil-Medico, Rio de Janeiro

October 2, XXIX, No. 37, pp. 289-296

124 Action of Pyrethrum on Mosquitos. A. da Costa Lima.

October 16, No. 38, pp. 297-304

125 Brazilian Species of Genus Tetrameres Cliplin, 1846. L. Travassos.

126 Urethroscopy in Men. A. Pereira. To be continued.

Semana Medica, Buenos Aires

August 5, XXII, No. 31, pp. 155-182

127 The Oscillometer in Diagnosis of Mitral Valvular Disease. R. A. Bullrich.

128 Encouraging Results with Radium Treatment of Certain Affections of the Middle and Internal Ear. (Radiumterapia en algunas afecciones del oido.) D. J. Spinetto.

129 The Pulse with Heart Disease. (El pulso en las enfermedades del corazon.) E. Rodriguez. Concluded in No. 32.

August 12, No. 32, pp. 183-210

130 History and Present Status of Serotherapy of Bubonic Plague. J. Moreno. Concluded in No. 34.

August 19, No. 33, pp. 211-238

131 *Severe Poliomyelitis with Recovery Under Injections of Convalescent's Serum. G. A. Alfaro and J. M. Hitce.

132 Inflatable Girdle to Sustain Sagging Stomach. (Ptosis gastrica y cintura neumatica hypsogastrica de Enriquez.) J. F. M. Gomez.

133 Technic for Testing Antitetanus Serum. G. Tizzoni and P. Perrucci.

August 26, No. 34, pp. 239-266

134 Present Status of Arteriosclerosis. C. P. Mayer. Commenced in No. 32.

135 Case Showing Danger of Mistaking Fibroma Under the Mucosa for Retained Scrap of Placenta. F. A. Deluca.

131. **Serotherapy of Acute Poliomyelitis.**—Alfaro and Hitce report the case of a 7 months' babe completely paralyzed by the fourth day of acute poliomyelitis; swallowing was difficult and respiration shallow and irregular. As the condition was growing worse, 2 c.c. of serum from two children who had had the disease a few months before was injected into the child's spinal canal the seventh day of the disease. Improvement was evident, and it continued to progress under further daily injection of 1.5, 2 or 3 c.c. of the serum, all the paralysis subsiding. There was no local or general reaction to any of the injections, and a total of 25 c.c. was thus injected

in the course of two weeks. The child was soon completely restored. They followed Netter's technic. The three middle injections were of serum from a young woman with diffuse myelitis; the diagnosis of poliomyelitis proved a mistake in this case.

Russkiy Vrach, Petrograd

XIV, No. 36, pp. 841-864

136 *War Psychoses. A. V. Gerver. Commenced in No. 34.
137 Indophenol Oxidase in Tissues of Animals, and the Variations Caused by Staphylococcus Infection. B. I. Slevtzoff and L. N. Chernevsky.
138 *Vaccination Against Gaseous Gangrene. V. I. Nedrigailoff.
139 *The Method of Rowntree and Geraghty in Functional Diagnosis of Renal Diseases. E. M. Naroditzky.
140 *Experimental Infection of Siberian Marmot with Plague During Hibernation. N. A. Gaisky.

No. 37, pp. 865-888

141 Operative Treatment of Hernia. B. K. Finkelstein.
142 *Sequestration of the Liver After an Operation for Acute Appendicitis. L. G. Stukkey.
143 Acanthosis Nigricans. P. S. Grigorieff.
144 *Tetany Successfully Treated with Parathyroid Extract. D. M. Rossiysky.
145 Apraxia. S. A. Liass.

136. **Psychoses in the Russian Army; Absence of Alcoholic Insanity.**—Gerver divides the war psychoses into three classes: To the first belong psychoses arising in persons without any hereditary taint, being caused solely by the war environment and violent emotions resulting from battles. To the second class belong psychoses that would develop in ordinary circumstances of peace, but which were prematurely brought on by the war. Here belong dementia praecox, manic-depressive insanity, paranoia, paralytic dementia, etc. To the third class belong traumatic psychoses, caused by wounds and contusions. The psychoses of the first category do not differ in any way from the old types, but they may be subdivided into those caused by battles, by trench life, and the rear guard psychoses. Clinically they belong to the acute mental disorders, amentia and asthenic psychoses. Frequently they develop in the form of neurasthenic insanities. The specific character of war psychoses of all the three classes consists in the peculiar coloring and the character of the hallucinations, illusions, delusions, and the patient's conduct. The contents of the hallucinations and delusions are the experiences of the war life. Another feature is depression, followed often by excitement, and confusion of consciousness. The character of the battle (artillery, infantry, bayonet attacks, etc.), the duration of the war life at the front, the course of military events (offensive or defensive, victories or defeats), and the general morale of the army determine the larger or smaller proportion of psychoses that develop. Gerver further claims that in the present campaign the amount of psychoses is comparatively small, about 1 per thousand; in the previous wars the rate was 2 or 3 per thousand. The main cause of the decreased rate is the total absence of alcoholism. In the Russo-Japanese War this was responsible for one third of all the psychoses. In the present campaign there has not occurred a single case of alcoholic insanity.

138. **Vaccine Against Gas Gangrene.**—Nedrigailoff offers a rapid method of preparing a vaccine against gaseous gangrene. He used as material the exudate from an incised gangrenous ulcer and two pieces of diseased muscles and subcutaneous tissue which were ground in a mortar and placed in a small tube with the fluid, mixed with three times the amount of normal salt solution. The corked tube was then thoroughly shaken for ten or fifteen minutes. The contents of the tube were then filtered through a small piece of cotton and through a Chamberland or Berkefeld filter. Twenty to thirty minutes later a sufficient amount of sterile, reddish fluid accumulates ready to use. Altogether it takes two hours to prepare the vaccine. Another method, by heating, can be used in the absence of a Chamberland or Berkefeld candle, but the heating method takes six to eight hours. The vaccine prepared by the first method was used on a guinea-pig which received 5 c.c. hypodermically; a painful edema developed which disappeared in three days. He had no opportunity to use it on men, as in his cases of gas infection death rapidly followed.

139. **The Phenolsulphonephthalein Test of Kidney Functioning.**—Naroditzky studied this reaction in thirty-seven cases of various renal lesions and in nine subjects with apparently healthy kidneys. The test was always made in the morning, the reagent having been injected in the upper portions of the gluteal muscles or into the lumbar muscles. Twenty to thirty minutes before the injection the patient was given 200 or 400 c.c. of water. The test dose was 6 mg. dissolved in 1 c.c. of water. The urine should be examined for the presence of the reagent immediately, or not later than two hours after the injection. He found that the phenolsulphonephthalein test is a good aid in the diagnosis of functional renal activity even in those cases in which other methods fail, but it is important to determine the amount of the coloring substance eliminated during the first hour. This test differentiates between parenchymatous and interstitial forms of nephritis. In mixed and parenchymatous nephritis, as well as in other renal affections, it is possible to determine, to a certain extent, the involvement of the interstitial tissue. In acute cases, repeated examinations may reveal improvement in the state of the kidneys. Naroditzky also found that with reduced elimination of the phenolsulphonephthalein there is increase of nitrogen in the blood, especially in interstitial nephritis. The phenolsulphonephthalein does not indicate a general retention of nitrogen in the blood, only that a part of the nitrogen is retained which is normally voided by the affected kidney. Therefore, the power of the kidney to eliminate nitrogen can be easily determined by this test without resorting to complicated and difficult methods of determining the nitrogen rate in the patient's blood.

140. **Experimental Inoculation with Plague.**—Gaisky infected Siberian marmots with a forty-eight hours old agar culture of bubonic plague bacilli while the animals were in a condition suggesting winter sleep. A dose of one-millionth or a tenth of one-millionth of a gram kills them in from ten to twenty-one days, while they are in this hibernating condition. Three animals were experimented on with the same dose when they were in deep sleep, and the results were negative. It seems, therefore, that in a state of deep winter sleep the marmots are immune against bubonic plague infection.

142. **Sequester Cast Off from the Liver.**—Stukkey reports an unusual case of acute appendicitis which though operated on twenty-two hours after its clinical onset, became complicated with an abscess and gangrene of a portion of the liver. The abscess showed the twenty-first day after the operation and was due to streptococcus infection. It was drained, but twenty-four days later a sequester of the liver, 7 cm. long and 1.5 to 2 cm. wide, was removed through the wound. The patient recovered about four months later and is now well.

144. **Parathyroid Treatment of Tetany.**—Rossiysky reports a case of tetany in a young man successfully treated with hypodermic injections of parathyroid extract. Altogether thirty-five injections were made, with 2 c.c. of the extract as a single dose. The subjective condition improved considerably, with complete disappearance of the objective signs (Trousseau, Erb, Chvostek) which were very pronounced before the injections were given. No other treatment was administered. Complete recovery followed.

Hospitalstidende, Copenhagen

October 20, LVIII, No. 42, pp. 1075-1102

146 Fatal Intestinal Involvement in Measles in Two Infants. (Enteritis ved Morbilli.) K. Secher.

October 27, No. 43, pp. 1103-1126

147 Congenital Infrapapillar Atresia of the Duodenum Corrected by Anastomosis. N. P. Ernst.
148 Diffusion of Gases in Air in Lungs. III. (Om Lungeluftblandingers Homogenitet. Fortsatte Undersøgelser.) C. Sonne.

Ugeskrift for Læger, Copenhagen

October 21, LXXVII, No. 42, pp. 1639-1672

149 Detailed History of Diabetic with Recurring Coma Kept Under Control. (Tilfælde af Coma diabeticum. Alkalibehandling, Diætbehandling.) V. Scheel.

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THE ECONOMIC WASTE OF SICKNESS AND PREMATURE DEATH *

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LOS ANGELES

Throughout our years, from youth to age, we are individually prone to miscalculate the economies of our lives. We have aspirations and ambitions. We would get on in the world. We can earn so much. It will cost so much for food and shelter, for clothes and warmth, for schooling and for luxuries. We must have certain embellishments. A watch is an ornament and will usefully mark the time — it will cost one, or a hundred dollars. And we must have fine clothes and feathers and jewels, and amusements — we must play as well as work. Will our earnings compass all these?

Our calculations are based on the theory that these are all the elements, and that we shall continue to be here and able to work. We do not allow that perhaps we may fall sick, and find all our plans go wrong. So we provide no surplusage.

But we know that the pianist who loses a finger must change his occupation. We know that the chief oarsman who has the colic, or has eaten or drank too much, loses the race. To the engineman a spell of dizziness may cause a collision of trains; and the fame of a general, and the issue of a battle, may be lost by an attack of headache.

The problem is the same for every child. The career of your boy is at the mercy of your neighbor's boy who plays with him, and who has a throat diphtheria: So he is at the mercy of a slight blow on the back or the hip, which may disable him with joint tuberculosis, and make him a dependent for life instead of a power in the world. Or he may have an infected lung, or pleura, that knocks all your calculations awry; that transforms him from one who would lift to one who must lean all his life.

In planning our own and our children's lives we usually fail to make any calculation that health may break down, and that the individual may become a liability instead of an asset to his family and the community. If we could be compelled always to consider this vital interest, it would amount to the greatest single reform in society, for it would keep us and our children away from many of the pitfalls of physical calamity. The economics of health, sickness and premature death are at once the most needed and most neglected subjects of our study.

We covet good health because it means longer life, which is the world's desire, and the first impulse of the normal human heart. Good health makes us forget the terrors of death. Pain and suffering, doubtless, are great discipline for us, but we always hate them and always must. Sickness handicaps us and blights our prospects and hopes for the joys we think we are entitled to. So in our quiet, sane moments we are ashamed of such of our foibles and our sins as bring on sickness; for this reason we try, some of the time, to lop off these and to keep well.

Less often do we consider the economic reasons for trying to keep well, yet they are among the most vital reasons of all. We not only neglect the calculation, we are often a little ashamed to broach the subject when it involves our friends and our families; it seems mercenary and ignoble. A man will warn his son to avoid carelessness and foolishness that might make him sick or handicap him for life; he will say, "If you get sick you'll have to go to bed, take disagreeable medicine, and be kept from pleasures — and you might die." He may warn the youth that if he gets sick his mother must nurse him, and that may make her sick, but not a word about the inability of the family to bear the expense of sickness. Yet this may be the chief reason. Unable to afford a nurse, the mother nurses the family invalids and becomes one of them herself.

In an active practice of medicine of several decades, and with some familiarity with the life of many hundreds of families, I recall hardly an instance among lay people in which the caution for health's sake was frankly urged on economic grounds. And when it has been so urged it has usually been spoken of under the breath, as though it were a shame to put life and health on so sordid a basis.

But the economic basis is a most vital one, and money is our call on the world for the munitions that fight off sickness and death; for it is a fight, and a continuing one, till death takes us; comfort, health, refuge from sickness and death, are often found by means of this potent thing called money.

Sickness and early death are the greatest drains on the resources of most of us — and more than any one influence handicap us, personally and in families, in our search for the things of life that are of paramount value. Sickness is our greatest pauperizer, as health is our greatest asset; and we usually ignore both of these truths.

The actuaries have made it easy for us to state, with some approach to accuracy, the money value of health, the loss to the community from sickness through loss of earning time and from the expense that must be paid in cash. They have also shown us the vast public loss from child mortality. Not only is all sickness expensive, but epidemics have destroyed nations and peoples, have led to the defeat of armies, and have interrupted and postponed for centuries great public works that have been needed in the development of society and the safety of states. The Panama Canal is one of them.

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* Delivered at the Central Presbyterian Church of Rochester, N. Y., on the occasion of the meeting of the American Public Health Association and the annual conference of the Sanitary Officers of the State of New York, Sept. 8, 1915.

There can be no doubt that the figures are fairly correct as to the ultimate cost and the loss to the individual and the public from these calamities, but the loss appears to be largely in the cutting off of possible future gains rather than from loss of so much cash out of pocket (except sickness expense); and so the public is slow to believe wholeheartedly in the figures.

The pecuniary worth, potential and prospective, of an individual at different ages is given by Fisher as follows:

At birth	$ 90
At 5 years	950
At 10 years	2,000
At 20 years	4,000
At 30 years	4,100
At 40 years	2,900
At 80 years minus	700

The value of life is figured on the possible earning power through the years that are promised for the individual, so the value of the younger members is high; that of middle life is a diminishing amount; while the aged have less than nothing of value in this sort.

The annual cost of illness and death in the United States is conservatively placed at $460,000,000; let us add $500,000,000 for loss of earnings by the victims, and we have a total of $960,000,000.

According to the most thorough survey of Pittsburgh, covering the experience of typhoid fever for thirty-five years, Mr. F. E. Wing found that the cases lasted in disability an average of over thirty-four days, and that the cost to the community of each death was $6,000.[1] In four years the cost on this basis was $9,000,000. In October, 1907, before the filtration plant for the city water was finished, there were 593 cases. In October, 1908, after the plant was in use, there were ninety-six cases. Assuming that the 497 cases shown to be avoidable suffered a mortality of 10 per cent., which is a fair estimate, there were forty-nine deaths in one month, costing the community $294,000. At this rate the saving to the public would cover the cost of the filtration plant in nineteen months.

The loss by preventable or postponable deaths, the country over, is probably many million dollars yearly. Fisher, some years ago, figured out the economic saving throughout the country, if needless sickness, deaths and fatigue could be prevented, as 1,500 millions of dollars annually. Nobody knows, or can know exactly, what proportion of deaths is preventable or postponable, but every student of the subject is sure that a very large proportion are preventable — or rather are capable of being postponed to a later time of life. Especially is this true of the deaths of infants and children. Much of the average increase of the span of life among enlightened peoples, from about 33 to 45 or more years, has unquestionably been due to the saving of child lives.

For a long time evidence has been accumulating that the average life is growing longer. Two hundred years ago the gain was 4 or 5 years in a century; one hundred years ago it was nearly 10 years per century; now it is at least 50 per cent. more than this, or in excess of 15 years per century, in this country.

We may postulate, and we ought to assert, that the great purpose of public effort should be to make the world a better place to live in. That is a broad, simple, general proposition that is understandable. It is axiomatic.

What constitutes making the community a better place to live in? What must every community do to this end? Many things may be necessary, and they will vary with local conditions, but they all tend and must tend in the final analysis to one aim, and that is the prolongation of the average human life. If human life is growing shorter, the world is a worse place; if growing longer, it is a better place.

The shortening of the average means more deaths in early years; lengthening it means fewer child deaths and more people reaching adult and advanced age; more people spared for the productive years of life. Longevity is fostered in all ages by good health and freedom from accidents and infections. These conditions connote longevity and the cutting out of the money losses of sickness, disablement, and death of prospective bread winners, otherwise the children.

With increase in average longevity the race is maintained numerically by a lower birth rate, and this invariably follows. A lower average birth rate means more vigorous mothers; fewer women destroyed in early life by excessive child bearing. Other things being equal, smaller families mean more vigorous children. High death rate among children means high birth rate. This usually means poverty, and may mean degradation. The child-bearing adults are sometimes so depressed in body and spirit by hard labor, by sickness and death about them, that all their higher ambitions are destroyed; and this *is* degradation.

A late review[2] quotes some very meaningful statistics on this subject which, while possibly not entirely accurate for all of the countries considered, are doubtless comparatively correct. It says that of 21 countries, outside of America, 11 have an average longevity of over 50 years; the other 10 under 50 years. The 11 have an average birth rate of 24.9 annually per thousand people, and a death rate of 14.08. The 10 have analogous figures of 36.2 and 22.5. Russia has the highest birth and death rate — 45 and 28.3 respectively, with a longevity of only 27.8 years, and an annual increase in population of 16.7 per cent. On the other hand, Australia has very low birth and death rates, and the highest longevity. The rates are birth 27.5, death 10.8, longevity 56, and natural increase 16.7 — exactly the same as Russia. The writer compares Austria-Hungary with Great Britain. The former has a birth rate of 31.7, death rate 21.2, longevity 38.3 years, and annual increase of 10.5 per cent.; while the figures for Great Britain are birth 24.4, death 14.2, longevity 53.8, and annual increase 10.2 per cent. The increase being so similar in the countries compared with each other, he infers some natural law maintaining a fixed relation of births to the deaths in a community. It is a logical conclusion, but the law is in part physiologic. It is not wholly some recondite "law" of unaided nature that lessens the births as the death rate falls. Other causes are a widespread reduction of marriages, especially of early ones, and a more or less extensive resort to methods of limiting the size of families — which it is a crime under our laws to teach others how to practice. Whether or not it is wicked, or how wicked soever it is, the practical fact is that some people discover methods and resort to them.

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[1] Irving Fisher gave to the International Congress on Tuberculosis the actual cost of each death by tuberculosis as $8,000.

[2] Editorial, North American Review, August, 1915.

As people prosper, are more effective, live longer, become rich, educated and refined, the death rate decreases; so does the birth rate. Large families come to the few among this class who covet them, or believe, on religious grounds, that they ought to have them; but mainly they come to the poor, simple, uneducated, natural folk who love children and believe that God sends them, and these people are the stalwart ones who are forever rising in the scale of world values, and are becoming the controlling factors of society. This class itself degenerates later; and their descendants give place finally to like people as they were at the beginning, and so the wheel revolves.

With such percentages of annual increase in population as have been noted, the nations will some day reach the limit of convenient existence. Famine, pestilence and war have, in the ages past, kept the race numerically within living bounds. With world fellowship and means of transportation increasing, and the increase of land production due to improved agriculture, famines will decrease; with pestilential epidemics coming steadily under more control with a promise of suppression of most of them, the sweeping mortality of plagues is becoming less common. When the combined food products of the earth are insufficient for the mouths that are to be fed, what will happen?

Speculation may be unprofitable, but it is a safe guess that the diminishing birth rate will, so far from destroying the race, actually save it in such circumstances. Nor will the progressive reduction of births endanger the existence of the race. With the refinements and luxury of the many who will live in that far-off time, there will always be more of the humble, simple, clean and physically strong people who will preserve the race from destruction, until the approach of the end of the habitable life of the earth. That will be millions of years in the future, and I believe that even then the human race will progressively adjust itself to the oncoming severe conditions, and live ages after we short-sighted people would naturally guess that the last man must die.

With increased longevity, life is easier, and easier because of it. Life for all the people can be easier only by reason of more substance, that is, less useless expense, less waste of energy. This means stable governments, stable and fixed conditions of living, continued through many generations; good public and personal hygiene long continued; constant watchfulness to guard against dangers of all sorts. It means in general, peace and plenty. Longevity is increased by conservation of the powers of the individual, and the lessening of forced hard work for long periods, especially by women and children. It is increased by regular, moderate work, and by wholesome attention, not with soul-breaking intensity, to all the serious problems of life. But too much luxury and idleness tend to rather early degeneration of the tissues of the body, and so a shortening of the average longevity.

Moral suasion will probably never produce the greatest progress for the betterment of mankind through improved health conditions. Nor will the good example of the small minority of excellent people who lead hygienic lives accomplish enough, although it will do much.

It is necessary, and will always be necessary, for an endless campaign of education among the people, most of whom are heedless and indifferent to the dangers of accidents and infections, and harm to others. Laws and ordinances will be necessary, and their faithful execution more necessary. Political effort and agitation must be continued, so that a majority of the people will support all sane health measures. The force of law must be felt by the people of all classes, especially the careless and indifferent, to prevent them from making themselves sick, to the public loss, and from endangering their neighbors. It is unsafe to live in a community where the moderate precautions of a sane public hygiene can be defied by any man or family with impunity.

In the last few decades one European state has signally illustrated this truth. During the last few years the length of the average human life has been increasing in Europe as a whole at the rate of nearly seventeen years per century; in Prussia the gain has been at the rate of twenty-seven years. Why is this? It is certainly not accident or any one fortuitous circumstance that has done it. It is probably due to the frank obedience of the people to the health rules of a forceful government. The rules have been formulated by experts for the preservation of the health and lives of the people; and all classes have obeyed with hardly a question. If there has been a question of the authority of the state in these matters, it has been hushed in a sentiment of loyalty to the Fatherland.

America is learning slowly that government is an instrument of force; it is learning a better respect for law, especially when the law is for the protection of all the people. The old doctrine is passing that every man has a right to do anything he likes, regardless of his neighbors, unless *he* can see that he is doing them some distinct harm. The bugbear of paternalism is also passing, and the mass of the people in the most progressive communities will not tolerate the logical results of the notion that there is no need of public hygiene.

It is only by a study of well-recorded facts bearing on the public health that we may surely know whether or not we are harming our neighbors. Prussia illustrates the effect of militarism, as applied to the preservation of health, and shows the value of *compelling* people to avoid infection, carelessness and excesses that tend to sickness and death.

Will better public health, gained by methods that may seem militaristic, develop in the people that sort of vigor and virility that will tend to a martial attitude toward other nations and threaten or produce war? Such a suspicion is groundless, even childish. Wars are brought about by human selfishness, jealousy, egoism, suspicion and hate between peoples and rulers of peoples. All methods for better health, whether forceful or otherwise, are for the benefit of the nation employing them and tend to peace; never toward war against another nation, unless that nation violates flagrantly the health interests of its neighbors.

We have, in this country, done a few things that show that we are becoming awake to the need of public and private hygiene. In some of our large cities we have, within a few years, lowered our annual death rate from twenty per thousand of population to fourteen or lower, largely as a result of the most constant watchfulness and insistence on health regulations. Here are a few of the measures that have brought down the death rate and raised the average age of the people:

1. By improvement in milk supply in cities and towns, the amount of bad milk sold has been reduced often to less than one tenth of the former figure. This gain has been made at the cost of stringent ordinances, constant watchfulness of the milk supply, daily laboratory examinations of the milk, frequent inspections of farms, herds and dairies, and frequent and merciless prosecutions. And the struggle goes on for still better hygiene and economic conditions of milk supply — and there is need enough for it. Rochester (N. Y.) is wasting a half million dollars annually in the way her milk is delivered to her people.

2. Diphtheria antitoxin, and the almost universal use of it in cases of this disease, has materially lowered the death rate. The cost has been a campaign of education of the medical profession and public as to the life-saving value of the measure; the supply of the article free for the poor; the examination of throat specimens at public cost, and the insistence on scrupulosity in the manufacture of antitoxin.

3. Improvement in water supply for urban and rural populations, often at enormous expense to the public, has cost strenuous political, educational and social campaigns to induce the governments to vote the appropriations. For the effect of this measure on the death records we need only to look at the typhoid mortality of two cities, before and after. These are Chicago and Philadelphia; the drainage canal in the former, and the filter plant in the latter.

4. The destruction of mosquitoes in the prevention of malaria and yellow fever. These fevers have been among the most destructive and expensive in all history. It is impossible to compute the annual cost of them to the world before the mosquito discoveries, but it must have been scores of millions. The cost of mosquito destruction has been high; but it is a trifle compared with the cost of the diseases they produced. The control of plague and cholera constitutes a similar story. Like yellow fever, they often occur in epidemics. We know their microbic causes, and have learned how to stamp out the epidemics, and, to a degree, how to prevent them. Dr. Blue, the head of our federal health service, has shown us how these ends are attained; and our Dr. Strong, the hero of Mukden, has, in that city with a terrific epidemic of pulmonary plague, accomplished one of the most brilliant feats of control in all history.

5. Tenement house inspection and the prevention of overcrowding is a good measure that has met with less popular opposition than many other reforms.

6. The regular inspection of schools by medically educated experts eliminates children capable of spreading infection, and helps toward the relief of those handicapped by disorders that are correctible. This measure is being adopted by most progressive cities, often in the face of strong and persistent opposition. It is subject to few drawbacks, and has been almost free from abuse. It is increasingly popular, and ought to be.

7. Scientific midwifery among the poor at the hands of selected dispensary physicians and visiting nurses, and instructions to poor and ignorant mothers in the care and feeding of their babies (with free milk, if necessary). By means of these and similar measures, New York City has, within a few years, reduced its death rate among children under one year of age by more than 30 per cent. This record will be repeated by many other cities and by the more advanced country regions. But it will probably be a long day before we can match New Zealand, which has the lowest infant mortality in the world.

The poor people have, of course, accepted these benefits gladly, but the public has required vast argument before voting the needed money. With such a record before it, the public is guilty of a flagrant waste of its own substance and of constructive manslaughter, if it refuses to supply the funds.

8. Visiting nurses for ordinary sickness, in cities, instructing and helping families that need it, prevent a lot of sickness, and they hasten recovery in many cases, and so cut down the cost of such calamities. The governing bodies of cities are usually slow to discover the value of this measure.

9. Vaccination against smallpox and typhoid fever. That against smallpox, notwithstanding bitter opposition, has for many years been so general that a considerable immunity among the people seems to have been established; and that against typhoid fever will before many years, if we can bring the facts to the knowledge of the people, become very common — with the result that typhoid will become a rare disease in the general community, as it is now in the armies of the enlightened world.

10. The pure food and drug laws now in force in this country have contributed to better health among the people, as they have repressed certain forms of unfair dealing and fraud among manufacturers and merchants. This reform was bitterly opposed in Congress and the legislatures for many years by certain powerful business interests.

11. The regulation and partial suppression of the use of alcohol has cut out a great amount of useless expense to the people, as it has reduced the amount of sickness. This is the verdict of the statisticians generally, notwithstanding the contention to the contrary by some good men. I believe that no woman has made such contention. We have undertaken, by federal law, to suppress the popular use of opium and cocain, except in cases of known and necessitous sickness. And public sentiment will not allow this law to be repealed. We have made no large attempts at reducing the use of tobacco, except for children. Tobacco has been shown to increase the death rate, and the habit is a money-eater. Besides being very costly, it is probably the most grotesquely curious habit of the human race; speaking generally, no one ever began the use of tobacco because he, by himself, at first desired it. Probably a thousand million dollars annually is spent because of the tobacco habit.

12. The fashion for fresh air, outdoor sleeping, and athletics among students and the young generally is a powerful aid to hygiene, and has lessened the death rate. Let us pray that the fashion will not change. Draughts of fresh air do not cause colds; these are due to some derangement of the body health. And all the advantages of a flood of fresh air are gained by a moderate amount of it, if it is kept in motion; hence electric fans and a lesser coal bill are in order.

13. Taking some tuberculous patients off the street where they are careless with their sputum, and sending them to proper sanatoriums, not only helps them, but protects the public. Thousands of such patients are now in such places, where under watchful care they harm nobody, and have some chance of recovery themselves. Hundreds of sanatoriums, state, municipal and private, have been built and are operated at great expense, but the saving of life has much more than

covered the cost. The public education as to the dangers from careless spitting has returned more value to the public than the cost of all the sanatoriums. But this education is not more than a quarter accomplished. The propaganda must be kept up until all the people know and remember the facts.

14. The cure of hookworm disease is one of the greatest gains. We are amazed that a few cents' worth (less than one day's wage of a laboring man) of a harmless medicine could cure so destructive and costly a disease. It is now within the possibilities to make uncinariasis a rare disease, and incapable of wearing out a single patient. In Porto Rico 89,000 people were cured at a cost of 54 cents each.

Other reforms must follow, and a great and united popular sentiment push forward all such as can minimize the sickness of mankind, so that there shall be a constantly increasing number of people who will escape death until overtaken by the unavoidable degeneration of tissue due to age. Even some of these degenerations will doubtless be found preventable or postponable to a later time in life than they usually now occur.

Here are a few of the things to hope for:

(a) More educated health officers, and more education for them in universities. They must be sane people, men and women — certainly women as well as men! — who know how to get along with other people; who can usually get the laws carried out with the least friction; and who respect the rights of the people while loyal to the law; who are jealous of the rights of the weak and helpless; and who do not have an excess of official dignity, with projecting elbows. Such are people capable of proposing new and better health regulations than we have; and they can convince the majority of their constituents of the necessity of progress, and of the value of the reforms they propose. Many health officers, like other public servants, are autocratic, uncompromising and apparently anxious to show and use their authority. Neither the cause nor the public good needs such servants. People in authority, when obliged to use their power in ways likely to be displeasing to the people affected, should always regret, and act as though they regretted, to use their power with severity — and then use it politely if firmly, and only after persuasion. This is the hand within the velvet glove that usually accomplishes the difficult object with thanks rather than execration from the public.

(b) Improvement in the hygiene of rural life and rural schools. Both are disgracefully below the standard in cities. Country life ought to be the healthiest life of all; and country schools can, with only moderate industry, be made as wholesome as any school in the metropolis. The movement by two great organizations, the American Medical Association and the National Educational Association, to further this purpose ought to have our hearty encouragement. It is a profitable measure and means health and wealth for the whole country. It has not kept pace with the progress in the conveniences of country life, such as better roads, automobiles, telephones and free mail delivery. The country people are lamentably neglected in the matter of hospital care and expert nursing. A few of our states have awakened to the necessity of enabling counties to provide proper hospitals and nurses for rural communities. This movement ought to be advanced by every means possible.

(c) We should teach early and late the value of keeping the physical body up to normal vigor all the time. It wards off sicknesses and helps us to weather them when they are unavoidable, and it often keeps us out of the expensive hands of doctors and nurses. Early diagnosis of apparently trifling ailments is important. Severe diseases are thereby often prevented. This is what the school inspection doctors do for the children. In sickness, procrastination is one of the most expensive and dangerous of our indulgences.

(d) We need to make a more vigorous campaign against flies, mosquitoes and vermin. Swatting the fly is good, but it is a makeshift. We must destroy the breeding places of flies and mosquitoes. We know the methods of doing this, and it is infinitely cheaper than our burden from the unlimited breeding of these pests. But one careless and indifferent family in a neighborhood can furnish breeding places for the flies and mosquitoes for the town, and nothing will do effectively but an ordinance requiring the health officer to declare all such places to be nuisances, and to compel their abatement. This, with public sentiment to sustain the officer, would reduce these insects to a trifling inconvenience. And one popular and successful movement that could enact such an ordinance and cause its effective enforcement would mean a general interest in public health that is equal to other reforms that would give the community a nation-wide, enviable reputation, and insure the lowest death rate.

The importance of body vermin in spreading infectious diseases has been emphasized by recent studies in typhus fever. Certain of the warring nations of Europe are profitably carrying out extensive measures for scrubbing the bodies of their soldiers, and disinfecting their clothing by heat.

We might profitably increase our facilities for free baths for the poor in cities. The bath house might have facilities for heating safely and quickly each bather's clothing while he is in the bath. The self-respecting bathers would probably resent the suggestion of vermin in their clothing, but they would not object to the disinfection if told that their clothes might contain tubercle or typhoid bacilli, and that the oven would not harm the garments.

(e) We ought to make a larger effort to lessen the spread and havoc of the venereal diseases. The economic loss to the nation from them is beyond computation. The results are great suffering, disabling complications that are sometimes mortal, blindness, insanity, barrenness, locomotor ataxia, aneurysms, loss of service and other multiplied calamities. The list is long and sickening. And the diseases are widespread, especially in cities. In New York in one year the number of cases was about 4.5 per cent. of the whole population.

We have done a few things to lessen them a little, mostly working around the edges of the problem, as it were, without attacking it in the direction of its greatest menace. We have to some degree banished the promiscuous drinking cup in public places, on railroad trains, and where numbers of people are employed. This helps a little, and is a good object lesson in hygiene.

We have advised against promiscuous lip kissing, with small result to change a fashion.

We have encouraged the use of domestic and toilet facilities that tend to lessen the spread of the diseases.

We are, with admirable unanimity, successfully fighting against segregation and official examination of prostitutes. This will remove somewhat the temptation to men and boys toward the dark ways—with a fatuous sense of safety that never exists.

We have reduced somewhat the use of alcoholics, for these have led countless thousands of men and boys to contract these diseases, who otherwise would have had enough caution, self-respect and resolution to avoid exposure to them.

We have begun to get over our cowardice and prudery, and to give a few boys and girls some slight knowledge of sex hygiene, and how to avoid these infections.

We have, by an admirable addition to the principles of medical ethics, unlimbered the tongues and courage of physicians who can and will, better than formerly, protect women known to them to be in danger through expected marriage. The certificates of perfect health before marriage that a few clergymen are demanding will do a little good, but not much, because of accommodating physicians and careless examinations by those unskilled.

Surgeons, in treating these diseases, are more cautious than formerly to avoid infection, by the use of rubber gloves and other devices.

We have seen most of a certain class of doctors shamed against further spreading of that abominable physiologic heresy that the health of any man requires sexual indulgence. Their subsidence has undoubtedly lessened a little the spread of these diseases, as it has lessened the degradation of man.

We are more and more providing quick and efficient hospital and dispensary care for the poor who are overtaken by these infections, for this is humane, and is a protection to the community. Every such patient is a constant menace to the people about him.

Lastly, we are preaching the gospel of a single standard of morality for men and women alike. This is right as well as righteous, and will do good as far as it goes; but with a present record of 60 per cent. of syphilitic women, having received the infection from their husbands, it is to be feared that it will not for many years greatly influence the spread of venereal diseases. Not 1 per cent. of syphilitic men receive the infection from their wives.

Probably the most effective means within our power to lessen greatly the spread of these diseases is the general education of the young of both sexes as to their nature, their baneful effects and the way to avoid them. But this measure, clearly the right of every boy and girl to have for their own protection, and much desired by them, is strongly opposed by many good people for reasons that seem to me utterly inadequate and even nonsensical. May the wisdom of these sensitive people, the love of their kind, their respect for essential purity and the rights of the young so increase that they may come to know that whatever knowledge is necessary in order to be healthy and avoid death is proper for young and old alike; and that not forever shall the best youths of our land be allowed by their ignorance to go blindly to their destruction.

(f) Finally, and never to be forgotten, the progress we have made in cutting down the death rate has been due to the results of scientific research during the last few decades. But for this research we would still have a death rate in our cities of twenty to twenty-four per thousand annually instead of fourteen or less. In this progressive work the pathologists of America have had a great part.

The wonderful results so far achieved are a promise of greater yet to come, and tuberculosis, cancer, diabetes, pneumonia and other destroyers of mankind will yet be conquered. The public health weather vane points to more endowment of research, and that is what we most need. The workers are ready, but the public says the endowments are expensive. That is true, but the beneficial results are one hundredfold greater than the cost.

The promise of further reduction in the death rate is in two factors only: the more efficient use of the knowledge which research has already given us, and of the new knowledge which further research is bound to produce. On this progress we pin our faith, in the calm certainty that it will not fail us.

The Auditorium.

PHYSICAL EXAMINATION AND REGENERATION OF EMPLOYEES *

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The advantage to be gained by industries in this country entering the field of preventive medicine by means of the physical examination of employees depends on the attitude assumed by medical advisers and the captains of our industrial organizations. That the need for the physical examination of the working force of the world is fundamentally sound, and has an economic and humanitarian basis, has been recognized by the medical profession for years. The fear of a few people, and they are often great molders of public opinion, that some industries may abuse the privilege gained by a knowledge of the physical condition of its workingmen is no ground for the denial of its usefulness to all. Industrial organizations are in business and not philanthropy, and therefore are primarily interested in the increased efficiency and the diminished waste, which are due to preventable accidents and sickness. Industry is also humane and is as distressed at inhumane practices as is the individual. Neither the individual, industry, or, in the last analysis, society can afford any unnecessary loss of productivity, or of diminished efficiency due to reparable and preventable physical defects.

For ages the medical profession has been endeavoring to educate the public in the science of preventive medicine, and the public in turn as it has received the education responded by making new laws for the control of public health. Today we hear, knocking at the door, large aggregations of capital, asking that they may be admitted to the portals of preventive medicine, and that they may lend their aid toward stamping out the wastes due to preventable accidents and sickness. Just what industries were real pioneers in the work of the physical examination of employees and to what medical men especial credit is due does not seem to be clearly recorded.

Railroads were among the earliest to engage in this work, but with the avowed purpose of eliminating the unfit, and with no provision for physically regenerating them. I recently read in a report of the Colorado Fuel and Iron Company that many years ago Dr.

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R. W. Corwin examined at frequent intervals those employees who worked in departments likely to be detrimental to health. As the result of an active campaign for the elimination of tuberculosis in Chicago in 1911, many firms under the leadership of Drs. Sachs, Mock, Britton, Fiske, Wieland, Lipman and McClelland examined their employees for tuberculosis, and some time since have extended the work to a complete physical examination.

Dr. I. W. Clarke of the Norton Company, Worcester, Mass., seems to be a real pioneer, inasmuch as in 1911 he conducted a thorough physical examination of their force and inaugurated a system of repair and subsequent inspection. In Europe, according to the U. S. Bureau of Labor, Statistics Bulletin No. 142, only Belgium and England have departments for the medical inspection of employees and those are poorly developed. Ohio is the only state in the Union that requires a monthly examination of workers, and it is limited to those working in lead.

At the Youngstown Sheet & Tube Co., where I am employed, we have been engaged in this work for sixteen months. We feel it our duty to find the physical defects of our employees, that we may repair them when possible, that we may protect our force from communicable disease, and that we may, in so far as we are able, have our men engaged in work suitable to their physical condition. Here they can do their work most efficiently and consequently receive a better wage.

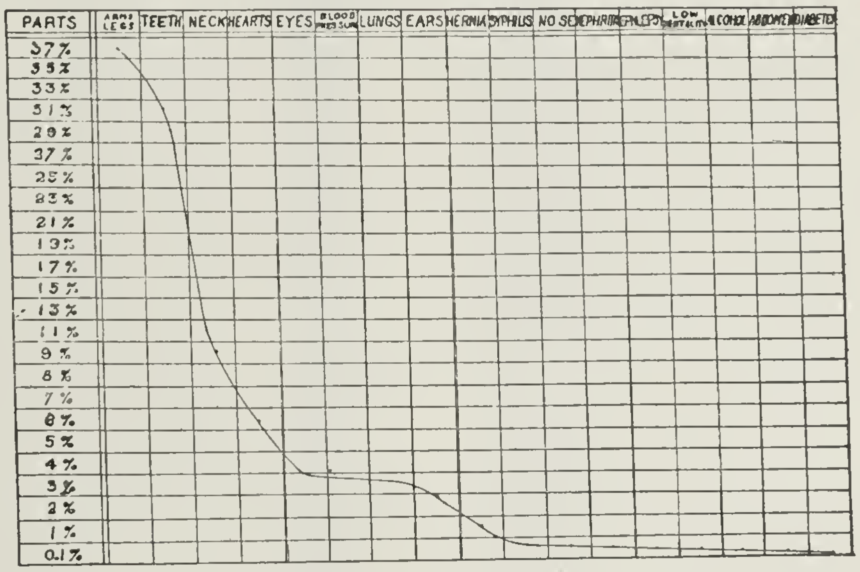

Chart 1.—Distribution of physical defects on medical inspection of 5,624 employees.

In the conduct of the examining department we have used medical graduates who have devoted their whole time to the company's work. Our examiners become familiar with the character of the work done in our various departments, and consequently are better fitted to estimate the relationship between physique and employment. Each person examined is obliged to remove his clothing, and careful arrangements are insisted on to preserve modesty and a professional decorum. The time consumed in a single case varies from ten minutes in the simple ones to as much time as is necessary for the more difficult examinations. All new applicants thus far have been examined, but as our medical force is not yet completed, we have only examined among the old men those returning to work following sickness and injury, and those who work in a department where there might be some likelihood of contracting an occupational disease.

It may be that a little knowledge of the character of our industry will help in judging of some of the results that the accompanying charts show. We employ about 8,000 men, engaged in the work of making iron and steel and many of their finished products. All steel work is known to be very heavy work, often with rather long hours, and associated with hot metals and the problems of high heats. In these plants enter many of the difficulties that railroads have in the handling of freight, since a plant is a veritable network of tracks. Manifestly, we require a different sort of individual to work here than does an industry filled with lighter burdens. This matter has to be daily weighed as we make our physical examinations, and often men must be advised to seek a vocation less arduous.

Our examination consists of taking weight and height with a notation of any identification marks.

Eyes are examined by the Snellen chart to discover defects of vision. All lids are lifted to eliminate the danger of overlooking trachoma. Various simple defects of the eye are noted.

Ears are examined with the watch only, and the distance of hearing noted.

The mouth is explored for defects, such as enlarged tonsils, gumma, new growths, etc., and a physician's description of the condition of the teeth, whether good, fair or bad is made.

The neck is palpated for glandular involvement, and any other signs of disease are noted.

The bared chest is carefully gone over by auscultation, percussion and palpation, with special effort directed toward tuberculosis and heart lesions. Other defects discovered are placed in the record.

The abdomen is palpated.

The inguinal region is recorded as to hernias, inguinal adenitis and other defects.

Penis and scrotum are examined for their local diseases.

Extremities are inspected for old injuries, varicose veins, flat feet, etc., and each applicant has his knee jerks tested.

Thus far we have taken the systolic and diastolic blood pressure, a urinary examination on all men over 40, and on all cases believed to have definite heart lesions.

It may be pertinent to bring up the question that is so often asked: "Do not the the men object to such an extensive examination?" I will answer by referring to our statistics which show that only four out of 5,624 men submitted for examination refused. In Chart 1 will be found a record of the physical defects that we have found in 5,624 examinations. Many of these defects seem too simple to need attention, but it is our continued effort to remedy the most important and as many others as possible. Teeth usually head the list, and the neck with its large quota of enlarged cervical glands follows. This condition and its ill effects have been taken seriously by at least one concern, the Goodrich Rubber Company of Akron, Ohio, and they have employed full-time dentists to fix the teeth and instruct in oral hygiene. Their dentist in 100 examinations could find only two patients whose teeth could be classed as fair. Others no doubt, prompted by the excellent work of this company, will found dental departments.

The heading Hearts denotes those in which we felt we could demonstrate a definite organic lesion. Eyes include mainly those which were trachomatous and of such deficient vision as to require correction. Blood pressures represent cases that were in systole above

150 mm. or which had an excessive pulse pressure. Ears are only classified according to hearing, regardless of cause. Syphilis refers to those cases that were able to be demonstrated without blood tests, but from history and physical findings.

Our blood pressure findings in men over 40 years were very interesting to us, but from them we do not feel that we have yet gained any knowledge that will help us in suiting the man with high pressure to any given work. These pressures were all taken in the sitting position and were on men applying for work, many of whom felt physically fit.

We had hoped that some idea could be determined from the systolic, diastolic and pulse ratio as to whether we could expect albumin and casts in the urine. The albumin and casts seem to be dependent on other factors, for it was not uncommon to find them in low and medium pressures, as well as to find them absent in pressures over 180 mm. Since we realized that the time of existence might be a factor, we have endeavored and succeeded in watching two men at hard labor with pressures of over 200 mm. systolic for six months. These men are two of the best workmen in a gang of many and seem to feel no ill effect from their high pressure. In both of them as yet there has not appeared albumin or casts in the urine.

Chart 3 illustrates the anatomic distribution and the percentage of the causes marked in the surrounding circle that we felt necessitated disqualification. Eyes, one of the largest causes, were those affected with trachoma, and deficient eyesight that could not be corrected. Men having hernias, without a truss or operation, we do not accept. Heart lesions represented those that were not fully compensated, as evidenced by the physical findings of the heart, blood pressure and kidneys. Men with lung affections were largely refused because of tuberculosis and disease conditions that manifestly were sorely in need of treatment. For high blood pressures men were not disqualified unless the systolic pressure was over 180 mm. Many between 150 mm. and 180 mm. were advised to take treatment and return later, their condition being explained to them.

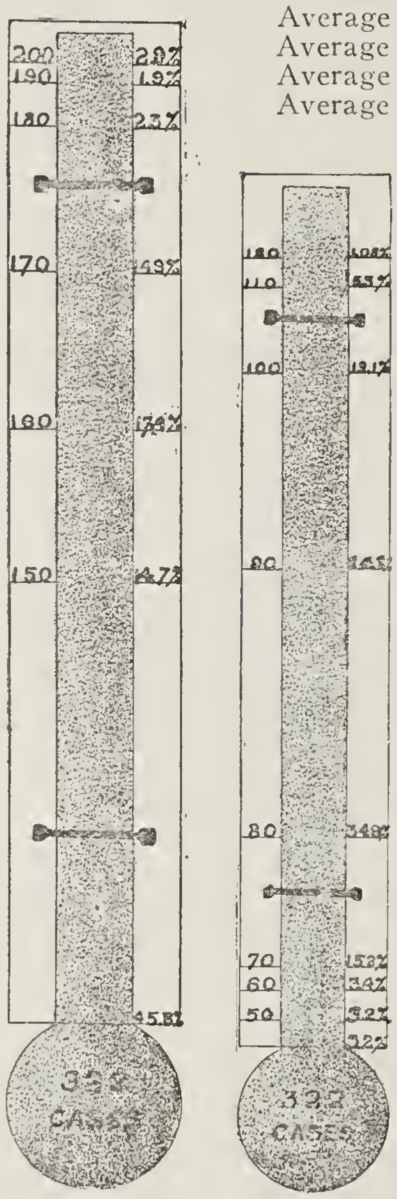

Chart 2.—Graphic representation of blood pressures in 322 men; at left illustrating percentage of height of systolic pressure; at right, diastolic pressures.

Chart 4 is the part of the work in which we are particularly interested. It shows, now numbering 525, the men that we have kept at work and are observing at least once a month. This is the class of case that we are trying to regenerate physically and make into useful and efficient citizens. Let us take the eyes first.

During the latter part of 1913 it was noticed that there was a large number of trachoma cases in our mills and vicinity. After some delay the U. S. Government was petitioned to make a survey of the village of East Youngstown to see to what extent trachoma existed and to find its cause and remedy. The Public Health Service sent to our aid Major J. W. Schereschewsky, who after an examination of 5,962 of our employees found seventy-six cases of positive trachoma; a percentage of 1.3. He also examined 652 schoolchildren, mostly sons and daughters of the same men, and found that there were ten cases positive; a percentage of 1.53.

DATA FROM EXAMINATIONS

Number of cases	322
Average systolic pressure	147.7 mm.
Average diastolic pressure	90.2 mm.
Average pulse pressure	57.5 mm.
Average age	44.2 yrs.
Albumin in urine found in	23.6 per cent.
Average systolic pressure	163 6 mm.
Average diastolic pressure	95 5 mm.
Average pulse pressure	68 1 mm.
Average age	45.3 yrs.
Albumin and heart lesions in	4.36 per cent.
Average systolic pressure	162.9 mm.
Average diastolic pressure	93.1 mm.
Average pulse pressure	69.8 mm.
Average age	45.3 yrs.

The company immediately opened a hospital for the quarantine and treatment of these cases. Drs. Hartzell, Biercamp and Goldcamp, eye specialists, were employed to administer the treatment and nurses were hired to assist. A sleeping room, loafing room, dining room and kitchen were installed, and a sufficient amount of help to care for them, including a patrolman to enforce quarantine. Many were operated in the general hospital at the expense of the company. After being improved and removed from the infective class, these men were returned to work and kept under observation. During the last year only five cases have recurred and the patients have been obliged to receive further treatment.

Acting on the further suggestion of Dr. Schereschewsky, the company employed two full-time surgeons, Dr. R. B. Dobbins and myself, who from April, 1914, to April, 1915, examined the eyes of 5,248 applicants for employment and have found twenty-eight positive cases, five recurrent cases, ten cases in persons who had lived in our vicinity less than five days, giving a percentage of 5 against Dr. Schereschewsky's 1.3 per cent. of the year before.

The patients that we found were treated partly at the expense of the company and partly at the expense of the township trustees. One point I wish to bring out is that the positive cases in persons who had lived with us less than five days were probably the foci of the twenty-eight cases, and illustrates that trachoma is not limited to East Youngstown, but is in your own city if you look for it. A further fact must be noted, and that is that no city or industry can stamp out trachoma without the assistance of all cities and all industries. Nevertheless, I am sure that I have positive evidence that some industries engaged in the physical examination of their working men fail to make any effort to discover this disorder.

Another class of eye cases under constant supervision are those men with one eye, who for their own protection are required to wear goggles while at work. This is accomplished by daily inspection made by the safety inspectors.

Hernias ran 2.6 per cent. in our examinations, and all examined by us either wear a truss or have been operated on. We have ninety-six trusses on men with hernias, and in order to know whether they are wearing these trusses or not, at frequent intervals and without previous warning they are inspected. During the last year we have operated on those who desired an operation and now have done twenty-two herniotomies free of charge. These hernia patients were in the hospital on an average of eighteen days and returned to their usual occupation at the end of six weeks. So far there have been no infections or recurrences. Heart and high blood-pressure patients are changed if necessary to work suitable to their condition, treatment given sometimes by us, more often by family physicians, but they are always kept under supervision. Lung cases under observation are mainly in those men who show indefinite symptoms of tuberculosis and in whom we are not positive as to diagnosis.

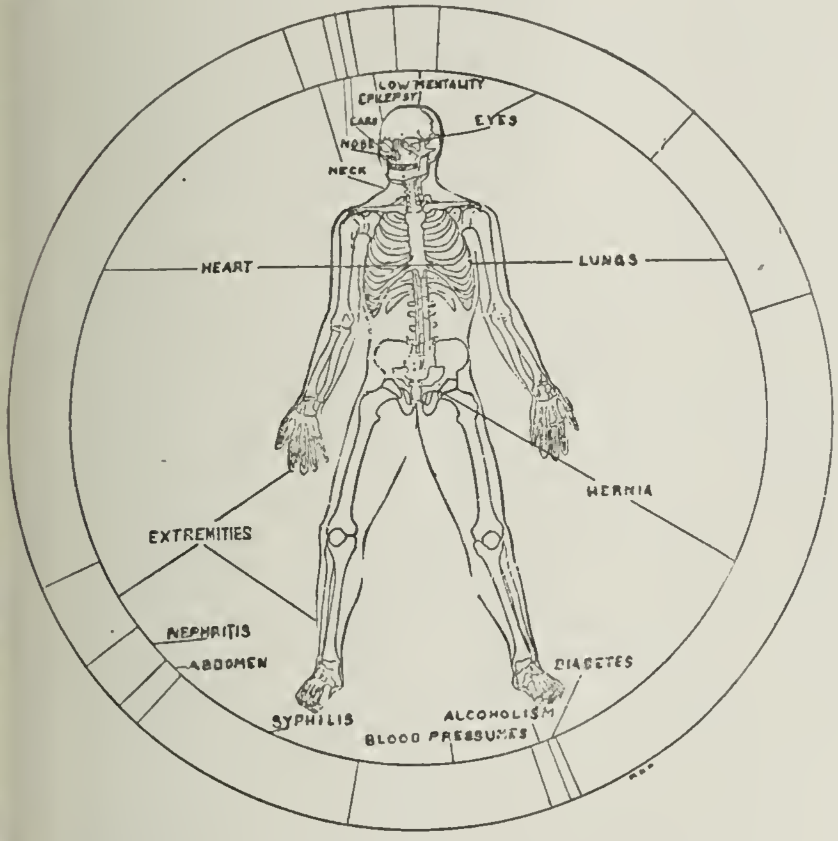

Chart 3.—Anatomic distribution of defects that disqualify.

Those having tuberculosis are placed in sanatoriums. For the nephritics we insist on treatment and make frequent urinary examinations to determine their condition.

Our practice of examining men who return to work following an illness, and who are leaving work because of sickness, is an absolute necessity. Recently we had its usefulness forcibly demonstrated to us. It was our fortune to find early in the day two cases of smallpox. These men were immediately sent home and all in their departments were vaccinated. In three days and a half without increasing the medical force, Dr. Dobbins and myself vaccinated 2,204 men. Of this number there were 1,183 fair or good vaccinations, in spite of the fact that many had been previously vaccinated, and to date there have been no infections. The result was that smallpox was eliminated from our mills.

The Ford Company and others have demonstrated that supervision of sickness in a factory diminishes absenteeism from that cause to a very large extent, and markedly decreases the time lost from work.

To properly understand his duty in this work one must have a fairly clear vision of its relation to the individual, the industry and to society. An industrial medical expert is engaged not only in the work of preventive medicine, but also in the science of preventive surgery. It is just as important to the individual that we do not overload him and cause a hernia as it is to prevent him from acquiring tuberculosis or lead poisoning. It is as necessary that we learn the safety limits of fatigue, with its consequences, as to prevent smallpox or other contagious disease. We must learn what the human body can safely do, and then ask it to do it. The increased efficiency of the laborer betters his condition in ratio to his production, and his production depends on his physical condition. Certainly a working man has the right to be protected from syphilis, tuberculosis and other infectious and contagious diseases.

Surely it is not right to ask a man with heart disease to compete for his living with one with a sound heart. It is proper and fair that we, as agents of society, until that day comes when society shall employ some other method to do this work, should endeavor to find these defects and remedy them. It has been our desire to relieve all those unfit when we can.

In this regenerative work we have tried to eliminate all appearances of paternalism, and a possible result, pauperism. We have felt it much better for the afflicted to pay a part or all of the bill required to make him a useful unit of society. Many men were required to pay the cost of medical care though the money was loaned them by the company. Men in sanatoriums were cared for under this plan, and the cost in general hospitals was paid by the individual. Some patients found unable to pay were placed by our medical force, through the various charitable agencies, in the institutions that were suited to their case. The net result to the working force is that they are protected from disease while at work, and that if ill, someone is interested in arranging that they may have a chance to become well.

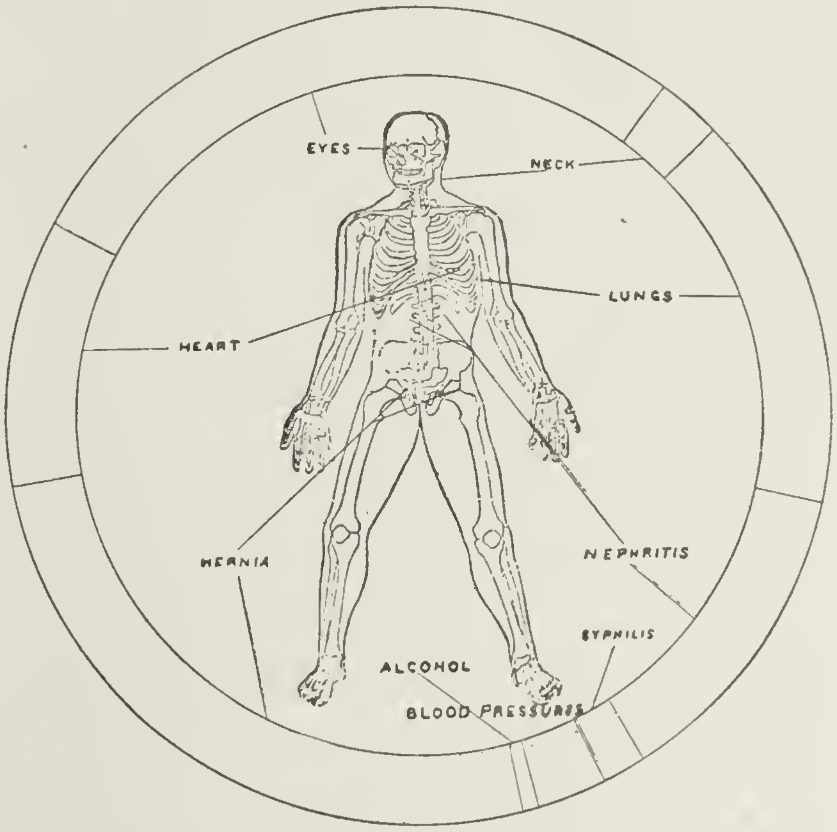

Chart 4.—Anatomic distribution of defects of men under observation.

Any industry is but an agent of society and has no more right to be extravagant and countenance preventable wastes than has that agent of society which we all recognize, our national government. Preventable loss from work due to sickness and accident is a bill that we all contribute to in the daily cost of living. Grieves estimates that it costs on the average $35 a man in the steel industry to hire and bring him to efficiency. If an industry can keep a constant force by eliminating sickness and accident as far as possible, it may make a greater profit; also the individual does not lose his wage, which he sorely needs, and society does not have to dispense with production which it must have if it is to compete with the progress of the world. Society must profit if there is a decrease in the loss of productivity due to sickness and it must gain if there is a daily increase of productivity due to increased efficiency of healthy workmen. No less valuable is the instruction given those who in the past have been the hardest to reach. In this movement we practically have a compulsory education of adults in the value of preventive medicine, and ultimately all must learn that a healthy body is the greatest asset toward a prosperous life.

A further question is asked, "What is to become of the rejected and unfit?" Economically, the problem is better for society if it can see the cost of the burden of the unfit than if the debt is concealed as we now have it. If any industry pays an employee two dollars and his producing capacity is in reality worth but fifty cents daily, then that industry appears to be giving in charity one dollar and fifty cents. Industries in the last analysis do not pay the loss at all, but somewhere it is charged into the cost of production, and you and I, members of society, pay the loss in our daily cost of living. Without a doubt those reparable should be compelled to improve their physical condition, if possible at their own expense. Those unable to bear the financial burden must be provided for by society, which must expand its facilities for medical work. The bill to the community should be borne by all. I see no better way than state insurance, which makes a man, while well, contribute toward the cost of care for society's infirm. If it is fair for a state to insure us against incapacity due to accidents, it is right that the state or nation should insure us against sickness and incapacity due to old age.

Finally, the solution of this great problem rests in the knowledge that medical men possess, and their opportunity to use that knowledge. Industry is beginning to ask for us and the response, I am sorry to say, is not just what it should be. No medical man can expect to solve these problems if he devotes but a part of his time to this work, and yet that is the sentiment from many in the field. This work is fast becoming a new specialty in medicine, and if one desires to render a big and lasting service to humanity, this branch of preventive medicine offers an opportunity which is not exceeded by any other.

Heredity Versus Environment.—Only by constant selection of the best can any race ever be improved. No education, no environment of any nature, can ever make any appreciable progress even though these same favorable surroundings may produce, through ages, a definite but indefinitely slow increment, which by constant repetition becomes slowly available in heredity, but by no means fixed, so that reproduction, true to the better type, can be depended on.—Luther Burbank.

OCCUPATIONS AND THE VENEREAL DISEASES *

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NEW YORK

Venereal diseases are, of course, not directly related to occupations, and are therefore in no sense to be considered as occupational diseases. There is ample evidence, however, to prove that the character of certain occupations and the environment of certain industries are important predisposing factors in their spread. Industrial health hazards have been defined as working conditions which, while they may not impair the more resistant worker until after a prolonged period, produce morbid conditions in the average worker, and tend ultimately to create preventable and degenerative diseases in all persons so subjected. These hazards readily fall into several recognized groups — the dusts and chemical irritants, the trade poisons, and the microorganisms, such as anthrax, which are directly disseminated through industry. Then there are certain diseases, of which tuberculosis is an example, wherein the occupation itself is not so important as the conditions under which it is conducted. Dampness, darkness, devitalized air, physical inactivity, and fatigue are illustrations of such conditions. There are still other groups of hazards which owe their origin to prevailing beliefs among those engaged in various industries, and to the mental depression brought about by the conditions of labor. For example, the common belief that the use of alcohol will counteract the effects of the dust and poison hazards leads to a supplementary hazard known as industrial stimulantism. Similarly unwholesome, insanitary, depressing surroundings combined with lack of ample water supplies encourage excessive use of other stimulants of like character or even of serious habit-forming drugs.

There is increasing evidence in support of recognizing social and moral hazards of industry as well as health hazards. Venereal infections illustrate a group of diseases not directly related to industrial health hazards, but closely related to moral and social hazards of occupation.

Certain industries are so conducted that young men and women are required to associate under conditions calculated to deaden ambition and self-respect, to arouse sex impulses, break down moral protection, preclude marriage, and eliminate home influences, thereby placing a premium on promiscuous sex relations and the contraction of venereal infections. In such ways industry plays a large part in the problem of venereal disease dissemination.

During the past year in the Boston Dispensary 369 new venereal disease patients coming to the evening pay clinic were classified as follows:

Single under 21 years of age.....	23.5	per cent.
Single over 21 years of age......	65	per cent.
Total single...............	88.5	per cent.
Married under 30 years of age....	6	per cent.
Married over 30 years of age.....	5.5	per cent.
Total married..............	11.5	per cent.

These patients gave their incomes as:

$10 or less per week......	41 +	per cent.
From $10 to $15 per week......	48 +	per cent.
From $15 to $20 per week......	9 +	per cent.
Over $20 per week.......	0.9	per cent.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Other facts in the social histories of these men indicated that the majority of them were living in lodgings. It is not necessary to picture the environmental and social conditions under which these men live, nor to do more than mention what these conditions mean when combined with a prevailing belief in the so-called sex necessity for men. In a sense there is involved here a moral hazard which is comparable to the health hazard described as industrial stimulantism.

Venereal diseases are peculiarly a group which do not lend themselves to statistical or etiologic analysis beyond the purely scientific facts of their origin and methods of transmission. It will be profitable to summarize here these scientific facts. Venereal diseases are communicable parasitic infections due to identified organisms; their methods of transmission are known, and a practical laboratory and clinical technic has been worked out for diagnosing each of them; they are widely prevalent throughout the world and are not limited to any race, sex, age, or condition of people; they find their chief opportunity for dissemination in the sex relations of infected individuals with other individuals who are susceptible; they are not exclusively transmitted through the promiscuous sex relations condemned by society as harmful alike to the health, the morals and the social progress of a people; recent methods of treatment make practicable the shortening of the period of infectivity and improve the chances of ultimate recovery for the individual; once contracted they may run their course to recovery with or without medical assistance, but under present conditions an unknown and very large percentage of those infected never regain their health or never cease to be carriers of either or both syphilis and gonorrhea and therefore a continuous menace to society. Various efficiency tests of syphilis and venereal clinics have shown averages of 11 or 12 per cent. only of the cases discharged as cured, and high percentages of cases unimproved leaving after one or several visits. What this means to the public can perhaps be paralleled by the spectacular outbreak of smallpox which occurred in Montreal in 1887, when the panic stricken inmates of a hospital after exposure to an unrecognized case were permitted to scatter through the city with the result that several thousand persons developed the disease and many died. Outbreaks of venereal diseases are not spectacular or sudden, but their insidious spread makes them far more dangerous than smallpox.

With these general facts before us, the medical lines of attack are clear: 1. We must seek by cooperation with or control of the infected individual to prevent his infecting others. 2. We must endeavor by education and administrative measures to enable the uninfected members of society to protect themselves against infection. Early diagnosis and ample treatment facilities are essential, and ultimately we may expect to see adequate plans developed for promoting personal prophylaxis, chief among which must stand continence. Meanwhile, much may be done with the environment, and this brings us back to occupations.

In the conditions I have cited we have a series of hazards, whatever their particular designation may be, which need to be eliminated by society. Alcohol is one of the hazards which is a connecting link between occupation and venereal diseases through the agency of prostitution. Careful investigations of commercialized prostitution in over one hundred cities and towns in the United States has shown that the sale of alcoholic drinks is as much a part of the business as the immoral practices. Every large employer of men knows the part played by venereal disease in lowering the efficiency of the company's employees. The reports of the United States Navy for 1914 show a total of 141,378 sick days due to venereal disease, or the equivalent of a complete loss of 456 men from service for the year. It may be contended that this is not evidence of a true occupation hazard, yet it can be proved that venereal diseases are most prevalent among those persons engaged in occupations which discourage early marriage and home building. The recent studies by the U. S. Public Health Service and by the New York Health Department on venereal diseases among garment workers, peddlers and others illustrate the feasibility of obtaining valuable data on occupation in relation to venereal diseases. The report blank for the Ohio State Board of Health's Department of Occupational Diseases includes under the subhead venereal diseases, questions concerning companions, relations of the sexes during work and "moral atmosphere."

The records of a venereal clinic for men in New York examined by Mr. Platt during the past year shows the street prostitute to have been the source of infection in 36.6+ per cent., house prostitutes 18.9 per cent., domestics 10 per cent., friends 10 per cent., working women 7.7 per cent., wives 1.5 per cent., and unknown 14.7 per cent. of the cases.

Restating the lines of warfare on venereal diseases as a menace to industry and to society at large, we find four important points of attack: (1) the medical — prevention of spread from known infected persons to others; (2) the educational — instruction of the public in methods of avoiding infection; (3) the environmental — repression of prostitution and safeguarding of industries and recreation from predisposing factors; (4) the moral — training the individual in habits of control of sex impulses, and inculcating ideals of marriage and parenthood.

In all of this the physicians and the industrial leaders, among both employers and employees, have a part to play. Every system of physical examination and treatment of industrial workers has developed facts showing the great importance of syphilis and gonococcus infections in lowering the efficiency of workmen and increasing the public and private expenses due to ill health, moral ills and death.

Surgeon Banks of the United States Public Health Service has estimated on the most careful statistics we have in the country that there are at least 2,500,000 cases requiring medical treatment each year in the United States. Who are treating these cases? How far are industries responsible for the recruiting of this group?

The purpose of this paper is to stimulate discussion at this session on the importance of considering venereal diseases in relation to industries. Many experiments are now on record of industrial corporations starting educational activities in this direction. Social hygiene societies and public departments of administration are doing work along new and practical lines. The medical profession is awaking to its social responsibility in this field. Industrial employers and employees may be confidently counted on to cooperate in practical plans which the medical profession proposes.

105 West Fortieth Street.

SICKNESS INSURANCE

A PREVENTIVE OF CHARITY PRACTICE *

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Industrial hygiene and the health of the people whose daily wage depends so largely on their physical efficiency, have come to constitute one of our most serious industrial problems.

Progressive leaders of labor have found that industrial hygiene is common ground on which they can meet capital, and affords excellent opportunity for bettering working conditions.

Wise business men are coming to realize this and are giving very serious consideration to the physical fitness of their employees.

Health authorities are finding that the total environment of the workers is a more important factor in causing disease than the germs of the infectious diseases, which have heretofore occupied so much of their time.

The magnitude of the problem can hardly be comprehended. There are approximately 30,000,000 wage earners in the United States. Each one of these loses an average of about nine days per year on account of sickness. This estimate is based on an investigation made for the U. S. Commission on Industrial Relations of about 1,000,000 industrial workers in the United States, and nearly coincides with the German and English figures for over 26,000,000 insured wage earners, which show an average of eight to nine days of sickness per year. Estimating the daily wage at $2 and the cost of medical services at $1 per day, the annual loss would amount to over $800,000,000. This leaves out of consideration the human suffering and losses due to death and decrease in efficiency which follows illness. It also leaves out of consideration the effect on the family when the breadwinner is disabled.

When the losses due to sickness come to the families living just above the poverty level, this circumstance causes them to fall below that level. These are the conditions which have compelled the partnership between poverty and disease. There is no need to tell physicians that sickness increases as the income decreases; that the mortality rate in the poorest sections of a city is often double that of the best sections; that the infant mortality in the families in which the father earns less than $10 per week is three times that in the families in which the father earns $1,200 or more per year,[1] and that the tuberculosis rate is roughly in inverse ratio to the income.

There is no question in the mind of the experienced physician that at times poverty is caused by disease, and at times disease is caused by poverty, and that this vicious circle must be broken before disease prevention can make much headway among this group of people. Of what use is it for us to tell the tuberculous workingman to stop worrying, get plenty of fresh air, eat fresh eggs and drink milk with plenty of cream, and sleep in a separate room, when the week's wages are already barely sufficient to meet the actual needs of the family. The low paid workers are forced to live in unhealthy environment and on a poor diet, which lessen resistance to disease and cause sickness, which in turn results in unemployment, decreased income, demoralization, and dependency.

CONDITIONS UNDERLYING THE PROBLEM OF THE WAGE-EARNER'S HEALTH

The causes of sickness are many and ill defined. There are causes in the workshop for which the industry is clearly responsible. There are home environments for which the workers are responsible. There are community conditions for which the public through governmental agencies is responsible. But, there are many conditions for which there is a joint responsibility and an overlapping of the fields in which each must share in the other's work for betterment.

1. *Conditions for Which the Employer and the Industry are Responsible.*—There are so many diseases for which modern industry is beyond all question responsible that space will not be given even to enumerate them here. It is only necessary to point out that, outside of the purely occupational diseases like phosphorus, lead, mercury and arsenic poisoning, and those diseases due to working in compressed air and the like, there are many ills which are caused or aggravated "by hours of labor which cause excessive fatigue; by machinery and methods of work and payment which cause nervous strain, and by general sanitary conditions in places of work."

It is therefore obvious that industrial diseases are "morbid results of occupational activity traceable to specific causes and labor conditions, and followed by more or less extended incapacity for work." [2]

The occupational hazard is often obscure, but is clearly developed when careful records are kept of all disease among a large number of workmen in many occupations, as was done by "The Local Sick Benefit Society of Leipzig and Vicinity" for the period 1887-1904. These records showed that the number of days lost per year on account of sickness varied according to occupation from four days for clerks and salesmen to 12.15 for polishers and metal grinders, 12.56 days for iron and steel workers and 14.43 days for refiners in sugar factories.

2. *Conditions for Which the Public is Responsible.*—The conditions for which the public is primarily responsible are community conditions. In times now passed health authorities confined themselves to operating quarantines and the abatement of nuisances, but now under the broadening influence of a clearer knowledge of the causes of disease, they are extending their activities beyond what was originally considered the province of the government. At first they went beyond the streets and public places and fixed regulations for proper housing, pure water, pure food, sanitary workshops. As working and living conditions have become more complex, the duties of the public have developed until now its regulatory power is extending into the home and shop, and the highest courts of the land are upholding this power, as is seen in decisions affirming the right of the state to limit hours of work and to compel the payment of wages to women which will be sufficient to maintain an adequate and healthful standard of living.

3. *Conditions for Which the Employees are Responsible.*—With all the conditions for which the public and employers are responsible eliminated, there still remains a large residue for which the employees are

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Duke, Emma: Infant Mortality, U. S. Children's Bureau, p. 45.

[2] American Labor Legislation Review, 1910, i, No. 1, p. 125.

responsible. In spite of the realization of employers of a larger degree of responsibility for the health of the workers, and in spite of the ever-broadening sphere of public activities to protect the health of all citizens, there remains the individual responsibility for the home environment. It must be stated, however, that the responsibility for their environment does not rest altogether on the workers. No one is able to choose every part of one's environment, and this is especially true of many workers who have little or no choice, but must accept what is offered in the way of employment, and must also accept the home environment for which they can pay with the wages earned. This will continue to be true, especially in the unskilled group, so long as the supply of laborers is greater than the demand and the competition for employment makes it possible for the employer to fix the terms of employment.

The great burden of maintaining proper hygienic standards in the home, after all, rests on the wage earners, who are least able to bear it and who are so often ignorant of their importance. Physicians know, from experience, of the inability of individual wage earners to meet this responsibility, but they are apt to conclude that volunteer welfare workers, relief societies, and charity organizations are providing for the cases which come to their knowledge.

It is necessary, therefore, to point out that recent investigations show that about one half of the native-born families and two thirds of the foreign-born families in the United States had incomes of less than $750 a year. Seventeen per cent. of all native-born and one third of all foreign-born families had incomes of less than $500 a year.[3] These investigations included incomes from all sources and included earnings of wives and children and payments from boarders and lodgers. The inadequacy of these incomes may be measured when it is stated that the consensus of conclusions taken from a number of careful studies of expenditures of workingmen's families show that an average family cannot live for less than $800 to $900 per annum. (The average family is defined as composed of man, wife, and three children under 14 years.) In small cities and towns where rents are lower, the amount required is smaller. But even in these towns a minimum of $700 to $800 may be fixed with the assurance that the amount required is more rather than less.

The adequacy of this standard may be judged by the manner of expenditure, as shown by budgets studied in families living in New England and other Eastern cities, whose incomes averaged about $750 a year, the family being of the average size.

TABLE SHOWING DISTRIBUTION OF FAMILY BUDGET

	Per Cent. of Income	Amount
Food	47	$360
Rent	17	126
Clothing	16	123
Fuel and light	5	41
Health	2	17
Sundries	13	98
Total	100	$765

With an income of $750 a year and an expenditure of $650 a year for the bare necessities of living, the narrow margin is all too apparent. When the numerous necessary sundry expenses are deducted from the margin of $100, there is little left to provide a surplus to meet the expenses of an emergency. No reasonable thrift can save from this small margin a sum sufficient to pay for a death, an additional birth, or unusual sickness.

The question may well be raised as to whether an income of $750 is sufficient for the average family. As to more than half of all the workingmen's families in the United States whose income is less than $750 a year there can be no doubt as to their inability to maintain healthful conditions in the home.

The conclusion is apparent, therefore, that the largest share of the responsibility for the wage-earner's health rests on the workers who cannot carry the load. Society expects these to carry the greatest part of the burden of sickness, when under the best conditions they can barely meet expenses and furthermore they have the least experience in disease prevention. This is expected of them after they are handicapped by an environment which our social organization has for centuries decreed for those who are unskilled or untrained for some trade.

TREND TOWARD COLLECTIVE ACTION AND INSURANCE METHODS

With the responsibility for the wage-earners' health so definitely fixed on the employer, the employee and the public, and with this responsibility so intimately related that the duties often overlap, cooperative action is apparently the best remedy. Collective action is the only method which will enable each group immediately to meet the problem of relief of sickness without greatly increasing the amount now expended for this purpose. If this collective action is further extended into the field of disease prevention, the present cost can be greatly reduced. This is, in fact, the essential principle of sickness insurance.

Insurance is a method by which a group of persons, each in danger of some loss, the incidence of which cannot be foreseen, can distribute the cost of such loss, where it occurs to any of them, over the whole group and lighten the burden of its most serious economic effects. The results are the strongest incentive to lessen the cost by diminishing the frequency of losses. In sickness insurance the employer, the employee and the public pay the premiums for insurance against the loss to which each group is liable in case of sickness of employees. In this way the loss is distributed and a strong incentive created in each group to reduce the cost by preventing sickness. This division of the cost would greatly reduce the amount now spent by employees for sickness, and distributes the payment over such a long period of time that the poorest paid wage earner can meet the expense without materially lowering his present standard of living. Furthermore, it would meet this expense in a businesslike way and leaves no "taint of charity."

While relief of sickness must be the primary object of sickness insurance, prevention of sickness will be the greatest result. There can be little doubt as to this when the results of insurance in other fields are studied. It is only necessary to mention fire insurance and the great effort to prevent fires by building regulations, fire inspections and the like; marine insurance and efforts to prevent losses at sea; and accident insurance and the "Safety First" movement.

The experience with sickness insurance in foreign countries has been such that practically every European country has some form of sickness insurance law, and in those countries with comprehensive laws, the results in stimulating efforts to prevent sickness have been very encouraging. It is also a significant fact that no country which has enacted laws on this subject has repealed them; on the contrary, many have extended and strengthened them.

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[3] Reports of the U. S. Immigration Commission, 1911, xix, 125.

In the United States no state has enacted a law on the subject, but there are several million persons insured against sickness in labor unions, establishment funds, fraternal orders, or commercial companies. It is therefore no novelty in this country, but a method which is growing popular, as is shown by the increasing demand.

A PRACTICAL PLAN FOR SICKNESS INSURANCE

To meet the requirements for the relief and prevention of sickness in the United States, a sickness insurance law could be enacted by Congress to apply to all industries in all the states, or by the state legislature to apply within the state.

An examination of the most successful European governmental systems of sickness insurance and of the principles and methods practiced by mutual benefit societies, trade unions, and industrial establishments in this country suggests that a sickness insurance system, whether state or local, should include the following provisions:

1. *Insured Persons.*—All persons engaged in gainful occupations and earning a specified annual income ($1,000 or less) should be entitled to the benefits provided under the law.

All persons earning more than the specified annual income should be allowed to qualify for the same benefits or greater benefits according to annual income.

2. *Funds.*—A tentative ratio of contributions has been suggested as follows:

Employees	50 per cent.
Employers	40 per cent.
Government	10 per cent.

Provision should be made for persons earning more than the specified income whereby they could pay a larger proportion of the contributions and receive larger benefits.

3. *Benefits.*—The following benefits should be provided:

Cash Benefits: Weekly cash payments to begin after the first week of disability due to sickness, nonindustrial accident, or to child bearing by the beneficiary, for a period not to exceed twenty-six weeks in one fiscal year.

Death Benefits: Cash payment to legal heirs for death due to sickness or nonindustrial accident.

Medical Benefits: To include adequate medical and surgical care, beginning with the first day of disability, whether due to sickness, nonindustrial accident, or to child bearing by the beneficiary or the wife of the beneficiary, and limited to a period of twenty-six weeks in one fiscal year unless the time is extended by the commission.

4. *Cost.*—Preliminary estimates indicate that the total contributions would not need to exceed 50 cents per week per insured person, that is, employee 25 cents, employer 20 cents and government 5 cents, for a minimum of benefits of $7 per week for disability beginning after the first week, $200 for death, and adequate medical and surgical care.

5. *Administration.*—All matters of promulgation of rules and regulations and appeals should be vested in a commission created for this purpose.

Subject to appeal to the commission, all executive authority should be vested in a director appointed for this purpose.

Subject to appeal to the director, all medical benefits should be under the supervision of the medical director who should be closely related to the health department.

All matters of local administration should be vested in local boards of directors which should be federated according to districts, in order to lower the costs and increase the efficiency of local administration. All local and federated bodies should be subject to supervision by the central authorities, and also subject to the rules and regulations promulgated by the commission.

The commission and all local and federated boards should be composed of persons representing the contributors to the funds. The number representing employees and employers should be in the same ratio as their respective contributions.

Provision should be made for free choice of any physician registered on the local panel, and all persons licensed under the laws to practice medicine should be allowed to register on the panels. But the number selecting any one physician should be limited.

Relation to the Medical Profession.—Without adequate medical benefits, both clinical and preventive, the whole plan will prove a failure.

These benefits should provide adequate medical and surgical relief, including specialist and dental services, medicines and appliances in home, hospital, or office, as the case may require, for all disability as provided under the law or regulation.

To provide these benefits there should be a corps of all-time medical officers and nurses, and local panels of physicians, specialists, dentists and druggists to provide such relief as may be authorized by the annual contract.

Corps of All-Time Medical and Health Officers.—The officers of the medical corps should be carefully selected, and after a probationary period of satisfactory service, given a life appointment subject to dismissal for inefficiency or immoral conduct.

In the federal plan the medical officers should be detailed from the present United States Public Health Service.

In the state plan a medical corps should be created along the same plans as the present commissioned corps of the Public Health Service and the state health department reorganized on such plans as would provide an efficient supervision of the medical benefits.

The duties of the medical corps under federal or state plan should be to have charge of all hospital and dispensary relief; to examine all insured persons claiming to be disabled, and issue certificates in accordance with the regulations promulgated by the commission; to advise the administrative authorities and all contributors to the funds as to the best measures for the relief and prevention of sickness; to advise with the physicians attending sick members as to measures which will shorten the periods of disability; and to perform such other duties as may be fixed by regulations. The corps of nurses should be selected and appointed in the same manner as the medical corps, and should aid the medical corps in all of the duties required of it.

The further duty of visiting and nursing disabled members in their homes should be imposed on the nurse corps under the direction of the attending physician or visiting board of the funds, as the case may be, but always under the supervision and approval of the medical corps.

Panels of Physicians, Specialists, Dentists and Druggists.—In every local or federated jurisdiction, panels of physicians, specialists, dentists, and druggists should be contracted with to furnish adequate services to all insured persons who prefer to be treated in their home or in private office.

These contracts should, by preference, be made through the medical societies and all the administrative details left to the societies, but strict provision should be made that any person, licensed under the state laws as competent to perform the services specified, must be allowed to register on the specified panels without regard to the particular school said person may have graduated from.

Each insured person should have the privilege of making his own choice of physician from among those registered on the panel for his district. This choice should be allowed once each year, or oftener if some good reason is furnished. The number choosing the same physician should be limited to such extent as will insure adequate service on the part of the physician.

Payment for services should be made on a per capita basis and each physician should receive the same annual amount per patient whether the patient is sick or well. At the end of each month or quarter the physician should receive pay in accordance with the number of insured who had selected him.

The same methods of capitation payment and selection should be provided for dentists and druggists.

This method of payment and selection should prove to be for the best interests of all concerned. Those rendering services or selling medicines and appliances should receive the same capitation fee and there would be no incentive to render excessive services or furnish excessive supplies of medicines or appliances in order to increase their income. On the other hand, the fact that the patient has the right to change his choice would be incentive sufficient to make those chosen do their best to please.

There will be a further inducement to render efficient service to all patients in the fact that an officer of the medical corps will have to see every disabled member as often as may be necessary to keep informed as to his disability, in order to issue the certificate required. This double medical examination would not only increase the efficiency of the treatment, but would prevent malingering, as it is not apt to be successful under the double examination and observation.

Hospitals and Dispensaries.—As rapidly as possible local boards of directors should be federated according to the most favorable districts so as to build, buy, or contract with, hospitals and dispensaries for the care of its disabled members. These should be placed in charge of the medical corps and contracts be made for such special services as may be required. Any patient should be admitted to hospital or dispensary treatment on the approval of a regular medical officer, but the amount of the capitation paid to any doctor or druggist for any person so admitted should not be reduced because of such admission.

Visiting Boards.—To further insure that every beneficiary received just treatment and none be allowed benefits to which he is not entitled, provision should be made for the organization of visiting boards composed of insured persons whose duty should be to keep in touch with each disabled member until he has recovered. These visiting boards should also keep in touch with the medical officers and visiting nurses on duty in their district.

THE POSSIBILITIES OF SUCH A SYSTEM

Of course, it is borne in mind that a system of sickness insurance such as has been outlined should be evolved through federal or state legislation, or both, and that starting in a limited field it could be gradually extended and perfected. But the beginnings of a cooperative governmental system should be made as soon as possible with the object in view that each one of the 30,000,000 workers in the United States should eventually receive adequate medical and surgical care.

With adequate financial relief when unemployed on account of sickness, he would be able to take advantage of the treatment before it was too late.

There would be funds with which to build or buy hospitals in every federated district. These hospitals would be in the reach of all and form part of the benefits to which all would be entitled.

The treatment in the homes would have to be of the best, or the patient would be sent to the hospital. Minor ailments, many of which now go uncared for because of the expense, would receive prompt attention in office or dispensary. Physicians would no doubt institute thorough, periodic examinations of the physical conditions of their clientele, knowing that such examinations would often save their patients from many serious troubles.

Visiting nurses and visiting boards would find in homes many conditions which needed correction to save future trouble. The all-time medical officers would enter the homes of all sick members and with the trained eye of the sanitarian would find many causes of disease which need correction.

Health departments would not have to spend time in lobbying to obtain proper laws and appropriations. Instead, business men, on finding that they were paying for much disease that could be prevented, would see to it that the health authorities were efficient and effective in the work of disease prevention.

PHYSICIANS ARE NOW HANDICAPPED

At present medical practice in the United States is operating on a most uneconomical and unsocial basis. The man on the average income of industrial workers cannot afford to pay the charges for the average sickness expectancy. Among these the physicians are practicing against heavy odds.

A large number of low-paid wage earners and members of their families constitute the "charity practice" of physicians, and many of them are found in the free hospitals and clinics where physicians give their services free; and many more, too proud to ask for charity treatment, either get no treatment at all, treatment too long delayed, or treatment of dubious value from quacks, "patent medicine" men, druggists, and ignorant midwives.

In medical centers large free hospitals are maintained for certain patients called hospital patients, while other patients must go without treatment and many of the hospital patients do not apply for admission because they cannot afford to stop work.

Outside of medical centers there are many large areas which have few or no physicians, because the people are too poor to employ them.

For the most part, throughout the United States hospital accommodations are far from adequate.

The results of this lack of treatment or improper treatment of the poorly paid workers is that many die every year who could be saved, untold numbers become permanently disabled and unable to work, their wives become invalids from no care or improper care during confinement, and thousands of their children die within the first year of life from lack of intelligent care, or become blind, or are otherwise handicapped.

SICKNESS INSURANCE A HEALTH MEASURE

A governmental system of sickness insurance similar to those in successful operation in Europe will enable the physician to receive pay for his practice and hospital work among low-paid wage-earners, and will allow the patient to receive prompt and proper treatment without forcing him to become a "ward of charity." It will strengthen the economic independence of the worker and at the same time greatly increase and stabilize the income of the physician, as well as enable the medical profession to carry on a more effective preventive work.

The waste from disability and death due to preventable disease is so tremendous that estimates mean nothing to the average mind. The suffering and sorrow due to these causes should be sufficient argument for a sickness insurance law which will place adequate medical relief within the reach of all and provide for preventive measures on a broad and comprehensive plan in which there will be a financial incentive for employers, employees, physicians, and the community to prevent sickness. Such a law would prove to be the greatest public-health measure ever enacted.

DISCUSSION

ON PAPERS OF DRS. MCCURDY, SNOW AND WARREN

Mr. Frederick L. Hoffman, Newark, N. J.: Any plan of national or state sickness insurance is and ever will be primarily a medical question. It matters very little as to how the end is achieved to those who are or will be the beneficiaries of the plan. It matters very little whether it is done by insurance, or whether it is done through the taxing power of the state. I believe that those who are responsible for the English national insurance scheme, if they could have their way and go over the ground again, would not call it an insurance scheme at all, but a national public health service. If we are really sound in our democracy, that the interest of every individual is a matter of government concern, as regards health and longevity, strength and efficiency, then I believe it goes without saying that sooner or later we shall adopt a rational and effective method to carry such an idea as that of Dr. Warren and others into effect. At the present time an enormous amount of ill health exists in the community in that latent, incipient form, when there is the greatest reluctance to seek advice, although there is then the greatest possibility of real prevention and of genuine cure. That reluctance is, of course, due largely, if not entirely, to economic reasons—to the unwillingness or the inability on the part of a large number of wage earners (and with these we are chiefly concerned) and their dependents, to incur the initial expense. It has been said—and I believe it is true—that the majority of our wage workers have not a single week's wages ahead. Now, if that is true, and if that amounts to $10 or $15, you can see how narrow the margin is between economic dependence and economic independence. If the state, or if insurance companies and societies, can induce the wage earner, however, to set aside a very small portion of his wages, so small that he would not feel it at all, that amount stretched over the course of his life and accumulated at compound interest will, broadly speaking, prove fully sufficient to provide for him and his dependents adequate medical treatment, adequate surgical treatment, adequate medical inspection, and other means for the prevention of illness as well as its cure. Unfortunately, whenever you approach a wage earner with so remote a contingency as sickness (for it is remote, broadly speaking, in the life of the large majority of that proportion of our wage earners who are mostly under 30 years of age), they are, as a rule, unwilling to make that present, though small, pecuniary sacrifice; and in the European countries, at least, compulsion has been the only alternative to a really universal and thoroughly effective system of what we call social insurance, but what really amounts to a system of state medicine. They call it insurance, but nothing is insurance in the true sense that rests on compulsion, on the one hand, and on a state or an employer's contribution, on the other. It is simply a modified form of taxation; and if we are going to have anything of that sort in this country, we must face it from that point of view. I should like to leave that thought with you, for it is of the utmost importance that there should be no confusion of terms.

Dr. George M. Kober, Washington, D. C.: The importance of the subject of industrial sanitation must be apparent when it is remembered that probably more than one third of the population in this country constitute our working classes. Health is the chief asset of the working man, and no greater calamity can befall him than when, by reason of sickness or accident, his earning capacity ceases. It means in many instances the utter financial ruin of the family and is doubtless one of the most potent causes of poverty and distress. An appeal has been made by Dr. McCurdy for an enlightened and humane interest in this important and much neglected subject. There has been need for it ever since the mechanical industries sprang into existence; and it is much to our shame that we have been so tardy to realize the imperative need for active preventive work in connection with industrial diseases and accidents. I certainly hope that the papers that have been presented will make a deep and lasting impression, and enroll into the ranks of workers in industrial sanitation a large number of able and faithful and intelligent men and women for the prevention of needless suffering and distress. I merely want to point out that of the 143,000 deaths from tuberculosis which were recorded in the census of 1913, probably more than one half belong to the industrial workers; and it has been estimated that fully one half of all these lives could have been saved by the enactment and enforcement of laws for the prevention and removal of dust and fumes, which constitute the foes of industrial life. That is only one of the many instances that can be cited in favor of active preventive measures. Time does not permit me to speak of many other factors connected with this great problem, such as industrial poisons, fatigue from overwork and long hours, the question of temperature and atmospheric conditions. One of the most important conditions is reasonable hours of work. How can we expect men to work day after day and month after month and year after year without wearing themselves out, as long as the hours amount to ten, eleven and twelve as we very frequently find in our steel plants, where they are exposed not only to extreme, hard physical work, but also to excessive heat and other avoidable conditions detrimental to health and life?

Dr. R. W. Corwin, Pueblo, Colo.: Our work must extend further than examination of the man in the mill. His home surroundings should be considered. If possible he should be freed from anxiety, insanitary and unhygienic conditions.

Our attention should be called also to the matter of education. Not only should the employee be instructed, but those above him in authority. The doctor learns new prophylactic facts every day. All others may do the same.

We hear much regarding the use and abuse of tobacco and liquor. No person in authority can ask one under him not to do what he himself indulges in. One cannot expect of his assistants more than he is willing to do himself.

Dr. G. H. Richardson, San Francisco: For the past two or three years, as a member of the Commonwealth Club of this city, I have been studying the various phases of social insurance, and have become very much interested in this subject, particularly as it relates to our profession. I want to bring out one point that was brought to my mind by Dr. McCurdy's paper on the physical examination of employees. I examine for the Civil Service Commission of San Francisco and of course make a large number of rejections, but I have kept no record of these rejections. All over the United States these examinations are being made, and it would be of great service to compile these rejections. The statistics would, I am sure, be of some service to this section. The same thing I know exists in the recruiting depots of the army, the navy and of the marine service. We have no easy way of knowing the character of the defects giving rise to their rejections, the proportion of men rejected, or most important of all, the ultimate result of these defects on the earning capacity of the individual. It would seem that if they were collected by this section in some proper manner, it would be of value to us in this work. The dark war cloud that now rests over Europe will practically socialize that continent. It is going to make poverty such as the world has never seen, and in consequence the various countries will have to tax themselves, probably by some form of compulsory insurance, to care for their great dependent populations. We must expect that this transition in economic life will affect conditions in the United States; and we as medical men should study and prepare ourselves for the wonderful change it will make on our profession as a means of livelihood and also on our relations to the sick and injured of our community.

Dr. G. H. Taubles, San Francisco: With reference to the paper of Dr. Snow, one of the strong things brought up but not elaborated was the instance of enormous numbers of girls living under most distressing conditions; and, on the other hand, the statistics of men infected with venereal diseases, most of them unmarried. I think that this is the age of the awakening of the civic conscience, and this condition is one that requires readjustment. The mass of people cannot be deprived of their biologic heritage by the isolation of large numbers under unsuited conditions, causing many of those women to pass through their lives without ever having completed their functions of motherhood, by ruining so many of these men so that they never will have completed their functions of fatherhood. This thing in time must have a serious effect on the entire population. The hopeful thing is that such a section as that of preventive medicine has sprung into existence, and it is from the social aspect that preventive medicine will have its strongest effect. That readjustment must take place, and the reestablishment of human beings as biologic functioning organisms must take place, and that is social. This is going to be emphasized, particularly at this time, in view of the enormous destruction of life occurring in Europe; and the problem will be presented to us in the United States from the point of view of immigration. We will have many hundreds of thousands of people to take care of directly, and hundreds of thousands to take care of indirectly. The United States has always sent a great portion of its natural products to other continents. This will be more than ever the case in the next decades.

Dr. W. C. Rucker, Washington, D. C.: Dr. McCurdy spoke of the question of overloading the human machine. Years ago the reports of the Marine Hospital Service were filled with references to aneurysm among sailors, which was then very common. Nowadays aneurysms are almost never found among sailors. This is coincident with the substitution of gasoline and steam power on ships in place of man power for the purpose of hoisting sails, moving boats, warping in vessels, and everything of the kind. I believe this has reduced aneurysm among sailors, and that what applies to this one craft applies to all others.

With regard to the examination of applicants for positions, on two occasions I have been entrusted with the employment of large numbers of men, and, like everyone who has done this sort of work, I have observed the very close relation between the physical and mental development of men; but there is a type of men physically sound and apparently fairly sound mentally who nevertheless have a mental strabismus. In the employment of men, the exclusion of such applicants is most important. They are invariably trouble makers, a danger to fellow workers and cost a great deal more than they are worth. The simple test of the imagination is one of the best tests for the exclusion of these men, as they invariably have a disordered imagination. If you present to them a sudden emergency requiring the exercise of the imagination you will be surprised at the queer and eccentric answers you will get; and whenever you find men with these queer imaginations it is not wise to employ them. For the common laborer, the man who is supposed to bring a little brain and a great deal of muscle to his job, a blot makes a very good imagination test. Simply take your pen and put some ink on a piece of paper, fold it and unfold it again, and, pointing to the blot, say to the man, "What does it make you think of?" That sounds like an idiotic test, but it is really a sensible test for these men. They will display emotional characteristics under this stimulus to their imagination. Here is a blot that looks to a normal eye like a cloud, and the man is apt to say, "Oh, that looks like a brainstorm. Take it away"—something like that. You will find it a good test.

I have told these things to bring out the importance of the test of the mental condition of workmen, of which nothing was said in the papers. The importance of such a test is illustrated by the case of a man, employed as a boatman running a small gasoline craft, who suddenly began to hit things, bumping into the wharf and injuring his boat. His friends and his employers noticed it, but paid little attention to it. Within a year he had general paresis.

A good many railroad accidents have been due to the fact that the men were in the stages of mental deterioration. I think in our routine physical examination of employees we should pay great attention to their mental condition.

Dr. Leo Munter, San Francisco: The proposition of sickness and accident insurance I believe to be dangerous and bad. The matter of industrial insurance as we have it in San Francisco has proved to be a bad proposition. At the time when the insurance act first went into effect there were compacts made between physicians of San Francisco and various parts of the state with the insurance companies, whereby the physician was to furnish his services at a minimum fee. The argument was made that industrial insurance was to protect a class of men who were making small wages, who were not earning sufficient to protect themselves in case of accident, and for that reason the medical men were asked to make their fees as low as possible. The argument was also made by the insurance companies and by the industrial accident commission that as we ordinarily charged low fees to these men, we should not charge the insurance companies larger fees for the services rendered. As a result, the association of insurance companies adopted a schedule, which was all the way from 50 to 60 per cent. lower than the regular fees that had been charged for medical services. A great many physicians were requested to sign this schedule and pledge themselves to work for these fees. A great many physicians of San Francisco, to my own personal knowledge, did sign this schedule and agreed to do the work for this minimum fee. At a meeting of the State Medical Society a fee schedule was adopted which was to be ratified by the various county societies, and which was rejected by various county societies. In San Francisco a mass meeting was held which resulted in a protest against binding ourselves to work for low wages. As a result of this protest, the insurance companies have taken it on themselves to dictate who the physician shall be who shall treat the injured employees. They have employed physicians at certain reduced fees, and have made contracts with physicians who would still further reduce their fees by giving a rebate of 25 to 30 per cent. off of the schedule which had already been reduced 50 to 60 per cent.

Dr. Mary Lawson Neff, Phoenix, Ariz.: I have been asked to speak on the psychologic aspect of the question. I examined in Los Angeles a few days ago with Dr. Allen a man, a jitney-bus driver, who had been arrested for charging at full speed into another automobile. He proved to be a paretic, and from time to time in different clinics I have seen many such cases. I believe if we collected them we would find an immense number of industrial accidents due to mental and nervous diseases. I think also the question of mental defect should be given attention. The high-grade mental defective is not recognizable except by a mental examination, and not always then; but a great many mentally defective people find their way into industrial positions that they are quite unfit for. The high-grade defective, for instance, is quite capable of working in a gang under a good foreman, but is incapable of working independently; and his right placing would depend on the proper psychologic examination, rather than the physical; that is, there are special defects that should be made the subject matter of psychologic work. For instance, a person with a "left hand lag" ought not to attempt to be a stenographer. The person who is "ear-minded" is unsuitable for a telephone operator where a flash light signal is what she has to depend on for her work. So it seems to me that there is a large field for the psychologist—the psychologist with common sense—in this department.

Dr. Otto P. Geier, Cincinnati: I believe that this sort of work if well done in industry is going to stimulate the general practitioner to better work, more accurate diagnosis. I find that we are continually coming across, as Dr. McCurdy does, the mistakes and oversights in diagnosis on the part of the general practitioner; and after a while, when enough of this work has been done, it is going to become a very uncomfortable thing for the general practitioner to remain so slovenly in his diagnosis, and have his families find out from the industrial physician that he does not know his business. It might surprise you to know that there have come before me, with only 1,000 men, three cases of appendicitis within the last six weeks, and two cases of tuberculosis. Those conditions we discover by virtue of the fact that medical inspection is insisted on, and because these men come freely to consult me just as they did their private physicians.

That matter then of the jacking up of the family physician, and making the general practitioner do less slovenly diagnostic work, I think, is going to be of some value.

It is also going to help the man who is interested in public health work. If he is interested in a larger budget for the health department, he should be interested in this thing, because if the people seize the idea that it pays to be healthy, they are going to see to it that the public bodies give the public health department more money. In that way it is going to stimulate better health conditions in our cities.

It is a question whether industries should undertake to do surgical work and medical service for its employees such as suggested by Dr. McCurdy, because I think there is a little danger of pauperization; and I think we should steer very clear of this danger. That of course should take care of itself by the inquiry into every man's social condition. If he deserves it, give to him out of your industrial clinic the same service you give in the general public clinic. In order to make this propaganda go with the profession we must steer clear of robbing the physician of his just part of medical and surgical service.

Dr. Sidney M. McCurdy, Youngstown, Ohio: It seems to me that a section on preventive medicine has a duty to perform in supporting the physical examination of employees. The only active opponents that I can discover are the labor unions and they seem to be undergoing a change of sentiment. We should help educate them to the fact that the examination is for honest purposes, and that no one will in the end profit more than the workingman.

The question of psychology and its relation to a working force, I am much pleased to have brought out by Dr. Rucker. Our accident department finds that it can only prevent 35 to 40 per cent. of accidents by mechanical devices, the rest probably belonging to the individual and to his psychologic attitude. I have spent much thought and time in the endeavor to discover an accurate and rapid test for recording the mental condition of applicants for employment. Thus far I have not felt satisfied that any practical tests have been evolved.

Lastly, I wish to thank Dr. Warren for his most able paper on insurance. I do not think that there will be any opposition from the employee when state insurance becomes necessary. We have a relief association, not compulsory, to which 5,600 of our 8,000 men belong. This would seem to indicate that the men appreciate the need of insurance and there is a real desire and necessity for a cheap form of protection. I am a firm believer that while the medical fraternity may suffer a diminution in the size of its fees, for the ultimate good of society, state and national insurance for sickness and old age is the only logical solution of this problem.

Dr. W. F. Snow, New York: The purpose of offering my paper was to bring out, if possible, that there are moral and social hazards in industry as well as health hazards; and that the complicated interlocking of such hazards with those that we technically know as health hazards, makes it possible to attack some diseases in the reduction of their prevalence rather by an attack on these moral and social hazards than directly on the health hazards. Venereal diseases are in this way sufficiently closely related to industry to demand close observation on the part of those working with health hazards in occupations.

Dr. John W. Kerr, Washington, D. C.: Much more might be said on this subject. Its importance to the medical profession has been brought out this morning. I would just like to emphasize its importance in relation to the public health movement; but I feel that health departments should be in closer touch, and that in future plans the work should be placed so far as possible in the hands of health departments. [In order to give practical effect to the resolution already adopted Dr. Kerr moved that a committee be appointed for the further consideration of this subject, to report at the next annual meeting. This motion carried.]

THE ROENTGENOGRAPHIC APPEARANCES IN RICKETS

WITH A COMMENT ON DIFFERENTIAL DIAGNOSIS *

ROBERT W. LOVETT, M.D.
BOSTON

During the past winter between 6,000 and 7,000 roentgenograms from the records of the Children's Hospital were examined for the purpose of selecting from among them the plates of rickets, of which there were found between 500 and 600. These were set apart for a study which forms the basis of this paper. This ratio of 10 per cent. of rickets in the cases requiring roentgenographic study in the varied clinics of a children's hospital is of interest. The plates of the general group covered cases of all types of trauma, congenital bone malformations, tuberculosis, scoliosis, osteomyelitis, empyema, scorbutus, osteomalacia, chondrodystrophia and syphilis.

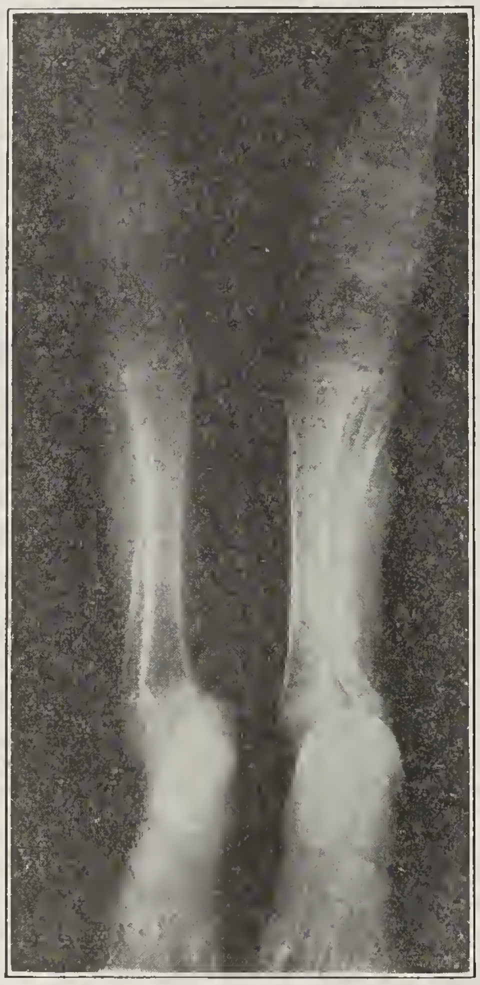

Fig. 1.—Acute rickets. First stage: indistinct epiphyses, periosteal thickening, fractures.

The plates of rickets were then carefully gone over several times from two points of view, (1) to establish and classify the Roentgen appearances of the acute, subacute and convalescent phases of the affection, and to define the finer bone changes associated with the disease, and (2) to determine definitely those points in differential diagnosis by which rickets might be distinguished from such diseases as osteomalacia, scurvy, congenital syphilis and similar affections.

The research was originally undertaken to see if it was possible to determine from roentgenograms when the rachitic process had subsided sufficiently to make operative interference advisable in cases of knock knee and bow leg. Experience had shown that such a determination by age limit was unsatisfactory, because even when children are 4 and 5 years old, one sometimes encounters soft bone offering little resistance to the osteotome, and in these cases profuse bleeding often results, suggesting that the rachitic process is still active.

The study of the plates, however, proved so interesting with regard to the broader aspects of the disease that the inquiry enlarged itself into a comprehensive investigation of the Roentgen-ray phenomena of the disease in general. A review of the literature proved that apparently such a survey was covering practically new territory.

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* From the Orthopedic Clinic of the Children's Hospital.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Fraenkel and Lorey have contributed interesting material from which a Roentgen diagnosis of typical deformities can be made, but the finer aspects as to differential diagnosis are not given, nor is there any attempt to trace the stages of the disease through a definite Roentgen sequence.

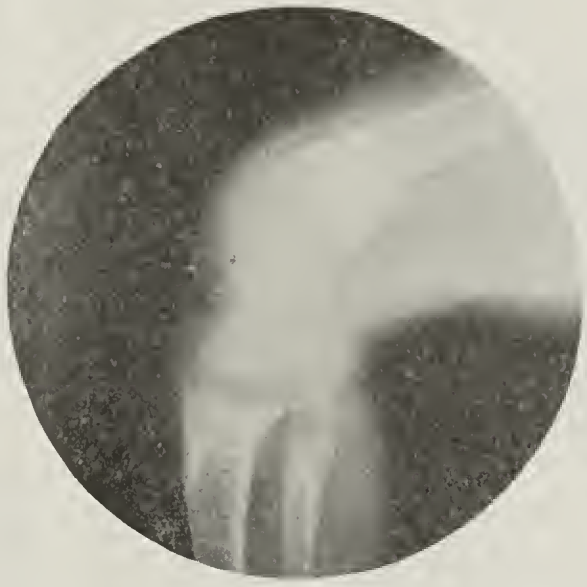

Fig. 2.—Knee in acute rickets, showing indistinct epiphyses and ragged diaphyseal ends with blocking off of lower end of shaft.

Von Recklinghausen's[2] study of pathology adds certain substantiating data to the roentgenologic evidences of the disease. Koch's[3] work from the experimental biologic aspect of etiology is familiar in the recent current literature on the subject.

There have been numerous French articles[4] dealing with the relation of rickets and syphilis, but as the literature in general does not bear directly on the aspect of the question under consideration, this paper will consist almost wholly of my own observations and conclusions.

On a comparative study of the plates, the disease divided itself naturally into three stages, stages in which the separation must of course be to some extent arbitrary, but which, on the whole, are distinct. These apparently correspond to three stages based on anatomic pathologic data advocated by Guérin and Monti[5] as the stages of swelling and rarefaction, deformity and organization, healing and reparative eburnation.

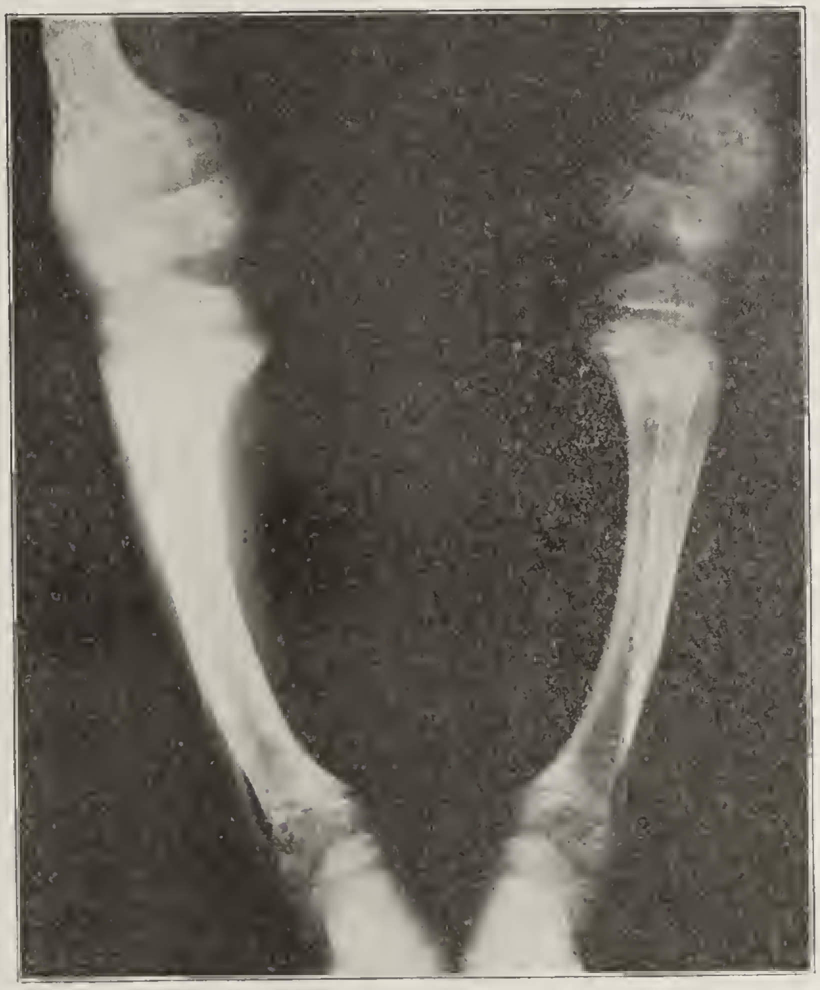

Fig. 3.—Second stage: epiphyses more ossified, ends of bones broadening, more marked on the side on which the strain is greater.

For this investigation, the knee was chosen as the most favorable joint for study. The manifestations, however, are similar in other joints.

FIRST STAGE

In the first stage there are two types, which differ in severity. This stage is the early period of the disease, the period of onset and acute metabolic disturbance. In the *milder* type, the ends of the diaphysis become frayed out instead of clear cut, and the epiphysis casts little or no shadow, while the center of ossification is small or absent, and at times appears multiple. The whole joint is surrounded by a hazy cloud, and the diaphysis on the whole contains less lime than normal. This is very marked in the juxta-epiphyseal region. Up to this point deformities have not begun.

In the *severer* type of the first stage, the epiphyseal appearances are similar, but more marked. In the diaphysis, severe general bone atrophy exists, and there is pronounced periosteal thickening, associated as a rule with fracture of the bones, most often in the arms. These cases of multiple fracture are very common, and are frequently classed as osteogenesis imperfecta, an affection wholly different in character. Fraenkel and Lorey use the terms "florida" and "gravissima" in connection with these severer manifestations.

SECOND STAGE

In the second stage, the shadow of the epiphysis becomes more marked. The area is ragged and irregular about the margin, and calcification is more marked at some points than others, which results in a characteristic mottled appearance. The ends of the diaphysis begin to broaden, especially on the side on which the strain is greatest, which produces a ledge or lip next to the epiphyseal line. In bow legs this is found on the inner side of both the tibia and femur, and in knock knee on the outer side of the same bones. This is the beginning of compensatory changes in the bone structure, which from all appearances are related to weight bearing.

The diaphysis in the second stage begins to give a more definite shadow. The region next to the epiphysis is streaked longitudinally, and is the area of maximum disturbance. At the epiphyseal end of the shaft there is generally a transverse area of increased density reaching about a quarter or a half an inch from the epiphyseal line, bounded at the end furthest from the joint by a fairly sharp line. This continues into the third stage, in which it may become more defined, and resembles in many respects similar changes observed in syphilitic bones in infants, described as osteochondritis, a point discussed under differential diagnosis.

At the end of the diaphysis next to the epiphyseal line there often appears in the late second or early third stage a clear transverse white line, showing an increased deposit of lime in the lower end of the shaft. This is apparently not to be distinguished from the "white line" which is described as a charac-

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[1] Fränkel, Eugen, and Lorey, Alexander: Die Rachitis im Roentgenbild, 1910.

[2] Von Recklinghausen: Rachitis and Osteomalacia, 1910.

[3] Koch, J.: Ueber Experimentelle Rachitis, Berl. klin. Wchnschr., 1914.

[4] Dufour, H., and Huber, J.: Syphilis et rachitism, Ann. de méd. et chir. inf., xiv, 702. Kassowitz, M.: Ueber Rachitis, II, Osteochondritis rachitica, Jahrb. f. Kinderh., 1912, lxxv, 194, 334, 489, 581.

[5] Monti: Rachitis, Kinderheilkunde in Einzeldarstellungen, 1900, ii.

teristic of scurvy, but which is equally characteristic of rickets.[6]

Along the shaft of the long bones a longitudinal change occurs, which is compensatory in nature. This consists in a cortical thickening on the concave side of the bones, chiefly noticeable in bones which have curved. This change is of endosteal origin, and persists into the cured stage of the affection. It is constant in curved bones, and is one of the most important characteristics in differential diagnosis.

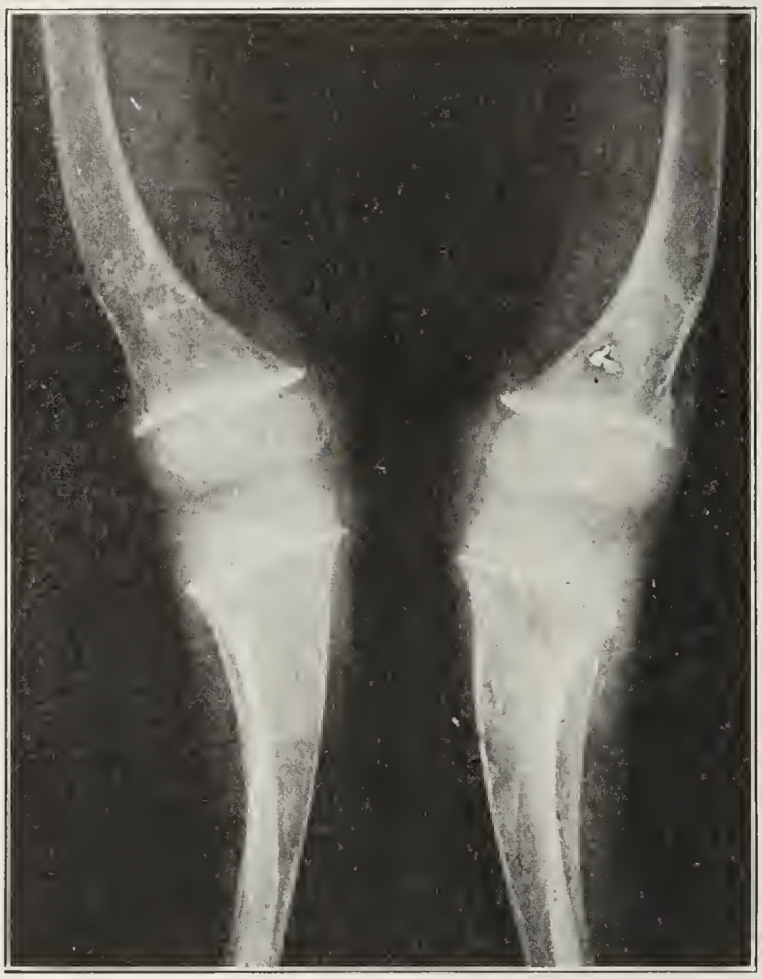

Fig. 4.—Second stage of rickets, showing returning ossification. Note "white line" at ends of diaphyses described as characteristic of scurvy; chambering of lower part of femur.

Further changes in the second stage consist in chambering of the interior of the bone, where light areas in the shaft indicate the absence of marked bone deposit, and heavier lines of ossification show the irregular development of trabeculae. The smooth homogeneous shadow of normal bone is replaced by an irregularly streaked shadow structure.

The second stage in general is a period of systemic reaction to the disease, in which signs of returning ossification occur and when deformity begins.

THIRD STAGE

In the third stage, the epiphysis begins to resume its normal contour and homogeneous shadow density. Irregularities persist in the marginal outline, and there is still a little mottling in the ossification. The lipping of the diaphysis has enlarged the bone ends, and there is in consequence a discrepancy in breadth between the diameters of the diaphysis near the epiphyseal line and the epiphysis. This relative difference in size is characteristic of this disease. The clouded condition surrounding the joint in the earlier stages has gradually cleared away, and the bone shadows are more definite in consequence. The white line mentioned in the second stage becomes more pronounced in the third.

The other general changes are greater definiteness in the bone shadow throughout the shaft as well as in the joint, and the accentuation of the compensatory thickening of the shaft on the concave side of the curvature. Though irregularities in the bone shadow continue, they are much less marked than in previous stages. In the plates so far observed, the lower epiphysis of the femur seems to be the last to recover its normal outline; but a more extended general study would be required to establish this.

The third stage is what may be termed the period of convalescence. From this point on, the deposit of bone continues, the outline of the epiphysis becomes clean cut, and the epiphyseal shadows homogeneous and rather more than normally dense, and irregularities in deposition in the interior of the shaft become less marked.

The characteristics of recently cured rickets are the enlargement of the diaphyseal end, which is not gradual but is a sudden lipping or ledging next to the epiphysis, the relative disproportion between the diaphyseal end and the epiphysis, and the cortical thickening on the concave side of the bone.

For diagnostic purposes, therefore, the changes may be summarized as follows: The epiphyses show scanty and irregular osseous deposit, and never have a clear normal outline during the acute process. The end of the shaft is streaked, and presents an irregular line at the joint end and above it a curious transverse zone of different structure from the rest of the bone. The interior of the shaft becomes chambered and irregular, and the whole shaft casts less shadow than normal. The ends of the shaft broaden at the junction with

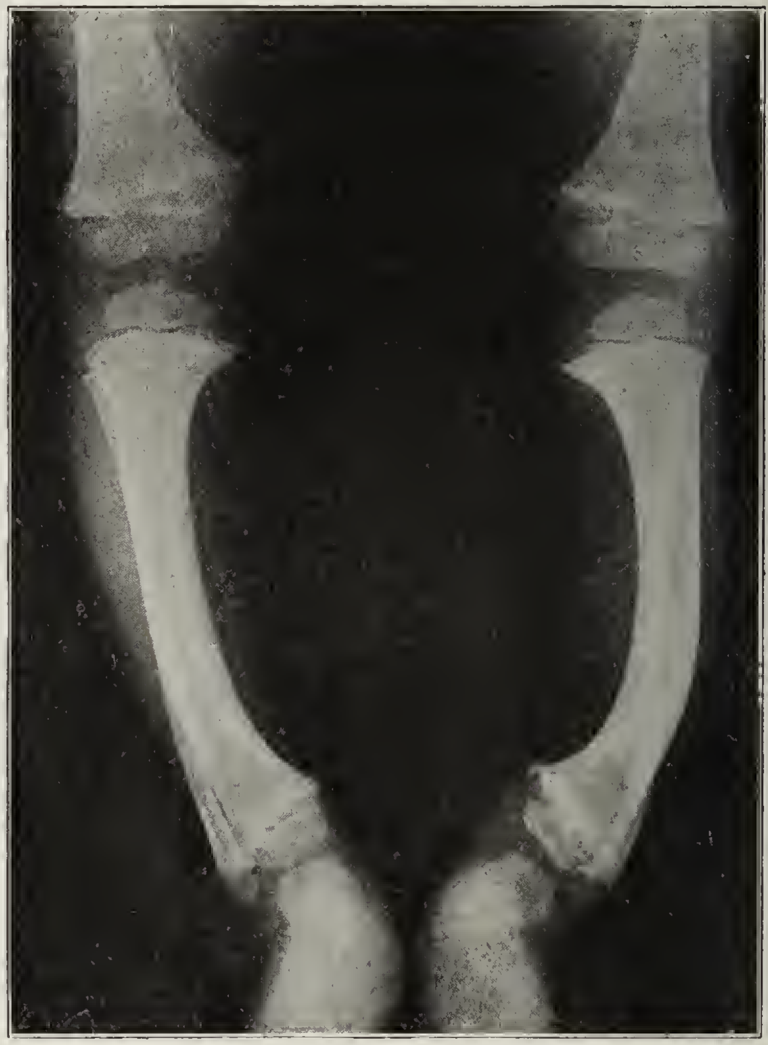

Fig. 5.—Third stage of rickets: clear and ossified epiphyses, curved bones with compensatory thickening on concave side of curve, broadened ends of shaft at epiphyseal line, increased density of bone.

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[6] Talbot, Dodd and Peterson: Experimental Scorbutus and the Roentgen-Ray Diagnosis of Scorbutus, Boston Med. and Surg. Jour., Aug. 14, 1913.

the epiphysis, and throw out ledges on the side when strain is to be met. A compensatory cortical thickening occurs on the concave side of curved long bones.

DIFFERENTIAL DIAGNOSIS

In cases of scurvy, the roentgenograms show the clear outline of the epiphysis. Even in cases in which extensive subperiosteal hemorrhage exists, with the attendant bone atrophy of the shaft and occasional dislocation of the epiphysis, the outline of the latter is quite distinct. Atrophy in scorbutic cases, though at times extreme, is uniform. The one point which is common to the two diseases in some cases is the white line occurring at the ends of the diaphyses. On the condition of the epiphysis alone, however, it appears possible to differentiate the two diseases.

In chondrodystrophia foetalis, the epiphysis is perfectly constant in maintaining its clearness and regularity of outline throughout the affection, and though the ends of the diaphyses are broadened, the changes occurring in this region in rickets, which have already been outlined, distinguish this part of the skeleton from chondrodystrophic deformities, which present comparatively uniform shadow densities.

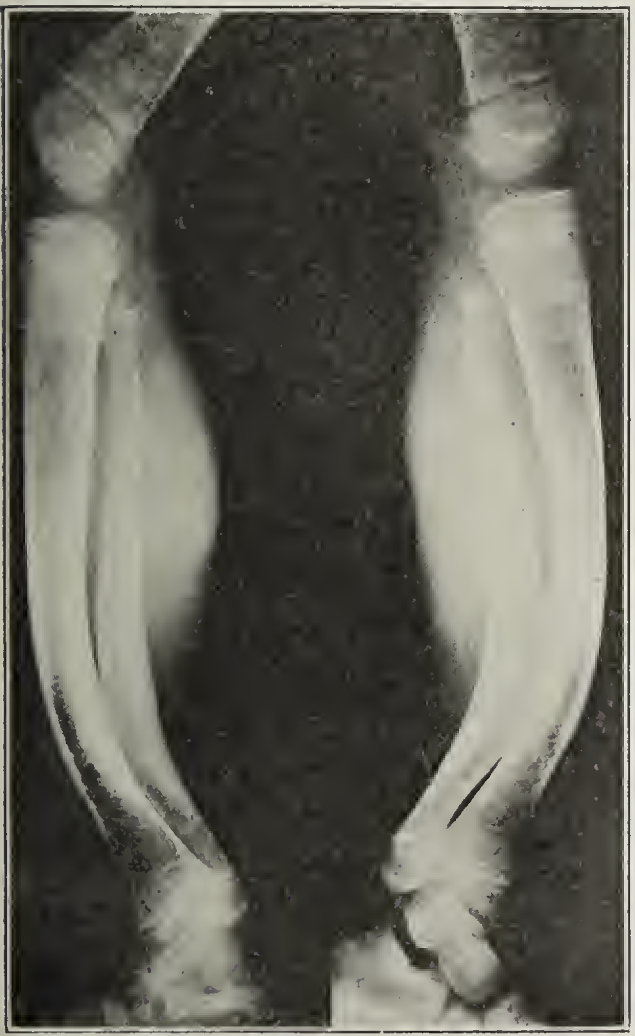

Fig. 6.—Side view of anterior tibial curve due to rickets; thickening is on concave side of curve.

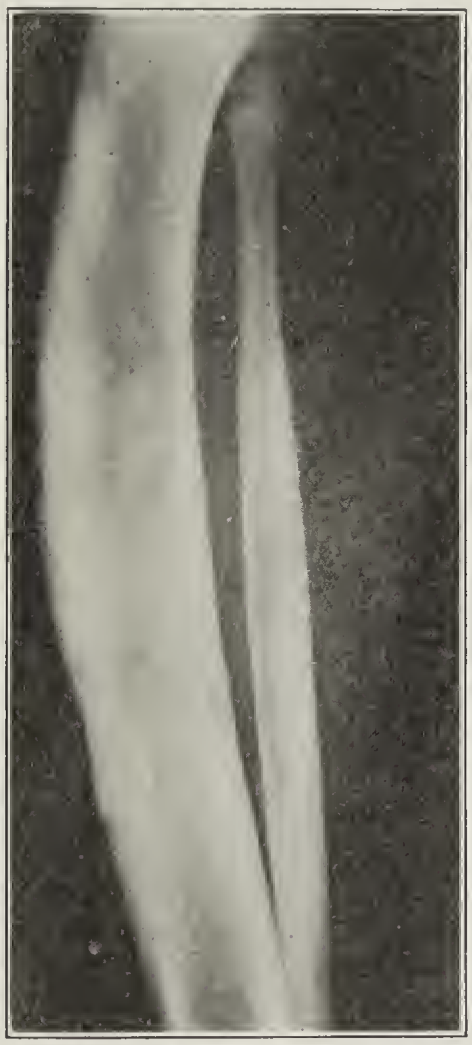

Fig. 7.—Side view of anterior tibial curve due to syphilis; thickening is on convex side of curve.

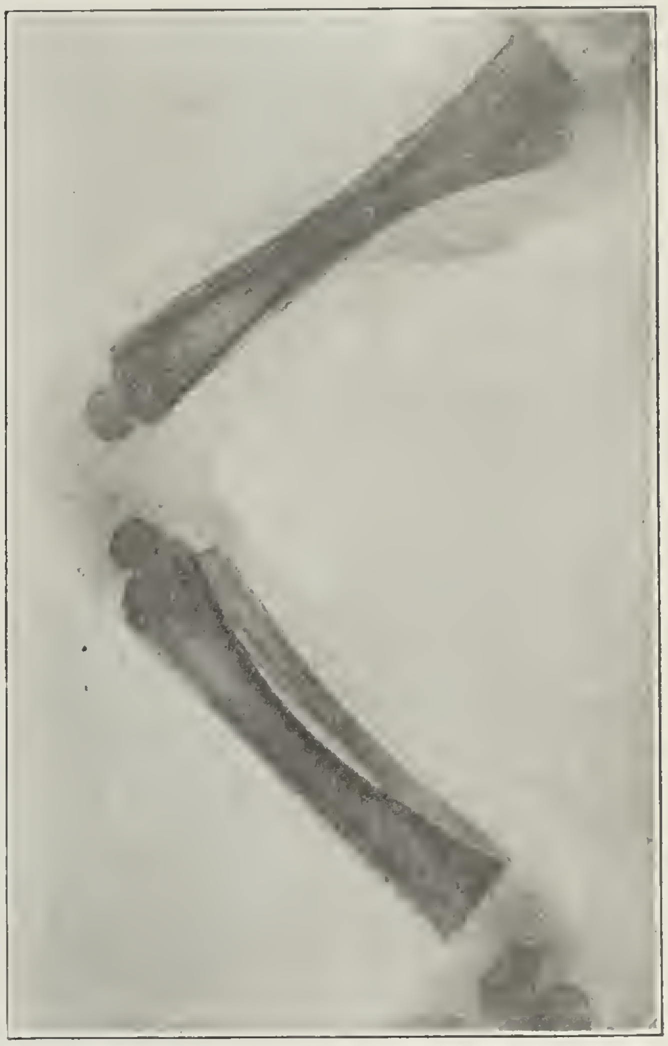

Fig. 8.—Side view of leg bones in congenital syphilis, showing periosteal thickening, but distinct epiphyses. (After Fraenkel.)

In hereditary osteogenesis imperfecta, one typical hereditary case has been studied very carefully through a period of eight years. During that time there has never been any epiphyseal abnormality or disturbance in ossification at the ends of the diaphysis or elsewhere in the bones, although the Roentgen shadow of the bones is less dense than normal.

The differential diagnosis between congenital syphilis and rickets from Roentgen-ray appearances is at once the most uncertain and interesting part of this comparative Roentgen study. In this connection an extended study of plates of congenital syphilis was made, a study in which I had the invaluable help of my colleague, Prof. Abner Post.

In children old enough to have acquired rickets, that is, in cases in which the question of differential diagnosis between these two conditions might arise, the epiphyses are far enough advanced in their development to be the focal point in the diagnosis. The outline of the epiphysis in syphilitic cases is clear and not seriously disturbed as in rickets. The appearance at the epiphyseal ends of the diaphysis of the zone of bone modification known as osteochondritis in syphilis, as has been said, is similar in appearance to the characteristic diaphyseal change in rickets. In the latter, however, there is in addition to the absence or cloudiness of the epiphysis a marked enveloping cloudiness of the joint. The time of the occurrence of this modification of the end of the shaft is also widely different. In syphilis it is recorded chiefly in the fetus and the new-born, and of its later history we know practically nothing. In rickets it occurs in the first dentition. Extensive periosteal disturbance is common to the two diseases. In the severe type of acute rickets in children with no syphilitic history or signs of syphilis, with a negative Wassermann reaction, severe periosteal thickening, very frequently associated with fracture, is found. Such periosteal disturbance diminishes with the progress of the disease, and shows no tendency to bone formation such as is the case in the periostitis ossificans of syphilis. Moreover, fractures are rare in syphilitic infants. In the metacarpal bones this periosteal thickening is sometimes present in rickets presenting Roentgen-ray appearances of dactylitis, a subject now under investigation for future report.

The irregularities in the medullary shadow of the shaft in syphilis are due to irregular increases in density. The irregularities in rickets are related primarily to diminished density. In the later stages of both diseases the occurrence of cortical thickening is highly differential. In rickets the thickening is endosteal in origin, and is always on the concave side of the curve, while in syphilis the thickening is periosteal or osteoperiosteal, and is very uniformly on the convex side of the curve, resulting in the lower leg in the characteristic "saber tibia." This thickening in syphilis may occur on both sides, however. Further differential study of the two diseases is demanded, because they not infrequently exist in the same patient.

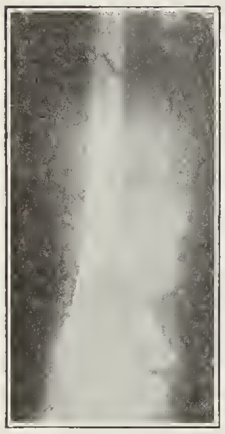

Fig. 9.—Osteogenesis imperfecta. Hereditary case under observation nine years.

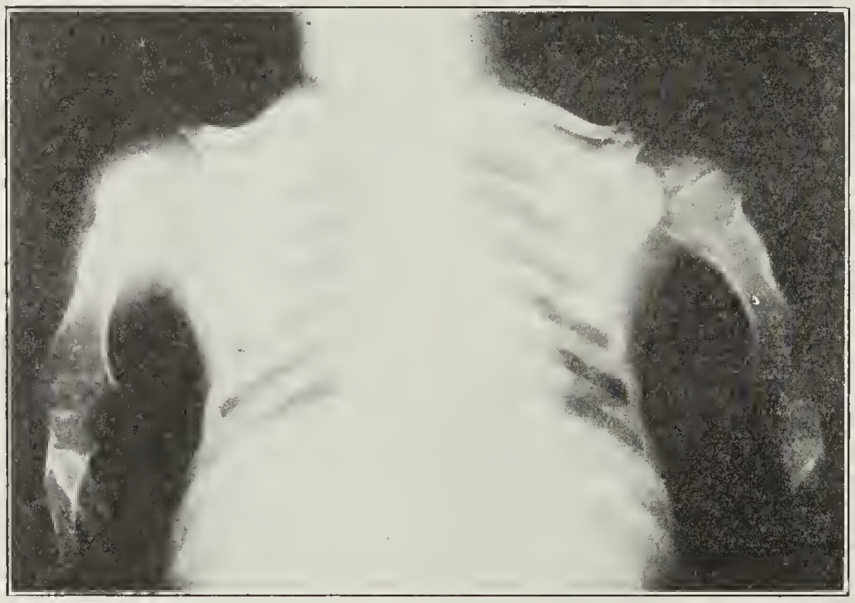

Fig. 10.—Chondrodystrophia foetalis. Broadening of ends of shaft, but distinct epiphyses.

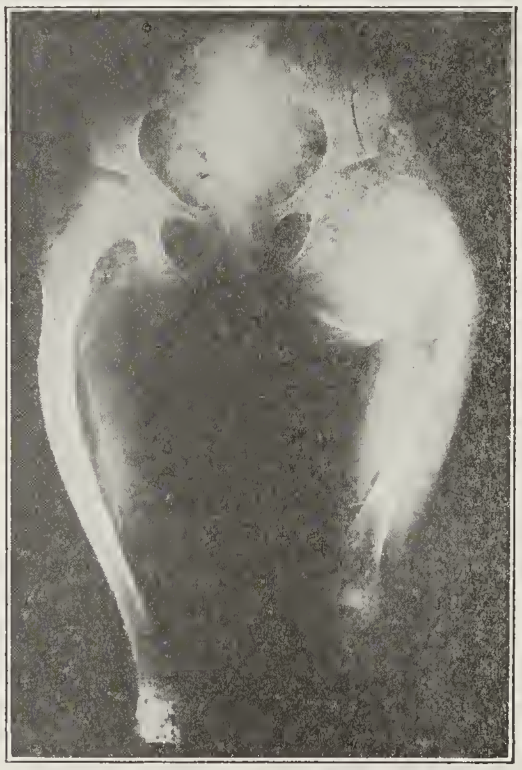

Fig. 11.—Osteomalacia, showing absence of disturbance in epiphyses or epiphyseal region.

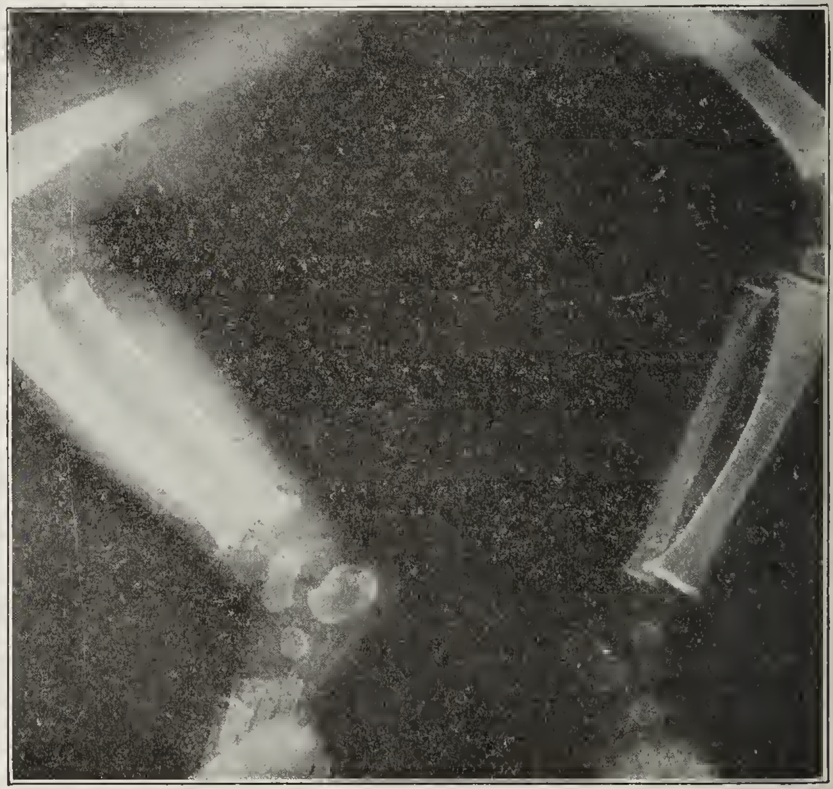

Fig. 12.—Scurvy, showing bone atrophy, "white line" and periosteal disturbances in shaft, but no trouble in epiphyseal regions.

SUMMARY

In rickets, constant changes are to be found while the disease is active, and are located most markedly in the epiphysis and the epiphyseal end of the shaft; but they also involve the shaft. The most important of these changes are (1) delayed ossification and indistinctness of the epiphysis, (2) fraying out of the end of the shaft next to the epiphyseal line, (3) broadening of the end of the shaft next to the epiphyses, (4) cortical thickening on the concave side of curved bones, and (5) areas of diminished density in the bone shadow of the shaft.

Periosteal thickening and multiple fractures often occur in the acute stage of the disease.

234 Marlborough Street.

ABSTRACT OF DISCUSSION

Dr. Henry W. Frauenthal, New York: I know I am expressing the opinion of the gentlemen present that Dr. Lovett has given us a most scientific differential diagnosis of the various stages of rickets. But it is most difficult to differentiate between the late rickets and syphilis in our roentgenograms. I expect on my return home to review the plates taken at the Hospital for Deformities and Joint Diseases with added light from this valuable demonstration.

Dr. Roland Meisenbach, Buffalo: I should like to ask Dr. Lovett whether he has laid emphasis on the relation between the width of the epiphyseal line and the hardness or softness of the bone. For instance, in using the osteotome in bow legs or knock knees, we frequently find that in the wide and jagged epiphyseal line the deformity usually occurs near the epiphysis and the bone is spongy, whereas, in the deformities which occur farther away from the epiphyseal line the bone is relatively harder. The decision on a point of osteotomy often depends on the roentgenogram, as does also the feeding of the patient. It is interesting to see the changes in the rachitic bones, the effect of feeding, by means of the roentgenogram.

Dr. J. T. Rugh, Philadelphia: One thing which Dr. Lovett brought out is highly instructive to me. I do not know whether others have had the same understanding in regard to the deposits of bone in these rachitic cases that Dr. Lovett mentioned. I have always understood and taught that bone was deposited where strain took place just as Dr. Lovett said, and my understanding of the mechanics of these curved bones was that in a bone of this kind —a weight bearing one—the strain did not come on the concave but on the convex side. It is found that in practically all Nature, where there is weight bearing, the strain is on the convexity of the part. This is the part that is stretched. My understanding was that in these bones this was the part which was thickened, and in osteotomy or osteoclasis of these bones, this has been the part that always gave me the greatest amount of resistance with the osteotome. I must say this is a total reversal of my idea, and the Roentgen-ray plates which Dr. Lovett has shown bear out unquestionably his idea. I have seen specimens of bones, however, which have been classed as rachitic, in which a section showed the thickening to be on the convexity of the curve. Possibly, as Dr. Lovett has mentioned here, they may have been syphilitic bones instead of rachitic.

Dr. Robert W. Lovett, Boston: I do not agree with Dr. Rugh's mechanics in this matter. We are considering the question of weight bearing strains and I should suppose that the line of weight would be on the concave side and not on the convex side of the curved tibia.

Dr. H. R. Allen, Indianapolis: You refer to an operation, in which you have the strap arrangement on the outside.

Dr. Lovett: In regard to Dr. Meisenbach's question, I believe we are operating too early in a good many cases of rickets. I personally do not think any patient should be operated on until the lower epiphysis of the tibia, taking that as a standard, has become rounded with a clear outline. As long as it looks indistinct I think it ought to be left alone. At least, that is my experience. When we do operate too early the bone is likely to bleed profusely and cuts like cheese. As a by-product of this investigation I have come definitely to the conclusion that those cases which Dr. Meisenbach mentions are the ones that make the trouble, and that we ought to study our cases with the Roentgen ray and not operate until the subacute stage of rickets is over and the deposit of bone has begun again, because when they are in the subacute stage bones are very poorly provided with lime and are very soft. I thought that we should have a perfectly clear epiphysis before doing an osteotomy or osteoclasis. The difficult point in the whole investigation is in the confusion with syphilis, and it is going to take hard work and exhaustive study to clear that up. I believe the changes of rickets are definite in character and can be diagnosticated in the presence of syphilis, but even the best syphilographers do not know what becomes of the so-called osteochondritis seen in early life.

PROLONGED AND ACCURATELY TIMED INTRAVENOUS INJECTIONS OF SUGAR

A PRELIMINARY REPORT *

R. T. WOODYATT, M.D.
W. D. SANSUM
AND
RUSSEL M. WILDER
CHICAGO

The study of sugar tolerance and the effects of prolonged uniform injections of glucose by vein, of which this is an abbreviated report, was undertaken primarily for the purpose of perfecting an accurate clinical method for estimating the sugar-using powers of different individuals. It was also anticipated that the data which would be obtained could not fail to have other applications, and that the method employed might be in itself of general interest as a means of studying problems of absorption, metabolism and elimination, and have therapeutic application. Expectations concerning all of these things have been fulfilled.

The study was based on certain prior ideas which were in part original and in part conceptions which had been expressed before by Doyon and DuFort in 1901, and by Blumenthal in 1906. These may be stated briefly:

1. It is at present a common clinical practice to estimate sugar tolerance as the number of grams of glucose which can be given by mouth all at once and just fail to cause glucosuria, and having done so to draw inferences as to the power of the individual to *utilize* glucose. But reflection will show that "tolerance" properly conceived as a measure of the power of the body to utilize glucose must depend on the rate at which the tissues are able to abstract glucose from the blood by their combined powers to burn it, to reduce it into fat or to polymerize it into glycogen. It must be clear that this sum of three chemical velocities cannot be expressed in grams, nor yet in grams of glucose per kilogram of body weight, but that the element of time must be taken into account. *Tolerance must be regarded as a velocity, not as a weight. It must be measured and expressed in grams of glucose per kilogram of body weight per hour of time* or in other convenient units of weight and time.

2. When sugars are administered by the stomach, the length of time during which they are actually brought to the cells must depend on the motor power of the stomach and of the bowel and on the rates at which the sugars can be absorbed; and even when they are given subcutaneously or by any other route which involves absorption as a prelude to their entering the blood, the rates at which they enter the blood will depend on the rates at which they are absorbed. By any of these, but especially by the oral method, the actual rate of entry of sugar into the blood and tissues at large must vary with a wide range of physical, physiologic and pathologic conditions over which we have no control; nor will it ever be possible by such methods to force sugar to enter the blood any faster than it can be absorbed. The rate of sugar absorption is a self-limited thing, for when a certain concentration of sugar is once present in the blood, no quantity given by mouth or subcutaneously or intraperitoneally can raise it higher. In fact, if the concentration of blood sugar is raised above a certain point by intravenous injections, sugar passes out into spaces from which it would ordinarily be picked up, the absorption rate from these spaces then being expressible only as a minus value.

3. *The nearest possible approach to a scientifically accurate method of sugar tolerance measurement must consist in direct intravascular administrations,* since only by this method is the variable factor of absorption rates reduced to a minimum. When sugar is introduced directly into the circulating blood, each tissue receives its share in proportion to its vascularity, and absorption plays no part except as it may be concerned in the transfer of sugar from the local capillary to the perivascular lymph, and the taking up by each individual cell of the sugar with which it is bathed.

4. When glucose is introduced directly into a vein, we should expect different results with different rates of administration. These different effects might be visualized by conceiving the body as made up of clear transparent tissues with blood like water, while the sugar injection is conceived as an injection of some red dye. If the injection is uniform, continuous and not too rapid, we should first see the dye diffuse through the circulating blood, making the veins and arteries stand out in a deeply colored tracery in the otherwise transparent body. Then the color would begin to "run" from the neighborhood of the capillaries, and, diffusing into the cells, would tint them — at first delicately and in some parts more than others as a histologic section absorbs the stain, then deeper and deeper until the whole mass of tissues were

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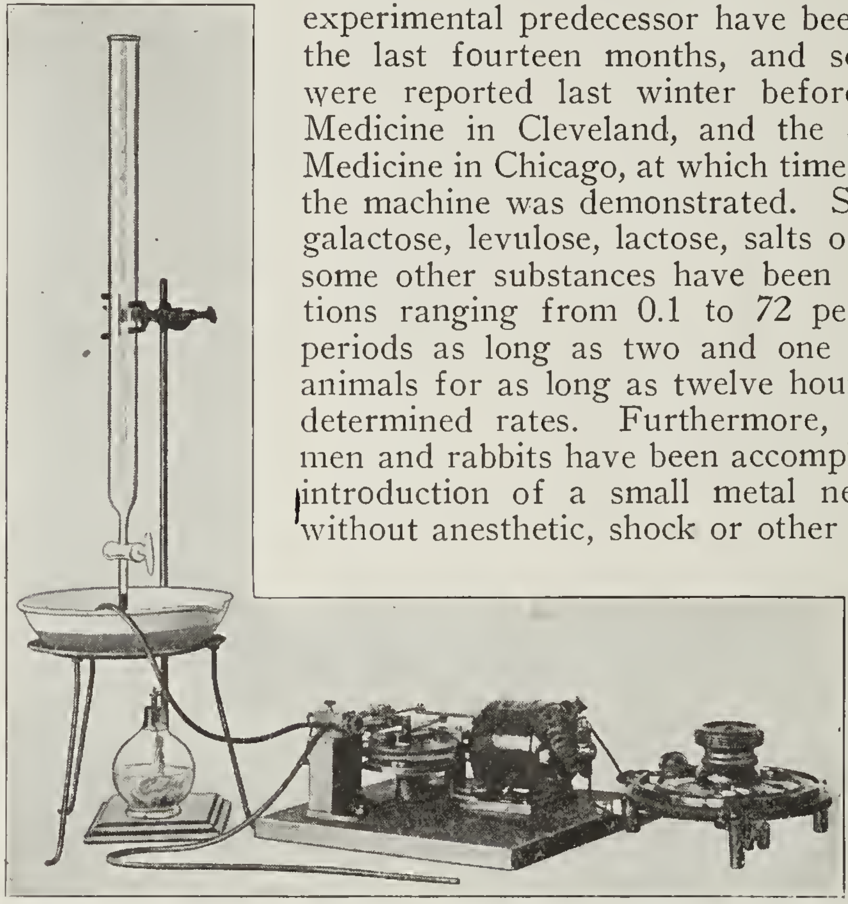
* From the Otho S. A. Sprague Memorial Institute Laboratory for Clinical Research, Rush Medical College.

diffusely colored. *This would take an appreciable time.* Now if the injection is stopped, the color will gradually fade away as the sugar or dye is used up in the cells. If the injection is begun again, the staining process will be repeated, and so on, the tissues alternately flushing and paling. But if the injection rate is just equal to the rate of utilization, a uniform tint will be maintained indefinitely. If the injection rate is faster than the rate of utilization, the color of the tissues will continue to deepen until they can stain no more, and finally the kidney, sharing in the general picture, drips the excessive stain, and, continuing to do so, the combined rates of excretion and utilization again just equal the rate of injection and the body again maintains steadily a certain depth of color, now of course deeper than before.



Apparatus for intravascular administrations. On the right is the quantitative intravenous pump with rheostat for motor speed control; the solution is drawn from a buret which may be more slender than that shown, and fitted with a side neck leading to a second buret of large capacity to facilitate refilling. The rate of injection is checked at intervals by readings on the buret, and corrected if necessary by touching the rheostat. The flame and bath on the left warm the solution. The delivery tube lies in front.

It becomes apparent that to determine the utilization rate of glucose in the body, the problem is to find the greatest rate at which glucose can be injected into a vein steadily without causing any glucosuria; and following the foregoing analogy it is clear that the injection must be continued long enough to permit the sugar to diffuse uniformly into the tissues and bring each to its corresponding state of saturation before any conclusion is drawn as to what the final and permanent effects of a certain rate of injection really are. It must also be apparent that a single syringeful of sugar solution injected all at once into a vein represents simply a very high rate of injection for a very brief period of time, and that such a method is the least capable of giving accurate information concerning utilization rates and the general behavior of intravenously administered sugar of any which could be devised. Yet the literature is confused by many fallacious ideas which have been developed out of such methods.

With these principles in mind, we have devised machines for the purpose of giving uniform intravascular administrations at precisely controlled and predetermined rates and for long periods of time.

DESCRIPTION OF APPARATUS

The machine consists of a glass syringe barrel with a metal piston provided with a piston ring (record syringe), the barrel being fixed while the piston is actuated by a piston rod from an eccentric on a power shaft. The latter is driven by an electric motor through a worm and gear which reduces the speed of the motor and increases the power correspondingly. On the nozzle of the syringe there is a two way all metal valve of special design which is turned automatically by a cam shaft and alternately permits an influx and outflow of fluid to or from the pump barrel. The rate at which the machine delivers fluid is controlled in three ways: first by the size of the barrel, which is interchangeable so that any capacity can be used from 0.5 to 10 c.c.; second, by a device which regulates the stroke of the piston to any desired length from a millimeter up, and, third, by a rheostat with which the motor speed can be controlled delicately while running so that the pump makes any desired number of strokes per minute between 15 and 60.

The machine is intentionally provided with a surplus of power. It is heavily built and of a high grade of workmanship. It pumps precisely and relentlessly anything from water to an 80 per cent. glucose syrup, at any rate from 10 c.c. to 5 liters hourly, overcoming with negligible variations in speed any minor obstructions which may occur in the tubing or the intravenous cannula or needle. All parts which come in contact with the fluid to be injected are detachable and sterilizable. A photograph of the machine is here reproduced.

Experiments with machines of this type and an experimental predecessor have been conducted during the last fourteen months, and some of the results were reported last winter before the Academy of Medicine in Cleveland, and the Society of Internal Medicine in Chicago, at which times an earlier model of the machine was demonstrated. Solutions of glucose, galactose, levulose, lactose, salts of various kinds and some other substances have been given in concentrations ranging from 0.1 to 72 per cent. to men for periods as long as two and one half hours, and to animals for as long as twelve hours, at precisely predetermined rates. Furthermore, the experiments in men and rabbits have been accomplished by the simple introduction of a small metal needle into the vein without anesthetic, shock or other nonphysiologic factor. For dogs we have employed a small blunt needle provided with a flange, or a very small cannula which was introduced into the saphenous vein under novocain.

The results so far obtained have led us to believe that timed intravenous injections of solutions of known concentration over long periods of time offer a most valuable method of studying a wide range of problems of absorption, kidney function and intermediate metabolism. They also promise to extend the possibilities of intravenous injections for diagnostic and therapeutic purposes beyond anything which has been accomplished heretofore. Some of the principal results may be mentioned briefly in this place.

EXPERIMENTAL RESULTS

1. A normal rabbit, dog or man can utilize between 0.8 and 0.9 gram of d-glucose per kilogram of body weight and hour of time without glucosuria for an indefinite time; that is, d-glucose in 10 to 50 per cent. solution can be introduced directly into the veins at rates corresponding closely to 0.85 gram of glucose per kilogram of body weight and hour of time for from six to twelve hours and not produce any glucosuria. Such rates of glucose administration do not cause any effect which can be interpreted as diuresis.

These facts force certain conclusions, some of which may be mentioned.

(*a*) A man weighing 70 kg., when resting quietly in bed, may receive and utilize 63 gm. of glucose by vein per hour without glucosuria. (This is an accomplished fact). He then receives 4 times 63, or 252 calories per hour, a rate corresponding to 6,048 calories per day. If his resting requirement were 3,000 calories per day, he could thus receive double what he needed, or enough to cover the caloric expenditure of the same man during heavy physical exertion. *Intravenous nutrition with glucose is thus proved to be a feasible clinical proposition,* and the way is opened for experiments with amino-acids, polypeptids, etc.

(*b*) The normal tolerance limit for glucose, expressed as a velocity, is established at close to 0.85 gm. glucose per kilogram of body weight hourly, which agrees approximately with what Blumenthal has established by repeated small intravenous injections in animals.

(*c*) The idea, already in part discredited by the work of Pavey and Godden and others, that the "glycogenic function of the liver" is indispensable for the utilization of glucose, or that it is in any sense necessary as a *barrier* to prevent sugar absorbed from the bowel from being lost in the urine, is definitely laid at rest.

(*d*) The idea that any large quantity of glucose given by vein always causes glucosuria and diuresis is an error based on clumsy methods of study.

2. The intravenous tolerance limit in cases of exophthalmic goiter has been found as low as 0.65 gm. per kilogram and hour, but two cases of acromegaly had a tolerance of 0.85 gm. per kilogram and hour, which is not above the normal, although by the oral method it had not been possible to cause glucosuria with glucose.

3. The tolerance limit for levulose when given by peripheral vein has been found close to 0.15 gm. per kilogram and hour, or only one-sixth that of glucose. For galactose it is even less or about 0.1 gm. per kilogram and hour. For lactose it approaches 0, as known before.

4. When glucose is given by vein faster than at the rate of 0.9 gm. per kilogram and hour, glucosuria appears; then usually a little later, diuresis. When the rate of injection exceeds the normal utilization rate, the time which elapses before glucosuria appears varies. If the injection rate is much too fast, the elapsed time is correspondingly short, or if the tissues have previously been partly saturated with sugar, the same applies. If the injection rate exceeds the utilization rate by about 0.1 gm. per kilogram and hour and the tissues happen to have been low in sugar, it may require several minutes of injection before glucosuria begins. But if a given rate of glucose injection causes glucosuria at all, it always begins to do so within the first half hour. The same general principles apply to other sugars with lower rates of injection.

5. As the rates of glucose injection are increased above 0.85 gm. per kilogram and hour, the rates of overflow in the urine increase also according to definite mathematical laws. At any given rate, say for example 1.8 gm. per kilogram and hour, the glucosuria begins slowly, increases in a steep curve, and finally becomes constant at some level characteristic for this rate of injection. The height of this level, of course, is higher in the case of the more rapid injections and lower for the slower ones. Also the time which elapses before the level is established is the greater the higher the level to be attained. It frequently takes from three to four hours for a glucosuria due to a uniform glucose injection by vein to reach its constant level.

As already stated, about 0.85 gm. glucose per kilogram and hour may be given indefinitely without glucosuria. If we give twice this quantity in the same time, that is, 1.7 gm. glucose per kilogram and hour, there is glucosuria which, when constancy is attained, averages about 0.17 gm. per kilogram and hour. This confirms the older view of Carl von Voit, proved to hold for sugar by Lusk, and Fisher and Wishart, that increasing the concentration of the food in the tissues increases the rate of utilization. But if glucose is given at a rate faster than 2 gm. per kilogram and hour, a large percentage of all glucose in excess of the 2 gm. per kilogram and hour appears in the urine, once constant conditions have been secured.

In a normal individual, the greatest rate of glucosuria which can be produced by feeding any quantity of glucose by mouth is limited, and at most approximates that which is produced by an intravenous injection at the rate of 1.8 gm. per kilogram per hour. Hence it would be reasonable to believe that when sugar is given by mouth in health, it is never absorbed faster than at this rate. This method of estimating an absorption rate by finding a rate of direct intravenous injection which just produces the same effect is, so far as we know, new, and it should be applicable to other problems.

6. As glucose is given at rates exceeding 0.85 gm. per kilogram and hour, and unburned glucose begins to accumulate in the tissues and pass out chiefly in the urine, it carries with it water. With rates of injection only slightly exceeding 0.9 gm. per kilogram and hour, the amount of sugar which escapes burning is moderate, and so the rate of glucosuria and the rate of diuresis are correspondingly moderate. But when sugar is given at the rate of 5.4 gm. per kilogram and hour (that is, 54 gm. hourly for a 10-kg. dog), this is equivalent to giving about 3.6 gm. per kilogram and hour over and above what can be burned. It is like giving 3.6 gm. per kilogram and hour to a total diabetic.

The effect is an incredibly great diuresis. When glucose is given at this rate to a 10-kg. dog, the urinary output rises rapidly to the vicinity of 350 c.c. per hour. If each hour the dog receives enough water to make good the losses, the rate of diuresis or a higher one can be maintained for long periods of time. A 10-kg. dog actually passed in eight hours 2,800 c.c. of urine. This would correspond to 19,600 c.c. for a man weighing 70 kg. in the same time, or an hourly rate of 2,450 c.c. If enough water is not given to counterbalance the urinary water losses, the volume of urine falls and the dog suffers from thirst. Death may be caused in this way. Unless plenty of water is given, not all of the unused sugar can leave the body, since it appears that the concentration of glucose in the urine will not rise above 12.5 per cent. To make 12.5 gm. of glucose pass out of the body through the kidneys, at least 100 c.c. of water are necessary. On the other hand, if one gives too much water with the hourly glucose injection rate of 5.4 gm. per kilogram and hour, there is danger of stopping the heart mechanically. We have produced a diuresis as high as 600 c.c. per 10 kg. of body weight for one hour, and still greater rates are possible; but attempts to continue such enormous water traffics lead to heart failure. This rate would correspond to an output of 4,200 c.c. of urine hourly from a man weighing 70 kg., or 100 liters in twenty-four hours. *In giving intravenous injections of glucose there are then two things to avoid: too great dehydration on the one hand, and heart failure from imposing too much mechanical work on the other. These can both be avoided by knowing the number of grams of glucose which enter the body hourly, and what volume of water is moved by such a rate of sugar injection.*

CLINICAL APPLICATION

It is hardly necessary to emphasize the therapeutic possibilities which these experiments suggest. With a knowledge of the proper concentration of the solution to be used, and the rate appropriate for this particular solution, we may (1) abstract any quantity of water from the body which we deem safe or desirable, or we may (2) pass through the body a great flushing stream to wash out poisons. How far the principles worked out for normal individuals will apply in disease we have only begun to learn. In this connection it may be well to recall that the literature already contains observations on the use of sugars in therapeutics.

Sugars have been given by mouth or bowel for purposes of nutrition or to obtain other desired metabolic or chemical effects in a wide range of clinical conditions. But as pointed out, such methods of administration do not introduce sugar into the blood faster than an approximate rate of 1.8 gm. per kilogram and hour at most, which is not sufficient to permit much glucose to escape utilization. Hence, after such administrations, unburned sugar does not accumulate in the tissues except to a limited extent, and they are not diuretic except in cases with decreased rates of sugar utilization (diabetes). Intravenous injections may exceed this rate, and so cause, in addition to the ordinary chemical effects of glucose, new physicochemical effects due to the presence of unburned sugar molecules in the tissues, and expressed outwardly as diuresis. Now glucose and levulose have long been found useful when given in cases of diabetic coma, especially when given intravenously. In such cases either mode of administration produces great diuresis, but especially levulous by vein (for levulose the *normal* intravenous tolerance limit being only 0.15 gm. per kilogram and hour). It has not yet been recognized that the value of this treatment is due to the diuresis, but we have on other occasions given the reasons which make us believe that this is the case. In 1907, Fleig[1] made roughly timed intravenous sugar injections, was struck by the remarkable diuresis, and realized possible clinical applications, without making any, however. Kausch,[2] in 1911, recommended and attempted intravenous nutrition with glucose in hysterical vomiting hyperemesis gravidarum, surgical conditions and acute gastro-intestinal disease, but laid no emphasis on the diuretic action. Fischer[3] recommended intravenous glucose injections in conditions of edema, nephritis and intoxication, but especially oligurias and anurias of various sorts on the basis of his observations concerning the power of sugars to dehydrate colloid gels and on their parallel diuretic effects in rabbits and men, thus bringing the behavior of sugars in these respects into relationship with that of diuretic salt solutions and recognizing the physicochemical principles which underlie the beneficial effects of intravenous injections of sugar. In 1914, Henriques[4] reported the use of from 250 to 300 c.c. of 30 per cent. glucose solution in the hour to about fifty clinical cases of heart disease, intoxication, and severe infections, finding special indications in oligurias of nephritis and heart disease. He did not discuss the principles involved. This year Turrettini[5] has given details of three cases of acute nephritis and three of mercuric chlorid poisoning, in all of which the urinary output was favorably affected. Experiments have been in progress in this laboratory for some time to determine the limits of application of these principles and the present technic of administration to different grades of experimental poisoning with mercuric chlorid, arsenic and diphtheria toxin. The system is being tested in the clinic as opportunities offer. Its chief application would appear to be in acute intoxications of various sorts, acute oligurias and anurias, intoxication of pregnancy, and in cardiac and other edemas. Further work is in progress on other diuretics besides sugars and on other sugars besides glucose, and also with simultaneous injections of sugars and salts, such as acetates and bicarbonates.

SIGNIFICANCE AND PREVENTION OF AMEBIC INFECTIONS IN THE MOUTHS OF CHILDREN *

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From time to time during more than half a century, a protozoan genus called *Ameba* by some, and *Endameba* or *Entameba* by others, has been reported as occurring chiefly about the gum margins in the oral cavity of human beings.

Few details of the morphology, comparative incidence and pathogenicity of the members of this genus have been given. Until last year, most, if not all of the species, were thought to be nonpathogenic. Indeed, of so little worth were they considered that no mention of their presence is made in the general histologic review of parasitic amebas of man by several authors, who used the term "parasitic amebas" as synonymous with "intestinal amebas."

Thus Craig says:

> There is no experimental evidence connecting *Ent. buccalis* (or the mouth ameba) with disease. It is very doubtful if it has anything to do with caries of the teeth, although it is most frequently encountered in the cavities of carious teeth. However, it may be frequently demonstrated in material scraped from the roots of perfectly normal teeth, so that, as far as the evidence goes, we must regard *Ent. buccalis* as only a secondary invader. The amebae known as *Ent. gingivalis*, Gross, 1849, and *Ent. dentalis*, Grassi, 1879, are probably identical with *Ent. buccalis* and do not merit separate description.

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[1] Fleig: Compt. rend. Soc. de biol., 1907, lxiii, 190.

[2] Kausch: Deutsch. med. Wchnschr., 1911, xxxvii, 8.

[3] Fischer, M. H.: Edema and Nephritis, New York, John Wiley & Sons, 1915.

[4] Henriques, E.: Presse méd., 1914, xxii, 121.

[5] Turrettini: Rev. méd. de la Suisse romande, 1915, xxxv, 204.

* From the Bureau of Laboratories, Department of Health, New York City.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

In 1914, Smith and Barrett, followed by Bass and Johns and several other investigators, asserted that mouth amebas occurred chiefly in cases of pyorrhea alveolaris or Riggs' disease, and that they were the probable cause of this common septic infection of the jaws. Other observers have not agreed with this assertion because sufficient evidence has not been given by its authors to make us sure of the types of amebas found and of the extent, if any, of their pathogenic action. So several hypotheses may be formulated as to the part thought to be played by amebas in mouth infections.

HYPOTHESES IN REGARD TO ACTION OF AMEBAS IN HUMAN MOUTHS

1. Amebas are accidental invaders; they produce no pathogenic or other reaction in the mouth (Provazek Hartman and others).
2. Amebas in the mouth have a beneficent action as scavengers (Chiavaro and others).
3. Amebas may be sometimes pathogenic, producing or helping to produce certain cases of pyorrhea alveolaris, certain abscesses and certain other mouth infections (Leidy, Gross, Flexner, Smith and Barrett and others).
4. Amebas are the specific cause of pyorrhea alveolaris (Bass and Johns and others).
5. Amebas may be pathogenic only in connection with certain other micro-organisms.

The comparative worth of these hypotheses may be discussed as follows:

In favor of the first hypothesis, that is, that amebas are accidental, nonpathogenic invaders, are the facts that amebas have been reported so frequently in apparently normal mouths and that when found in diseased conditions, they are always accompanied by other micro-organisms of pathogenic types, which might be sufficient to produce the disease. Against it is the fact that they are found so much more frequently and in so much larger numbers in the lesions.

As for the second hypothesis, that amebas are beneficent scavengers, there is no question but that amebas are scavengers both of other micro-organisms and of tissue host cells — at least, of leukocytes, red blood cells and broken down epithelial cells. But they probably take up as many harmless as well as harmful germs and leave enough of the latter to exert their full power in harming the tissues of the host. Then, too, since we know that certain amebas will live on brain, liver and kidney cells of human beings, there is no *a priori* reason to suppose that the mouth amebas will not help in destroying the fixed tissue cells in the mouth, especially after a certain amount of injury has been done them by other micro-organisms. The evidence, then, is against this second hypothesis as it stands.

As regards the third hypothesis, that amebas are sometimes pathogenic, we can only say that the large number of amebas in most cases of pyorrhea and in some abscesses of the jaw, and their infrequent presence in absolutely healthy mouths make this a tenable hypothesis.

We may state, concerning the fourth hypothesis, that is, that amebas are the specific cause of pyorrhea alveolaris, that whether or not they are the specific cause of this condition can only be determined after further study. Some facts brought forward in this paper bring new evidence on this point.

In regard to the last hypothesis, that is, that amebas may be pathogenic only in connection with certain other micro-organisms, we must remember that if amebas absorb and digest fixed tissues as well as leukocytes, blood cells and other wandering cells, they may help decidedly in keeping up a lesion bacteria have started. This fifth hypothesis is also tenable.

ORIGINAL WORK

In order to help determine which, if any, of these hypotheses is correct, we have been trying to find out, first, how many children are infected and at what age the amebas begin to appear in their mouths, as well as to study the condition of the mouths showing the amebas. Second, what types of amebas, if more than one, are present. Third, the relation, if any, of these amebas to the diseased condition of the childrens' mouths, and fourth, the necessity and worth of preventive measures.

We have begun our study by examining the mouths of the schoolchildren in one of the poorer districts of New York City. We have already started the examination of a similar group in one of the more well-to-do districts. At the same time, the Bureau of Laboratories of the New York City Health Department has begun a more general study of focal mouth infections, particularly of pyorrhea alveolaris.

Soon after our observations on adults were begun, we found that all patients presented to us by the several dentists who are collaborating with us already had pus pockets formed in the jaw alveoli — that is, they were well-established cases — and when we began to inquire for beginning cases, we learned that the diagnosis of pyorrhea alveolaris is made by most dentists only after pus pockets can be demonstrated, so this added interest to our decision to hunt for beginnings in schoolchildren.

So far 1,678 children (those in only one session of the school) between the ages of 5 and 15 years have had a preliminary examination, and from 995 representative ones stained smears have been made and examined for amebas. The 1,678 children have been divided roughly into those having healthy gums and those with receding or spongy and bleeding gums. The healthy looking gums are further divided into those with one or more decayed teeth, and those with apparently sound teeth. Needless to say, we found very few of the latter, that is, of those with apparently healthy gums and sound teeth, and about one half of all showed unhealthy gums.

From many cases, two smears were taken. The smears were made as follows: In the bad cases, the teeth and gums were cleaned with a cotton swab dipped in 50 per cent. alcohol; then with the flat end of a hard wood sterile toothpick, material was scraped from the margin of the gums (there were no pus pockets in these children, so we did not need a scaler) and stroked lightly over a clean glass slide, three or four streaks being made. The smear was then fixed while still moist by dropping methyl alcohol on it, and it was ready to send to the laboratory. This was called the superficial smear. A second toothpick was used to get material from beneath the margin of the gums, from which another smear was made and fixed. This was called the deep smear. In the cases with clean teeth and tight healthy looking gums, the first smear was made before the cleaning with alcohol. All of these smears were stained with Giemsa's stain and examined for amebas. Other stains have also been used in the more minute study of types of amebas. In regard to the identification of amebas by stained films, we would say that they are more certainly and easily identified by this method than by warm living preparations, though, of course, both methods should be used in studying all of the characteristics of these micro-organisms. In hunting for amebas in these smears, we have found that most of them seem to be between the superficial bacterial layer and the deep leukocytic layer, so one may find them only in large numbers in one small part of a smear, especially in a smear taken in a routine way.

Stained by Giemsa, the delicately but definitely reticulated cytoplasm of the ameba stains a clear blue, while the small nucleus shows as a delicate rounded or irregular mass of red granules and threads, with often a central light blue staining karysome which sometimes contains a vacuole-like body. This nucleus no doubt corresponds to that most frequently described for *Endameba histolytica-tetragena*. There has been found no marked variation from this type of nucleus.

Amebas are so notoriously variable in their entire morphology, according to their stage of development, and to the conditions of growth, that no definite opinion should be expressed as to the species of the forms found in these mouths until much further study has been made. We may say, however, that there seem to be at least two morphologic types of amebas present: one small, with more or less rounded, dense nucleus, with a few or no inclusions or vacuoles, found in the majority of healthy mouths, and the other large, with more irregular nucleus with many large vacuoles and containing many red blood cells, leukocytes and other dense masses formed by undigested material. The latter type is found in the majority of unhealthy mouths. Its appearance agrees with that of the type most frequently seen in the well-developed cases of pyorrhea alveolaris. We have seen no cysts. We have seen evidence of budding and of more equal division.

NUMBER AND PERCENTAGE OF AMEBAS FOUND IN EACH GROUP OF CHILDREN

Condition of Mouth	Between 5 and 16 Years		Between 5 and 7 Years	
	Total	Amebas Present	Total	Amebas Present
1. Healthy gums	(+ 38) (— 92)	= 29 per cent.	(+ 3) (— 31)	= 9 per cent.
2. Healthy gums, decayed teeth	(+109) (—183)	= 37 per cent.	(+ 32) (—105)	= 23 per cent.
3. Tartar and receding gums	(+182) (— 96)	= 65 per cent.	(+ 19) (— 17)	= 53 per cent.
4. Spongy, bleeding gums	(+268) (— 28)	= 91 per cent.	(+ 34) (— 5)	= 70 per cent.

We have found that amebas begin to appear at a very early age, 35 per cent. of children between 5 and 7 years of age being infected. The numbers of those infected with amebas increase in frequency with age. Between 5 and 15 years, 60 per cent. show these protozoa on their gum margins. In apparently normal mouths, only 29 per cent. show amebas. Taking the percentages by groups as in the accompanying table, the results are more significant.

Finding the amebas so often in apparently healthy mouths and in such young children does not agree with the statement of Bass and Barrett that they are not found in healthy mouths. Whether or not one or more varieties are taken from adult pyorrhea patients and are simply waiting their opportunity to exert a pathogenic action, we cannot yet say. But the evidence seems to point toward the establishment of either the first or the fifth hypothesis already given.

These results, however, as they stand, are very striking, especially when we must add that most of the cases of spongy and bleeding gums show more amebas in the films than the other cases. If we could only rule out other micro-organisms, the evidence for the pathogenic action of the amebas would be stronger.

We have, in these schoolchildren carriers of amebas, a marked opportunity to test the prophylactic effect of ipecac or its emetin alkaloid on mouth amebas.

We have divided the cases showing amebas into three groups, one to be watched without treatment, and others to be treated in different ways, one with emetin and the other by ordinary cleanliness. We have a tooth wash made up containing a dilution of emetin, and have the washing of the teeth done morning and afternoon in the school clinic under the supervision of the school nurse.

The first examinations, one week after the beginning of this treatment, gave marked results, in that every child but one, receiving emetin, showed no amebas, while many of the others showed them. In the later examinations, however, amebas were found in a few of the emetin-treated which were negative before, while a few more of the controls showed none.

The following points have been brought out so far by these examinations:

Amebas are demonstrated irregularly in all mouths once showing them, most constantly and in largest numbers in mouths showing gingivitis, least so in healthy mouths.

With ordinary teeth cleansing methods, the number of mouths showing amebas is reduced one half. With emetin in the tooth wash, the number showing amebas is greatly reduced, only about 10 per cent. showing them. The second set of controls — those doing their cleaning *at home* by ordinary methods — continue to show amebas in about 75 per cent. of the cases.

The question as to the amount of emetin to be used has not yet been settled. We began with a 1 : 200 solution, then reduced it to a 1 : 400 strength. Probably a much smaller amount would be sufficient to keep down the development of the amebas.

We hope to carry on these investigations for several years and, if necessary, to extend the number of children included in the groups. Whether or not we can demonstrate fully the efficiency of the use of an amebacide in preventing many cases of pyorrhea alveolaris remains to be seen. We hope by combining these practical investigations with the laboratory studies that we may be able to help demonstrate the relationship of these amebas in septic mouth infections.

ABSTRACT OF DISCUSSION

Dr. Woods Hutchinson, New York: It is an interesting and important subject, especially in view of the effect of the organisms involved in later life. My impression is that we shall find that the diseases of the gums in later life bear the same relation to the infections of childhood that the diseases of so-called middle age do to the infectious diseases of younger life. We elderly individuals, who ought to be Oslerized probably, are beginning to be terribly worried about diseases that attack us over 50. By taking proper steps we may very early remove the cause of our worries.

The ameba in its relations with the pathogenic organisms may prove to be the keynote of the diseases and loss of teeth at an immature and undesirable time.

Dr. C. C. Bass, New Orleans: I do not know of any other series of cases as large as that reported by Dr. Williams. Most examinations that have been reported and come to my attention have been in older people, practically all of whom were infected. The study, then, of Dr. Williams and her associates is especially valuable because it takes up the subject of the disease at a stage at which it could be prevented, perhaps, whenever we know enough about it, or cured before too great damage is done. As to the pathogenicity of the amebas that we find in the mouth and in pyorrhea lesions, the evidence at hand leaves the question somewhat open. Many good authorities are confident that this ameba is not the cause of pyorrhea and does not play a part at all. Others are willing to grant that it may play a part. Still others, including ourselves, feel certain that the chief specific cause of alveolodental pyorrhea is *Endameba buccalis*. One of the things that we have observed we believe as certainly as any other thing is that these endamebas feed on certain nucleated cells that are to be found only in inflamed tissue. If we make sections of the diseased tissue we find these same cells distributed not only on the surface, but actually in the inflamed tissue. Now for endamebas to get these cells, they must crawl about or burrow about in the inflamed tissue searching for them. We have been able to demonstrate and find the endamebas in the tissue and determine to what extent they burrow. We find that they burrow for a distance many times their diameter, but possibly they do not burrow as deeply as the endamebas in amebic ulcers of the intestine do. Not only do we find them in the tissue, but we find them also on the surface of the closed ulcerated tissue in the bottom of the pyorrhea pocket. In burrowing back and forth from the pyorrhea pocket and then into the tissue, many different species of bacteria are transported or transplanted and retransplanted by the amebas. Whether endamebas are present in all cases of pyorrhea we will be obliged to wait for further studies to determine until those working on the subject have acquired such technic as will permit them to make accurate negative diagnoses. It is quite difficult to make an examination which justifies one in saying positively that the individual has not some endamebas present. We may say he has no endamebas demonstrable by our technic but a microscopic lesion may be large enough to hold many endamebas. We cannot give a mouth a casual macroscopic observation, and determine that there is no inflammation of peridental membrane around or between any of the teeth. The disease begins between the teeth, where it cannot be seen. After it is advanced, then we may see evidence of the disease labially or lingually. It is difficult if not impossible to determine that an individual has a normal mouth. The fact that some endamebas have been found and are found in what are called apparently normal mouths cannot be taken too seriously on this account. Our experience has been that in the examination of probably 500 individuals having pyorrhea, we found endemebas in all of the patients after we had acquired the technic which seems to us quite necessary.

Dr. Anna W. Williams, New York: Just such work as Drs. Bass and Johns are doing in histologic biology will no doubt be of much aid in helping us to get more evidence in regard to the relationship of this organism to disease. In regard to the use of the toothpick, I would say that we simply use a toothpick in our routine examinations of the schoolchildren. These children do not need a scaler since they do not have pus pockets. We have only found one of the older boys having small pus pockets. We use Young's dental scaler No. 22 for obtaining material from the adult pyorrhea cases that we have studied.

COMPLEMENT FIXATION IN DIAGNOSIS WITH BACTERIAL EXTRACTS PREPARED WITH DIGESTIVE FERMENTS

J. O. HIRSCHFELDER, M.D.
SAN FRANCISCO

In a preliminary report[1] in The Journal a method was described by me for the preparation of a soluble vaccine against the pneumococcus, and the evidence presented of its efficacy in producing active and passive immunity. Ten cases of pneumonia treated with the extract were tabulated and reference was made to experiments with other micro-organisms. Since then, extracts have been prepared with greater accuracy by improved methods and the immunizing effects have been made more constant. At the same time, it has been found that these extracts are valuable as antigens in complement fixation for diagnostic purposes.

PREPARATION OF EXTRACTS

As the standardization of bacterial suspensions by the known methods of counting is notably uncertain, a gravimetric method was devised based on their opacity as compared by means of a delicate photometer with that of a suspension containing a known quantity of the micro-organism as determined by its weight when dried at 110 C. The germs were grown in bouillon that had been passed through a Berkefeld filter and then autoclaved. After growth, the culture was filtered through a Berkefeld and the germs washed several times with distilled water. The bacteria were then gently rubbed off under a fine stream of distilled water with absorbent cotton on the end of a wire and the suspension well shaken.

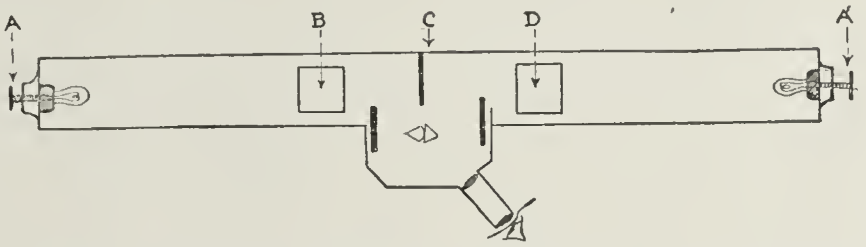

Diagram of light for determining amount of micro-organisms in suspensions. See full description in text. *A, A'*, screw adjustment for lamp; *B*, standard bottle; *C*, Lummer-Brodhun photometer; *D*, test bottle.

A portion was weighed and dried at 110 C. and the dry weight determined. Weighed portions of the suspension were diluted with measured quantities of distilled water until the opacity corresponded to that of the standard. The amount of the dried bacteria in the standard could thus be readily calculated. Conversely, it became easy to calculate the amount of the dry micro-organism in an unknown suspension by diluting to the opacity of the standard.

The apparatus used consists of a Lummer-Brodhun photometer head to which two light-proof arms are attached, in each of which a small electric lamp can be moved back and forth by means of a screw. After the light on the two sides has been equalized, the standard test bottle is placed between the photometer and the lamp on one side, and on the other side a measured quantity of the bacterial suspension to be determined in a tested bottle. This is then diluted with distilled water until the light which passes through both sides is the same. When this is the case, the suspension contains the amount of dry micro-organism represented by the standard. All of the bottles used must be first tested optically when filled with distilled water. The standard is made by using a suspension of electrosilicon in distilled water, which is allowed to stand a few hours to permit the heavier particles to sink. The fine suspension is then standardized optically with a suspension of the micro-organism equivalent to the desired amount of dried bacteria.

In standardizing the pneumococcus, suspensions were used of washed living pneumococci of the types Rockefeller 1, 2 and 3, cultures of which had been kindly sent by the Rocke-

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[1] Hirschfelder, J. O.: The Production of Active and Passive Immunity to the Pneumococcus with a Soluble Vaccine, The Journal A. M. A., Oct. 12, 1912, p. 1373.

TABLE 1.—RESULTS OF COMPLEMENT FIXATION BY McNEAL'S AND BY AUTHOR'S ANTIGEN FROM GONOCOCCI

Patient	McNeal Antigen	Hirschfelder Antigen	Remarks
Qi.	— — —	— — —	Acute gonorrhea.
Ag.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Rip.	— — —	— — —	Syphilis. No history of gonorrhea.
Hut.	— — —	— — —	Chronic prostatitis. *Micrococcus catarrhalis.* No history of gonorrhea.
Gr.	— — —	— — —	Syphilis. No gonorrhea.
Hof.	— — —	— — —	Chronic prostatitis. Previous gonorrhea, Wassermann positive.
Go.	— — —	— — —	Tabes. No history of gonorrhea.
Ha.	— — —	— — —	Prostatic hypertrophy. No history of gonorrhea.
Fa.	— — —	— — —	Hydrocele. No history of gonorrhea.
Jor.	— — —	— — —	Sexual neurasthenia. No history of gonorrhea.
Mrs. S.	— — —	— — —	No history of gonorrhea.
Hag.	— — —	— — —	Stricture of urethra. No history of gonorrhea.
Ric.	— — —	— — —	No history of gonorrhea.
Mrs. R.	— — —	— — —	Severe vaginal discharge. No gonorrhea.
Bonv.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Br.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Mrs. L.	— — —	— — —	No history of gonorrhea.
Reg.	— — —	— — —	Acute gonorrhea, five weeks.
Ab.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Haf.	— — —	— — —	Acute urethritis without gonococci.
Lar.	— — —	— — —	Acute gonorrhea. Epididymitis one year ago.
Col.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
McM.	— — —	— — —	Sexual neurasthenia. No gonorrhea.
Chr.	— — —	— — —	Had gonorrhea two years ago. None now.
Lu.	— — —	— — —	Sexual neurasthenia.
Br.	— — —	— — —	Had gonorrhea and used vaccine.
Lev.	— — —	— — —	Hydrocele. No gonorrhea.
Hor.	— — —	— — —	Had gonorrhea three weeks.
Ho.	+ — —	+ — —	Chronic prostatitis. No gonococci. Previous gonorrhea.
Hu.	+ — —	+ — —	Had a discharge for two years. No gonococci in smear.
O'B.	+ — —	+ — —	Chronic prostatitis. No gonococci. Previous gonorrhea.
Pol.	+ — —	+ — —	Acute gonorrhea. Previous gonorrhea.
Ge.	+ — —	+ — —	Previous chronic gonorrhea. Doubtful joint affection.
Mur.	+ + —	+ + —	Chronic prostatitis. No gonococci in fluid.
Mo.	+ + —	+ + —	Acute gonorrhea. May have had chronic.
Ber.	+ + —	+ + —	Had testicle removed. Had several attacks of gonorrhea. Prostatitis without gonococci.
Nom.	+ + —	+ + —	Chronic gonococcic prostatitis.
Be.	+ + —	+ + —	Chronic gonococcic prostatitis.
Rip.	+ + +	+ + +	Chronic prostatitis. Epididymitis. Gonococci present.
Lon.	+ + +	+ + +	Has been taking gonococcic vaccine twice a week.
Dil.	+ + +	+ + +	Gonorrhea for six months.
Ha.	+ + +	+ + +	Gonorrhea for eight months.
Ha.	+ + +	+ + +	Gonorrhea five years ago for seven months.
Lin.	+ + +	+ + +	Chronic prostatitis. Gonococci.
Sil.	+ + +	+ + +	Subacute prostatitis and epididymitis. Gonococci present.
Mon.	+ + +	+ + +	Subacute gonorrhea with gonococci.
Bal.	+ + +	+ + +	Chronic prostatitis. No gonococci in fluid.
An.	— — —	+ — —	Gonorrhea nine years ago.
Bas.	— — —	+ — —	Chronic prostatitis. No gonococci in fluid.
And.	— — —	+ — —	Sexual neurasthenia. Had gonorrhea, but not at present.
Gr.	— — —	+ — —	Had gonorrhea five years ago. None for three years.
Far.	+ — —	+ + —	Syphilis. Had several attacks of gonorrhea.
Man.	+ — —	+ + —	Subacute gonorrhea with gonococci.
Sed.	+ + —	+ + +	Chronic gonococcic prostatitis. No gonococci in fluid.
Ces.	+ + —	+ + +	Chronic gonococcic prostatitis. Reinfection.
Jen.	+ + —	+ + +	Chronic gonococcic prostatitis.

feller Institute. The tests made with the three different pneumococci show how accurately the observations could be made.

PNEUMOCOCCUS ROCKEFELLER 1

18.6071 dried at 110 C. gave 0.0579.
17.7126 dried at 110 C. gave 0.0552.
1.0 contains 0.00332 dry.
1.1223 suspension diluted to 80 c.c. corresponds optically to standard.
0.8844 suspension diluted to 64 c.c. corresponds optically to standard.
Hence, 1,000 c.c. standard corresponds to 46 mg. dry.

PNEUMOCOCCUS ROCKEFELLER 2

19.3252 dried at 110 C. gave 0.0512 dry.
18.8286 dried at 110 C. gave 0.0490 dry.
1.0 contains 0.0026 dry.
1.0427 suspension diluted to 60 c.c. corresponds optically to standard.
0.9498 suspension diluted to 58 c.c. corresponds optically to standard.
Hence 1,000 c.c. standard corresponds to 45 mg. dry.

PNEUMOCOCCUS ROCKEFELLER 3

18.2440 dried at 110 C. gave 0.0488 dry.
18.3318 dried at 110 C. gave 0.0491 dry.
1.0 contains 0.0027 dry.
0.9460 suspension diluted to 60 c.c. corresponds optically to standard.
1.1075 suspension diluted to 70 c.c. corresponds optically to standard.
Hence 1,000 c.c. standard corresponds to 45 mg. dry.

In the preparation of the pneumococcic extract a suspension of living washed pneumococci was taken such that it corresponded optically to 1.8 gm. dry to 1,000 c.c. This was heated to 38 C. and an equal quantity of a solution of 0.2 per cent. Cudahy Pancreatin and 2 per cent. sodium bicarbonate also heated to 38 C. was added. The mixture was allowed to stand at 38 C. for fifteen minutes and then barely acidulated with pure hydrochloric acid until the development of gas on the addition of acid ceased. It was then filtered through a Pasteur filter which made it germ free and sterile. When it was to be employed as an antigen it was simply put into small sterile bottles and kept in an ice chest. For experimental and therapeutic purposes 0.1 per cent. tricresol was added in order that it might be handled without fear of infection. The tricresol was used only after it had been determined by experiments on rabbits that absolutely no interference with the immunizing properties of the extract was thereby produced.

The effect of the action of the alkaline pancreatin on the pneumococci was absolutely inappreciable, for although immunizing substance was extracted, as will be shown in a later communication, the staining properties, the viability in culture and the virulence of the pneumococci were unchanged. It was repeatedly proved that pneumococci so treated killed rabbits injected with them just as the untreated pneumococci did. They could be grown from the heart's blood of the animals that died in exactly the same manner.

Extracts of the gonococcus, streptococci, staphylococci, *Streptodiplococci rheumaticus* (Poynton-Payne), streptodiplococci of endocarditis and similar cocci were made in the same manner.

With the members of the typhoid group like typhoid, colon, hog cholera, it was found that although some results were obtained by extracts that had been subjected to the digestive process for fifteen minutes, better were given by such as had been acted on for thirty minutes, whereas longer periods gave less potent extracts. Hence for this type of micro-organism thirty minutes was the period used as a routine.

With tubercle extract the method employed was somewhat different, although the principle involved was the same. After the germs had grown they were strained through cheese-cloth and thoroughly washed with distilled water. The mass was partially dried with filter paper. A weighed portion was dried at 110 C. and a portion of the moist living bacilli, corresponding to 2 gm. dry, was mixed with 500 c.c. distilled water heated to 38 C. To this 500 c.c. 0.4 per cent. Cudahy pepsin in 0.6 per cent. HCl heated to 38 C. was added and the mixture allowed to stand at 38 C. for three hours. It was then made faintly alkaline to phenolphthalein with sodium carbonate and filtered through a Pasteur filter. For use as an antigen the germ-free sterile fluid was simply bottled, whereas for experimental and therapeutic use 0.1 per cent. tricresol was added. When correctly prepared, 20 c.c. should kill a highly tuberculous guinea-pig weighing 250 gm. within twenty-four hours, with a reaction consisting of hemorrhages in and about the tuberculous deposits; 15 c.c. should not kill the animal, but should produce the reaction, which can be found by killing the animal and making a postmortem examination.

This tubercle extract is entirely different from tuberculin in its qualities. It is destroyed by heating to 100 C., which is not the case with tuberculin. In making the extract it was found that digesting for three hours gave a more potent extract than when the ferment acted for a shorter or a longer period.

TABLE 2.—COMPLEMENT FIXATION IN TUBERCULOSIS

The antigenic unit of the bacterial extract of a single strain employed was 0.5 c.c.

Patient	Compliment Fixation	Tubercle Bacilli in Sputum	Remarks
Br.	———	—	Mother had tuberculosis.
Miss Ha.	———	—	Mother had tuberculosis.
Kel.	———	—	Pronounced tuberculous by three doctors.
Mrs. L.	———	—	Heart disease. Physical signs and roentgenogram negative.
Dr.	+——	+	Advanced tuberculosis. Wassermann + + +.
Mrs. Gr	+——	+	Moderate tuberculosis.
Mrs. Led. ...	+——	?	Tuberculosis found two years ago.
Mrs. Gn.	+——	+	Tuberculosis.
Ha.	++—	—	Spinal tuberculosis.
Miss McD. ..	++—	+	Tuberculosis. Has been taking tubercle extract.
Gs.	++—	+	Moderate tuberculosis.
Mil.	++—	+	Advanced tuberculosis.
Sim.	+++	+	Tuberculosis two years.
Miss Br.	+++	+	Advanced tuberculosis.
Mrs. L.	+++	+	Advanced tuberculosis.
Mrs. H.	+++	..	Has had tuberculosis four years. Is taking tuberculin.
Pal.	+++	+	Advanced tuberculosis.
Le.	+++	+	Tuberculosis treated with extract.
Mo.	+++	+	Moderate tuberculosis.
Mar.	+++	+	Tuberculosis.
Lan.	+++	+	Tuberculosis four years.
Ur.	+++	+	Tuberculosis.
Baby Ta.	+++	—	Tubercle bacilli in feces.
Ncl.	+++	..	Tuberculous glands removed.
Eis.	+++	—	Tuberculous glands.
Miss La.	+++	—	Tuberculous glands.
Mrs. H.	+++	—	Tuberculous glands.
Hc.	+++	—	Bone tuberculosis operated.
2 Rabbits	+++	..	Experimental eye tuberculosis.
3 Rabbits	+++	..	Experimental eye tuberculosis treated with extract.
Normal rabbit	———	..	

Work is being done with numerous other micro-organisms, including the *Spirochaeta pallida*, as there is every reason to believe that the principle of extracting the end-body unchanged applies to all bacteria.

All of the ferments of digestion will act, but for different types some seem better than others, although it is probable that special methods could be worked out with each which would give as good results as any of the others.

In the preparation of the various antigens, accurate standardization of the micro-organisms is not necessary. Any moderately thick suspension may be used and an equal volume of the solution of the digestive ferment added according to the method described above. Of course, it is necessary in each case to determine the antigen value just as is done in making the ordinary Wassermann test.

With the discovery of the principle of complement fixation of the bacterial antibodies by Bordet, the possibilities of diagnosis entered on a new era. The investigations on the subject that have been made since then have fully confirmed the correctness of Bordet's conclusions. Practical results of great value have been achieved with the gonococcus, mainly through the work of McNeal and Strauss. With the other micro-organisms, however, the diagnostic value of the method has not met with general acceptance, as the results have been rather variable. It has seemed probable that this has been due to the difficulty of obtaining a good antigen and not to any incorrectness of the fundamental principle. As investigation with extracts of numerous micro-organisms made with digestive ferments and with the bacteria after extraction indicated that the substance extracted was not an autolyzed product but the real end-body, it was

TABLE 3.—STREPTOCOCCUS

The antigenic unit of an extract of mixed streptococci was 0.5 c.c.

Patient	Complement Fixation	Remarks
Miss L.	+++	Has been taking streptococcic extract.
Dr. J.	+++	Streptococcic infection of finger. Took streptococcic extract.
Miss L.	+++	Abortion terminating fatally. Streptococci isolated from blood.
Ster.	+——	Chronic rheumatism.
St.	+——	Chronic rheumatism.
McQ.	++—	Chronic rheumatism.
Pet.	++—	Chronic rheumatism.
Mrs. C.	+++	Chronic rheumatism.
Gr.	++—	Chronic tonsillitis.
Miss S.	++—	Chronic tonsillitis.
Dav.	+——	Neuritis.
Noc.	++—	Neuritis.
Mrs. W.	+++	Retained gauze in abdomen following operation. Removed and pus found. No report of bacteriologic findings.

TABLE 4.—TYPHOID

The antigenic unit of an extract of mixed bacilli was 0.5 c.c.

Patient	Complement Fixation	Remarks
Ar.	———	Appendix abscess.
Laz.	+——	Appendix abscess not examined to determine whether he was a typhoid carrier; no history of typhoid.
Crow.	++—	Infarction of the lung. No history of typhoid. Not examined to determine whether he was a typhoid carrier.
Cr.	+++	Temperature for three weeks as high as 104 F. Widal negative. No further observations.
Bel.	++—	Child with typhoid.
Byr.	+——	Convalescent typhoid.
Sun.	+++	Had taken typhoid vaccine four months ago.
Cos.	+——	Had taken typhoid vaccine three years ago.
Four.	+++	Had typhoid in January, 1914. Took typhoid vaccine in February, 1915.
Car.	———	Had irregular fever, ambulatory. Suspected typhoid. Widal negative. No further observations.
Hor.	+++	Widal negative. Found three days later.
B.	+++	Widal negative. Found two days later.
Fr.	———	Suspected typhoid ambulatory. Did not develop.
Cr.	———	Suspected typhoid. Meningitis with meningococci.
Bo.	———	Suspected typhoid. Proved to be malaria.
Na.	———	Suspected typhoid. Had tubercle bacilli in sputum.
Si.	———	Suspected typhoid. Had temperature for three weeks. Proved to be stone in kidney.
Aik.	———	Suspected typhoid. Widal negative. Died of tuberculous meningitis.
Laz.	———	Considered typhoid. Widal positive. Proved to be spinal meningitis with tubercle bacilli in spinal fluid.
Mrs. M.	———	Considered typhoid. Proved to be tuberculous meningitis. Confirmed by postmortem.
Rob.	———	Temperature for some weeks. Diagnosticated typhoid. Wassermann found +++. Rapidly cured by antisyphilitic treatment.

thought probable that the extract would be an efficient antigen. The tests thus far made have warranted this opinion. As the antigens are very easily and rapidly made in any laboratory, it is to be hoped that further trial will be made by others.

The following results shown in the tables in complement fixation with the various antigens prepared by the action of the digestive ferments on washed living bacteria, according to the method described, were obtained by Dr. Edward Johnson and Mr. George Gillman of the Pacific Wassermann Laboratory. Great credit is due them for the careful manner in which they observed all the precautions and used all the ordinary controls employed in the Wassermann tests.

TABLE 5.—COMPLEMENT FIXATION WITH ANTIGENS FROM VARIOUS MICRO-ORGANISMS

Patient	Pneumococcus	Tuberculosis	Gonococcus	Streptococcus	Streptococcus Viridans Endocarditis	Diplostreptococcus Rheumaticus Poynton & Payne	Wassermann	Noguchi	Remarks
Pet.	———	———	+——	++—	———	———	———	———	Had gonorrhea four years ago, lasting two weeks. A year ago rheumatism began. Gonorrhea two months ago. Was first given gonococcus extract without effect. Was then given streptococcic extract with rapid improvement and cure.
McQ.	———	———	———	++—	———	———	———	———	Chronic rheumatism rapidly improved and cured by streptococcic extract.
St.	———	+——	———	+——	———	———	———	———	Extensive arthritis deformans of long duration. Slight tuberculosis.
Mor.	———	———	———	++—	++—	———	———	———	Chronic rheumatism for one year. Not treated.
Rey.	———	———	———	+——	++—	+——	+——	+——	Arthritis deformans of twenty years' standing.
K.	———	———	+++	+——	———	++—	———	———	Acute rheumatism in childhood to the age of 14. Again at 18 and again three years ago, followed by gonorrhea. Improvement following extract of *Streptococcus rheumaticus* (Poynton and Payne).
Miss F.	———	+——	———	———	———	+——	———	———	Chronic rheumatism. Roentgen ray shows infiltration of glands at the root of the lung. Rapid improvement after extract of *Streptococcus rheumaticus* (Poynton and Payne).
Kr.	———	———	———	+——	+——	++—	———	———	Chronic rheumatism. Not treated.
W.	———	———	++—	———	———	———	———	———	Gonorrhea five years ago, lasting seven or eight months. Rheumatism began three months ago. Improvement following gonococcic extract.
Ols.	———	———	———	———	———	———	———	———	Acute gout of right upper extremity. Numerous nodules in both ears.
Bick.	———	———	———	+——	++—	+++	———	———	Acute rheumatism improved following injections of rheumaticus extract so that he walked around, and the extract was continued. Ten days later a relapse as severe as the original attack occurred, showing he was not immunized.
Pip.	———	———	———	———	+——	+——	———	———	Acute rheumatism. Rapid cure following extract rheumaticus.

GONOCOCCUS

In the subjoined table (Table 1) the results of complement fixation with the McNeal antigen and with an extract prepared with pancreatin from mixed living gonococci are presented. Most of the cases have been observed by Dr. Martin Krotoszyner. The antigenic unit employed was 0.5 c.c. of the bacterial extract.

STAPHYLOCOCCUS

Tests were made in two cases only of staphylococcic furunculosis and gave positive results in both cases with antigen prepared from culture of staphylococci in the furuncle of one of the patients. The antigenic unit was 0.5 c.c.

PNEUMOCOCCUS

Antigen prepared from a single strain was tested on several rabbits that had previously been injected with cultures of the same strain heated to 80 C. for one-half hour, and gave positive results. It was tested on one case of pneumonia only just before the crisis and gave + + + fixation. The antigenic unit was 0.1 c.c.

RHEUMATISM

A small number of cases of rheumatism were investigated serologically with extracts of various micro-organisms. The extract of the Poynton and Payne *Streptodiplococcus rheumaticus* was made from a single strain. Its antigen unit was 0.3 c.c. The extract of the streptococcus of endocarditis was also made from a single strain. Its antigenic unit was 0.2. On testing with the extract of another strain of the same micro-organism in several cases, the same results were obtained.

The therapeutic results in these cases of rheumatism, while not sufficient to prove the remedial value, are of interest as being slightly confirmatory of the correctness of the serologic diagnosis.

275 Post Street.

Muzzling Dogs Lessens Rabies.—The department of health of New York City announces that of 1,200 owners of dogs summoned to court in September for permitting their dogs to go unmuzzled, eighty-three paid fines aggregating $1,034. The figures regarding rabies indicate that muzzling dogs has been effective. Cases of rabies found in animals decreased from sixty-four in the second quarter of 1914 to fifteen during the corresponding quarter of this year. There has also been a considerable decrease in the number of persons affected. The number of dogs examined during the past three months was 2,030, of which 218 were destroyed.

AN AMEBA IN SUPPURATIVE AND HYPERPLASTIC OSTEOPERIOSTITIS OF INFERIOR MAXILLA *

KENNETH M. LYNCH, M.D.
CHARLESTON, S. C.

In 1896 Flexner[1] reported an ameba found in artificially obtained pus from an abscess on the floor of the oral cavity. Doflein,[2] in 1901, observed a similar ameba in an abscess with fistulas opening on the right lower jaw. The latter case resembled, somewhat, the following, although there are certain differences in the two parasites observed:

History.—E. W., a negro woman, aged 23, servant, admitted to the Roper Hospital in Charleston, April 20, 1915, beginning about one year before had frequent attacks of toothache. The lower jaw on the left side began to swell about a month previous to admission, when she exhibited a hard nonmovable tumor the size of a hen's egg attached to the inferior maxilla. Nothing abnormal was noted in the mouth or throat. The cervical lymph nodes were palpable. The temperature, normal in the morning, went up to 99 and 100 in the evening.

A diagnosis of osteosarcoma was made, and the left half of the mandible resected and sent to my laboratory.

Examination of Specimen.—From articulation to canine tooth the bone was thick, with rough surface into which ran small clean-cut sinuses containing thick white granular pus. The thickening was most prominent about the middle of the body of the bone, where it was of tumorous appearance. Over this prominent portion on the outside was a hard fibrous mass attached to the bone and to the surrounding muscles. In this were several larger sinuses leading into the bone. Saw cut revealed the bone to be of a compact cancellous nature, like new growing bone, honeycombed with small pus sinuses. The first molar tooth was missing and the third was represented by a decayed root, level with the soft tissues of the gum.

Microscopically, the composition of the tumor mass was of newly formed and forming bone trabeculae, fibrous tissue, mainly old, encroaching on surrounding muscle, lymphocytic infiltration, largely in localized foci, and small areas of necrosis and pus in which were rounded hyaline nonnucleated bodies somewhat larger than leukocytes. The appearance was that of inflammatory overgrowth of bone and connective tissue of a progressive nature, showing areas of necrosis and pus formation corresponding to the previously mentioned sinuses.

Microscopic examination of the pus revealed no recognizable bacteria; nor did animal inoculation give any results. It contained in addition to granular materials, neutrophilic leukocytes and a goodly number of eosinophils, some recognizable tissue cells, and numerous ameboid cells. These, when rounded, were about 40 microns in diameter, with a distinct clear ectoplasm and coarsely granular endoplasm of refractile bodies. No nucleus was recognizable. These cells were ameboid, throwing out, slowly, large broad single pseudopodia which were seen to engulf red blood cells and leukocytes. The cell moved from place to place by projecting one of these pseudopods into which the endoplasm flowed, it then becoming the body.

Stained with Leishman's fluid, the cytoplasm was very faint, vacuolated, and contained red blood cells and fragments of leukocytes. No nucleus was observed. Unfortunately, these specimens were destroyed before I had completed my study of them or had opportunity to use other stains.

That this ameba was not of those commonly found in the mouth was plain to me because of its size, activity, character of endoplasm, and staining properties. It differed from Doflein's parasite in that it was sluggish in action and exhibited single large blunt pseudopodia and a distinct differentiation of ectoplasm from endoplasm, while the latter was more active than those of amebic dysentery and developed long fingerlike pseudopodia of apparently the same appearance as the protoplasm in general.

Doflein conjectures that both his and Flexner's parasites were dysenteric amebas, although there was no history of dysentery in either case. Neither was there history of dysentery in the present instance, and the variance in morphology of the ameba connected with the history disputes such an opinion in this case.

That the ameba was the etiologic factor here cannot, of course, be said; but the absence of any other recognizable factor, the nature of the growth, the history of onset, and the decayed tooth as a possible port of entry, lend the suggestion.

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* From the Department of Pathology and Research Medicine, Medical College of the State of South Carolina.

[1] Flexner: Bull. Johns Hopkins Hosp., 1892, No. 25.

[2] Doflein, F.: Die Protozoen als Parasiten und Krankheitserreger, Jena, 1901, p. 30.

THE SUGAR CONTENT OF THE BLOOD IN CERTAIN DISEASES OF THE SKIN

A PRELIMINARY REPORT *

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Since it is well known that diseases of the skin, such as furunculosis, occurring in various areas of skin are associated at times with a transient or even a permanent glucosuria, as in diabetes mellitus, and since it is known also that a hyperglycemia may be present, under certain conditions, even in the absence of a glucosuria, it occurred to me that it might be of interest to make investigations along these lines in certain dermatoses.

It was intended to ascertain, if possible, any changes from the normal, in those conditions in which the cause, or underlying etiologic factor, was more or less unknown. The tests, therefore, were made merely to answer the question whether there was an increase or a decrease in the sugar content of the blood, compared with the normal.

The cases were selected at random, but in practically all it could be assumed that there might be some disturbance in metabolism or some systemic disorder. The patients were selected from both sexes at the outpatient service of the Johns Hopkins Hospital, and nearly all were white adults. The blood was obtained, invariably from a vein in the forearm, approximately from one to three hours after the last meal eaten. This probably had some influence on the degree of glucose percentage. The urine was examined in every instance. The specimens were obtained after the venipuncture, and were examined at once for albumin by the heat and acid test, and for glucose by the copper sulphate-alkaline test (Fehling).

The method employed was a modification of the Benedict-Lewis procedure, as proposed by Epstein,[1] and carried out by specially designed apparatus. This method was found to be satisfactory because of its convenience, simplicity, and rapidity of execution. It was tested against the original Benedict-Lewis method and found to vary only by a practically negligible factor.

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[1] Epstein, A. A.: An Accurate Microchemical Method of Estimating Sugar in the Blood, The Journal A. M. A., Nov. 7, 1914, p. 1667.

Fifty cases were tested, including clinical examples of the following: acne vulgaris, psoriasis, eczema of various types, urticaria, erythema multiforme, furunculosis, hyperhidrosis, dermatitis herpetiformis, alopecia areata, rosacea, ecthyma and pemphigus foliaceus. The variations for the fifty cases ranged from 0.07 to 0.156 per cent., averaging 0.107 per cent. The accompanying table includes a list of the cases, with range of percentages and an average for each group. Since this is a preliminary report, it is realized that certain groups have too few representatives; but these hardly vary from the normal.

RESULTS OF TESTS IN FIFTY CASES

	Cases No.	Limits Per Cent.	Average Per Cent.
Eczema, vesiculosum, papulosum, seborrhoicum, squamosum and rubrum	18	0.08-0.156 (2 cases)	0.117
Psoriasis, localized and widespread	7	0.095-0.132	0.118
Furunculosis, localized and widespread	6	0.073-0.154	0.115
Dermatitis herpetiformis	4	0.07 -0.134	0.106
Erythema multiforme	3	0.106-0.146	0.131
Acne vulgaris, face and body....	3	0.08 -0.12	0.95
Hyperhidrosis, palms and soles...	2	0.122-0.127	0.124
Alopecia areata	2	0.124-0.126	0.125
Urticaria	2	0.113-0.142	0.127
Pemphigus foliaceus	1	0.101	0.101
Rosacea, face and nose..........	1	0.128	0.128
Ecthyma	1	0.07	0.07
Total	50	.....	0.107

This work was undertaken several months before the appearance of the paper of Strouse and his co-workers.[2] According to them, the limits of normal percentages of blood sugar are from 0.04 to 0.12, averaging 0.084 per cent., the upper limit being approached, depending on diet and especially after meals. Compared also with the normal (according to Benedict and Lewis) 0.09 to 0.11 per cent., it is noted that the values determined here are close to the upper limits, the slight increase being due probably to the time at which the blood was taken (postprandial), and to the unknown diet of the patients.

There was no glucose found in the urine in any case, and albumin was discovered in only a few instances; a few showed the presence of urates, all of which findings were considered of no importance so far as influencing the sugar content of the blood.

It may be concluded, therefore, that in a group of fifty cases of certain diseases of the skin, on an unknown ordinary diet, the sugar content of the blood, when examined after meals, showed practically no definite increase above the normal, although tending toward the higher percentage limit. And since the dermatologic manifestations of diseased conditions are frequently dependent in part on internal conditions, it is felt that a further study of this problem may throw light on certain forms of dermatoses in which a high sugar content will infer a probable alimentary hyperglycemia, the proper treatment of which may help solve the all-too-frequent difficulty of the dermatologic therapy.

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[2] Strouse, Solomon; Stein, I. F., and Wiseley, Alan: The Accurate Clinical Study of Blood-Sugar, Bull. Johns Hopkins Hosp., 1915, xxvi, 211.

THE INTRASPINAL ARSENIC TREATMENT OF SYPHILIS

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The arsenic treatment of so-called nervous syphilis is closely identified with intraspinal injections of the arsenic combinations known as salvarsan and neosalvarsan. The various methods devised for these intraspinal injections were recently reviewed by Swift.[1] Of these methods, the most popular ones are those of Swift-Ellis and Ravaut,[2] while in Germany the methods of Gennerich[3] and Schubert[4] are preferred. I had the opportunity of studying the latter last summer at Hamburg, in Nonne's service and in the insane asylum of Friedrichsberg-Hamburg.

In Gennerich's method, 0.15 gm. of neosalvarsan are dissolved in 300 c.c. of normal sterile salt solution, of which 60 c.c. are introduced into the spinal canal by means of a syringe, after an equal amount has been withdrawn, and mixed with the normal salt solution.

Schubert uses nothing but the spinal fluid of the patient. He removes 10 c.c. of the spinal fluid, attaches to the needle a 40-cm. long rubber tube, to the free end of which a funnel-like retainer is fastened. Of the removed 10 c.c., he takes 3 c.c., in which he dissolves 0.045 gm. of dry neosalvarsan, which immediately becomes dissolved. Of this solution, from 0.1 to 0.2 c.c. are taken by means of a special pipet graduated in 0.01-c.c. divisions, and dropped into the retainer, which is lowered and thus gradually filled up with the cerebrospinal fluid. Raising the retainer, he lets the fluid flow back into the canal. The dose of neosalvarsan must be greatly diluted; therefore he withdraws at least 20 c.c. of the spinal fluid, into which he drops the solution containing 0.003 gm. of the drug.

Another precaution which Schubert takes is absolute dryness of all the instruments used for the injection. All the glasses and the tube are rendered absolutely dry, so that the patient gets nothing but the neosalvarsan dissolved in his own cerebrospinal fluid.

This method is quite simple, and I used it in my intraspinal injections, but simplified the method by abolishing the graduated pipets, funnel-like retainers, watch-glasses, etc.

The method as used by me is as follows:

1. A spinal puncture is made.
2. About 10 c.c. of the spinal fluid are withdrawn into a common small medicine glass, which was previously boiled and *dried* (on a flame).
3. Fifteen hundredths gm. of neosalvarsan are placed in another medicine glass, which has also been boiled and *dried,* and in which 50 drops of the spinal fluid dissolve this dose of neosalvarsan. The drops are taken from the 10 c.c. of the spinal fluid by means of a common medicine dropper which is thoroughly dried.
4. A rubber tube which closely fits the needle is attached to the latter while it is in the spinal canal, and the free end is connected with a large test tube (boiled and dried).

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[1] Swift, Homer F.: Intraspinal Therapy in Syphilis of the Central Nervous System, The Journal A. M. A., July 17, 1915, p. 209.

[2] Ravaut, M.: Comment dépister la syphilis nerveuse, Ann. méd., 1914, p. 49.

[3] Gennerich: Zur Technik der endolumbalen Salvarsanbehandlung, München. med. Wchnschr., 1913, No. 52.

[4] Schubert: Zur Technik der endolumbalen Neo-Salvarsantherapie, München. med. Wchnschr., 1914, No. 15, p. 823.

5. Lowering the attached test tube, we allow the spinal fluid to flow into it until 20 or 30 c.c. have been removed.

6. Keeping the tube lowered and filled with the spinal fluid, we let in 1 drop of the neosalvarsan which we previously dissolved in 50 drops of the spinal fluid. One drop will contain 0.003 gm. of neosalvarsan.

7. Raising the tube, we allow its contents with the neosalvarsan to flow back into the spinal canal.

8. Lowering the tube for the second time, we allow the spinal fluid to run back into the tube, and raising it again we have the greatly diluted neosalvarsan back in the spinal canal.

9. It is desirable to keep the patient's back elevated for a few hours, but this is not necessary.

This method proved to be very simple, and does not require any special glasses, instruments or technic. Mulford's needle and rubber tube, which are supplied in the Mulford antimeningitis serum packages, are admirably fitted for these injections, but, of course, any other needle and tube may be used, provided they fit closely. If the dose of 0.045 gm. of neosalvarsan can be obtained, then only 15 drops of the patient's fluid are used for dissolving this amount; but we could not obtain less than 0.15 gm., this being the reason why we used 50 drops. As one patient needed only 1 drop, that is, 0.003 gm., of neosalvarsan, we could have injected fifty patients with the same solution. Indeed, we have sometimes injected as many as twelve patients, using one solution prepared from a spinal fluid of a single patient. That could do no harm, as every patient positively had some syphilogenous nervous lesion which in every case was proved by clinical and serologic examinations.

Schubert and other clinicians in Hamburg used a different vial for each patient, which they could very well afford, as their supply of neosalvarsan has been furnished by the hospitals, while our ward patients, always very poor, had to furnish the medicine at their own expense. The solution kept very well, sometimes as long as three hours, and could be carried from one ward to another, a distance of an entire city block, without any bad consequences.

The usual dose was 1 drop, that is, 3 mg., but frequently 6 and even 9 mg. were used. Only those patients received the injections who desired them, asked for them, and who did not benefit from usual antisyphilitic treatment.

From January to May of this year, forty-six injections were given to twenty-nine patients. Twenty patients had tabes in various forms, but all far advanced — ataxic and paralytic stages. Two had general paralysis with marked physical signs, as bladder, speech, pupillary disorders, etc. Six had cerebrospinal syphilis, also far advanced, and one had a gastric neurosis which first was interpreted as tabes, but had nothing to do with this disease.

The most frequent reactions to the injections were shooting pains in the legs, sometimes in the upper extremities, pain in the back and between the shoulders, headache, nausea and vomiting, retention of urine and slight elevation of temperature, not above 100.2 F. These complications were usually of short duration, except the headache, which in one case (general paresis) lasted about four days. As a rule, the patients would be up the next day, feeling well.

Any particular improvement in the subjective state of the patients I did not notice. In one case of tabes the gastric crises ceased after the injection for a few days, but soon returned with greater severity, and the patient refused another injection. Patients with bladder disorders, shooting pains and paresthesias would not get worse, but did not get better either, though the spinal fluid would show favorable biologic changes in regard to cell content, etc. The good results obtained by Schubert[5] in tabes and cerebrospinal syphilis, as well as by some other observers (Ravaut), were possibly due to the fact that their patients were amenable to any form of antisyphilitic treatment, and would therefore have improved under ordinary old methods with mercury and potassium iodid.

In advanced cases like mine in which the old methods failed to produce any curative effect, the neosalvarsan intraspinal injections proved of no value, though they were repeatedly given, in one case as much as eight times. The dose, as I said, was not below 3 mg., frequently 6 mg., and in one case in which eight injections were given, the dose was once 9 mg.

Case 1.—This was a case of tabes, in the ataxic stage. The patient bore the injections very well and showed the usual after-effects, as shooting pains and some headache, which would soon disappear. Twelve days after the seventh injection (9 mg.), he was given by Dr. Grinker 30 c.c. of mercurialized human serum, which injection immediately was followed by complete paralysis of the lower extremities, and complete incontinence of the bladder and rectum. Nevertheless, eight days after this unfortunate injection and twenty days after the 9 mg. injection, we gave him 3 mg. of neosalvarsan. No particular complications followed, except slight headache and shooting pains. The paralysis of the legs seemed to manifest some slight improvement, the bladder and rectum disturbances having remained stationary.

In this case, the severe complications could not therefore be ascribed to the neosalvarsan therapy, but rather to the mercurialized serum.

It is still more difficult to interpret another case, also of tabes.

Case 2.—A man, aged 38, entered the county hospital, Dec. 7, 1914, and was given mercury inunctions and potassium iodid internally until Jan. 16, 1915, when suddenly epileptiform convulsions set in which lasted for three minutes. They were accompanied by foaming, biting of the tongue, cyanosis and coma. The next day the convulsions reappeared, and were followed by profuse perspiration. Eight days later, January 25, 0.6 gm. of neosalvarsan was given intravenously without any untoward symptoms. February 19, 3 mg. of neosalvarsan were injected intraspinally, which injection was followed by gastric pain, vomiting for three days and somewhat thick speech. Five days later he left the hospital in good condition, but returned April 1, when he received an injection of mercurialized serum. This was followed by two more during the next two weeks (given by Dr. Grinker). Only the last injection was followed by severe headache and shooting pains. A month after the last injection (May 15), 6 mg. of neosalvarsan were given intraspinally, after which the patient vomited (eight hours after the injection), and convulsions set in which lasted for five hours. The next six days, however, the patient felt fine, when the convulsions reappeared, followed by stupor and death. The spinal fluid, during the convulsions and the neosalvarsan injections, was very bloody. As convulsions occurred during the mercury treatment (inunctions), it would be improper to ascribe their origin to the neosalvarsan therapy. Most probably the convulsions were due to paralytic attacks, the patient evidently having been suffering from taboparalysis.

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[5] Schubert: Ueber Technik und Erfolge der Neo-Salvarsanbehandlung syphilitischer Nerven- und Geisteskrankheiten (manuscript).

Aside from the two cases mentioned, we had no disagreeable complications, except those mentioned above and observed by everybody else. They evidently constitute the regular clinical picture following the neosalvarsan injections, being, as it were, a clinical reaction to the latter. They are pointed out by Swift, who says that a given dose may be well tolerated several times, but later may be followed by severe symptoms. He recommends, therefore, extreme caution in the injections and a dose not exceeding 0.5 mg. With such a small dose, Swift obtained in three patients out of thirty-four (the rest usually received intravenous and intraspinal injections together) quite encouraging results from the biologic standpoint (favorable changes in the cerebrospinal fluid). About clinical changes, Swift says only that he was "struck with many instances of parallelism between condition of the spinal fluid and general condition of the patient."

Giving intraspinal injections of neosalvarsan, I was interested not so much in the possible biologic changes of the spinal fluid as in clinical changes, which unfortunately were not very favorable, in spite of the large and repeated doses. The results, I must confess, were in the majority of cases much better from internal administration of plain arsenic, of arsenic trioxid, given in large doses according to a method used in the treatment of chorea and described by me some time ago.[6]

I have been using this method in my private and dispensary patients in the form of a 1 : 1,000 solution of arsenic trioxid (arsenic trioxid, 0.12; diluted hydrochloric acid, enough to dissolve; distilled water, 120.0), which is given once a day, after a meal, beginning with half a teaspoonful well diluted with water. During the following days the dose is each time increased by a half a teaspoonful until 6 or 7 teaspoonfuls are given to one dose (always well diluted with water), after which the dose is daily decreased by one half teaspoonful until the initial dose of one half teaspoonful is reached. If no changes in the patient's state are noticed, or no complications of the stomach (vomiting) or the urine (albumin) are present, the arsenic treatment is renewed in ascending doses until three or four or more courses are given.

That arsenic given internally may reach the nervous system is proved by a case of Comby,[7] whose patient, a 7-year-old girl, took in eleven days 4 grains of arsenic, and developed a myelitis (paraplegia, incontinence of bladder and rectum, etc.), of which the child recovered within three weeks. This method is practically devoid of any danger, as I never met any serious complications in spite of the fact that it was used in small children. Of late, I began to use the same method also on my county hospital patients instead of neosalvarsan injections, and had in many cases results not worse if not better than from neosalvarsan therapy.

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[6] Hassin, G. B., and Hershfield, A. S.: The Treatment of Chorea with Large Doses of Arsenic, Med. Rec., New York, 1910, lxxviii, 15.

[7] Comby: Lançette française, Gaz. d. hôp., 1896, No. 83, p. 834.

School Medical Examination.—The Supreme Court of South Dakota has decided that a regulation of the school authorities of Aberdeen requiring that each child seeking admission to the schools must furnish a "physical record card" signed by a physician, was reasonable and valid, that it did not unlawfully bar any pupil from the schools, and that the school board had authority to adopt such a regulation. —*Public Health Reports.*

VACCINE TREATMENT OF GONORRHEA [*]

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In a recent paper[1] I reported experiments on the gonococcus from which the following observations were made:

Autolysis is an invariable character of the gonococcus in the presence of excess of water, and is due probably not to enzyme activity, but to water hydrolysis and solution. By autolysis, I mean the solution or disappearance of the cocci which always occurs in the presence of excess of water, whether the water be in the culture medium, in the menstruum used for the preparation of a vaccine, or in the tissues of animals.

The process of autolysis, which is favored by the delicacy of the limiting surface and by the easy vulnerability of the coccus and its ready permeability by water, consists in edema followed by liberation of protein, or protein split products, compounds containing phosphorus, and fats.

The gonococcus protein, comprising 75 per cent. of the entity of the organism, is liberated into the salt solution or water during autolysis, and at first exists in chemical forms representing the sum of metabolic activity at the moment of liberation, but which undergoes fairly rapid changes in character, either by water hydrolysis, by the action of ferments not killed by high temperature, or by other agencies, so that in a short time the organic nitrogen has largely lost its identity as gonococcus protein and has assumed simpler chemical form.

The fats of the gonococcus, obtained as fatty acids, neutral fats and lipoids, are of large bulk, and a considerable proportion of the former are volatile and soluble in water and salt solution.

Suspensions of gonococci in water or in salt solution, as in the preparation of antigen and vaccines, undergo rapid, almost immediate, autolysis, accompanied by the changes above mentioned, at all temperatures below the coagulation point of protein. Heating at 60 hastens the process, while 70 coagulates the proteins.

Fresh suspensions or autolysates are fatal to guinea-pigs. The toxicity declines rapidly to a fairly constant level, then ultimately disappears. The toxicity appears to be associated in measure with the *character* of the nitrogen rather than with the quantity.

I have shown that fresh, live gonococcus culture suspended in water or salt solution and injected intravenously or otherwise into laboratory animals shows a toxicity almost inversely proportional to the length of time the cocci have been in suspension, being greatest within the first few minutes, diminishing rapidly by hours and days, and finally disappearing altogether. During this time the gonococci show, microscopically, progressive disintegration, swift at first, then more deliberate, until finally there are no cocci to be found. As I have shown, heat and chemicals may modify or check these changes, but only by damage to the cocci in other ways. Freshly prepared gonococcus vaccines are therefore toxic, while aged vaccines are inert.

Autolysis of whole gonococcus also occurs on wet culture mediums, in serum, normal, immune and inactivated, in all electrolytic solutions in which cell permeability is increased, and in all cavities and tissues of laboratory animals. Autolysis is prevented by alcohol, by electrolytic solutions of high ionic content, by fatty substances, by soaps and by hygroscopic nonelectrolytes, such as glycerin and syrup.

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[*] Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Warden, Carl C.: Jour. Infect. Dis., May, 1915.

The viability of the gonococcus may be maintained for days in glycerin, lanolin, and cold cream, at room temperature. I believe such anhydrous substances to be frequently responsible for the dissemination of gonococcus infections.

It will be observed that gonococcus suspensions in water or salt solution are not unlike sterile autolysates of other cells, and consist of substances much changed from their former character in the living cocci. A question of importance is to what extent such suspensions may be expected to create active immunity in animals. I know of no way by which whole unautolyzed or live cocci may be introduced into an animal except by suspending them in glycerin, fats or neutral oils, or by transferring fresh culture material directly to the tissues. By all methods lysis occurs in the animal in the same manner as in water or serum in vitro. Animals immunized with gonococcus suspensions in water or salt solution and with autolysates yield serum containing quite variable amounts of agglutinin, no definite germicidal substance, and irregular opsonic power. The immune serum fixes complement with gonococcus antigen, which is merely gonococcus autolysate. It is probable that the lysis following the introduction of live, unautolyzed gonococci into laboratory animals is of the same nature as that occurring in serum in vitro. Numerous observations on intraperitoneal lysis have shown that the primary products of dissolution act as aggressins. The cocci quickly enter the circulation and are found in the liver and spleen in all stages of lysis, but rarely within the leukocytes. It is probable that the immunity response to gonococci in animals gives true gonococcus antibodies only in part, the remainder, if any, being antibodies to products of lysis. In speculating on the rôle of gonococcus nitrogen in the body, a question rises whether the administration of vaccines in gonorrhea may not produce antibodies to the products of autolysis in large measure, and to true gonococcus antibodies in less. It is doubtful whether vaccine (autolysate) given to man and other animals occasionally produces substances in the serum which fix complement with gonococcus antigen (autolysate). By this I mean that the administration of vaccine to a normal individual, or to one suffering from gonorrhea, does not of itself bring about a positive complement-fixation test with the serum of that individual. Fixation of complement with the serum of individuals with gonorrhea does not occur until a stage of the disease is reached, the sixth to the eighth week, when probably lysis of the cocci in the tissues has begun or is increased. Such an assumption is certainly admissible, from the foregoing evidence.

Now, if the immunity response to vaccines is directed more against the products of lysis than against true gonococcus antigen, it is not unlikely that such antibodies may merely neutralize the products of lysis occurring from cocci at the site of disease.[2]

Not all vaccines are prepared in the same manner, but there are objections to all. Washed cocci have undergone extensive lysis with consequent liberation of fats and nitrogen, as I have shown by chemical examinations of the wash water. Repeated washing occasions further loss until nothing but granular material remains. It can readily be seen that the standardization of gonococcus vaccine by the method of counting is impossible save when the cocci have been altered, or fixed, by heat or chemicals. Suspensions heated to 60 show autolysis hastened, and 70 coagulates the proteins.[3]

In sensitized vaccines the cocci have yielded products to the serum, and there is no evidence to show that they have gained antibody from the serum. Such vaccines are merely gonococcus residue. Abundant evidence has shown me also that unautolyzed vaccine is toxic and only slightly greater in antigenic value than ordinary vaccine. My studies on autolysis led me at one time to believe that if a vaccine of whole, unautolyzed, unchanged gonococci could be produced, better results would be obtained in the treatment of gonorrhea by such a vaccine. Accordingly, I learned first how to cultivate the gonococcus free from autolysis, and later how to preserve the whole cocci in anhydrous menstruums. Vaccines were made of quickly dried gonococcus substance suspended in neutral oil; others of fresh unautolyzed cocci in pure glycerin and in neutral oil, and all were thoroughly tested out on animals and patients. In all cases, the results were the same; all were toxic, the glycerin vaccine more so than the oil, and appeared to have no effect whatever on the course of the disease. On the other hand it was plainly shown that whole, unautolyzed cocci, alive or killed, underwent autolysis when introduced into the tissues of the body exactly in the same manner as in fluids in the test tube, followed by toxic manifestations, local or general, slow or rapid, according to whether the menstruum employed was oil or glycerin.

The beneficial results following vaccines in gonorrheal rheumatism, for which there is some evidence, might appear to be contradictory to the ideas above expressed, were it not possible to explain them on the same hypothesis. Not infrequently, especially with freshly prepared vaccines, it has been noticed that the reactions following their administration to patients include pain in the joints. In animals inoculated with water suspensions I have noticed stiffness and apparent tenderness of joints, although no gross changes could be found. Serum from patients with gonorrheal rheumatism gives the largest proportion of complement fixation. The serum of goats immunized with fresh gonococcus suspensions in salt solution gives a precipitin response with gonococcus autolysates, fresh and heated to 75. This evidence, though inconclusive, nevertheless suggests that conditions about the joints may be more favorable to lysis of the cocci than in the tissues of the urethra, and that the products of lysis may contribute to the symptoms. The relief of pain following gonococcus vaccines is one of the most conspicuous results. Without carrying the argument further, the same explanation may suffice for other complications of gonorrhea, including salpingitis.

From the evidence submitted, it is assumed that the character of autolysis in the gonococcus renders immunity response of animals and man to injections of the organism unsatisfactory and incomplete. In other words, the organic nitrogen of the gonococcus does not seem to be altogether available as antigen. This assumption is strengthened by the fact that the nitrogenous portion alone of watery antigen made by me for complement fixation is much poorer in antigenic power than the whole autolysate. It was necessary, then, to search for some substance other than protein, or its split products in the autolysate or watery antigen which, with immune serum, would fix complement. These substances were found to be the fats of the gonococcus, since these substances, chemically isolated from the organism, and suspended in absolute alcohol, possess a much higher antigenic power than the watery antigens of commerce.

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[2] A matter of common observation has been that autolysates were distinctly inhibitory to growth of the gonococcus, and should conditions be at all comparable within the body and in artificial culture, it may be seen that such antibodies might not be incompatible with the continued existence of gonococci in the tissues.

[3] Zinsser: Effects of Heat on Antigen in Precipitins and Agglutinins, Infection and Resistance, 1914.

The question of whether there may exist with these fats an inseparable and essential nitrogen *"rest"* need not concern us at the present time.

I submit a report, preliminary to a forthcoming paper on the subject by L. E. Schmidt and myself, on complement-fixation tests in which the best of the commercial antigens and my own were used parallel. Up to the present, 279 tests have been made and the results show indisputably the importance of the fats in the reaction. The serums of 50 normal individuals gave no fixation, nor did the serums of 47 persons with diseases other than gonorrhea.

In acute cases under one month, the commercial antigen gave positive tests in 20 per cent., the lipoid antigen in 50 per cent.

In subacute cases, up to six months, commercial antigen in 20 per cent., lipoid in 75 per cent.

In cases of long standing with repeated or recurring attacks, commercial in 33 per cent., lipoid in 65 per cent.

In past cases—over six months to thirty years—of doubtful character, commercial in 16 per cent, lipoid in 50 per cent.

In children, all stages included, commercial in 10 per cent, lipoid in 66 per cent.

With my lipoid antigen, complement fixation appears at an earlier period, occurs with greater regularity during the disease, and endures longer than with commercial antigen. All watery antigens are likely to show periods of alternating positive and negative reactions during an attack of gonorrhea, in which the administration of vaccine takes no[4] part. The lipoid antigen shows less fluctuation of this character.

The facts shown in this preliminary report appeared to me to place these fatty substances in an important light from an immunologic view,[5] and I have sought to test their antigenic power as a therapeutic agent in the treatment of gonorrhea. This was specially desirable because of the unsatisfactory results in the use of autolyzed and whole, unautolyzed, gonococcus vaccine. It was found that the fatty moiety is nontoxic for normal man and other animals, even when given intravenously in large doses.

The results, briefly summarized, of the treatment of gonorrhea with gonococcus fats are to be regarded as tentative, and constitute a preliminary communication on the subject.

The cases treated by me thus far comprise acute, chronic, simple and complicated, in men and infant girls. In all, the subcutaneous inoculation of the fats has been followed by marked improvement, and in some by unodubted cure.

The chronic cases, in which there are posterior involvement, with slight but constant discharge containing gonococci in smear and culture, have shown disappearance of cocci in discharge, and symptoms, following one to three inoculations. The acute cases, taken within the first forty-eight hours of the discharge, showed complete disappearance of gonococci in smears and cultures, and entire absence of the discharge within a week following one inoculation. Between these extremes are those acute cases showing well-established infection, copious discharge, and considerable edema, which have required more frequent inoculations with increasing doses, and which constitute an improved, but unfinished series, owing to lack of material.

There has been a slight local reaction, consisting in reddening and swelling of the subcutaneous tissues, which quickly subsided. In some instances a constitutional reaction characterized by chilly sensations, anorexia and some fever appeared in from six to eight hours. This reaction has not been constant, but is followed by marked clinical improvement. The first indication of improvement is the diminution in the number of cocci in the exudate, which in some cases constituted a striking sign. The coincidence of the disappearance of cocci and the constitutional reaction, together with my experience with anaphylactic reactions in animals following the administration of fresh gonococcus autolysates, or following lysis of whole cocci in vivo, has led me tentatively to infer that the reaction in question may be due to the sudden lysis of the cocci in the body of the patient.

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ABSTRACT OF DISCUSSION

Dr. J. A. Fulton, Astoria, Ore.: I have done no work in this line. I believe, however, that when one in the profession finds that which he thinks is of consequence it is his duty to present it. Owing to the low vitality of the gonococci, acute gonorrhea should be easily checked with injections, were it not for the fact that by the time the disease manifests itself the bacteria have buried beneath the epithelium, where they are protected.

The urethra will stand a temperature of 120 Fahrenheit without injury. I have demonstrated that with a bougie heated to 120 F. in the urethra; a thermometer placed alongside of the urethra with the skin folded over it, a temperature of from 104 to 106 was shown, indicating that heat penetrated living tissues and raised the temperature of the skin from 5 to 7 degrees, and showing that even if the bacteria do bury under the epithelium, the heat surely reaches them.

Heat must be used carefully and accurately. One degree difference in temperature may make for either success or failure, just as one more grain of a drug in solution may determine whether your patient is cured or killed. This I wish to impress on every one who attempts the use of heat for the cure of disease. The method followed in making applications of heat to the urethra is this: the bougie is so constructed as to allow the circulation of water from one end to the other. At the entrance and exit of this circulating water is placed an ordinary pair of irrigating thermometers so arranged as to show the temperature of water as it enters the bougie and also at the point of exit, so one may know always the exact temperature of the bougie within the urethra. The water is heated in any convenient way, but is kept at such a temperature all the time, so as to show 120 F. at point of entrance. The urethra is washed out with warm boric solution, and with the patient in a recumbent position the bougie is introduced down to the cut off muscle, and the heat is turned on. The application should last for at least thirty minutes. The temperature of the bougie should not be allowed to vary. It should always show 120 or within a fraction of that point. After this application, the mucosa where touched by the bougie is slightly swollen, and there is some discomfort on urination. The discharge changes to a watery mucoserous character and disappears in from ten to fourteen days as a rule.

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[4] Irons and Nicoll: Jour. Infect. Dis., March, 1915.

[5] Meyer, Kurt: Antigenic Nature of Lipoids, Ztschr. f. Immunitätsforsch. u. exper. Therap., xix, 20.

My experience convinces me that almost every case of acute gonorrhea, that is, cases in which the disease has not gone into the deep urethra, may be aborted, and many cases of chronic disease cured, through the proper application of heat.

Dr. Frank Hinman, San Francisco: The paper would seem to have two practical lines of application: in the first place in treatment and in the second place in diagnosis. The subject of immunization is a very complex one. There are two principal forms, active and passive immunization. In passive immunization the specific serum that has been produced by active immunization of animals is injected and exerts directly its antitoxic powers. Such passive immunization is possible for those organisms only which secrete a soluble toxin, such as diphtheria, tetanus, etc. Passive immunization cannot be produced with gonococci, for the reason that the gonococcus secretes no toxin, but produces injury, possibly after death or autolysis. The immunity of diphtheria is an antitoxic immunity, whereas immunity in the same sense is never established against the gonococcus, but is bactericidal through the interaction of immune substances and complement. Active immunization of the bactericidal form has been shown to be of practical value, particularly for typhoid prophylaxis, and more recently by using Gay's sensitized vaccine, for acute typhoid, for furunculosis, etc. The failure of gonococcus vaccine as an active immunizer and of the gonococcus antigen as a deviator of complement, as usually used, has been beautifully explained in this paper of Dr. Warden. The action of the gonococcus is evidently twofold; by injury from substances of autolysis, and by injury from the true gonococcal amboceptor. The fatty and lipoid extracts, according to Dr. Warden, are nontoxic, but antigens and vaccines made of these lipoids and fats are much more active than the autolysates. These lipoid substances may have the same side-chain grouping as the true gonococcal amboceptor, since they are so much more active than the autolysates, and would be, in a way, analogous to the toxoids in diphtheria immunity. Now, if by the use of these lipoids we can get the gonococcus in a nontoxic but specific form, we will then be in a position more correctly to diagnose gonorrhea and to use vaccines satisfactorily in the treatment of acute gonorrhea and gonorrheal complications.

Dr. John Campbell Spencer, San Francisco: Dr. Warden's contribution practically relegates to the scrap heap all products of the views regarding vaccines and watery suspensions with which the market is drugged at the present time. It is an eloquent treatise on the relative inefficiency of our therapeutic attempts at the present time to treat gonorrheal infection by vaccines. Personally I am glad that I have been present to listen to Dr. Warden's elucidation of this subject, because it looks as though we were entering on a new epoch in our treatment of gonorrheal infection. It will be of great benefit in the elimination of this scourge of the human race.

Dr. Louis E. Schmidt, Chicago: I have been fortunate enough to be with Dr. Warden in his laboratory work and to supply much of his clinical material. The purely scientific part of the article I do not wish to discuss, but it seems to me to be the most thorough explanatory article on this subject. It seems to set forth very clearly, at least to me, the reason why we have had so many failures in clinical treatment of patients, and the failures of the gonorrheal complement tests are accounted for. We know that there are any number of instances in which the test has not given us a satisfactory answer. It has always been rather surprising that where we have been able to find gonococcus in culture and in smears, the test has frequently been negative. This holds true in connection with the work in children. The explanation given here clears up the question perfectly to me and gives us a basis for an answer regarding our failures.

Regarding the ordinary vaccine treatment of gonorrhea and its complications, it has practically been relegated to the background. It has been attended with few satisfactory results. Dr. Warden in this paper states that with the old vaccines there have been a limited number of cases in which the results are satisfactory. Certainly the vaccine treatment of gonorrhea, and its complications, is not as satisfactory as the vaccine treatment in certain other conditions. The explanations he has given certainly help to clear up the subject. The vaccines that are on the market at the present time do not adhere to any theories that Dr. Warden has laid down. How do they act? Certain results are gained by giving certain remedies without any known reason therefor. The answer always is, of course, that the results are satisfactory. It is far more satisfactory to all of us to follow the reasons why we get unsatisfactory as well as satisfactory clinical results.

The antigen of Warden is unquestionably far superior and gives more accurate results than the watery antigens on the market. As to treatment, the number of cases up to the present time is limited. However, they go into hundreds, and comparing the results with all other similar methods of treatment I can personally state that in this series of cases which I have had under my observation they are markedly different and more satisfactory.

Dr. Lewis Wine Bremerman, Chicago: If Dr. Warden has all that he claims, we have made a definite advance in the therapeutics of gonorrheal infection. We all have used commercial vaccines and discarded them, using the antigens which were manufactured, and discarding them, because we did not get the proper results. Gonorrheal complications and the sequelae constitute the majority of cases of the genito-urinary specialist. If we can advance along the line of treatment we are doing something that will be for the benefit of a large number of people, as well as to the medical profession. I hope and trust that he has an antigen that will give all of the good results he claims for it, because I have worked along this line myself in my own laboratory with commercial antigens with very unsatisfactory results. I cannot see why the complement fixation tests for gonorrhea cannot be made as satisfactory as the complement fixation test for syphilis. If we can prove up the complement fixation equally with syphilis we are advancing an excellent method of diagnosis.

Dr. Fred R. Charlton, Indianapolis: I am glad to add my word of gratitude to Dr. Warden for what he has done. I have been one of the discouraged ones, having used the various products seriatim, as they have been offered, without any clearly defined good results whatever. If the treatment that Dr. Warden outlines here proves satisfactory, I am going to feel a little more sanguine as to the general procedure. Such work as his again shows the folly of plunging the profession into "fads" before they are studied. Vaccinotherapy has been nothing less than a craze heretofore. Perhaps some benefit may yet be derived from a Neisser bacterin. To date I have seen none.

Dr. Granville MacGowan, Los Angeles: There is no disease civilized man suffers from that causes half the misery that gonorrhea does. Anything that serves to make it more rare, or make it more readily curable, and to relieve the troubles which come from it, is a boon to mankind.

The thing that impressed me most in this admirable paper was the significance of the keeping alive of the gonococci by fats and greases. I think that the usual advice to men is to anoint themselves well with fats before coming in sexual contact with their female companions, and then to wash themselves thoroughly afterwards. One can very readily see how if a free use of fat is made by the male or female, and it is not thoroughly removed immediately after the sexual congress, that if one or the other of the participants has gonorrhea the other is pretty sure to have this disease within a few days after the congress. The second point brought out shows why we have all failed so markedly to cure or relieve gonorrhea with vaccines.

Dr. Carl C. Warden, Ann Arbor, Mich.: There are two points that I think need emphasizing. One is in regard to the presence or absence of protein or nitrogen in these lipoids. We cannot absolutely say that nitrogen is wholly excluded from this product, no matter how perfect our chemicals may be. I may say that this nitrogen, if it exists, is one of the essential parts, coupled with the fats.

In regard to the complement fixation, it seems very strange that we do not obtain a complement fixation test at all times during the course of gonorrhea. The question arises: why do we not, especially in the florid stages of gonorrhea, obtain a higher percentage of complement fixation test than we do. We shall always be embarrassed by this fact. I think the reason for it is fairly evident. Man is almost wholly immune to gonococcus to begin with. There are very few tissues left in the body on which the gonococcus is able to exist. The blood stream occasionally shows gonococcus infection but these cases are extremely rare. Now, then, those positions in the body that are subject to gonococcus infection happen to be extremely remote from the great laboratory of antibody formation, and for this reason it is a long time before the fluids of the body are enabled to form antibodies against the coccus. It is only when the disease is beginning to get pretty well along, in from the fourth to the eighth week, that complement fixation appears as a really established thing. The greater the amount of antigen the coccus gives to the body as a whole, in the great laboratory of antibody production, the sooner we will find complement fixation positive. When the deeper structures of the urethra become involved and the complications of gonorrhea appear, and when the general conditions become manifest, then is the time we have the largest per cent. of complement fixation. These conditions, I think, we shall always have to contend against, and we shall never be able to find antigen which will fix the complement under all conditions. The old watery antigens act variously, according to their fatty contents. A new arrangement of the fats and new lipoids will fix complement in the largest percentage of cases. There is abundant work to be done on the subject..

Dr. Fred R. Charlton, Indianapolis: May I ask Dr. Warden whether in his therapeutic experiments he has confined himself to autogenous or the heterogeneous?

Dr. Carl C. Warden: All strains of gonococcus. I have used every one that could be obtained in the ordinary course of the examination of patients. I have succeeded in getting together probably forty or fifty different strains. The work of Torrey, and a good many others, has shown that if a dozen or more strains are employed, those strains will probably embrace all the variations. I feel that by having a large number of strains I have covered all the different varieties that might occur. I do not attach any particular significance to autogenous vaccines. I think better results are obtained from using many strains than one.

Experimental Vivisection and the Rights of Animals.—I cannot argue with the man who insists that his dog and his hog are as good as he is; that he has no right to restrain the one or to eat the other. If he refuses to eat meat, or eggs, drink milk, use leather, wool or other animal products for clothing or shelter; if he refuse to make counter attacks against the lions or serpents which attack him, he is consistent; I cannot argue with him; I can merely watch him go his way in the procession with the trilobite, the ichthyosaurus and the dodo. But intensely practical questions arise and must be met. And the life of a relatively few animals is placed against the life and health and comfort of the human race. The antivivisectionist insists that even if you grant that the injury to the guinea-pig or the rabbit or the horse will save the life of a child, you have no right to save it in that way. If there is not room in the life-boat for the woman and the dog you have no right to push out the dog to make room for the woman.—Samuel S. Maxwell, *Science*.

PERFORATION OF THE BILIARY TRACT

REPORT OF TWO CASES

HOWARD L. BEYE, M.D.
IOWA CITY, IOWA

Perforation of the biliary tract is so infrequent as to warrant the reporting of unusual cases. In the following two cases of perforation of the gallbladder, the patients were operated on by Dr. C. J. Rowan in the surgical clinic of the University of Iowa.

Case 1.—*History.*—L. E., schoolboy, aged 11 years, referred by Dr. Sinning of Iowa City, on the afternoon of Sept. 7, 1914, while playing, received a blow in the abdomen from one of his playmates. This caused him to faint, and after gaining consciousness he was in so much pain that he screamed and had to be carried home. During the following night he complained of a great deal of pain, and was very restless. The next morning he vomited profusely, and the pain became worse on the left side, and was more marked here than on the right. The temperature ranged between 100 and 101 on this day. The bowels refused to move even with enemas and after calomel. There had been no chill.

The past history was negative, except that about two months before, the boy had received a blow in the abdomen, at which time he was sick for three days with a high fever and vomiting. The bowels were moved with difficulty. Following this he was apparently perfectly well until the present trouble.

Examination.—The patient was brought to the University Hospital at 8:30 p. m., September 8. At this time the temperature was 100.8, pulse 100, and respirations 40. His face had a drawn, anxious look, and the respirations were rapid and shallow. He preferred to be on his side with the thighs and knees flexed, and complained of pain in the abdomen when moved. The walls of the abdomen were rigid; this was perhaps most marked in the right upper quadrant, though the patient complained mostly of pain in the left side. There was dulness in the right upper quadrant. No palpable masses. No cough. Heart and lungs negative. Leukocyte count 21,300. A diagnosis of ruptured appendix and general peritonitis was made.

Operation.—Under ether anesthesia, a midline incision was made below the umbilicus. There was properitoneal edema. The abdomen contained a large amount of bile-stained fluid, and considerable fibrin in plaques. The proximal half of the small intestines was distended, and the distal half collapsed. The intestines were examined for perforation, and none found. The incision was carried up to the right of the umbilicus to the gallbladder region. The gallbladder was found to be thickened and adherent to the liver, and contained a single perforation in the fundus from which pure bile was pouring. No stones were found. A rubber tube drain was led down to the perforation, together with a cigaret drain and a strip of iodoform gauze. A rubber tube drain was led from the pelvis at the lower end of the incision. The usual closure was made.

Course.—The patient was placed in Fowler's position and given normal salt solution by rectum, and nothing per mouth. Recovery was uneventful. The patient left the hospital on the fifteenth day.

The interesting point about this case aside from the perforation is the chronic cholecystitis present in a child of 11 years. The relationship between the condition of the gallbladder and the injury received two months before the perforation is problematic. At that time the patient might have had an acute cholecystitis which was followed by gallbladder changes which predisposed to later perforation, or he might at that time have had a perforation of the gallbladder with a localized peritonitis which resolved. There is no history of typhoid fever, and there were no attacks of tonsillitis to account for the gallbladder infection.

Case 2.—*History.*—Mrs. M. M., housewife, aged 57, referred by Dr. A. R. Lynn of Marshalltown, for several years had occasional attacks of belching of gas, sometimes with vomiting, independent of meals. In February, 1913, she suddenly had a severe tearing pain under the right costal margin, radiating to the pit of the stomach. Following this she vomited profusely for several hours. The pain lasted an hour or more, caused her to cry out in agony, and was finally relieved by a hypodermic. Four weeks following this attack she became jaundiced, and this condition persisted until the next fall. In July, 1913, she had a similar attack.

Ever since the first attack the right side has been tender, and a swelling gradually formed, pointing in the right flank above the iliac crest. This finally approached the surface, the skin overlying became reddened, and it was lanced. An odorless fluid was obtained, at first thin and yellow, and later thicker. This gave her immediate relief from her constant ache and pain. There has been a persistent discharge of a mucous secretion ever since, and recently she passed four wheat-sized calculi. The general condition was good except for an increasing gnawing, burning sensation in the epigastrium, not referable to food taking.

Examination.—This was negative except for the abdomen. In the right side, between McBurney's point and the gallbladder region, there was a palpable mass about the size of a small orange, quite tender. Leading down to this mass was a sinus from which a small amount of light yellow tenacious fluid was discharged.

Blood: Hemoglobin 78 per cent. (Sahli), leukocytes 9,300.

Gastric Analysis: Seventy-five c.c. in forty-five minutes. Total acidity 100. Free hydrochloric, 68. No blood.

Urine: Negative.

A diagnosis of mucous gallbladder fistula following perforation was made.

Operation.—Sept. 28, 1914, under ether anesthesia, a right rectus incision was made above the level of the umbilicus. The gallbladder was long and narrow, and was adherent slightly to the omentum, and at the fundus to the abdominal wall at the inner end of the fistulous tract. A large mulberry stone was impacted in the cystic duct. The gallbladder was excised from its connection to the abdominal wall, and cholecystectomy performed. Tube draining was carried to the stump of the cystic duct, and an iodoform gauze drain through the sinus.

Course.—This was uneventful except for the formation of a hematoma in the operative wound, and the passage of a small calculus from the old fistulous tract, following which the latter healed. The patient left the hospital Nov. 3, 1914.

One of the interesting points about this case was the very slight amount of adhesions around the gallbladder, considering the extent of the diseased condition which must have been present during the period preceding the discharge of the abscess through the abdominal wall.

Measles.—The essential points in regulations for the control of measles are: The case shall be recognized and isolated at the earliest possible moment; the premises on which the case is isolated shall be placarded; the patient shall be isolated for at least five days after the appearance of the exanthem; adults and children who have previously had the disease need not be restricted, but it is advisable to warn them as to the slight possibility of second attacks, and keep them under observation; children who have not previously had measles and who are in contact with cases, need not be restricted for seven days after contact, but should thereafter be isolated for at least ten days and carefully observed. Disinfection after measles is useless and unnecessary. Transmission of measles by third persons or fomites must be exceedingly rare, if it occurs at all.—Harold Farnsworth Gray, *Jour. Infect. Dis.*, November, 1915.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

STAPHYLOCOCCUS VACCINE (See N. N. R., 1915, p. 319.)—Swan-Myers Company, Indianapolis.

Swan's Staphylococcus Bacterin (No. 37).—Marketed in packages of six 1 Cc. vials, each containing 300 million Staphylococcus pyogenes albus; also in 20 Cc. vials, containing 300 million Staphylococcus pyogenes albus per Cc.

STREPTOCOCCUS VACCINE (See N. N. R., 1915, p. 322).—Swan-Myers Company, Indianapolis.

Swan's Streptococcus Bacterin (No. 43).—Marketed in packages of six 1 Cc. vials, each containing 120 million Streptococcus pyogenes; also in 20 Cc. vials, containing 120 million Streptococcus pyogenes per Cc.

CALCIUM PEROXIDE (See N. N. R., 1915, p. 230).—The following non-proprietary preparation has been accepted:

Calcium Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM PEROXIDE (See N. N. R., 1915, p. 232).—The following non-proprietary preparation has been accepted:

Sodium Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

ZINC PEROXIDE (See N. N. R., 1915, p. 234).—The following non-proprietary preparation has been accepted:

Zinc Peroxide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

ETHYL SALICYLATE (See N. N. R., 1915, p. 272).—The following non-proprietary preparation has been accepted:

Ethyl Salicylate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

OSMIUM TETROXIDE (See N. N. R., 1915, p. 225).—The following non-proprietary preparation has been accepted:

Osmic Acid, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM OLEATE (See N. N. R., 1915, p. 348).—The following non-proprietary preparation has been accepted:

Sodium Oleate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

THIOSINAMINE (See N. N. R., 1915, p. 361).—The following non-proprietary preparation has been accepted:

Thiosinamine, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

UREA (See N. N. R., 1915, p. 365).—The following non-proprietary preparation has been accepted:

Urea, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following dosage forms have been accepted:

Ampuls Sodium Cacodylate, Mulford, 7¾ grains.—Each ampule contains sodium cacodylate 0.5 Gm. (7¾ grains). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 15 *grains.*—Each ampule contains sodium cacodylate 1 Gm. (15 grains). Prepared by H. K. Mulford Co., Philadelphia.

SOLUTION PITUITARY EXTRACT (See N. N. R., 1915, p. 223).—The following dosage form has been accepted:

Ampuls Solution Pituitary Extract, Mulford, 0.5 Cc.—Each ampule contains solution pituitary extract 0.5 Cc. Prepared by H. K. Mulford Co., Philadelphia.

Therapeutics

TETANUS

The war has shown two very important facts concerning this infection: 1. The germ is more or less universal in the regions of warfare. 2. The results of its infection may be made negligible by the preventive use of tetanus antitoxin. A brief review of this disease may be of interest.

Hill[1] found that tetanus is more frequent in the tropics than in temperate climates, and that in the latter climates 86 per cent. of all cases are traumatic in origin.

The incubation period of acute tetanus is from one to ten days, and of subacute tetanus from ten to twenty days. Fifty per cent. of all cases develop between the sixth and ninth day, the majority apparently on the seventh day after infection. Acute tetanus lasts from one to ten days, and subacute tetanus from ten to twenty days. Not until the patient has lived until the tenth day of the disease is there an equal chance for life. After the tenth day the patient's chances of recovery increase day by day.

There is probably always more or less leukocytosis in tetanus, and Hill found the average count to be 13,000. The eosinophils seem to be diminished in number.

The tetanus bacillus is a cylindric rod, larger at one end than the other, and is an anaerobic germ. It is constantly present in the dirt of cities and on most country roads, as well as in barns and pastures. Noble[2] has recently shown that this bacillus occurs in the intestines of otherwise normal animals, and he found the germ in the feces of eleven of sixty-one horses examined. Further examination of these infected animals showed that the germ could disappear in a few weeks, but could also remain present as long as four months. Such animals become tetanus carriers,[3] and are a constant menace to other animals which may receive injuries, and to their drivers and hostlers, who may have slight wounds on their hands. These tetanus-carrying horses infect the dirt of the fields or streets on which they work or travel.

The reason for the perpetual danger from the tetanus organism is that it will live, when not subjected to intense light or heat, for years. The germ has also been found in the feces of cows, and has even been found in the feces of man.[4] Animals obtain the bacillus from their food, probably principally from infected grass and hay. When it is found in the feces of the human being, he has probably obtained it from eating contaminated uncooked vegetables.

This bacillus gains entrance to the system almost always through a wound or abrasion, and, as has long been recognized, the most frequently infected wounds are contusions and crushing or lacerating wounds, especially those that occur from sliding, grinding and friction injuries in the streets and from lacerating wounds acquired in warfare, explosions, Fourth of July injuries, etc. At first the infection is a local one, and it is stated that the bacilli do not often wander from the point of infection; but they soon produce their toxins, which cause the general disturbance.

As this germ grows without air, it is evident, as urged by Mühsam,[5] that infection with other bacteria, pus germs, etc., which will use up the oxygen in the tissues, or in a more or less closed wound, will thus aid in the growth of the anaerobic tetanus bacillus. Also, the destroyed tissues at the base or around the wound should be very carefully removed, as such structures, with their impaired circulation, instead of normally combating infection, promote it. Mühsam also urges flushing suspected wounds with oxygen, perhaps well furnished by hydrogen peroxid solutions, as oxygen inhibits or stops the growth of the tetanus bacillus.

The toxins of tetanus bacilli ascend the motor nerve sheaths and thus reach the spinal cord. They unite with nervous tissue and seem to remain in a more or less fixed combination; hence the difficulty of the tetanus antitoxin combating the toxin that has become thus combined. Prevention of tetanus by the use of antitoxin is easy; the cure of tetanus with antitoxin is difficult. It is probably only late in the disease that the toxins circulate in the blood. Sinigaglia[6] found the tetanus bacillus in the blood in a case of slow infection.

The beginning symptoms of poisoning from this germ are aches and pains in the muscles, with a general lassitude, some headache, and soon some stiffness of the muscles of the back of the neck, face and jaw. The wound or source of infection may show no change; in fact, may apparently be healed. The more or less permanent contraction of some muscles and the convulsions of tetanus are too well understood to need description. Spasm of the sphincters may make urination and defecation almost impossible. The mind generally remains clear, unless there is very high temperature, which is one of the causes of death. Death may occur during a convulsion from spasm of the diaphragm or spasm of the laryngeal muscles, or it may occur from exhaustion.

It was for many years thought that tetanus antitoxin was of no great value when the disease was positively in evidence. It was considered and taught that it was too late to expect any antitoxin activity. Therefore, it is very encouraging, in the treatment of this disease, to note that Irons[7] has found in animal experimentation that antitetanic serum will save life when tetanus has already developed, and therefore should perhaps not infrequently save life in the human being. If the patient cannot be treated before serious intoxication of the central nervous system has occurred, the toxins, Irons believes, may be neutralized by a large intravenous injection combined with an intraspinal injection of the antitoxin.

Nicoll[8] has determined by animal experimentation in the Research Laboratory of the Department of Health of New York, in conjunction with Dr. William H. Park, and also by clinical experience, that from 3,000 to 5,000 units of antitoxin should be injected into the lumbar region of the spinal canal as soon as tetanus is diagnosed. This injection should be done under an anesthetic, to inhibit any possible convulsion during the injection. The volume of the fluid injected should be "brought up to 10 to 15 c.c. by the addition of sterile normal saline, the exact amount being regulated according to the age of the patient and the amount of spinal fluid withdrawn." At the same time he advises the injection of 10,000 units of antitoxin intravenously. The spinal injection dose should be repeated in twenty-four hours, and a subcutaneous injection of 10,000 units should be given three or four days later. Nicoll finds that the death rate has been reduced by this method of treatment of those who already show symptoms of tetanus.

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[1] Hill, E. W.: Tetanus, Arch. Int. Med., December, 1911, p. 747.

[2] Noble: Jour. Infect. Dis., 1915, xvi, 132.

[3] Tetanus Carriers, editorial, The Journal A. M. A., May 29, 1915, p. 1850.

[4] Pizzini: Riv. d' ig. e. san. pubb., 1898, x, 170.

[5] Mühsam: Berl. klin. Wchnschr., 1914, li, No. 45.

[6] Sinigaglia: Riforma med., April 24, 1915.

[7] Irons, E. E.: Tetanus and Antitetanic Serum, The Journal A. M. A., May 8, 1915, p. 1552.

[8] Nicoll, Matthias: Intraspinal Administration of Antitoxin in Tetanus, The Journal A. M. A., June 12, 1915, p. 1982.

These investigations, with the added clinical experience, would seem to make it doubtful if subcutaneous injection alone of antitetanic serum could cure tetanus, although Comby[9] states that he has cured three cases of tetanus in children by the subcutaneous injection of antitetanic serum.

Subsequent injections of antitoxin, especially when given intravenously, can cause anaphylaxis, sometimes severe; and Simon[10] thinks that injections later than the tenth day become dangerous from the standpoint of being likely to produce anaphylactic shock.

It has recently been shown[11] that if the tetanus antitoxin is injected into the tissues surrounding the wound soon after the injury, tetanus will be prevented, even if the tetanus bacillus is later recovered from the wound. Teutschlaender[11] states that if, in such cases, a little stiffness or tendency to stiffening of the muscles of the part injured begins, he immediately gives another dose of antitoxin.

The prophylactic dose of tetanus antitoxin should be about 1,500 units, given subcutaneously, preferably in or about the region of the injury, and this should be given whenever the character of the injury or the region in which the injury is received presents any possibility of tetanus infection. This dose can be repeated in a few days if deemed advisable. The serum may also be perfused into the open wound, but the antitoxin powder applied to the wound can probably not be relied on as an effective prophylactic. An antitoxin impregnated pad is described by Robertson.[12]

As in administering diphtheria antitoxin, it should be ascertained if the patient is susceptible to emanations from horses or stables; if he shows hay fever and asthma symptoms from such emanations, it is unwise to administer horse serum, especially as a prophylactic for something that may not occur.

The newest of the drug treatments of tetanus is that by magnesium sulphate. Solutions of this salt are injected into the spinal canal, and Eunike[13] injects 10 c.c. of a 10 per cent. solution. This drug more or less successfully inhibits the convulsions. If active symptoms recur in two or three days, he gives another dose of 8 c.c. of the 10 per cent. solution. Certainly the intraspinal injections of magnesium sulphate should be given only in very severe cases. The dosage suggested by Eunike is not large; very much stronger solutions have been injected. The danger lies in causing paralysis of the respiration. Usener[14] states that subcutaneous injections of magnesium sulphate solutions are of value in relieving spasms and convulsions. Cloetta[15] says that the action of magnesium sulphate is similar to the action of curare, perhaps not quite so dangerous, as its action may be inhibited by calcium. Schütz has shown that magnesium sulphate diminishes heat production, and he thinks that the intensity of its action may be determined by the temperature curve.[16]

Injections of magnesium sulphate into the system, and especially into the spinal canal, are always more or less dangerous, and it would seem that in serious convulsive conditions, while waiting for the antitoxin to have its effect, inhalations of chloroform would be safer in quieting and controlling the patient than injections of a substance whose activity passes beyond the control of the physician.

Angerer[17] revives the chloral treatment of tetanus in conjunction with the antitetanic serum. He gives as high as 5 grams of chloral by rectum twice a day, and adds to this one-sixth grain of morphin hypodermically. By this means he gets a sort of "twilight sleep." He continues the antitetanic serum treatment, both intraspinally and subcutaneously, until the active symptoms of tetanus cease.

While the dose of the chloral given by Angerer is very large, some such combination of morphin and chloral, with the dose gradually increased or diminished, depending on the symptoms, seems much safer than the magnesium sulphate treatment.

Jacobsthal and Tamm[18] bathe all lacerated wounds with the ultraviolet rays, as they claim they will kill the tetanus bacilli as well as other bacteria. Riehl[19] believes that he prevents tetanus infection of wounds by applying chlorinated lime in the form of a mixture of 1 part of the chlorinated lime to 9 parts of kaolin. This powder is blown into and over all wounds. This treatment, he reports, does not cause pain, allows the wounds to heal, and seems to prevent tetanus infection.

Phenol treatment has been advised many times, and has been termed "Baccelli's treatment." Reynolds[20] reports the successful treatment of tetanus in a boy of 11 by phenol injections.

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[9] Comby: Brit. Jour. Child. Dis., 1915, xii, 1.

[10] Simon: München. med. Wchnschr., Nov. 10, 1914.

[11] Teutschlaender, O.: Deutsch. med. Wchnschr., May 13, 1915.

[12] Robertson, H. E.: A New Method for the Prophylactic Application of Tetanus Antitoxin, The Journal A. M. A., Aug. 28, 1915, p. 793.

[13] Eunike: München. med. Wchnschr., Nov. 10, 1914.

[14] Usener: München. med. Wchnschr., 1914, lxi, 2323.

[15] Cloetta: Cor.-Bl. f. schweiz. Aerzte, Jan. 16, 1915.

[16] Schütz: München. med. Wchnschr., Jan. 26, 1915.

[17] Angerer: München. med. Wchnschr., Nov. 10, 1914.

[18] Jacobsthal and Tamm: München. med. Wchnschr., 1914, lxi, 2324.

[19] Riehl: Med. Klin., Jan. 10, 1915.

[20] Reynolds: Lancet, London, May 23, 1914.

Scallops as Food.—The scallop industry in Massachusetts has recently increased greatly. In 1906 the Massachusetts Fish and Game Commission at the instance of the General Court made an investigation and a report on the scallop industry, calling attention particularly to the sophistication of this food by soaking the scallops in water. Inasmuch as the courts have decided that the practice of adding water to oysters is a violation of the law, the Massachusetts authorities brought the matter of the possible violation of the law in regard to scallops to the attention of the federal authorities. A joint investigation was then made, when it was disclosed that in some instances water in amount equal to the amount of scallops was added to the vessels in which the scallops were marketed. Standards of purity were then advised by these authorities.

Water in scallops may be detected by the fact that soaked scallops usually contain a milky fluid, while unsoaked ones have almost no liquid. If a scallop is rubbed on the prism of an Abbe refractometer, and the refraction of the juice taken, unsoaked scallops will give a reading at 25 C. of 1.38 plus on the scale, while soaked ones give a reading of from 1.34 to 1.36. Experiments show that soaking lowers the percentage of proteins and solids. The normal figures are from 19 to 24 per cent. for solids and from 14 to 16 per cent. for proteins. Soaking lowers these figures to from 10 to 16 per cent. for solids and 9 to 11 per cent. for proteins. Scallops collected in the markets in Boston showed that about half of them had been soaked.—Pub. Health Bull., Massachusetts.

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SATURDAY, DECEMBER 11, 1915

THE OUTLOOK FOR BLOOD TRANSFUSION

Blood transfusion is likely to be a far more efficacious therapeutic procedure in the near future than it has been during the few years that have witnessed the introduction of a successful technic for the operation. This statement is not intended to imply that successful transfusions have heretofore been rare or that the coming period is necessarily likely to witness an increasing number of applications of the method in practice. But the technic has been rendered more satisfactory, easier of general application under difficult circumstances, and safer in its employment. This aspect of the matter is exemplified in the introduction of syringe transfusion, a process easily repeated and involving little pain or trauma as compared with the original surgical method. The necessary precautions have been studied and explained so that the dangers and complications of transfusion — such as those due to incompatible blood, dilatation of the heart and introduction of air — are readily preventable. The fundamental importance of ascertaining the possibility of hemolysis or agglutination of the red blood cells of either donor or patient by the serum of the other is almost universally recognized and taken into account. Further than all this is the fact that the indications for transfusion are being better understood so that, to quote recent writers, there is a tendency more and more to use it not as a means of last resort but as an ordinary therapeutic measure.

In the case of any novel method of treatment, applicable to clinical medicine, the value of which depends in good part on statistical results and careful observation, a retrospect and a critical review are always of practical interest. From a general summary of this sort prepared by Ottenberg and Libman[1] of the Mount Sinai Hospital, New York, we gain a decidedly helpful impression of the status of blood transfusion. Their statistics cover nearly 200 cases, and thus derive considerable authority from the force of numbers. The cases in which transfusion was apparently life-saving fall under the headings of acute anemia from hemorrhage; hemorrhagic diathesis, whether hereditary or acquired; grave chronic anemias, and poisoning. In a goodly number of other cases, transfusion was not an emergency measure, but was performed on patients whose general condition had been seriously impaired by chronic disease. In more than forty of these, great improvement followed the transfusion, even when the recovery from the disease itself was not complete. Expressed in a statistical way, 45 per cent. of the transfusion cases were successful in that the condition of the patient was greatly improved. This includes 22 per cent. in which the procedure was life-saving. In about half of the attempted transfusions, no good was accomplished.

These are the bare figures. Some details deserve to be quoted for the light which they throw on the value of the method. In almost all of the cases of gastric or duodenal ulcer, the hemorrhages stopped after transfusion. The danger of increasing the bleeding by raising the blood pressure through transfusion during active hemorrhage must not be overlooked. The cases in which it appears actually to be checked are those of repeated or prolonged hemorrhage. Blood which can form normal thrombi is supplied. Transfusion is also worth trying as a temporizing measure in other forms of prolonged hemorrhage in which there is nutritional disturbance, as in severe dysentery. Ottenberg and Libman insist that transfusion should be tried more often than it has been in the emergencies of severe typhoid. Here, too, it not only replaces lost blood but also may help to check hemorrhage. With the first appearance of blood in the stools of this disease, preparation should be made so that a transfusion can be done, if needed, at very short notice; for in the typhoid state and in very protracted cases, it may be life-saving. Transfusion seems well indicated in the conditions arising from ectopic gestation.

The occasional usefulness of transfusion in connection with surgical operations, particularly for postoperative hemorrhage, was early considered and is quite generally understood. In surgical shock the results are frankly disappointing, so that, despite the hopes once awakened, transfusion cannot be relied on as a remedy. In hemorrhagic disease, and particularly hemophilia, the results have been noteworthy. Here transfusion may actually be termed a specific therapy for the control of hemorrhage. Where serum treatment — subcutaneous, intravenous or local use of human, horse or rabbit serum — has been without remedial effect, transfusion has repeatedly supplied a lacking element and stopped hemorrhage. Ottenberg and Libman are so impressed with its value in hemophilia, in which the majority of the sufferers never reach adult life, that they look on transfusion as offering a new hope to those afflicted with this disease of high mortality. They suggest that every individual known to have hemophilia ought to have at his command several persons whose blood by previous tests is known to be compatible with that of the patient and who are willing, when called on, to act as donors. The syringe method does not injure the veins, and allows for any number of prompt transfusions. In consideration of this, the New York investigators believe that the majority of hemophiliacs might be enabled to lead a life of normal duration.

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[1] Ottenberg, R., and Libman, E.: Blood Transfusion: Indications, Results, General Management, Am. Jour. Med. Sc., 1915, cl, 36.

With regard to pernicious anemia, no one can be expected in the present state of knowledge to speak with emphatic certainty of any satisfactory management of this insidious disease. Ottenberg and Libman believe that transfusions should be resorted to early, and persistently repeated, to prevent the development of a marked grade of anemia. They regard transfusion as the best remedy: it never cures, but it leads to remissions in about half of the cases. When these fail, splenectomy can still be resorted to in accord with the dictates of increasing experiences. In the infectious diseases there are numerous possible fields of application for transfusion which deserve very careful study and are likely to reward it. Even in such a serious condition as endocardial infection, transfusion offers some promise. It puts the organs into better condition to respond to other methods of therapy, and inasmuch as there is a tendency in endocarditis for the patients to become spontaneously bacteria-free, the procedure may be worth trying repeatedly.

RESPONSES OF THE RESPIRATORY CENTER

It has long been known that carbon dioxid "stimulates" the respiratory center, that is, causes an increase in the rate or depth, or both, of the respiratory movements. The result is an increase in the amount of air breathed in a given time. Researches of recent years have shown that this action of carbon dioxid is in reality due to the hydrogen ions of the carbonic acid (H_2CO_3) formed when carbon dioxid is dissolved in water or in a fluid like the blood. Other acids reaching the blood have the same effect.

Loewy showed, twenty-five years ago, that within certain limits there is a parallelism between the percentage of carbon dioxid in the inspired air and the volume of air breathed. Thus the total amount of air breathed doubled when the subject inhaled air containing sufficient carbon dioxid to raise the concentration of carbon dioxid in the expired air to between 5 and 6 per cent. Loewy and others have taken advantage of this reaction to test the effects of drugs on the excitability of the respiratory center. As an illustration of the results obtained, the effect of morphin may be cited. After a small dose of morphin, a much greater concentration of carbon dioxid in the inspired air is required to cause a given increase in the amount of air breathed; in other words, the excitability of the respiratory center has been lowered by the drug. Since the excitability of the respiratory center to other stimuli (through sensory nerves, for example) is similarly lowered by morphin, the mode of action of opiates as respiratory sedatives is obvious.

Means, Newburgh and Porter[1] have recently applied the same method to a study of the condition of the respiratory center in experimental pneumonia. They compared the effects of different concentrations of carbon dioxid on the volume of air breathed by normal cats and by cats in which pneumonia had been experimentally produced. In all cases the breathing of carbon dioxid had a much greater stimulating action on the respiratory center of the normal cats than on that of the cats with pneumonia: there was a marked depression of the excitability of the respiratory center in pneumonia, especially marked in those animals which were near death, but also very pronounced in those which were only moderately ill. Aside from their great scientific interest, these results would seem to have important practical bearings. Thus, as was stated above, morphin has the same effect on the respiratory center as does pneumonia; this suggests that great caution should be used in the administration of opiates to patients ill with pneumonia.

Peabody[2] has recently applied this principle (the effect of carbon dioxid on the respiratory center) in an effort to obtain further light on the mechanism of the production of dyspnea in certain cases of cardiac and of cardiorenal disease. He found that, whereas in normal individuals the total ventilation was doubled only when the concentration of the carbon dioxid had risen to between 4.2 and 5.4 per cent., in certain of the pathologic cases the ventilation was doubled when the inspired air contained only 2 or 3 per cent. of carbon dioxid. This result does not, however, show that the excitability of the respiratory center has been directly affected in these pathologic conditions, for these results were obtained only in those cases in which a condition of acidosis was present; cases without acidosis or cases in which the acidosis had been combated by the administration of alkali reacted to an increase in the carbon dioxid content of the inspired air in a normal manner. This is another illustration of the fact that in certain cases of cardiac, and especially of cardiorenal disease, the dyspnea is due in part to an accompanying condition of acidosis.

Observations of this character are of great importance in explaining the condition and responses, under normal and pathologic conditions, of one of the most vital but in many respects least understood of the functions of the body, that of respiration.

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[1] Means, J. H.; Newburgh, L. H., and Porter, W. T.: State of the Respiratory Mechanism in Pneumonia, Boston Med. and Surg. Jour., 1915, clxxiii, 742.

[2] Peabody, F. W.: Clinical Studies on the Respiration, 1, The Effect of Carbon Dioxid in the Inspired Air on Patients with Cardiac Disease, Arch. Int. Med., November, 1915, p. 846.

THE ABSORPTION OF CHOLESTEROL

The peculiar lipoidal compound cholesterol, or cholesterin, as it is still sometimes called, has long been known to physiologic chemists; yet, aside from those features of its chemical structure which mark it as an alcohol, and certain other incidental characteristics, the real make-up of this complex substance is almost as much of a puzzle as it was two or three decades ago. Cholesterol has not been synthetized by the chemist; but its widespread occurrence in nature among animals and, in closely related form at least, among plants certainly foretells the biologic importance of the substance.

In the animal organism, cholesterol occurs not only free, but also combined with fatty acids in the form of esters. Cholesteryl oleate and palmitate are known as constituents of the blood along with the alcohol itself. In the nervous system a large content of free cholesterol is always present. Pathologic structures may also contain it. Until quite recently it has been debated whether cholesterol can be formed anew in the adult organism or whether the latter is dependent on exogenous sources for its supply. Today there is, we believe, a fair agreement that the cholesterol of the body has its origin in the food and not in actual synthesis within the tissues. English investigators, in particular, have shown definitely that feeding cholesterol either as such or in the form of its esters results in an increase in the blood content of both forms.

The extension of the physiology of cholesterol has long demanded a better elucidation of the mode and path of absorption of the substance, and some indication of the formation of its esters. Dr. J. H. Mueller,[1] of the Department of Pathology at Columbia University, College of Physicians and Surgeons, has followed the actual absorption of cholesterol and its derivatives from the alimentary tract into the lymph stream of the thoracic duct. Reasoning that, since fatty material enters the blood stream by way of the lymphatics, one might expect to find cholesterol also absorbed in this way, because of its solubility in fats and its insolubility in aqueous mediums, Mueller analyzed the lymph of experimental animals before and after feeding the lipoidal product. The figures show that cholesterol is readily absorbed from the intestinal tract through the chyle, and may be recognized in the contents of the thoracic duct. When cholesterol is fed entirely in the free condition, a portion is esterified during the absorption, and appears so in the chyle. Cholesterol esters, in turn, may be split into their component groups. Hence, either in the intestinal contents or in the wall of the intestine, processes of esterification or hydrolytic cleavage may take place. As a result, the absorbed product shows approximately the same proportion of free cholesterol to ester as is found normally in the chyle. Evidently this ratio tends to be preserved. The findings of Mueller do not prove directly that no cholesterol is absorbed immediately into the blood; but the quantitative data make such a process appear as a more unlikely probability.

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[1] Mueller, J. H.: The Dissimilation of Cholesterol and Its Esters, Jour. Biol. Chem., 1915, xxii, 1.

THEORIES OF DELIRIUM TREMENS

Since the Harrison Narcotic Law went into effect, many drug habitués, having exhausted their supply and failing to obtain more, have turned to alcohol as a substitute. In some who had been drinking for years, the sudden and marked increase in the amount of liquor consumed has led to the frequent occurrence of delirium tremens. This brings up anew the question as to what is the final factor in the production of delirium tremens.

Chronic alcoholic poisoning produces well-known changes in the central and peripheral nervous system. Among these are vacuolization and high grade degeneration of the nerve cells with atrophy and shriveling; fatty infiltration of the medullary substance; dissolution of the chromatin structure; inflammatory infiltration of the pia; internal hydrocephalus, and degeneration of the peripheral nerves. Cases of delirium tremens may present the same changes, or the chronic changes may be of higher grade. Even instances of Korsakoff's psychosis may differ from chronic alcoholism only in a more severe change in the ganglion cells. As yet, however, no changes have been found in the brain which explain why a man who has been drinking for years suddenly develops a delirium which runs a definite course of from three to five days or even longer.

It has been thought that delirium tremens is an acute infection occurring in chronic alcoholics. Nevertheless, many cases run their entire course without fever, and Nonne[1] found blood cultures negative in fifteen consecutive cases examined by him. Döllken[2] believes that continued drinking of alcohol results in the production of a poisonous substance in the brain itself, and that an accumulation or concentration of this substance produces delirium tremens. Jacobson[3] explains the delirium as an autointoxication, the toxin arising from the pneumococcus gaining entrance through the liver, the kidney or the intestinal tract, and acting on a brain which has been poisoned over a long period of time by alcohol. The view of Hertz[4] differs from this in that the supposed poison which precipitates the delirium comes from an insufficiency on the part of the kidney, this in turn being due to the acute nephritis which usually accompanies delirium tremens. That albuminuria is present and seemingly dependent on this delirium was long ago maintained by Fürstner,[5] and has been noted repeatedly since. According to Bonhoeffer,[6] chronic alteration in the intestinal tract is responsible for the elaboration of poison which is normally excreted through the lungs. In diseases of the lungs, and especially in pneumonia, an altered gas exchange occurs, the excretion of this poison is hindered and delirium tremens is the result. Wagner von Jauregg[7] believes that the liver rather than the lungs is the organ which fails to eliminate the poison elaborated in the gastro-intestinal tract, and he thinks that this failure is due to the changes occurring in the liver in chronic alcoholism. Kauffmann[8] has asserted that this poison is a carbon derivative acting on a medulla altered as a result of chronic alcoholism. He believes that the delirium will persist until the production of this carbon derivative stops.

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[1] Nonne: Bakteriologische Blutuntersuchung bei Delirium Tremens, Allg. Ztschr. f. Psychiat., 1904, lxi, 220.

[2] Döllken: Die körperlichen Erscheinungen des Delirium Tremens, Leipzig, 1901.

[3] Jacobson: Ueber die Pathogenese des Delirium Tremens, Allg. Ztschr. f. Psychiat., 1854, xi, 221.

[4] Hertz: Pathogenese von Delirium Tremens, Neurol. Centralbl., 1901, xx, 524.

All of these theories demand as a preliminary condition a poisoned and permanently altered central nervous system on which a poison acts. The objection is raised that many chronic drinkers develop marked brain and visceral changes and yet never suffer a delirium. In answer it has been suggested that, in patients who acquire delirium tremens, the brain has undergone some special change. As a result of this change, an autointoxication produces a delirium; or one may assume the view of Raimann,[9] that for each poison elaborated in chronic drinkers, a special psychosis results. Thus one poison causes delirium tremens, a second Korsakoff's psychosis, and a third the poliomyelitis superior acuta of Wernicke.

The possibility that delirium is due to an increase in the pressure and amount of the spinal fluid has recently been considered.[10] There are two other theories of special interest, the first on account of its ingenuity, the second on account of its bearing on statistical evidence. Jauregg[11] of Vienna assumes that the body of chronic alcoholics protects itself by the production of an antialcohol which is of the nature of an antitoxin. When a hard drinker suddenly stops taking alcohol, this antialcoholic substance, having no alcohol to which to affix itself, acts on the body in such a manner as to produce delirium tremens. Hare[12] maintains that the development of delirium is due to a sudden fall in the amount of alcohol circulating in the blood of alcoholics. His evidence is drawn from a study of seventy-five cases of delirium tremens, in nearly all of which there was a great reduction in the amount of alcohol absorbed prior to the onset of delirium. In many of these instances the alcohol was withheld; in others vomiting prevented its absorption.

Numerous objections have been raised to each of these theories. The views concerning poisons and autointoxications have been vigorously attacked because there is as yet no definite proof that a poison is elaborated. There are already adversaries to the recent notions concerning an increased pressure of the spinal fluid and the fall of alcohol in the circulating blood, all of which indicates that much work remains to be done before the final answer to the problem is reached.

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[5] Fürstner: Ueber Albuminurie bei Alcoholisten, Arch. f. Psychiat., 1815-1816, vi, 755.

[6] Bonhoeffer: Klinische und anatomische Beiträge zur Kenntnis der Alkoholdelirien, Monatschr. f. Psychiat. u. Neurol., 1895, i, 229; Pathologische und anatomische Untersuchungen an Alkoholdeliranten, ibid., 1899, v, 379.

[7] Von Jauregg: Die Giftwirkung des Alcohols bei einigen nervösen und psychischen Erkrankungen, Wien. klin. Wchnschr., 1901, xiv, 359.

[8] Kauffmann: Stoffwechseluntersuchungen bei Alkoholdeliranten, Jahrb. f. Psychol. u. Neurol., 1908, x, 22.

[9] Raimann: Beiträge zur Lehre von den Alkohol Augenmuskellähmungen, Jahrb. f. Psychiat. u. Neurol., 1890, xx, 136.

[10] Lumbar Puncture in Delirium Tremens, editorial, The Journal A. M. A., Oct. 30, 1915, p. 1557.

[11] Jauregg, quoted by Wassermeyer: Arch. f. Psychiat., 1908, xliv, 861.

[12] Hare: Alcoholism, Its Clinical Aspects and Treatment, London, J. and A. Churchill, 1912.

A NATIONAL BOARD OF MEDICAL EXAMINERS

Preliminary steps have been taken for the organization of a national board of medical examiners, to be established with the government medical services as a nucleus. A body composed of fifteen physicians,[1] including representatives of the government services, is now at work on the details by which a working organization can be established. The original intention was to have representatives on the board from a number of prominent medical organizations, including the American Medical Association; but at a meeting held recently in Washington it was decided that no organizations of physicians as such should be directly represented on the board. We believe that this decision is a wise one, even though it eliminates the American Medical Association from direct representation on the board. The matter came before the House of Delegates of the American Medical Association last June, as it was a part of the president's address; the only action taken was to refer the matter to the Council on Medical Education for further consideration. It is proposed to make this matter a subject of general discussion at the conference of the Council to be held in Chicago, February 7, next. A symposium on the subject is being arranged, and several prominent speakers, including representatives of the government services and state licensing boards, will participate.

That there is need of a national board of medical examiners practically all are agreed. Such a board must be essentially a voluntary organization — unless created in some way by the national government — the purpose of which must be not to displace but to cooperate with the various state medical licensing boards. It is essential that the educational qualifications required of those who are to take the examination should be as high as the highest required by any state board. The methods of verifying and evaluating credentials of educational qualifications must be so thorough as to make it impossible for any poorly qualified individual to slip through. Its examination must be of such unquestioned thoroughness as to make it worthy of recognition by all state licensing boards. If these conditions obtain, and especially if the certificate of this board is accepted for admission to the three government services in lieu of the examinations at present required, all state licensing boards would undoubtedly in time recognize it as an acceptable qualification for the license in their various commonwealths. Progress in this respect would be a parallel to what has taken place in Canada, where, following the organization of the Medical Council of Canada, it was necessary to secure recognition of it in each province of the Dominion.

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[1] The present members of the national board are: Admiral William C. Braisted, Washington, surgeon general United States Navy, president; Major General William C. Gorgas, Washington, surgeon general, United States Army; General Rupert Blue, Washington, surgeon general, United States Public Health Service; Colonel Louis A. La Garde, Washington, United States Army, treasurer; W. C. Rucker, Washington, assistant surgeon general, United States Public Health Service; Commander E. R. Stitt, Washington, United States Navy; Dr. Herbert Harlan, Baltimore, representing the Federation of State Medical Boards; Dr. Isadore Dyer, New Orleans; Dr. E. Wyllys Andrews, Chicago; Dr. Louis E. Wilson, Rochester, Minn.; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Henry Sewall, Denver; Dr. W. L. Rodman, Philadelphia; Dr. Austin Flint, Jr., New York, and Dr. Horace D. Arnold, Boston.

Such a board would make for greater uniformity and higher standards not only in educational qualifications but also in the character of the examination for the license to practice medicine in every state.

Current Comment

A THEORY OF THE PRODUCTION OF DIURESIS

Some time ago Cow, of the pharmacological laboratory at Cambridge, England, made the interesting and unexpected observation that a strictly physiologic quantity of saline solution or of water, which may fail to produce any increase in diuresis when it is injected directly into the circulation, may nevertheless give rise to a distinct increase when administered by the mouth. Usually, intravenous injections of active products are more potent than oral administration. Hence the suggestion that there exists in the gastro-intestinal mucous membrane a substance which presumably is taken up by water during absorption from the alimentary tract, and that this substance, either directly or indirectly, is largely concerned in the production of diuresis.[1] More recent investigations by the same author[2] have elucidated the probable sequence of events concerned in this phenomenon. They show that perfusion of the kidney with extracts of the duodenal mucous membrane gives rise to diuresis provided the fluid has previously been passed through the general circulation or through the circulation of the head and neck. Circulation through a headless subject is ineffective. We need not here detail the evidence which furnished the explanation. It points to the pituitary body, an organ which gives an extract of known diuretic action, as the connecting link between the introduction of the duodenal mucous membrane extract and the subsequent diuresis. Ingestion of water or saline solution may thus be assumed to lead to an absorption of some substance contained in the gastro-intestinal mucous membrane which in turn stimulates the pituitary to discharge the product that induces diuresis. The suggested succession of events reminds one of the sequence by which gastric chyme is believed to liberate in the intestinal wall the secretin which thereupon provokes the flow of pancreatic juice. In the case of diuresis cited there is a duplication of hormone effects. Several phenomena are in accord with the hypothesis of Cow. The long latent period which occurs between an intravenous injection of duodenal membrane extracts and the onset of increased diuresis is explicable on the basis of the time required for the succession of indirect events including the pituitary functioning. It also indicates why in otherwise intact experimental animals whose pituitary bodies have been destroyed, intravenous injections of duodenal mucous membrane extracts produce no characteristic diuretic effects such as follow when the pituitary is intact. The suggested interrelation between the mucosa of the intestine and the pituitary is an unexpected discovery which, if it shall be confirmed, adds another to the instances of remarkable "long-distance" chemical regulative mechanisms in the organism.

THE SOCIAL TREATMENT OF TUBERCULOSIS

The significant feature of the Home Hospital experiment of the New York Association for Improving the Condition of the Poor[1] is its recognition of the fact that tuberculosis is a social as well as an individual disorder, affecting people's lives at many points, and therefore to be attacked coincidently from several sides. The New York City Department of Health, among others, is doing work based on a recognition of this fact. Mrs. Herman M. Biggs, wife of the commissioner of health of New York State, in an address delivered before the New York Association of Tuberculosis Clinics,[2] describes the social activities of the Chelsea Clinic, located in the west side tenement district of New York. A class in dietetics gives instructions to mothers and other homemakers on the values of foodstuffs and the preparation of simple, nourishing, inexpensive foods. Trained dietitians are sent into the homes of tuberculous families under observation, to teach the members of the family how to market and cook. Families are encouraged and, so far as possible, assisted to improve their housing conditions; but this, though most important, is expensive and difficult. Physical training classes for the children have been in operation for about two years, and the results of corrective and developmental exercises have been most encouraging. A nursery, a kindergarten and a roofgarden, where the children spend most of their time, furnish means of removing them from tuberculous homes during the day. The children take

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1. Cow, D.: Arch. f. exper. Path. u. Pharmakol., 1912, lxix, 397; Jour. Physiol., 1914, xlviii, 1.
2. Cow, D.: Diuresis—The Pituitary Factor, Jour. Physiol., 1915, xlix, 441.

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1. A Method of Attack on Poverty and Tuberculosis, Current Comment, The Journal A. M. A., Nov. 27, 1915, p. 1922.
2. Reported in the Modern Hospital, September, 1915, p. 203.

long naps, and are given a nourishing supper before their return home. Mrs. Biggs does not give figures on comparative cost and efficiency, such as were furnished by the Association for Improving the Condition of the Poor with regard to the Home Hospital. A comparison would doubtless be difficult to make, but it would be instructive to have some of the concrete results of this interesting work presented for the guidance of tuberculosis workers elsewhere.

ANOTHER TRAGEDY OF UNPREPAREDNESS

In a football game at St. Louis several weeks ago, one of the players received an injury to the cervical spine and was taken to the City Hospital. After careful examination it was determined that surgical interference was not indicated, in that fragments of the vertebra were not then pressing on the cord; that the character of the injury made the patient's condition practically hopeless, and that the treatment indicated was absolute quiet and immobilization. The parents of the boy were frankly told the seriousness of the injury. In the face of these conditions, according to the *Journal of the Missouri State Medical Association,*[1] an osteopath, who had been engaged by the father, wanted to treat the patient immediately. The surgeon in charge, fearing injudicious handling which would deprive the patient of any existing chance for recovery, refused to permit the osteopath's treatment. The osteopath, accompanied by the boy's father, then obtained an order from the mayor to the hospital commissioner, relieving the hospital physicians from further responsibility and permitting the osteopath to "try to save the patient as the doctors had 'given him up.'" Says the Missouri journal:

> For five days the patient had been resting quietly with a gradual lessening of the effects of the frightful shock from the hemorrhage into the cord. Then the osteopath applied a jury-mast to the victim's head, which resulted in renewed shock, a scream and a plea from the patient to remove the apparatus. The patient became cyanotic. The extension was removed on account of the patient's bad condition. Death followed about two hours later.

The necropsy report showed that death was due to "hemorrhage into the cord and fracture of the cervical vertebrae," thus supporting the diagnosis of the physicians and proving that their treatment had been correct. The *Journal* continues:

> Now it seems clear that the mayor and the director of public welfare actually took charge of a poor unfortunate who was receiving the best possible care which could be provided in a metropolis and noted medical center. They dismissed the skilled attendants who were honest and had informed the relatives of the actual state of affairs and turned the patient over to the distracted and deluded father and mother and an arrogant, boastful osteopath.

Here, it seems, is another instance in which the delicate watch was given over for repairs, not to a skilled watchmaker, but to a blacksmith. The change of the patient from a condition of quiet restfulness, with its possible chance for recovery, to one of sudden pain, shock and speedy death was too prompt to be interpreted otherwise than as due to the use of methods entirely unwarranted by the conditions. The safety of the patient demands that whoever assumes the rôle of the physician must have had sufficient medical training to know when such treatment is best and when it is bound to do more harm than good.

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[1] December, 1915, p. 544.

SECRETORY NERVES FOR THE KIDNEY

The anatomic features of the innervation of the kidney are well understood, and the relation of the nervous system to its blood supply has been fairly well elucidated in recent years. Vasomotor impulses which change the circulation in the renal organs promptly affect the condition of diuresis in them. From the richness of their nerve supply as well as by analogy with other active glands, one might expect the kidneys to contain true secretory nerves. The answer to this question has been difficult to secure, particularly because of the sensitiveness of the kidney structures to even minor variations in the blood supply and arterial pressure, as well as to the presence of small quantities of chemical substances in the blood stream. Only when these variables are controlled and accounted for can alterations in urine production be charged to nervous stimulation. The remarkable adaptability of the kidney function to changes in the composition of the fluid perfusing it is undoubtedly in large measure a response to chemical factors. Nevertheless there have been occasional suggestions of an influence exerted by the nervous system directly on the active cells. Some time ago, experiments by Asher and Pearce[1] were cited which these investigators interpreted as demonstrating the presence of renal secretory fibers in the vagus nerve. The technical difficulties of the investigation were very great, and the conclusions have not remained unchallenged. Asher and Pearce depended on the rate of urine formation for evidence of the changes in the functional activities of the renal cells under vagus stimulation. Pearce and Carter,[2] of the physiologic laboratory at the Western Reserve University in Cleveland, have sought for corroboratory evidence of renal activity under vagus stimulation in another manner. Cellular metabolism is well known to be attended with increased consumption of oxygen. The action of some diuretics, for example, is accompanied by increased gaseous metabolism of the kidney. This factor was investigated, therefore, in relation to vagus stimulation. Pearce and Carter failed to obtain evidence of any increased gaseous exchange, and their newest evidence accordingly speaks against the supposed existence of renal secretory fibers in the vagus nerve.

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[1] Asher, L., and Pearce, R. G.: Ztschr. f. Biol., 1913, lxiii, 83. Do the Kidneys Have Secretory Nerves? editorial, The Journal A. M. A., Dec. 6, 1913, p. 2073.

[2] Pearce, R. G., and Carter, E. P.: The Influence of the Vagus Nerve on the Gaseous Metabolism of the Kidney, Am. Jour. Physiol., 1915, xxxviii, 350.

Safe Schools.—Public schools are a public trust. When the parent delivers his child to their care, he has a right to insist that the child under the supervision of the school authorities shall be safe from harm and will at least be handed back to him in as good condition as he was at first.—*Wisconsin State Board of Health Bulletin.*

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Personal.—Dr. John Little, Tuscaloosa, has been reelected treasurer, and Dr. William M. Faulk, Tuscaloosa, secretary of the board of trustees of the Alabama Insane Hospital.

State Tuberculosis Commission Appointed.—The governor has appointed the following as the Alabama Tuberculosis Commission created by the last session of the legislature: Dr. William H. Sanders, Montgomery, ex-officio, and Drs. Cabot Lull, Andrew L. Stabler and Benjamin L. Wyman, Birmingham; R. C. Long, Carbon Hill; Rev. George E. Birmingham and Messrs. J. T. Ashcraft, Florence; A. R. Brindley, Gadsden, and E. R. Brown, Birmingham.

Health Campaign in Etowah County.—State Health Officer Sanders has notified Dr. Claude L. Murphree, Gadsden, health officer of Etowah County, that he intends shortly to inaugurate a campaign for better sanitation and health in the county, and has asked for the names of ten places that will be likely to give audience to such a campaign. The county will be properly circularized and experts will urge the adoption of methods of sanitation which will bring about a revolution in health conditions.

Hospital Notes.—Work will shortly be started on the addition to the Birmingham Infirmary, West End. The addition will be in two units, 50 by 100 feet and three stories in height and in them will be housed a maternity ward and a ward for medical treatment.——A meeting was held in the court house at Clanton, November 20, to make arrangements for the erection of a hospital building at Clanton, for Chilton County.——A mass meeting of citizens of Dothan and Houston counties was held, November 8, at the State Hospital at Dothan to raise $40,000 for building and equipping a modern general hospital for the city.——The southside jail, Birmingham, has been transformed into a charity hospital under the care of the city physician.

ARKANSAS

State Society to Meet in Texarkana.—The annual meeting of the Arkansas Medical Society will be held in Texarkana early in May next.

Smallpox.—An epidemic of smallpox exists at Heber Springs. According to Dr. Charles W. Garrison, state health officer, more than fifty cases have developed in the town.

State Antituberculosis Society.—At a meeting of the State Society for the Study and Prevention of Tuberculosis in Little Rock, November 24, the local society was absorbed and new officers were elected. On the new board of directors appear the names of the following physicians: Drs. St. Cloud Cooper, Fort Smith, and Clinton P. Meriwether, Charles R. Chestnut, and Charles W. Garrison, Little Rock.

General Hospital Favored.—The closing session of the third annual conference of health officers of Arkansas, November 23, was a joint meeting between the health officers and the faculty members and alumni of the University of Arkansas, at which a resolution favoring the establishment of a state general hospital was unanimously adopted. A committee of five physicians was appointed to work out a plan for establishing a hospital and to form organizations in each county to work for the passage of a law making appropriations for its maintenance.

Personal.—Dr. Frank B. Young, superintendent of the State Hospital for Nervous Diseases, Little Rock, has resigned to take effect November 31. The board of control accepted his resignation and tendered the position to Dr. James L. Greene, Hot Springs, whom Dr. Young succeeded.——In honor of his seventieth birthday Dr. M. Donaldson, Rector, was given a banquet by local physicians and druggists, November 18.——Dr. Delparde W. Roberts, senior physician of the State Hospital for Nervous Diseases, Little Rock, has resigned to accept a similar position at the Sacred Heart Hospital near Milwaukee.

ILLINOIS

Water Survey Chemist Transferred.—H. P. Corson, instructor in sanitary chemistry and bacteriology for the Illinois State Water Survey, has been appointed sanitary chemist in the United States Public Health Service at Grove City, Pa.

New Dispensary Opened.—A free dispensary has been opened in connection with St. John's House, Ridgely, Springfield. The institution will be open on Saturdays from 10 to 12 o'clock, and a physician and nurse will be in regular attendance.

Epidemic Diseases.—The public schools of Sparland have been closed on account of the presence of smallpox.——The schools in DuQuoin have been dismissed and the buildings fumigated on account of the presence of twenty-five cases of diphtheria in the city.

Personal.—Dr. Warren R. Rainey, Salem, a member of the Chicago unit, has returned from Flanders.——Dr. Henry S. Metcalf, Mt. Carroll, is reported to be seriously ill with septicemia in the Freeport General Hospital.——Dr. Wilfred H. Gardner, Bloomington, who has been serving as surgeon in a British Hospital in London, for almost a year, sailed for the United States December 8.——Dr. Marion E. Reed, East St. Louis, has returned after eight years in the Samoan Islands.——Dr. Clarence M. Cheadle, Ashton, is at Nish, Serbia, recovering from typhus fever.——Dr. Emil Lofgren, Rockford, has been elected president of the Winnebago County Antituberculosis Association.——Dr. John P. Benson has been elected president and Dr. Herbert S. Worthley, secretary, of the medical staff of St. Joseph's Hospital, Joliet.——Dr. William C. Bridge, Elgin, fell on a slippery pavement, November 22, receiving a severe scalp wound.

Chicago

Physicians' Club Meets.—The Physicians' Club held its second dinner of the year, November 23, when the psychopathic situation was discussed. Chief Justice Harry Olson of the municipal court presided.

Hospital Addition Approved.—Plans for a $1,000,000 addition to the Cook County Hospital which is to contain a model hospital kitchen, have been approved by members of the Board of County Commissioners.

New Charities Building Dedicated.—The building at Wood and Selden Streets, erected at a cost of $200,000 by Julius Rosenwald, housing the West Side Charities and to be used as a general administration building by the Associated Jewish Charities, was dedicated with formal ceremonies on November 28.

Annual Address at Institute of Medicine.—At the annual meeting of the Institute of Medicine of Chicago, December 7, Drs. Thomas J. Watkins, Robert B. Preble and Frank Cary were elected members of the board of governors for a term of five years. The annual address was delivered by the president, Dr. William E. Quine, on "Medical Teachers and Teaching," and Professor Stieglitz of the University of Chicago and Professor Kendall of Northwestern University spoke on the "Relation of the Institute to Medical Progress."

Children's Health Crusade.—The December issue of the *Open Air Smile*, the organ of the Elizabeth McCormick Open Air School, is devoted to the Children's Health Crusade Day, December 10. The superintendent of schools has requested teachers in all schools to see that this journal is distributed to each child and that it be used at reading lessons and at convocation exercises and as a test for health talks on that day. A similar use will be made of this issue of the periodical in the parochial schools of the city.

Personal.—Dr. William A. Clark sailed for Belgium, December 4, to be director of an American Red Cross unit at Hospital L'Ocean, La Panne, Belgium.——Dr. Maurice B. Wallin, ambulance surgeon of the West Chicago Avenue Police Station, was injured in a collision between his automobile and a street car, November 30.——Dr. John Dill Robertson has been appointed chairman of the committee on sanitation of the Chicago Bundle Days Committee.—Dr. Irving F. Stein has been appointed associate in obstetrics on the staff of the Michael Reese Hospital.——Dr. Otto T. Freer delivered an address before the German Medical Society of New York on December 6. His subject was "Opening the Frontal Sinus Through the Nose."

IOWA

Hospital News.—Dr. George W. Franklin has opened a hospital in Jefferson. The institution has five rooms and accommodation for seven patients.——Dr. Joseph J. Meehan has purchased the Young property at Denison and will remodel the house for a private hospital or sanatorium.

New Antituberculosis Societies.—The Sioux City and Woodbury County Society for the Prevention of Tuberculosis was organized November 12 to take over the work that has been performed by the Visiting Nurses' Association.——A society for the prevention of tuberculosis was organized at Boone, November 23, at which Dr. Albert B. Deering was elected president.

Personal.—Dr. W. T. Graham, superintendent of the Methodist Hospital, Des Moines, has been placed in charge of the hospital of the state university, Iowa City.——Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, is reported to be ill in a hospital in Ruthven.——Dr. J. Robert Wright has been appointed assistant superintendent of the State Hospital for Inebriates, Knoxville, succeeding Dr. J. Van Meter, who has accepted a position at the Clarinda State Hospital.

Vital Statistics.—Iowa, with a population of 2,225,000, in August had 1,534 deaths. According to the report of the State Board of Health, 184 of these deaths were in children under 1 year; 55 in children from 1 to 5 years; 33 from 5 to 10 years. There were 23 deaths of persons 90 years of age or over. The number of deaths in state institutions was 30. There were no deaths in the state during the month from malaria, smallpox or rabies. There were 21 deaths from typhoid fever, 7 from measles, 8 from whooping cough, 2 from pellagra, 5 from tetanus, 169 from cancer and other malignant tumors, 167 from organic diseases of the heart, 106 from nephritis and other diseases of the kidneys, 17 from puerperal septicemia and other puerperal diseases. There were twenty-three suicides.

KENTUCKY

New Hospitals.—The Citizens' National Hospital, a continuation of the hospital of the old Louisville National Medical College, was reopened in new quarters at 1525 W. Chestnut Street, Louisville, November 9.——At a meeting of the Clark County Medical Society at Winchester November 5, it was announced that $17,500 was now available for the county hospital project. The Fiscal Court has made a pledge of $5,000 as soon as $25,000 has been raised. The society now asks that this amount be reduced so that the court's donation may become available when $20,000 has been raised.——A meeting was held in Mt. Sterling, November 6, in the interest of a hospital for Montgomery County for which $25,000 is required. A committee was appointed to visit Harrodsburg and inspect the new hospital there.——The new Harrodsburg Hospital, erected at a cost of $13,000, was formally dedicated October 22. Dr. Lewis S. McMurtry, Louisville, delivered the principal address.

LOUISIANA

Health Exhibit Car in Texas.—The educational hygiene exhibit car of the Louisiana State Board of Health was on exhibit in Dallas during the meeting of the Southern Medical Association.

Quarantine Not to be Moved.—Surgeon-General Rupert Blue, U. S. P. H. S., after an investigation of the quarantine station, has decided that it is unnecessary to remove the station closer to New Orleans.

Personal.—Dr. Joseph D. Tuten has succeeded Dr. S. George Kreeger, resigned, as president of the Board of Health of Lake Charles.——At a meeting of the Fifth District Medical Society at Tallulah, a medal was presented to Dr. Thomas E. Wright, Monroe, for original research in the treatment of malaria by the intravenous injection of quinin. The medal was presented by Dr. Oswald W. Cosby on behalf of the society.——Dr. Clarence Pierson, superintendent of the East Louisiana Hospital for the Insane, Jackson, has resigned.——Dr. E. M Ellis, Crowley, has been appointed a member of the State Board of Health, succeeding Dr. Henry B. White, Gueydan, who has been made state medical inspector.

MARYLAND

Hospital Dedicated.—The new Emergency Hospital, Easton, was formally dedicated November 23.

Personal.—Dr. Nathan G. Keirle has been reappointed chief medical examiner of Baltimore city by Health Commissioner John D. Blake. Dr. Keirle has held this position for many years.——Dr. Henry G. Branham was also reappointed assistant chief medical examiner.——Dr. Henry O. Reik gave the third of a series of lectures during the past week, the subject being "Our National Parks."—Dr. T. C. Janeway has been elected president of the Baltimore community workshop.

Health Department Gets Additional Appropriation.—Health Commissioner Blake has been allowed practically all he asked for in the way of appropriation, except that required for a new hospital building at Quarantine and an additional ward building and a home for nurses at Sydnum. He was, however, given an appropriation for an additional tuberculosis dispensary in North Baltimore. The total increase will aggregate about $40,000.

Society Meets at Training School.—The Baltimore County Medical Society held a meeting November 17 at the Rosewood Training School, Owings Mills. The Society was entertained at luncheon by Dr. Frank W. Keating, superintendent of the school, and later made an inspection of the building under the guidance of Dr. Keating and his assistant. Clinics were afterward held by Drs. Keating and Kenneth B. Jones, Baltimore.

Charity Campaign Opened.—A campaign to raise $225,000 for the support of the organizations composing the Alliance of Charitable and Social Agencies of Baltimore was begun during the past week. The campaign was organized at a dinner held at the Emerson Hotel when various teams were appointed to secure the money in the time limit, two weeks. A luncheon is held every day at the City Club, at which time each team reports the results of its day's work. Thus far over $77,000 has been raised.

University to Ask State Funds.—The University of Maryland will ask the legislature at its next session to grant a substantial annual appropriation. Of recent years the institution has received no money from the state except the grants to the hospital and St. John's College, which is an integral part of the university. Since the recent consolidation of the university with the College of Physicians and Surgeons, there has been greater need for funds, and although the legislature appropriated $15 000 for the school in 1915 and a like sum in 1916, the money is said not to have been paid to the institution.

MASSACHUSETTS

Cancer Clinic to be Established.—Carney Hospital, Boston, announces the establishment of a clinic for the treatment of cancer and other malignant diseases by the use of radium. The clinic will be opened late this month or early in January. It will be under the supervision of Dr. John T. Bottomley and the radium for use has been donated by M. Douglass Flattery of Boston.

School Physicians Named.—The school committee of Boston has appointed forty physicians as inspectors of schoolchildren. Each physician will receive a salary of $504, excepting one later to be selected, who will act in the employment certificate office and will receive $900 a year. These appointees will take the place of the health board physicians who formerly were assigned to duty in public schools.

Honor Old Members.—Drs. Edward Cowles, Plymouth; Samuel H. Durgin, Duxbury; A. Elliott Payne, Brockton; Horatio F. Copeland, Whitman, and Calvin Pratt, Bridgewater, all of whom have been in practice more than fifty years and all of whom, in addition, were veterans of the Civil War and are still engaged in active practice, were guests of honor at a banquet given by the Plymouth Medical Society at Brockton, November 23. Dr. Gilman Osgood, Rockland, officiated as toastmaster.

Decennial of Social Service Department.—The tenth anniversary meeting of the social service department of the Massachusetts General Hospital was held in the institution, November 30, Dr. Richard C. Cabot, presiding. The program includes papers by Mr. Homer Folks on "Humanizing the Institution"; by Mrs. William H. Lathrop on "The Responsibilities of Popularity"; and a discussion by Dr. Richards Eustis, Cambridge; Miss Clara M. Welsh, and Thekla Andren on "What Was Done for Rebecca Aronobsky by Those Who Did It," an illustration of the care of heart disease in children.

Personal.—Dr. Hugh Cabot, Boston, read a paper at the monthly meeting of the surgical section of the Hartford (Conn.) Medical Society, November 22.——Dr. Stanley S. Osburn, Peabody, who has been on duty at Uskub, Serbia, is believed to have been taken prisoner by the Bulgarians.——Dr. George A. Powers, Worcester, has been appointed associate medical examiner in Worcester County and Dr. William O. Faxon, Stoughton, has been reappointed medical examiner for Norfolk County.——Dr. Robert Williamson Lovett, Boston, has been elected John B. and Buckminster Brown professor of orthopedic surgery in Harvard Medical School.

MINNESOTA

Anthrax.—A death from anthrax was reported in the returns to the State Board of Health for October, in the person of a farmer's wife at Rapidan, Blue Earth County, who was said to have been stung on the cheek by a bee or wasp. The diagnosis was made by two physicians of Winona. The State Board was not notified of the case until the woman's death.

Territory Served by Mankato Laboratory.—The State Board of Health has authorized the extension of the territory served by the Mankato Branch Laboratory. This will include all the counties of Lincoln, Lyon, Redwood, Blue Earth, Brown, Nicollet, Rock, Nobles, Jackson, Martin and Faribault and portions of Yellow Medicine, LeSueur and Waseca counties. The examinations made by the laboratory include sputum examinations, the Widal test and cultures for diagnosis and release from quarantine for diphtheria.

Sanatorium Opened.—The new tuberculosis sanatorium for Goodhue County, erected at a cost of $36,000 at Mineral Springs, near Cannon Falls, which will accommodate from thirty-five to forty patients, has been officially dedicated and is open to receive patients. With the opening of this institution, four similar sanatoriums are now in operation, and ten others under construction.——At the state sale of lands held at Brainerd, November 20, the State Fish Hatchery, Deerwood, was sold at its appraised valuation to the Crow Wing-Aitkin County Tuberculosis Sanatorium Commission. The tract of land purchased includes 44¼ acres, with an eight-room two-story modern house. The site is about 2 miles from Deerwood, near the Northern Pacific and Soo railways.

Personal.—Dr. William R. Bagley has resumed the practice of medicine in Duluth, after ranching in Oregon for five years.——Dr. James S. Gilfillan, St. Paul, was operated on for appendicitis in St. Luke's Hospital in that city, December 1.——Dr. Carl A. Scherer, Minneapolis, has moved to Fargo, N. D.——Dr. Ernest E. Wells, Stillwater, coroner of Washington County, has assumed duties as sheriff on the death of that officer.——Dr. Gerald R. Maloney, Belle Plaine, who has been ill, has recovered and resumed practice.——Dr. Frederick U. Davis, Faribault, fractured his arm while cranking his automobile, November 14.——Dr. Edwin S. Muir, Winona, who was operated on recently for appendicitis at the Winona General Hospital, is convalescent.——Dr. Honore D. Valin, pathologist to the St. Peter State Hospital, has resigned to accept a similar position at Fort Wayne, Ind.——Drs. Alexander H. Brown and Thomas Lowe have associated themselves together to conduct a hospital to be known as the Pipestone Hospital.——Dr. Francis H. Gambell was elected mayor of Thief River Falls at the recent election.——Dr. Holland T. Ground of the staff of St. Peter's State Hospital, who was operated on for appendicitis recently, is convalescent.

NEW JERSEY

Water Company Held for Typhoid.—The Mt. Holly Water Company has been held responsible for causing typhoid fever during the outbreak in 1912, by a jury in the Burlington County Court which awarded $500 to William S. Fryer in his suit to recover on account of the illness of his daughter. This is the second successful suit against the water company.

To Enlarge Tuberculosis Pavilion.—Release from the crowded conditions of the Tuberculosis pavilion of the Soho Isolation Hospital, Newark, was promised, November 17, when the building committee of the board of freeholders eliminated the proposed new laboratory and substituted an additional ward for tuberculosis patients. A bond issue of $60,000 has been asked for this purpose.

Personal.—Dr. Joseph W. Williams has been appointed city physician of Paterson to succeed Dr. Paul E. Rauschenbach, resigned.——Dr. James J. McGuire, Trenton, has been appointed a member of the State Board of Medical Examiners, succeeding the late Dr. Horace G. Norton.——Dr. Jacob C. Price, Branchville, has been appointed chief of the division of bureau administration; R. B. FitzRandolph, chief of the laboratory of hygiene; Dr. A. Clark Hunt, Metuchen, chief of the bureau of medical supervision, and Dr. Millard Knowlton, Trenton, chief of the bureau of education and publicity of the State Department of Health.——Dr. Britton D. Evans, Greystone Park, has been appointed chairman of the committee to prepare legislation for better care of the insane.

NEW YORK

Personal.—Dr. C. M. Louis Hacker, Albany, has resigned as instructor in surgical pathology in the medical department of Union University, Albany.

New York City

Home from Serbia.—Dr. George F. Adair, Lynbrook, L. I., has returned from Serbia, where he was in the service of the Serbian Red Cross.

New Convalescent Home.—The New York Association for Improving the Condition of the Poor has opened a convalescent home for wage-earners at Sea Breeze, Coney Island.

Food Inspector Dies.—Bayard Clarke Fuller, supervising inspector of food in the New York Department of Health from 1890 to 1911, died in the Post-Graduate Hospital, New York City, November 11, aged 52.

Memorial to Dr. Blackwell.—A tablet in memory of Dr. Emily Blackwell and her sister, Dr. Elizabeth Blackwell, has been placed in the New York Infirmary for Women and Children, which was founded by them. The bronze medallion on the tablet is the work of Victor D. Brenner of New York.

Leprosy.—Two patients with leprosy have recently been the subject of investigation by physicians of the New York City Health Department. It is said there are only ten known lepers in the city, all but three of whom are confined in institutions. These three are under surveillance by the health board.

Hospital for Wall Street Assured.—The proposed Broad Street Hospital now seems assured, as it is announced that $50,000 has been raised. This sum was fixed by other wealthy men in the Wall Street district as the necessary requirement before they would contribute, and makes the prospect of increased funds assuring.

Academy of Medicine Elects Officers.—At the stated meeting of the New York Academy of Medicine held December 2, officers were elected to fill expired vacancies. The term of the president, Dr. Walter B. James, does not expire until 1916. Dr. George David Stewart was elected vice president and Dr. Frederick T. Van Beuren, Jr., recording secretary.

Personal.—Dr. Mary M. Crawford has returned from work with the American Ambulance, Paris.——Dr. Andrew J. Gilmour lectured before the Vassar Institute, Poughkeepsie, November 30, on "Climbing the Canadian Alps."——Dr. Robert C. James has retired from active practice and will make his home near Lexington, Ky.——Dr. Sumner Everingham has returned from eight months' service in Serbia.

Medical Relief Expedition for Germany.—The second medical relief expedition for Germany and Austria-Hungary, dispatched by the American Physicians Expeditions Committee, sailed for Copenhagen on the *Hellig Olav,* November 25. The expedition is headed by Dr. Fred Kammerer, who takes with him three other surgeons and six nurses and a complete outfit for the equipment of a hospital with 300 to 400 beds.

Demand for Women Doctors Starts Campaign.—The board of trustees of the New York Medical College and Hospital for Women has set out to raise $200,000 by Sept. 1, 1916. The money will be used to erect what has been called "an emergency plant." This step is being taken in response to the demand from Europe for women physicians to take the place of men whose services have been required by their country and in this country for social work.

Columbia Courses at Long Island College.—Beginning with September, 1916, Columbia University will give, at the Long Island College Hospital, Brooklyn, a year of college work in physics, chemistry, biology, English, French and German. This work is especially planned to enable prospective medical students to meet the admission requirements of the Long Island College Hospital. The course will, however, be open and suitable for all, and those who take it will receive university credit.

State Health Officer Wants Half a Million.—State Commissioner of Health Biggs has appeared before the Government's Budget Committee to plead for an increase in the appropriation for his department. The chief needs are the creation of a division for the prevention of tuberculosis, the extension of laboratory work and the payment of full salary to sanitary supervisors. The funds provided for the present fiscal year were not sufficient by $79,000 to pay the expert chemists engaged in blood tests and in the preparation of diphtheria antitoxin and other serums.

Hospital of Rockefeller Institute.—The Rockefeller Institute for Medical Research maintains a hospital in connection with its research work to which a limited number of patients is admitted. According to a *Bulletin* just issued by this hospital, patients ill with acute lobar pneumonia, with diabetes mellitus, heart disease and nephritis are now admitted. Physicians having such patients may communicate with the hospital. No charge is made for treatment or other services. Patients most acceptable at the present time are those cases of heart disease with broken compensation, especially those with edema, and cases of nephritis with severe symptoms and edema or those with threatened uremia.

Radium Sanatorium Opened.—An institution which occupies two private houses on West Seventieth Street is now open and receiving patients, there being at the time of writing eighteen patients under treatment. Already 300 milligrams of radium have been delivered to the institution and $130,000 worth has been contracted for. The pathologic and biologic laboratories are being thoroughly equipped for the study of malignant conditions, and it is stated that all alterations in the building will be completed by January 1. There will be a dispensary for the treatment of outpatients. The staff in surgery consists of Drs. Cornelius G. Coakley, John A. Fordyce, Charles H. May, George D. Stewart, Winfield Ayres, Henry C. Coe, Anthony Bassler, Eugene C. Savidge, George M. MacKee, William C. Lusk, Frederick E. Sondern and Joseph B. Bissell. The medical staff of the institution has not yet been announced.

Tuberculosis Week.—Since December 6 to 12 has been designated as National Tuberculosis Week, an effort will be made in this city to revive interest in tuberculosis, which is still the greatest public health problem. The Department of Health will place emphasis on the importance of regular medical examinations. Wednesday, December 8, has been designated "Medical Examination Day." Hundreds of thousands of circulars are being distributed to the people of the city urging them to consult their family physicians and to submit to a thorough physical examination. This effort of the Health Department is receiving the cooperation of the Charity Organization Society, the Tuberculosis Committee of the Brooklyn Bureau of Charities, the Metropolitan Life Insurance Company and the Prudential Life Insurance Company. It is also suggested that physicians can render invaluable aid to the cause of public health by advocating regular medical examinations to their patients and by carrying out such examinations with care and thoroughness.

Examination of Food Handlers by Private Physicians.—Important changes have been made in connection with the examination of food handlers by private physicians. Private physicians will be authorized to examine food handlers employed in kitchens and dining rooms of restaurants and hotels in compliance with the regulations of the board of health. The physician desiring such authorization must make application to the department of health, and must observe the instructions of the department requiring that report blanks issued by the department of health be used, that a report card must be made out for each applicant, that all information asked for must be given, and an entry made in every blank space. Because of lack of laboratory facilities the department of health is not yet prepared to demand a Widal test in every case, but a specimen for a Widal test must be forwarded in every instance in which the applicant gives a history of having had or having been exposed to typhoid fever. A parole system has also been established for food handlers who are found to have a quiescent or arrested tuberculosis or a tertiary syphilitic condition without open lesion. These applicants are given a short term certificate good for a period of one month, and are required to present themselves at the end of that time, when on the recommendation of the examining physician, a renewal of the short term certificate for another month is given. These advisory physicians give no treatment of any kind.

PENNSYLVANIA

Personal.—Dr. Edward S. Dickey, Pittsburgh, will join Dr. Esten L. Hazlett, formerly of Pittsburgh, in Red Cross work at Tiflis, Russia.

Health Exhibit Complimented.—The state commissioner of health has received a telegram complimenting the Pennsylvania Health Department exhibit at the Panama-Pacific Exposition and asked that it be made a part of the government exhibit at the Panama National Health Exhibition which opens January 1.

Communicable Diseases.—The authorities of Jessup have ordered schools, churches, nickel shows and dance halls closed and have forbidden congregations of people on account of the prevalence of smallpox.——The Walnut Street School, Hazleton, has been closed because of the existence of fourteen cases of diphtheria.——On account of the prevalence of diphtheria in Shamokin Dam, the schools have been closed for fumigation.

State Takes Charge of Borough Health Administration.—Commissioner of Health Dixon on November 23 took charge of the public health administration of the boroughs of Jacksonville, Hartleton, Grand Valley, Curwensville, Meshoppen, New Buffalo, Jefferson, Rice's Landing, Greensboro, Mt. Morris, Finleyville, Driftwood, Cormont, Hagerstown, Conneaut Lake, Venang, Troutville, New Washington, Glen Hope, Waterford, Cranesville and Lockport. This action was taken because the local boards of health were either inactive or not organized.

Philadelphia

Favors Reconstruction of Hospital.—Director Ziegler, of the Department of Health and Charities, favors the reconstruction of the Pennsylvania Hospital and endorsed the proposal of Senator James P. McNichol which provides for an eventual expenditure of $8,000,000 in this work.

Civil Service Examination.—The civil service commission has scheduled for December 17 an examination for outdoor physician with an annual salary of $540. Applicants should call in person at the office of the commission, room 875, city hall, between 9 a. m. and 4 p. m. Applications must be executed and filed with the commission not later than three days prior to the day of the examination.

Mütter Lecture.—The Mütter lecture for 1915 will be delivered in the Thompson Hall, College of Physicians, Twenty-Second Street above Chestnut on Friday, December 17, at 8:30 p. m., by Dr. Rudolph Matas, professor of surgery in Tulane University, New Orleans, on "The Fundamental Principles that Underlie the Surgical Treatment of Aneurysm."——A reception will be given to Dr. Rudolph Matas, New Orleans, at the Hotel Rittenhouse immediately after the Mütter lecture, December 17.

Women Help City Hospitals.—On November 30, Dr. S. Lewis Ziegler, director of public health and charities, appointed a "Women's Advisory Council" to take charge of charity work at the Philadelphia General Hospital and the Philadelphia Hospital for Contagious Diseases. The work of the council will be in line with the project for the establishment of a greater hospital; the removal of the insane from Blockley to Byberry and the removal of the indigent from the Blockley Alms House to Holmesburg.

Personal.—Dr. Andrew Anders was seriously injured in a collision between the automobile in which he was riding and a trolley car, November 29.——Dr. Douglas T. Davidson of the staff of the University Hospital will sail from San Francisco early in January for China where he will become a member of the faculty of the medical department of the College of Changsha, Hunan Province, which is operated by Yale University. Dr. Davidson will be accompanied by his wife and two children.——Dr. John R. Wells of the staff of the Pennsylvania Hospital and four nurses sailed from New York on the *La Touraine*, November 27, for France, where they will serve in the American Ambulance Hospital, Neuilly.——Dr. Malcolm C. Grow, who left September 12, with Dr. Edward H. Egbert of Washington, D. C., for Russia, was recently appointed chief surgeon with the rank of lieutenant-colonel on the twenty-first flying column of the Russian Red Cross under Commander Andrew Kalpashnikoff, former secretary of the Russian Embassy at Washington.——Dr. Charles Bingham Penrose has been appointed a member of the Fairmount Park Commission to fill the unexpired term of Peter A. B. Widener.

CANADA

Personal.—The Hon. Dr. Thomas S. Sproule, Markdale, Ont., speaker of the Canadian House of Commons, has been appointed a member of the Canadian senate.——Dr. George E. Clerk, Melville, Sask., has been appointed medical officer of the Sixty-Ninth Battalion, a French-Canadian battalion for overseas service.

Medical Board at Camp Toronto.—A medical board has been appointed to sit daily in Toronto in connection with sick soldiers in that divisional area. This board consists of the following medical men: Lieut.-Col. George Acheson, Hamilton; Capt. Albert H. Rolph, Toronto; Capt. Daniel A. McClenahan, Hamilton.

Hospital News.—Fire broke out in the military hospital at Belleville, Ont., December 2. About 19,000 pounds of ammunition were stored in the building, but this and seven or eight patients were removed safely.——A new Canadian hospital has been opened at Ramsgate, England, with accommodation for 600 patients. Col. Walter L. Watt of Winnipeg is in charge.——Lieut.-Col. Harry B. Anderson and Lieut.-Col. Herbert A. Bruce, Toronto, have been appointed to organize the Convalescent Home in Toronto for returned soldiers. They will select the medical and surgical staffs at once, whose services will be gratuitous.

Free Serums for Ontario.—Following on the observations as to the results from the free use of diphtheria antitoxin in Toronto where the general death rate from diphtheria in that city is 16 against 6 in the Isolation Hospital where perhaps the worst cases are treated, the serum being supplied free to the hospital and in large doses, the Ontario government announces its intention to undertake, through the Ontario Board of Health, to supply free practically all the serums used in the province. Of diphtheria antitoxin alone it is expected that from 150,000 to 200,000 doses will be required and about 500,000 doses for antityphoid innoculation. The serums will be supplied free to physicians, hospitals, boards of health and the public generally. Ontario is the first province in Canada to adopt this system of preventing communicable diseases and to lessen the incidence and death rate from those diseases.

Ontario Medical Commission Resumes Sittings.—Mr. H. S. Osler, K.C., Toronto, presented arguments before the Ontario Medical Commission last week, supporting the case for the Ontario College of Physicians and Surgeons, of which body he is counsel. He first dealt with "patent medicines," pointing out that the public had no protection against the evils of many of these which were mostly foolish preparations. Mr. Justice Hodgins thought, however, that some of them were built on common-sense lines. Mr. Osler said in his understanding of the Ontario Medical Act any man who holds himself out as being competent to relieve suffering is practicing medicine; and in the "drugless healers" phase of his argument, said there should be some provision in the law to prevent unqualified people advertising themselves as "doctors." Mr. Osler further stated that the College of Medicine and Surgery for Ontario was at one with all those who had appeared before his lordship pressing that a recognized university degree be the minimum standard of qualification. He said doctors as a rule were not given to money making, and they were not prompted by any selfish motives in any effort they may make to have the act amended; it was solely in the public interest. His lordship has asked the College of Physicians and the universities to confer and come to some common agreement as to what should be recommended. He suggested that such a conference might take up the subject of fees charged by physicians as well as the fees charged for examinations. Advertising on the part of any doctor might also be considered; in fact, what the commissioner desired was a full and complete statement of what in their opinion should be the status of the whole matter of medical education, examination and practice. The commission sits in Hamilton the present week to hear the chiropractor society there. It is understood Mr. Justice Hodgins will investigate the college at Davenport for his own benefit.

GENERAL

Western Surgeons to Meet.—Surgeons from Baltimore to Butte are expected to be present at the meeting of the Western Surgical Association, which will hold its twenty-fifth annual meeting at the Chamberlain Hotel, Des Moines, December 17 and 18, under the presidency of Dr. J. Rilus Eastman, Indianapolis.

First Aid Standardization.—The Board on First Aid Standardization recently appointed by President Wilson, held its first meeting in Washington, November 27, and perfected its organization. Dr. Richard H. Harte, Philadelphia, was elected chairman, and Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., secretary of the board.

Alienists Elect Officers.—At a meeting of the Interstate Psychiatric Association, held at the Sheppard and Enoch Pratt Hospital, Baltimore, November 23, the following officers were elected: president, Dr. Henry A. Cotton, Trenton, N. J.; vice president, Dr. Edward N. Brush, Baltimore; and secretary, Dr. Samuel T. Orton, Philadelphia.

Warning.—Dr. Hart Beyer, Pittsville, Wis., writes that during the latter part of July an agent called on him selling a vaporizing inhaler alleged to be manufactured in Philadelphia. After writing to the address given, however, the letter was returned marked "not in directory," and on inquiry of the commercial agencies the firm named is not known.

Opponents of Alcohol and Other Narcotics to Meet.—The American Society for the Study of Alcohol and Other Narcotics will hold its forty-fifth annual meeting at the Hotel Raleigh, Washington, December 15 and 16. The public is cordially invited to be present; programs may be obtained from the secretary, Dr. T. D. Crothers, Hartford, Conn.

Typhus in Mexico.—An Associated Press dispatch of December 4 states that typhus fever, which has been epidemic in and around the City of Mexico, has now increased to an alarming extent. The death rate from this disease now exceeds 130 a day and is increasing. It is estimated that there are at present 11,000 cases in the federal district and neighboring towns.

Stock Plague Expensive.—It is estimated that the direct loss due to the hoof and mouth disease epidemic in the United States, up to July 1, was $5,600,000. This estimate was made November 29 in a paper by A. J. Glover, Fort Atkinson, Wis., on "The Economic Effect of the Hoof and Mouth Disease," which was read before the conference of state and federal authorities in Chicago, November 29.

National Examination Board Meets.—The National Board of Medical Examiners closed its session at Raleigh Hotel, Washington, November 29, after adopting plans by which it is hoped that every state in the Union eventually will recognize its certificate from the National Board as sufficient credentials for the issue of a license to practice medicine. The Medical Corps of three government services are represented on this board, of which Surg.-Gen. William Braisted, U. S. Navy, is president, and Col. Louis A. LaGarde, M. C., U. S. Army, treasurer.

Labor Legislation.—The ninth annual convention of the American Society for Labor Legislation will be held in the Shoreham Hotel, Washington, December 28 and 29, and the program is to be devoted to vital questions of the day, the main topics being the Lafollette Law for the Protection of American Seamen, The New York Industrial Commission; A Practical Form of Health Insurance for Wage-Earners, and The Progress Made Throughout America in Industrial Hygiene, with Especial Reference to Dangerous Trades, Child Labor, Protection of Female Wage-Earners and The Factory Situation. The closing meeting of the convention is to be held jointly with the Pan-American Scientific Congress, and the especial topic will be the "Progress Made in Industrial Hygiene in the Different Republics of the Two Americas."

Dogs as Carriers of Disease.—The Department of Agriculture has issued a bulletin on dogs as carriers of disease. Among the most interesting and important of these diseases at the present time is foot and mouth disease among cattle, of which, it is said, dogs act as mechanical carriers by running over infected farms. Other maladies which may be spread by dogs are rabies, hydatid, ringworm, favus, tapeworm, round-worm, and tongue worm. These may be conveyed to human beings. Dogs may also be the carriers of fleas and ticks and by this means aid in spreading bubonic plague and spotted fever. Dogs may become infected with various parasites by feeding on carrion and should be prevented from obtaining access to such material. In outbreaks of ringworm or favus among children, the dog should be suspected as a possible source of the trouble.

Stereopticon Loan Library.—The U. S. Public Health Service announces that the service has established a stereopticon loan library, consisting of over 2,000 slides, the majority of which are original, dealing with public health problems. These slides will be loaned without cost to physicians, health organizations, educators, welfare workers and others on application to the service. They cover such subjects as Alaska, 83 views; children and children's diseases, 50 views; health exhibits, 90 slides; hookwork, 90 slides; Indians, 50 views; leprosy, 45 slides; living conditions, a small number; malaria, 275 views; milk, 80 views; mouth hygiene, 12 slides; parasites and organisms, over 200 views; pellagra, over 500 views; rural schools, 10 slides; service general, 320 slides; smallpox, 90 slides; trachoma, 120 slides; tropical diseases, 40 views; tuberculosis, 100 slides; typhoid fever, 350 views; yellow fever, many slides, as well as slides of other miscellaneous subjects. These slides are 3½ by 4 inches and will fit most any lantern. Catalogs of these views will be sent on request, out of which selections may be made, or the service will make the selections on any subject desired to be presented.

Mental Hygiene Surveys.—The National Committee for Mental Hygiene has completed surveys with reference to public and private provision for feebleminded, epileptics, insane and allied defectives, for Pennsylvania, South Carolina and Wisconsin. Surveys are under way for Arkansas, Missouri, Texas and Florida. State surveys will be undertaken for Maine, Rhode Island, Connecticut, New Jersey, North Carolina, Georgia, Tennessee, Indiana, Illinois, Kansas, Oklahoma, Washington, Oregon and California. A map issued by the committee shows that separate provision for the feebleminded and the epileptic has been made in the following states: Massachusetts, Connecticut, New York, Pennsylvania, Virginia, Ohio, Michigan, Indiana, Illinois, Iowa, Kansas and Texas. In Wisconsin, Minnesota, South Dakota, Missouri, Oklahoma, Colorado, Wyoming, Washington, Oregon and California the feebleminded and epileptics are segregated from the insane, but are housed in the same institution. Epileptics are not cared for by the state in states not mentioned. The following have no separate institutions for either feebleminded or epileptics: Nevada, Utah, Arizona, New Mexico, Arkansas, Louisiana, Mississippi, Tennessee, Alabama, Georgia, Florida, South Carolina and West Virginia.

Examination for Medical Corps of the Navy.—An examination for appointment in the Medical Corps of the Navy will be held on or about February 23 at Washington, D. C., Boston, New York, Philadelphia, Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Mare Island, Calif., and Puget Sound, Wash.

Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary and medical examination. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps and embraces anatomy, physiology, materia medica and therapeutics, general medicine, general surgery and obstetrics. The successful candidate must attend a course of instruction at the Naval Medical School which will begin on or about Oct. 1, 1916. During this course he receives a salary of $2,000 per annum with allowance for quarters, heat and light and at the end of the course, if he successfully passes examination in the subjects taught in the school, he is commissioned assistant surgeon in the Navy to fill a vacancy. Candidates must be between 21 and 30 years of age, graduates of a reputable school of medicine and must apply for permission to appear before a board of medical examiners. The application must be in the handwriting of the applicant and accompanied by letters or certificates from two or more persons of good repute, testifying from personal knowledge, as to the good habits and moral habits of the applicant; a certificate to the effect that the applicant is a citizen of the United States; a certificate of preliminary education from an accepted high school or an accepted equivalent; a certificate of medical education giving the name of the school and date of graduation, and a certificate regarding hospital service or special education and professional advantages which the applicant has had.

FOREIGN

Deaths Abroad.—C. Vincenti, professor of hygiene at the University of Milan and founder and director of the *Corriere Sanitario,* later changed to the *Avenire Sanitario,* aged 52.——O. Ughi, professor of pathology at the University of Parma.

Octogenarian in the Field.—A Berlin exchange states that his eighty-first birthday was recently celebrated by Dr. Hertwig of that city, now on active service with the troops at the front. This is his fourth military campaign, as he served in 1864, 1866, and in the Franco-Prussian war, and he is still well and active.

Extend Embargo Lists.—In Denmark cotton goods and dried casein have been added to the list of products subject to embargo. In France various food products, fruit, gum, mica, petrolatum and various types of sacks have been placed on the embargo list. England has prohibited the exportation of cotton wadding, cotton wool and iron ore, of all descriptions to all destinations.

Hospital Factor for Peace.—Baron Shibusewa, the Japanese financier, at a luncheon given in his honor in New York by the American council of St. Luke's International Hospital, Tokyo, said that the completion of the institution would prove a factor toward international peace. The plans for the hospital were endorsed by the emperor, who had contributed $25,000 toward the fund. The institution, he believed, would do much to bring closer relations between the United States and Japan.

Bordeaux Exchange Resumes Publication.—In November the *Journal de Médecine de Bordeaux* issued its first number since August, 1914. It is to be continued as a monthly. This first issue contains a tribute to the twenty medical students at the University of Bordeaux who have fallen in the war. It also lists the honors that have been conferred on members of the medical faculty and student body for conspicuous gallantry. The leading and only original article is a clinical study of 330 cases of typhoid in soldiers.

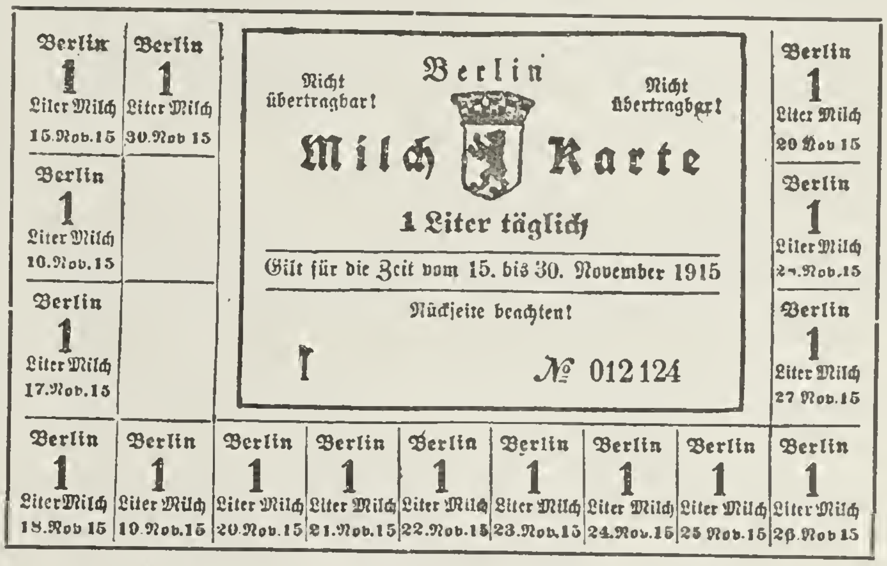
BERLIN LETTER

Berlin, Nov. 9, 1915.

The War

TREATMENT OF WOUNDS IN WAR

In the sixth issue of "Military Surgery," published as a part of the *Beiträge zur klinischen Chirurgie,* Professor von Bruns discusses at great length the treatment of wounds received on the battlefield. He says that the causes of shot wounds are entirely different in the present war from what they were in previous wars. The wounds caused by artillery fire greatly outnumber the wounds caused by gun fire, being twice as numerous, whereas formerly they constituted from 5 to 25 per cent. of all injuries. Therefore, the number of large open wounds is also greater than the number of small bullet wounds. Bullet wounds are practically never infected, whereas shrapnel and shell wounds are always infected, primarily because of the large amount of tissue exposed, the nature of the wound, the tearing of the tissues, the time which necessarily must elapse between the infliction of the wound and the first-aid dressing, irrigation of the wound, finger contact, probing for bullets and tamponing. The lack of sufficient immobilization of the injured part during transportation, especially in the case of bone and joint wounds, is also responsible for the production of infection. The statement made years ago that the first-aid dressing practically determined the subsequent clinical course of the wound no longer holds true. The primary wound infection is now the determining factor, and the results to be expected from our present knowledge of treatment of wounds are not realized. English surgeons have stated that nearly all wounds, with the exception of gun fire wounds, were infected and that no antiseptic could be depended on for a germicidal effect. Sir Almroth Wright has discarded the use of bandages, which, when saturated with wound secretion, favor the retention of septic products. He recommends the use of a 50 per cent. salt solution with 0.5 per cent. sodium citrate in the form of a bath, irrigation or compresses. Under this treatment wounds apparently do very well in two or three days. Another English surgeon, Sir Watson Cheyne, saturates wounds with pure phenol (carbolic acid). The thin layer of necrotic tissue which results from this treatment is absorbed. The German war surgeons combat infection with the aid of the natural antibodies in the human body. This is accomplished first of all by placing the injured tissue absolutely at rest, immobilizing the extremities for bone and joint wounds. If the infection increases in severity, counter-openings are made. Pieces of bone and foreign bodies are removed from the wound by irrigating with sterile salt solution. When suppuration is present, a moist dressing is applied, one that is not covered by rubber tissue, so that evaporation is furthered rather than prevented. In very severe cases, resort is had to the continuous bath or continuous irrigation. Open wound treatment is also resorted to by some surgeons.



Berlin
Nicht übertragbar!
Nicht übertragbar!
Milch Karte
1 Liter täglich
Gilt für die Zeit vom 15. bis 30. November 1915
Rückſeite beachten!
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Milk ticket used in Berlin for preferred consumers.

REGULATING THE BERLIN MILK DISTRIBUTION

For the purpose of regulating the distribution of milk, the Berlin authorities issue "milk cards" which give the holder the privilege of being among the first to receive milk. Children under 6 years of age, nursing mothers, and the sick and decrepit are given the preference. Such persons are supplied with a "milk card" by the bread commission, and on presentation of this card to any milk dealer they are given first attention, but must call for this milk before a certain hour.

ANTHROPOLOGIC INVESTIGATION OF PRISONERS OF WAR

The president of the Austrian Anthropological Society, Professor Toldt, and his students have examined 3,700 prisoners, making thousands of measurements. This investigation has determined that among these people, as among other nationalities, there does not exist a pure race but only mixtures. All of these people represent various racial elements which have been molded into one people by language and circumstances. Even the Poles consist of five such groups. In order to isolate these types, one must examine a large number of persons. The type as such does not appear to be conveyed by heredity, but certain features of each type appear in the offspring. To carry on such an investigation properly one must follow these racial characteristics geographically; for instance, in northwest Russia and extending through the country down to the Ural mountains are found the Finns, and coming from the east westward from the Ural mountains to the Volga, one finds the Mongolian races. Among the former the prevailing type was that of the great Russian, numbering 52,000,000 and resulting from a mixture of the Slav with the Finn, the German, the Tartar, etc. There were three different types: two blond and one brunette. The little Russians, together with their relations in Galicia, Bukovina and Hungary, number 32,000,000. The white Russians number only 3,500,000, and are said to speak the purest Russian dialect. The Litauers and the Slavs in East Prussia number 32,000,000. They live in the governments of Kowno and Wilma, and also in Grodno and Suwalki. They are said to speak the oldest of old Indo-Germanic tongues. They are Catholics, but are strongly inclined to pagan practices.

Alcohol and Crime

Speaking of the relationship of alcohol and crime in the Prussian statistics bearing on prisoners for 1913-1914, the president of the supreme district court, Mr. Lindenberg, says: Of the new male prisoners, 1,141, or 26.6 per cent. (24.2 per cent. in the previous year), committed the deed while intoxicated. Among the female prisoners this percentage was considerably lower, 5.4 per cent. Among the male prisoners 15.1 per cent., and among the female prisoners 12 per cent., were habitual drinkers.

LONDON LETTER

London, Nov. 19, 1915.

Medical Research Under the Insurance Act

It may be remembered that under the national health insurance act an annual sum amounting to 2 cents for every insured person was granted for medical research. In the year 1914 this amounted to $275,000. The outbreak of war has modified the scheme to some extent and temporarily, but the main idea stands. Indeed, the war has afforded a fresh field of inquiry. Thus at the outbreak of war it was determined to attack the many problems which were bound to arise on the field. The services of Sir Almroth Wright were secured to investigate the bacteriology of wounds, with what results is already well known. Sir Almroth's work, indeed, has been revolutionary. Researches were also undertaken on the poisons producing gas gangrene, and on the nature of typhoid fever. The work on antiseptics, in which many investigators have been engaged, has been assisted by the Research Committee. The committee also sent Dr. Freeman, of St. Mary's Hospital, to Galicia in 1914 to investigate strains of cholera infection and to bring cultures to this country so that if need be—that is, if the disease spread—vaccines could be prepared. The work of Lieutenant-Colonel Leiper, which has resulted in the discovery of the life history of the Egyptian bilharzia—a worm producing a disease which has long been regarded as one of the plagues of Egypt—was also assisted by the committee. Lord Cromer, at the Royal Society of Medicine, characterized this work as of first-class importance to Egypt. In the epidemic of cerebrospinal fever which lasted from January to June, much research work was accomplished. Many of these researches have confirmed the fact that various conditions influence the virulence of bacteria, so that bacteria of the same type may show very different properties at different times. Work is to be carried on to determine these factors more precisely, for it has often been suggested that on these epidemics other outbreaks of disease depend. Other special researches include those on dysentery, industrial fatigue and the health of munition workers, the disorders of the soldier's heart, and gunshot wounds. All this material will be made available in the official medical history of the war. The peace plans of the committee were no less important, and they will, no doubt, be carried out at a later period. They comprise investigations of such diseases as tuberculosis, rickets, diabetes, rheumatic infections, rheumatoid arthritis, oral sepsis and heart disease. It is believed that the coordinating work of this committee marks the opening of a new era in medicine in this country which will differ from the old in that general statements founded on imperfect observation will be replaced by accurate knowledge gathered by careful and qualified observers in all the fields of medical work, correlated by competent statisticians, and presented in a form calculated to be of lasting value.

Dr. Charlton Bastian

Dr. Henry Charlton Bastian, F.R.S., F.R.C.P., has died at his residence, Chesham Bois. He was educated at University College, London, where he was successively professor of pathologic anatomy, and professor of medicine. In medicine he was principally interested in nervous diseases. He was one of the brilliant galaxy which included Hughlings Jackson, Gowers and Ferrier, who formed the staff of the National Hospital for the Paralyzed and Epileptic, and created a British neurology. His principal works, many of which were translated into other languages, were "The Brain as an Organ of Mind"; "Paralyses: Cerebral, Bulbar, and Spinal," and "Aphasia and Other Speech Defects," but it was by his work on the nature and origin of life that he was most widely known, because of the stoutness and persistence with which he maintained, contrary to all orthodox opinion, that life can arise from inorganic material. He enclosed various materials in glass tubes, which he then sealed up and raised to temperatures of from 130 to 145 C. for from five to twenty minutes. According to all orthodox opinion, this should have killed every living thing in the tubes, yet on opening the tubes nine months later Dr. Bastian declared that he found living micro-organisms. His views were hotly contested from the moment when, in 1870, he first published them. Huxley and Tyndall entered the arena against him, and even Pasteur was drawn into controversy. Science accepted the arguments of Pasteur, and rejected those of Bastian. Yet he did not lose heart, but continued to wage his fight to the end of his long life. His first book on this subject, "The Beginnings of Life," was published as long ago as 1872. In 1904 appeared "Studies in Heterogenesis," in 1905 "Nature and Origin of Living Matter," and in 1907 "Evolution of Life." Only a few years ago he had an embittered controversy with the Royal Society, of which he was a fellow, because of its rejection of his Memoir "The Origin of Life," in which he once more with unabated vigor assailed the prevailing doctrines.

The Protection of Patients in the London Hospitals Against Air Raids

The Zeppelin raids on London are a distinct danger to the patients in the numerous hospitals. Indeed, more than one hospital had a narrow escape, being missed by only a few yards. The problem of helpless patients unable to flee in case the hospital was set on fire by an incendiary bomb is a difficult and distressing one. During the night when these raids occur the staff which remains on duty would be quite unable to remove the patients with sufficient speed. All the great hospitals contain wounded soldiers in considerable numbers, and it was felt that it would be a reproach to London if any of these men, who had suffered so much already for their country, were to be burnt to death at home. After the outbreak of war, volunteer corps consisting of men past the age eligible for the army (40 years) have been formed all over the country for home defense. The idea occurred to one of these corps to provide a detachment of men each night at a large hospital which appears to be in a particularly dangerous situation, so as to be ready to remove the patients from any wing which might catch fire. Their services were gladly accepted by the hospital authorities, who made the following arrangement: Each man is provided with an ash stretcher pole. The patients are divided into three classes: (*a*) those in bed who cannot walk or be carried; (*b*) those who can be carried on the back, or by bandy chair; (*c*) those who can walk. The mattresses of the first group at all times have under them a canvas sheet with a wide hem on each side through which poles can be passed, thus forming a stretcher. A supply of these sheets is provided in each ward, and it is the duty of the sister to see that one is placed under the mattress of every bed occupied by a patient who is too ill to be carried. Each of these beds is indicated by a crimson tape, so that the stretcher-bearers will know at a glance which patient they have to remove on the improvised stretchers. The third group will be directed and aided to leave the wards by the emergency staircases at the ends of the wings while the patients who have to be carried are being removed by the main staircase.

Sanatogen Again

The eclipse of this fraudulent nostrum produced by the war is only partial. Though all trading with Germany is prohibited, there is nothing to prevent the stuff being produced in this country and exploited in the usual manner so long as none of the profits are sent to Germany. However, the protection of the patent disappears for the time, and, as announced in a previous letter, a British company has taken advantage of the fact and produced an article called sanaphos, which, it claims, is much better than sanatogen. Sanatogen has just obtained a gratuitous advertisement by a question in Parliament as to whether a German alien enemy is carrying on the business and why he has not been interned. The government reply was that the London business of the Sanatogen Company was now independently carried on in the interests of this country under a British supervisor appointed by the board of trade, and any profits are paid over to the public trustee. The case of the individual referred to was carefully considered, who, in view of the special circumstances, recommended that he should be exempted from internment on condition that a bond for $5,000 for his good behavior was entered into by two British sureties.

PARIS LETTER

Paris, Nov. 18, 1915.

The War

TREATMENT OF HEAD WOUNDS FROM FIREARMS

This subject was discussed at length at the Réunion médicale de la VI-e armée, at which Dr. Paul Mathieu of Paris reported fifty cases of this nature. All the wounds were surgically explored, no matter how insignificant the injury to the scalp seemed. When the external surface of the skull was merely grazed the skull was opened up so that the condition of the inner side might be observed. The dura mater was uncovered and incised in one case in which the skull was intact, but the patient had crises of localized epilepsy. Twenty-seven other patients had lesions of the bone or of the brain, and eight patients with osseous lesions without perforation of the dura mater all made an operative recovery. The operation consisted of complete removal of fragments. The existence under the intact dura mater of a hematoma or of a focus of cerebral contusion does not always necessitate incision of the dura mater, which may produce serious complications. In cases of serious cerebral signs, however, evacuation of the subdural hematoma may be indicated. It should be recognized that often patients with insufficiently drained wounds of the head have died in the base hospitals from late infectious complications. Such patients should not be too early regarded as cured. Permanent infirmities are frequent after wounds of the head. Some patients retrogress completely, others partially. Neurologists should follow these patients for a long while.

Dr. Ruotte emphasized the very great difference in the seriousness of wounds of the head in accordance with the involvement or noninvolvement of the dura mater. When, during an operation, one finds a dura mater intact but tense and glistening, the surgeon should consider opening it. Ruotte thinks that in such cases simple puncture of the dura mater may give good results. Trephining is specifically indicated if one finds the least cranial lesion, even the most superficial. If it is merely a scratch of the external surface of the skull, trephining should always be employed. Dr. Reverchon has had occasion since the beginning of the war to trephine 100 times. He finds that wounds of the scalp should always be explored with the greatest care, and that often trephining, where there is a very slight wound of the external surface, enables the surgeon to find lesions that might have been overlooked. In cases of hematoma of the dura mater the great danger of systematic incision is infection. Therefore, as Ruotte says, there is much reason to use simple puncture in these cases. Reverchon punctured the dura mater, not with a Tuffier needle, which would be unsatisfactory, but with the point of the bistoury. When the dura mater presents a wound from fragments of bone or projectile it should be opened up, but this operation is followed by cure only if it is done under conditions of scrupulous asepsis. Patients with wounds of the dura mater should not be operated on in ambulances of the first line. They should be taken to the rear and operated on only in a place where perfectly aseptic surgery is possible.

LABARRAQUE'S SOLUTION AND DAKIN'S SOLUTION

At a recent session of the Société de chirurgie de Paris, Dr. Pierre Delbet, professor in the surgical clinic at the Faculté de médecine de Paris, called attention to the fact, already mentioned in The Journal (Sept. 4, 1915, p. 880), that Labarraque's solution and the antiseptic solution of Dakin are obtained by the same process. The solution of sodium hypochlorite of the French Codex or Labarraque's solution is obtained by double decomposition of calcium hypochlorite (the chlorid of lime of commerce) and sodium carbonate; the calcium, united to the carbonic acid, is precipitated and the sodium hypochlorite remains in solution with the excess of sodium carbonate. The antiseptic solution of Dakin is obtained in the same way, but to the concentrated sodium hypochlorite resulting from the double decomposition is added a certain quantity of boric acid which principally neutralizes the original alkalinity of the solution. The long-known favorable effect of the hypochlorite solutions of commerce should be attributed to their irritant action on the tissues. The treatment to which Dakin subjects the hypochlorite solutions in order to lessen their irritant effect can only diminish their efficacy in the treatment of wounds. This is demonstrated every day.

Professor Qénu believes that Delbet is right in calling attention to the irritating effect which certain chemical substances have on wounds. The antiseptic may be useful, in fact, not only because it does not destroy the living cells, but also because it excites their vitality, causes the proliferation of the leukocytes and consequently hastens the elimination of elements altered by traumatism and microbes or their toxins.

EXTRACTION OF BULLETS FROM THE BLADDER BY THE NATURAL CHANNELS

At a recent session of the Académie de médecine de Paris, Dr. F. Legueu, professor of the clinic of diseases of the urinary tract at the Faculté de médecine de Paris, read an interesting paper on this subject. Rifle shot and grape shot are of such size and shape that they may be easily and rapidly removed through the urethra without incision. For this purpose Legueu uses a special lithotrite modified for the purpose. The instrument, introduced into the bladder by the urethra, seizes the ball by its point on touching it and in less than a minute the extraction is made without anesthesia. One patient left the hospital the next day. A superior officer who had been unable to walk for eight months was soon enabled to resume his duties. The most difficult thing is to ascertain that the ball is actually in the bladder in cases in which it comes from a very distant part of the body and is embedded in the tissues during the whole of the cicatrization of the wound. When radiography shows a pelvic ball two successive plates should be made, changing the patient's position. If the ball shifts its place, this shows that it is in the bladder. Only balls that are free in the vesical cavity can thus change their position. Cystoscopy, however, is the most useful method of exploration for giving an idea of the presence, the situation, the mobility of the ball, the condition of its surface and all the data necessary for the extraction by the natural passage, which remains the best and most expeditious method.

RELIEF OF PHYSICIANS AT THE FRONT

I mentioned in a previous letter (The Journal, Nov. 20, 1915, p. 1831) that the minister of war had decided that physicians at the rear who had not yet taken their place in the armies should replace their comrades fatigued by fifteen months of campaign. Out of over 8,000 physicians at the front, only 1,500 have asked for relief on this ground, but there are no more than about 600 of these physicians fit for service who have not been at the front. The time set for each physician's departure is determined by his age and by his service in the army. The exchange is made regularly, but not too frequently, so that there is not likely to be any disorganization which might affect the patients unfavorably.

THE FRENCH WOUNDED EMERGENCY FUND

The undersecretary of the military medical service has just decided to accept the aid of the French Wounded Emergency fund, an Anglo-American society, the delegate of which in

France is Mrs. Hendry, née Charcot. The purpose of the society is to distribute in the various hospitals which receive patients from the army gifts for the improvement of the condition of the soldiers. The under secretary has therefore authorized Mrs. Hendry and fifteen of her collaborators to cooperate with the head physicians of the hospitals in distributing such gifts.

MEMORIAL TO DR. REYMOND

The general council of the department of the Seine and the prefect of police have placed in the surgical operating room at Nanterre the bust of Dr. Emile Reymond, who was a senator and surgeon of this establishment and who died bravely in an aviation reconnaissance of the army (The Journal, Nov. 21, p. 1868). The bust is the work of the sculptor Gauquié. The president of the republic and other high officials were represented at this ceremony. Several speeches were made recounting the career and the glorious death of Dr. Reymond.

THE WAR AND THE STATISTICS OF POPULATION OF FRANCE IN 1914

The *Journal officiel* has just published the statistics of population of France in 1914. Ten French departments are still, in whole or in part, under invasion. The figures, therefore, apply to only seventy-seven departments instead of eighty-seven, and are also incomplete with regard to deaths during the first five months of hostilities.

The following are the figures:

1. The number of deaths is provisionally estimated at 647,549, an increase of 58,740 over 1913 (588,809).
2. The number of births is estimated at 594,222, a decrease of 10,232 from 1913 (604,454).
3. The excess of deaths over births was 53,327. This indicates that the population of France diminished last year by 53,327. In 1913 there was an insignificant increase of 15,645.
4. The number of marriages was 169,011, a decrease of 78,742 from 1913 (247,753).
5. The number of divorces was 7,884, a decrease of 4,460 from 1913 (12,344).

To estimate the influence exercised by war on the status of the population, it is interesting to compare the changes in population in seventy-seven departments during the last semester of 1913 and the corresponding semester of 1914:

1. During the second semester of 1914 the number of deaths recorded was 323,018, as against 280,804 during the corresponding period of 1913, an increase of 42,214.
2. The number of births diminished from the one year to the other by 6,676 (300,304 in the second semester of 1913 and 293,628 in the second semester of 1914).
3. The number of marriages decreased by 65 per cent.: 43,585 in the second semester of 1914 against 122,754 in the second semester of 1913.
4. The number of divorces diminished from 6,307 to 2,014.
5. The number of illegitimate children increased by more than 2,000: 19,798 in 1914 against 17,684 in 1913.

NERVOUS AFFECTIONS CAUSED BY BURSTING OF SHELLS IN THE PATIENT'S VICINITY

At a recent session of the Réunion médico-chirurgicale de la X-e armée, Drs. Gustave Russy and J. Boisseau read an interesting paper on this subject, based on sixty-seven cases of nervous affections provoked by bombardment. The conditions in which these disturbances occur are always the same: bursting of a shell of large caliber near by, killing or wounding neighboring comrades, more or less prolonged loss of consciousness, followed by an outbreak of nervous disturbances. The latter may be grouped in three classes:

1. Disturbances of hearing and speech (deafness, loss of speech, deafmutism, stammering). The patients sometimes present an expression of terror and mental confusion, sometimes an impassive and stupefied countenance, sometimes an expressive mimicry, gesticulating, pointing to their ears, demanding to write.
2. Various nervous complications, such as trembling, convulsive crises, astasia, paraplegia, etc.
3. Mental disturbances such as confusion with stupor and delirious ideas.

Somatic signs sometimes observed are a very slight and temporary elevation of temperature with often persistent headache. In eleven out of sixteen cases of deafness, examination revealed the presence of small lesions, generally old, sometimes recent. In seventeen out of nineteen cases examination of the cerebrospinal fluid gave negative results (generally the fluid trickled drop by drop; there was no hyperalbuminosis or lymphocytosis); in two cases there were positive results (slight hyperalbuminosis in one, slight lymphocytosis in the other). The two patients presented mental confusion and the second had albuminuria.

Cure always followed the treatment, immediately (that is, within a day), or tardily (within two or three days in the intense forms).

The complications presented in the sixty-seven cases could all be classified as functional or hysterotraumatic. There are no signs which give reason to suspect a disturbance of the central nervous system, no reflex trouble, no chemical or cytologic modification of the cerebrospinal fluid. All the symptoms disappeared very rapidly under suggestion. The ease and rapidity of cure of these patients treated at a date very near the onset of the condition contrasts singularly with the slowness and even the failures observed in the zone of the interior. There would appear to be considerable practical value in early treatment from the military point of view.

LOCALIZED TETANUS

At a recent session of the Académie de médecine de Paris, Professor Pozzi reported a case of paraplegiform tetanus localized in the lower limbs and appearing early (five days after the wound) following a serious wound of the left foot from a fragment of shell necessitating submalleolar amputation. Extremely painful spasms, at first clonic, then tonic, remained localized in the left leg and thigh with a temporary irradiation to the right leg depriving the patient of all rest and sleep. The temperature, very high at first, fell after the operation, performed the tenth day. The stump healed normally and the general condition became very good but the contracture of the left leg continued. The treatment consisted in strong doses of bromids, chloral or other sedatives, as well as massive doses of antitetanic serum. Great improvement resulted. The convulsions ceased but the contracture persisted, holding the leg strongly flexed on the thigh. The prognosis is good but it is to be feared that the stiffness and flexure of the leg will continue for a long time.

Cases of partial or localized tetanus are very rare. A form of delayed cephalic tetanus is well known, but cases of tetanus localized in a single limb, or monoplegia, are quite unusual up to the present. In a recent thesis Ramirez-Martinez was able to collect only two observations. Both were cases of wounds of the foot. The appearance of tetanus was very much delayed (three months for one and fifteen days for the other). The observation of Pozzi is the first case in which incubation was so short (five days). It is therefore a case of precocious localized tetanus, and also the first case of partial paraplegiform tetanus.

Marriages

George Lauman Laverty, M.D., Harrisburg, Pa., to Miss Rebekah Eleanor Kendig of Roland Park, Md., November 20.

Ralph Hiram Knapp, M.D., Youngsville, Pa., to Miss Margaret I. Johnston of Clinton, Mass., September 1.

Guy Edward Campbell, M.D., Plentywood, Mont., to Miss Helen Collins of Barnesville, Minn., November 10.

Henry L. Schelling, M.D., Brooklyn, to Mrs. Isabel Hanson Woodford of New York City, November 23.

Clarence Gilbert Goodwin, M.D., Chicago, to Mrs. Minnie Starr Grainger of Belvidere, Ill., November 24.

Joseph Anthony Stockler, M.D., Reading, Pa., to Miss Ellen McKeon of Newark, Del., November 27.

Seavy Highsmith, M.D., Fayetteville, N. C., to Miss Ethel Johnson of Red Springs, N. C., November 23.

Joseph Aloysius Henske, M.D., to Miss Kathryne McClanahan, both of Omaha, November 3.

Sherman Grant Bonney, M.D., Denver, to Mrs. Jessie Ellwood Ray, in St. Louis, December 1.

George Warren Thompson, M.D., to Mrs. Julia Williams, both of Winamac, Ind., November 25.

Joseph H. Bloomer, M.D., to Mrs. Idella M. McDavitt, both of Quincy, Ill., November 17.

Roy Brown Seely, M.D., to Miss Emma Gissel, both of Brooklyn, August 4.

Deaths

Frederick William Russell, M.D. New York University, New York City, 1870; aged 70; a member of the Massachusetts Medical Society; hospital steward, U. S. V., during the Civil War; formerly physician to the Children's Hospital, Baldwinsville, and vice president of the institution; chairman of the Board of Health of Winchendon, Mass., and proprietor of The Highlands Sanitarium, Winchendon; eminent as an entomologist and a member of the American Entomological Society; for the last three years a resident of Dallas, Texas; honorary president of the Texas Harvard Club and an honorary member of the Dallas Medical and Surgical Association; died at the home of his daughter in that city, November 20.

George Reuling, M.D. University of Giessen, Germany, 1866; aged 76; formerly assistant to Dr. Pagenstecher of Weisbaden, Germany; a practitioner of Baltimore since 1868; one of the founders of the Eye and Ear Hospital as an adjunct of the Maryland General Hospital; a pioneer in operative surgery of the eye and ear; lecturer at a number of medical schools in Baltimore and professor and later emeritus professor of ophthalmology and otology in Baltimore Medical College; ophthalmologist on the staff of the German Hospital; of late years an art connoisseur; died in the Maryland General Hospital, November 25, from rheumatic endocarditis.

Edward Cummings, M.D. Medical College of Virginia, Richmond, 1903; aged 44; a Fellow of the American Medical Association; assistant surgeon to the Hinton (W. Va.) Hospital and bacteriologist to the Chesapeake and Ohio Railway; at one time city editor of the *Daily Journal and Tribune* of Knoxville, Tenn.; a veteran of the Spanish-American War; a prolific writer on tuberculosis, to the study and treatment of which he had devoted the last years of his life; died at his home in Hinton, W. Va., November 25, from pulmonary hemorrhage.

John C. Hutton, M.D. University of Pennsylvania, Philadelphia, 1867; aged 69; first health officer of Harrisburg, Pa.; for many years president of the City Board of Health and a member of the staff of the City Hospital; founded the Municipal Hospital for Contagious Diseases; for two terms a member of the board of education and for three years a member of the common council of Harrisburg; died at his home in Elkwood, New Cumberland, Pa., November 20.

Henry McKee Tucker, M.D. University of Maryland, Baltimore, 1899; aged 40; of Raleigh, N. C.; a member and formerly treasurer of the Medical Society of the State of North Carolina; professor of obstetrics in the University of North Carolina and of gynecology in Leonard Medical School, Raleigh; who underwent operation for mastoiditis at Rex Hospital, Raleigh, on November 22, died from a secondary meningitis, November 24.

Benjamin Joy Jeffries, M.D. Harvard Medical School, 1867; aged 82; a member of the Massachusetts Medical Society and American Ophthalmological Society; formerly consulting ophthalmic surgeon to the Massachusetts Charitable Eye and Ear Infirmary, State Hospital and New England Hospital for Women and Children; author of "Color Blindness, Its Dangers and Detection"; died at his home in Boston, November 21.

Andrew J. Martin, M.D. University of Buffalo, N. Y., 1887; aged 55; a Fellow of the American Medical Association and a well-known practitioner of North Tonawanda, N. Y.; a member of the Board of Health and health officer for several years; coroner of Niagara County for three years; died in the German Deaconess Hospital, Buffalo, November 24, five days after an operation for disease of the intestines.

Fayette Kent Waller, M.D. Miami Medical College, Cincinnati, 1878; aged 68; a veteran of the Civil War; and for many years a practitioner of Wabash, Calhoun and Madison counties, Ill.; who had been an inmate of the Odd Fellows Home, Mattoon, Ill., for seven years; died in that institution, November 19, from cerebral hemorrhage.

William F. Hani, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1864; Rush Medical College, 1868; aged 72; surgeon of the One Hundred and Seventy-Second Ohio Volunteer Infantry during the Civil War and afterward a practitioner of Middlebury, Ind.; died at the Soldiers' Home near Lafayette, Ind., November 23.

William Frisbie Lewis, M.D. College of Physicians and Surgeons in the City of New York, 1854; aged 85; for many years a practitioner, druggist and banker of Mankato, Minn.; a veteran of the Indian War of 1857; since 1887 a resident of California; died at his home in Palo Alto, Calif., November 18, from senile debility.

Frederick W. Messerve, M.D. Hahnemann Medical College, Philadelphia, 1885; aged 55; for many years resident physician at Hahnemann Hospital, Philadelphia; professor of ophthalmology in his alma mater and ophthalmologist to various hospitals in Philadelphia; died at his home in Berlin, N. J., November 22.

Thomas Ayars James, M.D. New York University, New York City, 1880; aged 65; a Fellow of the American Medical Association and president of the Luzerne County (Pa.) Medical Society in 1885; one of the best known practitioners of the Wyoming Valley; died at his home in Ashley, November 10, from heart disease.

LeRoy R. Craig, M.D. University of Louisville, Ky., 1895; aged 41; a member of the Nebraska State Medical Association; for several terms coroner of Scotts Bluff County, Neb., and county health officer and a member of the Board of Health of Mitchell; died at his home in Mitchell, November 24, from heart disease.

Elfred Rowe Barney, M.D. University of Michigan, Ann Arbor, 1872; aged 64; a Fellow of the American Medical Association; for twenty-one years a practitioner of Wattsburg, Pa.; for twenty years a member of the local school board and for twelve years its president; died at his home, November 17.

Daniel Berry, M.D. Jefferson Medical College, 1866; aged 80; a veteran of the Civil War, in which he served as assistant surgeon of the Eighty-Seventh Illinois Volunteer Infantry; later a practitioner and druggist of Carmi, Ill.; died at his home in that city, November 19, from cerebral hemorrhage.

J. Clayton Alexander, M.D. Chicago College of Medicine and Surgery, 1907, aged 48; formerly a Fellow of the American Medical Association; of Hope, N. D.; was injured by the overturning of his automobile about 4 miles south of Hope, November 6, and died at his home five hours after the accident.

John T. Kennedy, M.D. College of Physicians and Surgeons in the City of New York, 1861; aged 75; for nearly half a century a practitioner of New York City; for eighteen years chief surgeon to the New York Hospital; died in his apartments in New York City, November 26, from heart disease.

Godfrey J. D. Hindley. University of Oxford, England, 1892; L.R.C.P., London, M.R.C.S., England, 1897; aged 43; formerly a practitioner of Carpinteria, Calif., and of Hilo, Hawaii; was lost at sea at the Dardanelles, early in September, by the sinking of a transport on which he was on duty.

John Ezra King, M.D. State University of Iowa, Iowa City, 1897; aged 50; formerly a Fellow of the American Medical Association; died at his home in Anamosa, Iowa, from the effects of cyanid of potassium believed to have been self-administered with suicidal intent, while of unsound mind.

Arthur Irving McCumber, M.D. Rush Medical College, 1905; aged 38; of Lewiston, Ill.; a patient at the Wilgus Sanitarium, Rockford, on account of nervous breakdown; threw himself under an interurban car about a mile from Rockford, November 20, and was instantly killed.

George Moses Hawkins (license, Kansas, 1901); aged 78; a practitioner since 1857; surgeon of the Tenth Pennsylvania Volunteer Cavalry during the Civil War; formerly a member of the Kansas Medical Society; died at his home in Dexter, Kan., October 2, from cerebral hemorrhage.

Samuel Morrow Crawford, M.D. University of Pennsylvania, Philadelphia, 1878; aged 63; a member of the Medical Society of the State of Pennsylvania; for eleven years chief medical inspector of the Pennsylvania System in Harrisburg, Pa.; died at his home in that city, November 20.

William Hambleton Tolson, M.D. Baltimore University School of Medicine, 1890; for several years director of the academic department of the Maryland State Normal School and later principal of No. 80 Public School, Baltimore; died at his home in Baltimore, November 24.

Cornelius Joseph O'Neil, M.D. Western Pennsylvania Medical College, Pittsburgh, 1900; aged 40; chief medical examiner in the Pittsburgh Department of Charities, and for twelve years school physician; died at his home in Pittsburgh, November 25.

William Henry Gesner Griffith, M.D. Hahnemann Medical College, Philadelphia, 1872; aged 82; assistant surgeon of Volunteers during the Civil War; one of the founders of the McKinley Hospital; died at the home of his son in Trenton, N. J., November 24.

Daniel Tufte, M.D. University of King Frederick, Christiania, Norway, 1893; of Pelican Rapids, Minn.; who was studying in Germany at the outbreak of the European war and joined the medical staff of the German army; died in Germany, November 10.

George Edwin Pinkham, M.D. Dartmouth Medical School, Hanover, N. H., 1863; aged 75; a member of the Massachusetts Medical Society; assistant surgeon of Volunteers during the Civil War; died at his home in Lowell, Mass., November 15.

Henry Philips Hirshfield, M.D. University of Pennsylvania, Philadelphia, 1878; aged 61; a member of the Medical Association of the State of Alabama; coroner of Mobile County for twenty-one years; died in the Inge-Bondurant Sanatorium, Mobile, November 14.

George Henry Charles Klie, M.D. Missouri Medical College, St. Louis, 1895; aged 70; a Fellow of the American Medical Association and a well-known practitioner of St. Louis; died in the St. Louis Mullanphy Hospital, September 24, from carcinoma of the stomach.

William A. Garner, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1885; aged 55; a Fellow of the American Medical Association; local surgeon of the Wabash System at Clayton, Ill.; died at his home in Clayton, November 14, from organic heart disease.

Edward L. Stewart, M.D. Vanderbilt University, Nashville, Tenn., 1891; aged 47; of Tampa, Fla.; a specialist on diseases of the eye, ear, nose and throat; formerly health officer of Tampa; is said to have committed suicide in Tampa, November 11.

John P. Dunnigan, M.D. Georgetown University, Washington, D. C., 1901; aged 41; a Fellow of the American Medical Association and a member of the surgical staff of Providence Hospital, Washington, D. C.; died in that institution, November 11.

Robert Davis Webb, M.D. Medico-Chirurgical College of Philadelphia, 1893; aged 44; of Philadelphia; died in St. Joseph's Hospital in that city, November 13, from fracture of the skull believed to have been accidentally sustained as the result of a fall.

John Calvin Webster, M.D. Harvard Medical School, 1867; aged 72; a member of the Illinois State Medical Society; a veteran of the Civil War; for forty-eight years a practitioner of Chicago; died at his home in Chicago, November 15.

C. Anton Holzer, M.D. University of Strassburg, Germany, 1878; aged 67; a practitioner and pharmacist of Uniontown, Wash.; for several terms a member of the city council and mayor for one term; died at his home in Uniontown, November 12.

David S. Tate, M.D. Chattanooga, Tenn., Medical College, 1900; aged 50; a well-known practitioner of South Pittsburg, Tenn.; died in the Newell Infirmary, Chattanooga, Tenn., October 2, after an operation for disease of the intestines.

Isaac Newton Kelly, M.D. Louisville, Ky., Medical College, 1907; aged 32; formerly a Fellow of the American Medical Association and a physician in the United States Indian Service; died in Garfield, Wash., November 8, from nephritis.

Robert A. Chambers, M.D. Tulane University, New Orleans, 1892; aged 48; for fourteen years a resident of Columbus, Ga.; died in the Columbus City Hospital, November 11, from peritonitis following an operation for appendicitis.

Adolf Decker, M.D. University of Wurzburg, Germany, 1881; aged 56; at one time president of the German Medical Association, Chicago; noted as a chess player and composer of chess problems; died at his home in Chicago, November 20.

Charles A. Fox, M.D. Medical College of Virginia, Richmond, 1868; aged 72; a Confederate veteran and for fifty-two years a practitioner of Beltsville, Md.; died at the home of his daughter in Washington, D. C., November 13.

John F. Kanawel, M.D. University of Pennsylvania, Philadelphia, 1879; aged 80; a member of the Medical Society of the State of Pennsylvania; died at his home in Penn's Creek, Pa., November 12, from cerebral hemorrhage.

George H. Peck, M.D. Detroit Homeopathic Medical College, Detroit, Mich., 1873; aged 77; for several years health officer of New Philadelphia, O.; died at his home in New Philadelphia, November 15, from arteriosclerosis.

Robert L. Morrison, M.D. College of Physicians and Surgeons of Kansas City, Kan., 1904; aged 37; a member of the Oklahoma State Medical Association; died at his home in Poteau, November 15, from nephritis.

William C. Q. Wilson, M.D. Starling Medical College, Columbus, Ohio, 1872; aged 66; formerly a member of the West Virginia State Medical Association; died at his home in Mannington, W. Va., November 14.

John Hockenhull, M.D. Medical College of Georgia, Augusta, 1855; aged 83; a Confederate veteran; for many years a practitioner and druggist of Cumming, Ga.; died at his home in that place, November 12.

Simeon J. Zabriskie, M.D. New York University, New York City, 1856; a member of the Medical Society of the State of New York; died at his home in Westwood, N. J., September 11, from senile debility.

William C. Day, M.D. Missouri Medical College, St. Louis, 1861; aged 78; emeritus professor of obstetrics in the American Medical College, St. Louis; died at his home in White Hall, Ill., November 13.

R. A. Turner (license Texas, 1907); aged 34; of Lovelady, Tex.; was found dead in the Cadillac Hotel, November 14, from the effects of chloroform believed to have been accidentally self-administered.

Orren Stoddard, M.D. Medical College of Indiana, Indianapolis, 1886; aged 72; a veteran of the Civil War and for thirty years a practitioner of Merom, Ind.; died in Indianapolis, November 12.

Philo Anderson Lutz, M.D. College of Physicians and Surgeons, Baltimore, Md., 1886; aged 55; formerly of Harrisburg, Pa.; died at his home in Baltimore, November 12, from heart disease.

Horace Besson Heysham, M.D. Jefferson Medical College, 1900; aged 42; formerly resident physician to the Charity Hospital, Norristown, Pa.; died at his home in Norristown, November 16.

Joseph M. Craig, M.D. New Orleans School of Medicine, 1861; aged 84; major surgeon in the Confederate service during the Civil War; died at his home in Amite, La., November 15.

William Moor Pulsifer, M.D. Harvard Medical School, 1886; Hahnemann Medical College, Philadelphia, 1887; aged 52; died at his home in Skowhegan, Me., October 31.

William Elvin Pritchard, M.D. Chicago Homeopathic Medical College, 1886; aged 56; died at his home in Los Angeles, November 14, from cerebral hemorrhage.

Joseph D. Tuthill, M.D. Bennett Medical College, Chicago, 1881; aged 87; a practitioner for more than sixty years; died at his home in Chicago, November 26.

William C. Yolton, M.D. Western Reserve University, Cleveland, 1887; aged 68; died at his home in Frankfort Springs, Pa., November 12, from pneumonia.

Charles C. Pierson, M.D. University of Louisville, Ky., 1907; aged 37; of Kiefer, Okla.; died at the home of his mother near New London, Ia., November 15.

J. M. C. King (license, Twenty-Seventh Judicial District Board, Texas, 1880), aged 63; died at his home in Merkel, Tex., August 26, from diabetes.

Edwin Forrest Philips, M.D. Jefferson Medical College, 1871; aged 66; died at his home in Tower City, Pa., November 17, from pneumonia.

Herman C. Block, M.D. Chicago Homeopathic Medical College, 1885; aged 63; died at his home in Milwaukee, Wis., November 10.

Henry Clay Stone, M.D. Louisville, Ky., Medical College, 1892; aged 70; died at his home in Constantine, Ky., November 11.

Levi Ormsby Johnson, M.D. University of Michigan, Ann Arbor, 1868; aged 74; died at his home in Chicago, November 15.

John Henry DeWitt, M.D. Jefferson Medical College, 1880; aged 60; died at his home in Philadelphia, November 14.

John W. Fawdrey, M.D. New York Homeopathic Medical College, 1892; died at his home in Corfu, N. Y., November 10.

Robert F. Taylor, M.D. Pulte Medical College, Cincinnati, 1877; aged 66; died at his home in Napa, Calif., November 8.

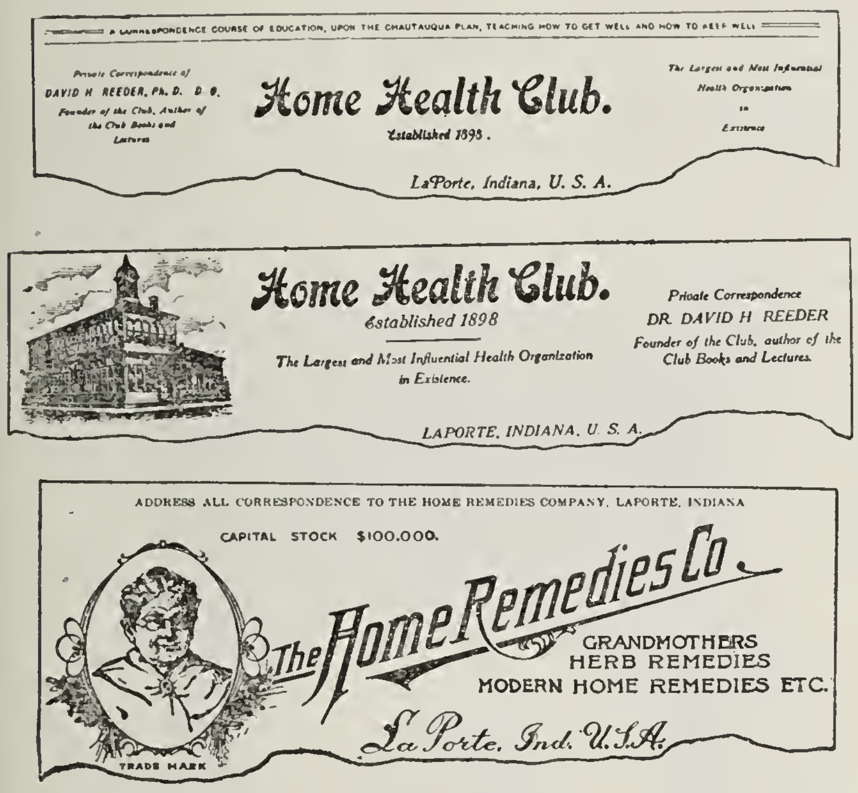
The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

THE HOME HEALTH CLUB

David H. Reeder's Ingenious Scheme for Advertising "Patent Medicines"

The medical mail-order faker's most valuable asset is his mailing list and obtaining this list is his greatest item of expense. David H. Reeder, one time of Laporte, Ind., but now of Chicago, has solved the problem in a way which makes up in ingenuity what it lacks in honesty. David H. Reeder is the president and, apparently chief owner, of the "Home Remedies Company," originally of Laporte, Ind., now at "Cottage Grove Avenue, opposite Fiftieth Place, Chicago." The company is a "patent medicine" concern that sells its remedies on the mail-order plan. The "Home Health Club" has its headquarters with the Home Remedies Company but advertises its address as "5039 Cottage Grove Avenue, Chicago." The "founder" of the Home Health Club and the author of the "Club Books and Lectures" is David H. Reeder.


A CORRESPONDENCE COURSE OF EDUCATION, UPON THE CHAUTAUQUA PLAN, TEACHING HOW TO GET WELL AND HOW TO KEEP WELL

Private Correspondence of
DAVID H. REEDER, Ph. D. D. O.
Founder of the Club, Author of the Club Books and Lectures

Home Health Club.
Established 1898.

The Largest and Most Influential Health Organization in Existence

LaPorte, Indiana, U. S. A.

Home Health Club.
Established 1898

The Largest and Most Influential Health Organization in Existence.

Private Correspondence
DR. DAVID H REEDER
Founder of the Club, author of the Club Books and Lectures.

LAPORTE, INDIANA, U. S. A.

ADDRESS ALL CORRESPONDENCE TO THE HOME REMEDIES COMPANY, LAPORTE, INDIANA

CAPITAL STOCK $100.000.

The Home Remedies Co.
GRANDMOTHERS
HERB REMEDIES
MODERN HOME REMEDIES ETC.

La Porte, Ind. U.S.A.

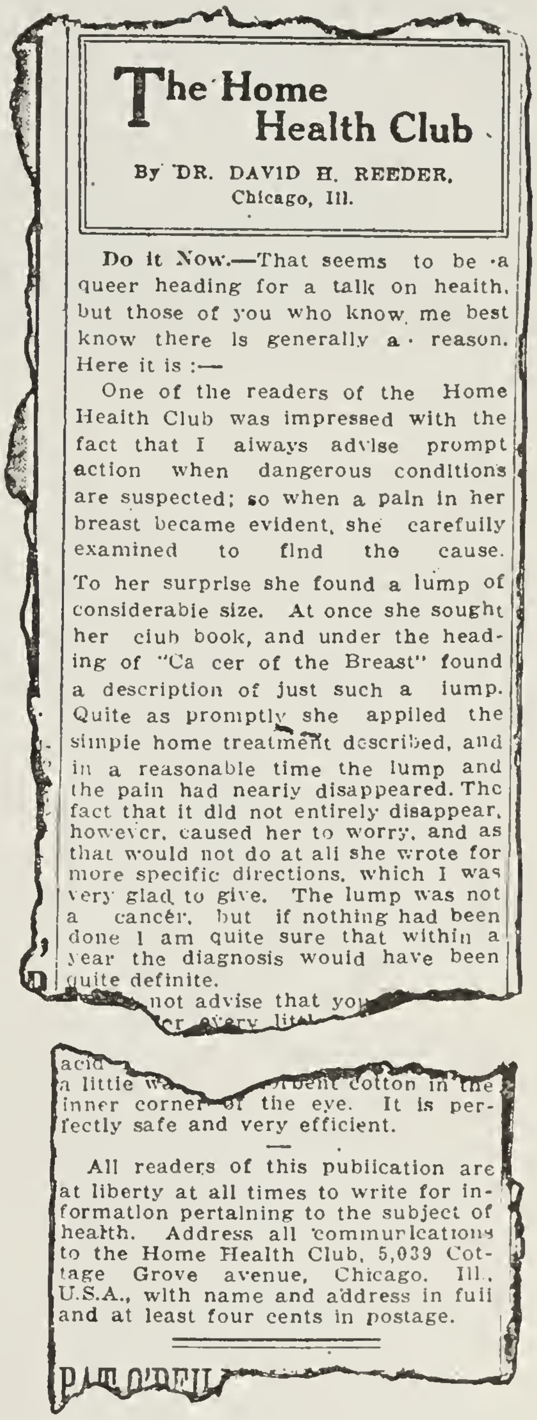
TRADE MARK

Some letterheads of the "Home Health Club" and the "Home Remedies Company" when these were operated at Laporte, Ind. "Dr." David H. Reeder calls himself "founder" of the "club," and he is president of the "patent medicine" concern.

Reeder[1] poses—in print—as a physician. A careful search of all available records, and they are extensive, fails to show that Reeder ever was graduated by a medical college or ever was granted a license to practice medicine by any state. In the past, Reeder has not hesitated to put "M.D." after his name; more recently he has become wary. Volume I of the Home Health Club was written, according to the title page, by "David H. Reeder, M.D., Ph.D."; Volume III of the Home Health Club had for its author, according to the title page, "David H. Reeder, D.O., Ph.D."

Reeder's business is the selling of (1) alleged health books (with a "Certificate of Membership" in the Home Health Club thrown in) and (2) "patent medicines," both on the mail-order plan. Reeder has worked out a novel idea for getting his customers. He has eliminated the chief item of "overhead expense" usually inseparable from the mail-order business, that of paying for advertising space. His scheme is to write to certain newspapers offering to furnish free "copy" for a "Health Department," to be conducted under the title "Home Health Club." To allay the suspicions that would, naturally, arise in the minds of those editors to whom such an offer came, the Home Health Club explains how it is able to furnish free "copy" for the newspaper. It asks that the "service" offered be given credit to the club "by name and address." Continuing, the letter to the editor says:

> "Through this publicity inquiries are brought directly to the club which promotes the sale of the books, compiled and reprinted from the lectures in various papers to which they are furnished. These sales amply cover the expenses of the organization which explains how the club is enabled to provide you the matter free."


The Home Health Club.

By DR. DAVID H. REEDER,
Chicago, Ill.

Do it Now.—That seems to be a queer heading for a talk on health, but those of you who know me best know there is generally a reason. Here it is:—

One of the readers of the Home Health Club was impressed with the fact that I always advise prompt action when dangerous conditions are suspected; so when a pain in her breast became evident, she carefully examined to find the cause. To her surprise she found a lump of considerable size. At once she sought her club book, and under the heading of "Ca cer of the Breast" found a description of just such a lump. Quite as promptly she applied the simple home treatment described, and in a reasonable time the lump and the pain had nearly disappeared. The fact that it did not entirely disappear, however, caused her to worry, and as that would not do at all she wrote for more specific directions, which I was very glad to give. The lump was not a cancer, but if nothing had been done I am quite sure that within a year the diagnosis would have been quite definite.

not advise that yo
r every lit

acid
a little w bent cotton in the inner corner of the eye. It is perfectly safe and very efficient.

All readers of this publication are at liberty at all times to write for information pertaining to the subject of health. Address all communications to the Home Health Club, 5,039 Cottage Grove avenue, Chicago, Ill., U.S.A., with name and address in full and at least four cents in postage.

To obtain a "sucker list" for his mail-order "patent medicine" business, Reeder offers to furnish newspapers with "copy" for a "health department" on the understanding that all inquiries are turned over to him. Here is a sample of the "copy."

Notice that no reference is made to the "patent medicine" side of the enterprise. The sale of books alone is given as the excuse for furnishing free "lectures."

HOW IT WORKS

The way in which Reeder's scheme works out may best be explained by detailing some specific cases. A young woman wrote to Reeder giving no details but stating that she was "weak and run down" and asking for advice. Reeder replied in a letter replete with platitudes regarding diet and exercise and suggested that the girl purchase "Home Health Club Book Vol. 1," price $1, and carefully observe the directions given therein. For a tonic Reeder recommended "Re-New-U," which, he declared, "is excellent":

> "Its influence upon the stomach, the liver, the bowels and the kidneys, as well as heart is the very best and I believe that it will be just the thing for you to take. It is sold under the name of Re-New-U by the Home Remedies Company at the price of $0.50 per box, $2.50 for six boxes."

Enclosed with the letter containing these recommendations was a descriptive price list of the Home Health Club publications. The correspondent was told that every purchaser of Volume 1 receives "a Certificate of Corresponding Life Membership." The day following the receipt of this letter and advertising brought the young woman a letter from the Home Remedies Company.

It is worth noting, here, that Reeder carefully avoids letting the public know that there is any connection between the Home Health Club and the Home Remedies Company. The Home Health Club's address is always given "5039 Cottage Grove Avenue, Chicago," while the advertising matter of the Home Remedies Company bears the address "Cottage Grove Avenue, opp. Fiftieth Place."

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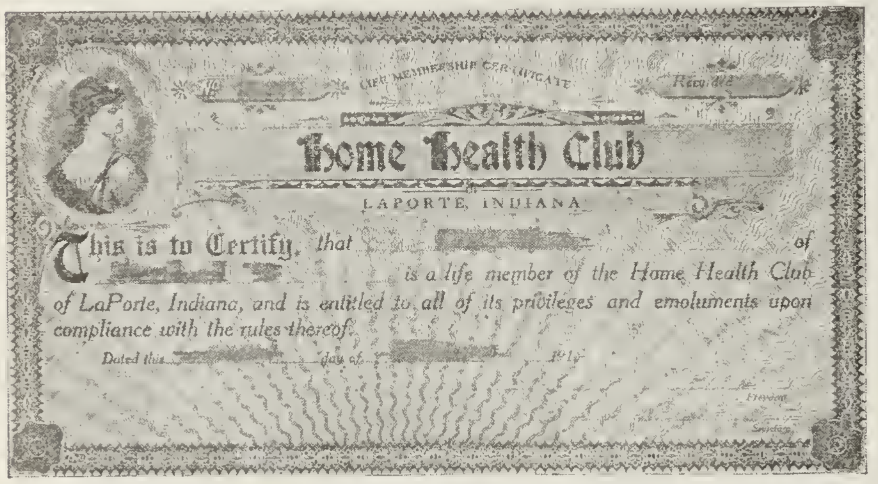
[1] Reeder's connection with the so-called Children's National Tuberculosis Society has been referred to in these pages. A reprint of the matter will be sent on receipt of a two cent stamp.

"PATENT MEDICINES" BY THE SCORE

The letter from the Home Remedies Company contained "patent medicine" advertisements galore. The first one described, for Abscesses, costs $2. No. 4 for "Ataxia Locomotor" costs but 50 cents. The eleventh on the list is for Cancer and is priced at $2. The one for Cataract comes at $1, while "Cold Feet" may be cured for 50 cents. No. 42 for Insanity is another half-dollar preparation while No. 52 for Prostatitis costs $3. Then there is "Nocturnia" for "unnatural losses, drains and weaknesses," which "Restores Virility, Strength and Efficiency," price, postage prepaid, only $2 a bottle! And "Grandmother's Pile Cerate" at 50 cents a tube must be considered cheap, as a "relief and cure" of any form of hemorrhoids. "Re-New-U" as the company's *pièce de résistance,* is, of course, played up to the limit; it will give you "Health, Vigor and Vim." In order that you may *look* as young as "Re-New-U" will make you *feel,* it is recommended that you use "Cutola," "which enables you to defy old age." For Cutola:



LIFE MEMBERSHIP CERTIFICATE

Home Health Club

LAPORTE, INDIANA

This is to Certify, that [redacted] of [redacted] is a life member of the Home Health Club of LaPorte, Indiana, and is entitled to all of its privileges and emoluments upon compliance with the rules thereof.

Dated this [redacted] day of [redacted] 191

President

Secretary

"Certificate of Membership" in the Home Health Club, which goes with every purchase of Vol. I of the club books—price $1.00.

> ". . . would restore freshness and youthful appearance to the face of an old Arizona Indian."

Those who, like Ponce de Leon, are seeking something in this line should send in a "Combination Order: 6 Boxes of Re-New-U and 3 Bottles of Cutola, $5."

MAIL-ORDER CURE FOR PILES

Another case: A man writes in to Reeder asking him what can be done for a long standing case of hemorrhoids. No details are given regarding the case but Reeder comes back with all the glib assurance of ignorance:

> "I believe that your case of piles can be entirely cured without having to resort to an operation."

As to the cause of the condition Reeder opines that "the bowels have very much to do with it," which sounds reasonable. For treatment:

> "You will find in Home Health Club book, Vol. 3 much upon the subject that would enable you, if observed, to successfully treat yourself at home. The price of the Vol. 3 is $2.00."

Further, Reeder suggests that the gentleman suffering from piles "secure and use internally a preparation of tissue foods":

> "The Home Remedies Co., Cottage Grove Ave., Opp. 50th Place, this city, handle them under the name of Modern Home Remedies and I will ask them to send you some circulars describing them."

The vision of Dr. Jekyll Reeder of the Home Health Club asking Mr. Hyde Reeder of the Home Remedies Company to send some advertising circulars to a sufferer from hemorrhoids is a touching one. But this was not all. Reeder recommends also that a 50-cent tube of "Grandmother's Pile Cerate" be purchased. This "will aid in putting the trouble under control but in order to gain the best results further measures are needed." The "further measures" are a set of "Weirick Rectal Dilators," price $3, sold, of course, by the Home Remedies Company.

CURING CANCER WITH "TISSUE SALTS"

But there is a darker side to the Reeder brand of quackery. One young woman wrote to Reeder describing a case of carcinoma of the breast. Reeder replied:

> "From what you mention of your mother's condition I am inclined to think that the trouble may be one of Cancer of the Breast, and although such cases are considered quite severe by many physicians, they are not at all incurable. There are many who have been fully restored to health without surgery, just by following the Home Health Club method of treatment, as described in the Volume 2 under the heading, 'Breast Cancer.' I will suggest that you procure this book for your mother, and see to that she carries out the different suggestions given therein. By so doing I predict good results. The price of the Volume 2 is $3.00."

For this case Reeder recommended the "tissue remedies" for cancer sold by the Home Remedies Company, price $2, and declared that "Grandmother's Tumor Remedy," also sold by the Home Remedies Company, price $2, was "of great value for external use in cases of this kind." A nice business forsooth.

Any man who declares that many women with cancer of the breast have been fully restored to health without surgery falsifies. If he does this knowingly, and for the purpose of selling some wretched nostrums, he is a scoundrel; if he falsifies unknowingly, from the depths of abysmal ignorance, he is a dangerous quack.

CATCHING THE WOMEN

Much more could be written of the Home Health Club and the Home Remedies Company and other activities of David H. Reeder, did space permit. It would be interesting, for instance, to describe the devious methods by which the Home Remedies Company has exploited women. Take these excerpts from a letter sent out by the concern to a woman:

Volume VI. First-Quarter, 1913 Number 1

HOME HEALTH

QUARTERLY MAGAZINE

EDITED BY DR. DAVID H. REEDER

OFFICIAL PUBLICATION OF THE HOME HEALTH CLUB

Dr. David H. Reeder

Founder of the Home Health Club

Per Year 50 cts. A MAGAZINE DEVOTED TO HOME HEALTH, HYGIENE & SANITATION Per Copy 15 cts.

Home Health, the "official organ" of the Home Health Club. The advertising pages are devoted to the exploitation of the nostrums of the Home Remedies Company.

> "While the scope of our ministrations are manifold, our chief aims are the alleviation and cure of relative diseases of the ovaries and womb and its appendages; Leucorrhoea, Prolapsus, Ulceration, Engorgement, Painful and Profuse Menstruation. . . . All replies will be held sacred, thus availing the most diffident and reticent of a guaranteed means whereby a perfect cure for each and all of women's ailments can be accomplished in the sanctity of home."

Reference, too, could be made to the attempt on the part of Reeder to sell stock in his "patent medicine" concern. The prospectus sent out was of the classic, "blue sky" type.

After stating that Reeder started in with an original investment of $4.60 and that the business had been developed until it was worth $126,000, doing a cash business of over $50,000 annually with net profits of 16 per cent., the prospectus declared that the company needed an additional $100,000 "to further advertise and push the sale of our Remedies, Foods, etc." There is the inevitable reference to fortunes made in the "patent medicine" business, and the cases of "Bromo Seltzer" and "Warner's Safe Cure" are cited, presumably for the purpose of exciting the cupidity of the prospective investor.

THE HOME HEALTH CLUB VOLUMES

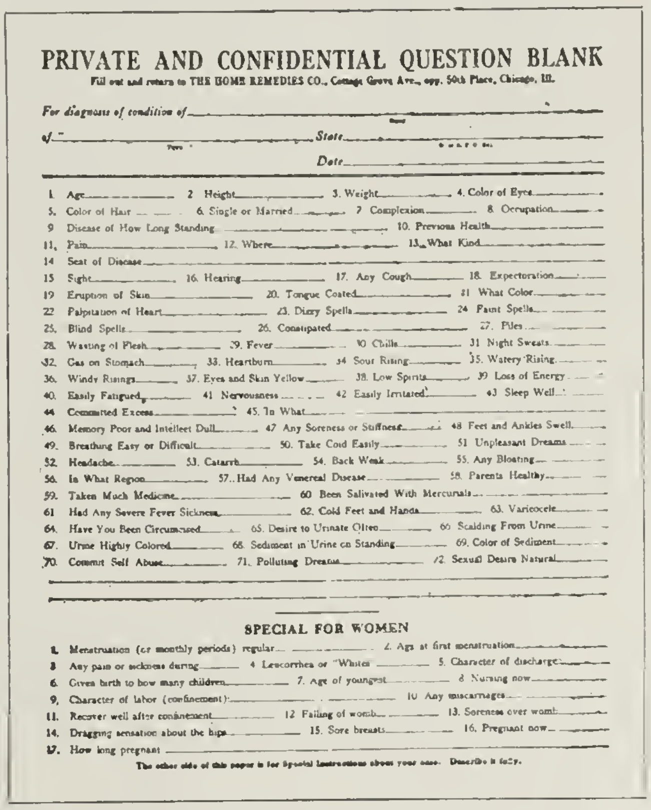
It would be possible to show by quotations from some of the Home Health Club volumes Reeder's ignorance of even the fundamental truths of medical science. One quotation must suffice. Reeder solemnly assures the public, through one of his books sold as recently as October, 1915, that:

> "Thirty-six cases of diphtheria developed in one school in Chicago by the leakage of sewer gas into a hot-air pipe."

In common with his kind Reeder does not omit an opportunity to blackguard the professions of medicine and pharmacy. In describing himself and his methods—as a physician, not as a "patent medicine" dispenser—he says:

> ". . . the druggists do not love me; the undertaker does not know me, and I miss his influence and my rebate; my patients have a quiet time; my bills, unfortunately, are small; can't get rich very fast; I don't have the advantage of swelling my bill for probate, for my patients are never too sick to keep tally on the number of visits."

The matter sent out by the Home Health Club, whether it be the so-called Home Health Club volumes, letters of "advice," *Home Health*, the alleged official organ of the Home Health Club or what not, has for its final object the exploitation of the nostrums sold by Reeder under the name of Home Remedies Company. The entire business is one of deception, misrepresentation and fraud. The newspapers are deceived into accepting the Home Health Club copy, the public is deceived by leading it to believe, inferentially, that there is no connection between the "patent medicine" concern—the Home Remedies Company—and the Home Health Club itself. Reeder's writings stand as monuments to his ignorance and his methods indicate a disregard for elementary truthfulness and common honesty.



PRIVATE AND CONFIDENTIAL QUESTION BLANK

Fill out and return to THE HOME REMEDIES CO., Cottage Grove Ave., opp. 50th Place, Chicago, Ill.

For diagnosis of condition of
of *State*
Date

1. Age 2 Height 3. Weight 4. Color of Eyes
5. Color of Hair 6. Single or Married 7 Complexion 8. Occupation
9 Disease of How Long Standing 10. Previous Health
11. Pain 12. Where 13. What Kind
14 Seat of Disease
15 Sight 16. Hearing 17. Any Cough 18. Expectoration
19 Eruption of Skin 20. Tongue Coated 21 What Color
22 Palpitation of Heart 23. Dizzy Spells 24 Faint Spells
25. Blind Spells 26. Constipated 27. Piles
28. Wasting of Flesh 29. Fever 30 Chills 31 Night Sweats
32. Gas on Stomach 33. Heartburn 34 Sour Rising 35. Watery Rising
36. Windy Risings 37. Eyes and Skin Yellow 38. Low Spirits 39 Loss of Energy
40. Easily Fatigued 41 Nervousness 42 Easily Irritated 43 Sleep Well
44 Committed Excess 45. In What
46. Memory Poor and Intellect Dull 47 Any Soreness or Stiffness 48 Feet and Ankles Swell
49. Breathing Easy or Difficult 50. Take Cold Easily 51 Unpleasant Dreams
52. Headache 53. Catarrh 54. Back Weak 55. Any Bloating
56. In What Region 57. Had Any Venereal Disease 58. Parents Healthy
59. Taken Much Medicine 60 Been Salivated With Mercurials
61 Had Any Severe Fever Sickness 62. Cold Feet and Hands 63. Varicocele
64. Have You Been Circumcised 65. Desire to Urinate Often 66 Scalding From Urine
67. Urine Highly Colored 68. Sediment in Urine on Standing 69. Color of Sediment
70. Commit Self Abuse 71. Polluting Dreams 72. Sexual Desire Natural

SPECIAL FOR WOMEN

1. Menstruation (or monthly periods) regular 2. Age at first menstruation
3 Any pain or sickness during 4 Leucorrhea or "Whites" 5. Character of discharge
6. Given birth to how many children 7. Age of youngest 8 Nursing now
9. Character of labor (confinement): 10 Any miscarriages
11. Recover well after confinement 12 Falling of womb 13. Soreness over womb
14. Dragging sensation about the hips 15. Sore breasts 16. Pregnant now
17. How long pregnant

The other side of this paper is for Special Instructions about your case. Describe it fully.

Every mail-order medical fraud has its "diagnosis blank." Here is a miniature reproduction of the one used by the Home Remedies Company.

The Development of Scientific Medicine.—An investigation of medical history shows two developmental periods which interlace with each other to some extent. In the early days our ideas of disease and its treatment were quite indefinite and general and were founded in the main on hypotheses and theories which had no particular scientific basis. In later years, research and experimentation have furnished the scientific basis for the establishment of various facts and for certain seemingly sound theories in addition. It is true some of the theories brought forth have been illogical deductions from the facts at hand, others have been formulated as a result of false evidence, improper technic, etc. It is fair to say, however, that medical theories propounded as the result of scientific research are much safer than those originating in the inner recesses of a dreaming mind. It can be said, therefore, that the earlier periods of generalization in medicine have passed, and we are now working in the age when legitimate progress can only be made as a result of careful research and experimentation.—E. F. McCampbell, *Ohio Public Health Journal.*

Correspondence

Statistics of Automobile Accidents

To the Editor:—Would it not be possible for The Journal to get the facts in regard to automobile casualties in the United States? In view of the fact that your practical system of collecting and tabulating the accident results of the Fourth of July annual observation has aided forcibly in bringing about a change from a dangerous and destructive demonstration to one of sane and safe observance, might it not be possible to the same extent to make the use of the automobile safe and put a stop to the frequent deaths and injuries?

I am convinced that if the daily, or especially the annual loss of life could be ascertained and shown up in as conspicuous a manner as has been done in the Fourth of July casualties, the American people would be appalled.

The American public through its legislative bodies, the Interstate Commerce Commission and otherwise, has demanded that the railroads and other public service carriers adopt and use every device and plan for safety; and yet the private citizen, with no consideration of his own or other persons' safety, uses the automobile with its many horse-power engine in a most indifferent and reckless manner.

Many of these machines or cars are too often run by individuals of indifferent judgment or physical condition or by youths or others incompetent to insure the safety of their own lives or that of others traveling perhaps by safer methods.

If in every case the cause or influence leading to the accident, even in a large percentage of the occurrences, whether causing death or other injury, could be ascertained and shown in a lucid form, undoubtedly it would lead to better and safer conditions in handling these engine-driven vehicles. Laws and regulations could be urged and enforced, making this mode of travel practically one of safety.

If you can do this work you will confer on the traveling public a blessing and aid that will be inestimable.

John J. Coffman, M.D., Scotland, Pa.

Etiology of Pellagra

To the Editor:—Your recent editorial on the report of the U. S. Public Health Service concerning pellagra (The Journal, Nov. 20, 1915, p. 1818) has been read with a great deal of interest, as it recalls to mind an article by Rosenbloom ("The Acetone Bodies in Diabetes Mellitus," The Journal, Nov. 13, 1915, p. 1715) which seems to have an important bearing on the subject.

Rosenbloom states that "in health the catabolism of large quantities of protein can dissipate acidosis on account of its partial conversion into sugar." I take it he means health as distinguished from the diabetic condition.

In the editorial on "Acidosis and the Reaction of the Blood" (Sept. 25, 1915, p. 1114) you state that metabolism in the animal body causes a regular formation of acid bodies which combine with the bases of protoplasm and blood, thus steadily operating to lower the alkaline reaction of the body.

This question now presents itself: Does not the protein diet which cures pellagra act by dissipating an acidosis (the particular acid bodies not differentiated yet), and may not this acidosis accumulate by *lack* of protein food?

What is acidosis? Is it not loss of reserve alkalinity sufficient to prevent neutralization of the acid bodies, as stated in your September editorial? And if it be admitted, therefore, that deficient alkalinity causes acidosis, and acidosis is dissipated by protein diet, and pellagra is also dissipated by protein diet, may we not with reason propose that pellagra is a condition of deficient alkalinity or lowered alkaline equilibrium between bases and acids?

George D. Fairbanks, M.D., Brownsville, Texas.

Studies of Pellagra: a Correction

To the Editor:—I have just read the editorial on "Studies of Pellagra" (The Journal, Nov. 20, 1915, p. 1818). In the second paragraph of the first column I find the following: "As a result of epidemiologic studies, Goldberger had concluded in effect that pellagra is not a communicable disease, that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately large," etc. This last word "large" is evidently a slip through inadvertence. It should be "small," so that the last part of the foregoing quotation should read, "that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately small," etc.

Joseph Goldberger, M.D., Washington, D. C.
Surgeon in Charge of Pellagra Investigations.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

UTILIZABLE ALCOHOL

To the Editor:—The amount of alcohol which can be oxidized by the adult human body in twenty-four hours, that is, serve as a food, has been determined by a physiologist and formulated into a law. Can you inform me concerning the name of the physiologist, and the amount of alcohol that can be utilized?

C. C. Mechling, M.D., Pittsburgh.

Answer.—The maximal dose of alcohol has been estimated at 15 grams per day. Such an amount can be taken without causing the alcohol tension in the blood to become so high that more than the usual amount will be excreted in the kidneys and lungs. It has long been known that 90 per cent. of the alcohol ingested is burned in the body. Atwater and Benedict within the last few years have determined that as much as 99 per cent. of the alcohol ingested undergoes combustion in the organism when the amount of alcohol ingested per day is equal in quantity to that contained in 6 ounces of whisky. It is well known that alcohol tolerance depends largely on habituation of the individual to this substance. In other words, a greater combustion of alcohol occurs in the tissues of a steady drinker than in a habitual abstainer.

We are unable to find any reference to the formation of a law for the determination of alcohol utilized in the human body.

TESTS FOR ACETONE IN URINE

To the Editor:—Sajous quotes from The Journal regarding tests for acetone in the urine, those of Stock and Denigès. I have no description of these tests and would appreciate the information from you.

H. A. W. Brown, Cookstown, Ont.

Answer.—These tests were described in an article by Dr. A. E. Taylor, "Tests for Acetone in the Urine" (The Journal, March 17, 1906, p. 790). The technic is as follows:

1. The Stock test: The distillate of the urine is used. From 50 to 100 c.c. of urine are made acid by the addition of either acetic, hydrochloric or sulphuric acid. The first 10 c.c. of distillate will contain all the possible acetone. About an inch of the distillate is placed in a test tube; a drop or two of a 10 per cent. solution of hydroxylamin hydrochlorid are added, and sufficient sodium hydroxid or carbonate to render the solution alkaline to liberate hydroxylamin; the mixture is shaken and a couple of drops of pyridin are added and the mixture shaken; then an inch of ether is added and the mixture shaken. Bromin water is then added drop by drop, with mixing until the ether layer becomes yellow; then a few drops of strong hydrogen peroxid are added; if acetone is present, the ether will turn a distinctive green blue.

2. The Denigès test: In the test of Denigès about an inch of the distillate in a test tube is mixed with an equal amount of a solution of the subsulphate of mercury (mercuric oxid 50, sulphuric acid 200, water up to 1,000) and the mixture allowed to simmer in a stoppered flask for about five minutes. A white crystalline precipitate occurs on cooling, which is very distinctive in appearance. If acetone is present in excess, the test is less distinct. If but a trace is present, a trace of sodium chlorid will aid the precipitation. The precipitate is not soluble in dilute hydrochloric acid.

CHOLOGESTIN AND TABLOGESTIN

To the Editor:—Are the enclosed claims of chologestin and tablogestin true? Or shall I try it myself? Jan Cepelka, M.D., Chicago.

Answer.—The "enclosed claims" are the literature issued by F. H. Strong Company, New York, concerning chologestin and tablogestin. Chologestin is said to be a liquid of which 100 c.c. contains the amorphous sodium salt of glycocholic acid, 0.858 gm.; true sodium salicylate from the natural oil of wintergreen, 1.07 gm.; pancreatin, 2.15 gm., and sodium bicarbonate 2.15 gm., in a menstruum containing 15 per cent. alcohol. Each half ounce is said to contain the amorphous sodium salt of glycocholic acid, 2 grains; true sodium salicylate from the natural oil of wintergreen, 2½ grains; pancreatin, 5 grains, and sodium bicarbonate, 5 grains. According to the manufacturers, tablogestin is chologestin in tablet form, and three tablets of tablogestin are said to contain the active medicinal ingredients of 1 tablespoonful of chologestin. The statement is made:

> "Tablogestin (and Chologestin), because of the combined digestive properties of the bile salt and pancreatin, materially aids in the intestinal digestion of the various foods and thus assists in the control of the fermentative and putrefactive changes that might otherwise ensue."

Bile salts do facilitate the action of the pancreatic juice in the intestines, but this applies only to bile salts of endogenous origin; that is, bile that is secreted in correlation with pancreatic secretion. It is doubtful if the pancreatin used in this mixture could ever enter into a digestion process in the intestine. As a consequence of the cholagogue action it might be admitted that it has an indirect influence on digestion in the intestine; this would, however, be offset by its disturbing influence on the digestive process in the stomach, as it is known that bile salts precipitate pepsin.

ARTICLES ON LEUKEMIA

To the Editor:—Please give me the more important references in the literature on leukemias in general, more particularly acute leukemia.

C. R. Bird, M.D., Greensburg, Ind.

Answer.—The following is a partial list of articles published during the past two years:

Billings, F.: Benzol in Treatment of Leukemia, The Journal, Feb. 15, 1913, p. 495.

Warthin, A. S.: Minute Changes Produced in Leukemic Tissues by Exposure to Roentgen Rays, *Am. Jour. Med. Sc.*, January, 1914; abstr., The Journal, Jan. 31, 1914, p. 407.

Smith, F. H.: Benzol Treatment in Two Cases of Leukemia, The Journal, March 21, 1914, p. 921.

Non-Formation in Leukemia of Agglutinins for Typhoid Bacilli, Current Comment, The Journal, April 18, 1914, p. 1259.

Brown, E. J.: Acute Lymphatic Leukemia after Tetanus Serum Anaphylaxis, The Journal, May 9, 1914, p. 1473.

Pulawski, A.: Roentgen Rays and Benzol in Leukemia, *Wien. klin. Wchnschr.*, May 7, 1914; abstr., The Journal, June 13, 1914, p. 1935.

Sappington, S. W., and Pearson, W. A.: Leukemias Under Benzol, The Journal, July 11, 1914, p. 143.

Kiralyfi, G.: Intramuscular Injections of Blood in Treatment of Leukemia, *Wien. klin. Wchnschr.*, July 30, 1914; abstr., The Journal, Sept. 26, 1914, p. 1143.

Graham, C. F.: Case of Splenomyelogenous Leukemia Treated with Benzol, The Journal, Feb. 6, 1915, p. 505.

Simon, C. E., and Judd, C. C. W.: Acute Lymphatic Leukemia, The Journal, May 15, 1915, p. 1630.

Smith, F. H.: Benzol in Leukemia, The Journal, May 22, 1915, p. 1734.

Beifeld, A. F.: Case of Acute Myeloid Leukemia, *Arch. Diagnosis*, July, 1915.

Boardman, W. W.: Benzene Treatment of Leukemia, *California State Jour. Med.*, September, 1915.

Ireland, R. A., and Ruhräh, J.: A Case of Lymphatic Leukemia with Apparent Cure, The Journal, Sept. 11, 1915, p. 948.

Steinke, C. R.: Leukemia: Report of Two Cases, The Journal, Sept. 11, 1915, p. 954.

Leukemia, Therapeutics, The Journal, Oct. 9, 1915, p. 1280.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

California: Los Angeles, December 14, and Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Colorado: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

District of Columbia: Washington, Jan. 10, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Indiana: Indianapolis, Jan. 10, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Minnesota: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

New Hampshire: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

New Mexico: Santa Fé, Jan. 10, 1916. Sec., Dr. W. E. Kaser, East Las Vegas.

North Dakota: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

Oregon: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

Pennsylvania: Philadelphia, Jan. 18-20, 1916. Sec., Mr. Nathan C. Schaeffer, Harrisburg.

Rhode Island: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

South Dakota: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Washington: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

California June Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, June 15-18, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 37, including 2 osteopaths, of whom 35 passed and 2 osteopaths failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles	(1914)	81.6
Hahnemann Med. Coll. of the Pacific	(1915)	75.1, 82, 84.2, 86.5
Leland Stanford Junior University	(1915)	79.5, 81.4, 82.2, 82.3, 82.7, 83, 85.2, 88.1, 88.3, 90.9, 91.3, 91.3, 91.5, 93.9.
Oakland College of Medicine and Surgery	(1915)	90
University of California	(1915)	84.7, 84.9, 88.2, 89.3, 90.7. 90.9, 92.8, 93.3, 93.4, 94.3, 94.8.
Denver and Gross College of Medicine	(1904)	96.[illegible]
Jenner Medical College	(1901)	83.8
Harvard University	(1915)	88.3
Jefferson Medical College	(1911)	81.8

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University	(1894) (1899)	Minnesota
Rush Medical College	(1891)	Minnesota
State University of Iowa College of Medicine	(1898)	Minnesota
College of Phys. and Surgs., Kansas City, Kan.	(1898)	Missouri
University of Louisville	(1872)	Missouri
University of Michigan Medical School	(1891)	Minnesota

The following questions were asked:

PHYSIOLOGY

1. (*a*) Discuss hemolysis. (*b*) Discuss the origin and fate of the leukocytes. 2. What is the relation of the nerves to the movements of the intestines? 3. Discuss the influence of the nervous system on respiration. 4. Define the following terms: inhibition, diffusion, osmosis, diapedesis, perimetry. 5. Discuss the metabolism of the embryo. 6. Discuss color blindness. 7. Discuss inhibition in reflex action. 8. Discuss the relation of the rods and cones to vision. 9. Discuss the variations in the volume of the brain due to respiration. 10. Discuss the sensation of hunger and thirst. 11. (*a*) What are the sources of uric acid? (*b*) Where and how is uric acid formed? 12. What effects are observed after section of a cutaneous nerve?

OBSTETRICS AND GYNECOLOGY

1. What is a blue baby? Give pathology and treatment of the condition. 2. Ophthalmia neonatorum: Give etiology, pathology and treatment. 3. (*a*) What are the indications for the use of forceps? (*b*) for cesarean section? 4. Diagnose tubal pregnancy before rupture. 5. Describe the mechanism of labor with a left mento-anterior position. 6. Differentiate polyhydramnios from twin pregnancy. 7. Name the ligaments of the uterus and give the origin and insertion of each. 8. Define and give etiology and pathology of cystocele, rectocele, hematocele and procidentia. 9. Describe an operation for complete laceration of the perineum. 10. Give diagnosis and treatment of pelvic abscess. 11. Give cause, symptoms and treatment of subinvolution of the uterus. 12. Erosion of the cervix: Give cause and treatment.

GENERAL MEDICINE

1. Typhoid fever: (*a*) etiology; (*b*) symptomatology; (*c*) pathology; (*d*) diagnosis. 2. In a case of general anasarca, how would you proceed to determine the underlying cause. 3. What are the early signs of tuberculosis, both subjective and objective? (*b*) Describe two important tests for tuberculosis and give relative value. 4. (*a*) Differentiate acute cerebrospinal meningitis and acute anterior poliomyelitis. (*b*) Give treatment of the latter. 5. (*a*) Describe and give management of a case of persistent gastro-enteritis in an infant on artificial diet. 6. Give ten causes of headache, and indicate location of pain in each variety. 7. Give a brief discussion of epilepsy, and give general advice to such patient. 8. What is the significance of a blood pressure of 240 in a woman 60 years of age? 9. Give symptoms and treatment of chlorosis. 10. Discuss the various types of asthma from etiologic standpoint, and give general management of one type. 11. Discuss the complications and sequelae of scarlet fever. 12. What is the usual type of pneumonia in the child; in the adult; in the aged? (*b*) Give description and treatment of one type of pneumonia.

ANATOMY AND HISTOLOGY

1. Give formation and branches of the lumbar and sacral plexuses. (May use diagram.) 2. (*a*) Classify articulations; give a typical example of each class. (*b*) Discuss the hip joint, naming all muscles passing across the joint. 3. Discuss the distribution and central connections of the auditory (eighth cranial) nerve. 4. Discuss the bony thorax. 5. Discuss the pleura, giving attachments and reflections, also external markings of its boundaries. 6. Give the action of: (*a*) the sternocleidomastoid, singly and together; (*b*) the psoas magnus; (*c*) serratus anterior; (*d*) deltoid; (*e*) trapezius; (*f*) iliocostalis; (*g*) latissimus dorsi. 7. Describe by diagram the longitudinal section of the femur, showing outline and histologic structure showing normal development and regeneration. 8. Give the essential differences of the appearance and structure—gross and microscopic—of the mucous membrane of the duodenum, jejunum and ileum. 9. Give the histology of a medium size artery. 10. Give formation of the tributaries of the portal vein; give most inferior tributary. 11. Discuss the cervical sympathetic ganglia; give location, tributaries and branches. 12. Give histology of the mammary gland; make drawing showing typical histologic section.

HYGIENE AND SANITATION

1. Indicate the limitations of private practice as compared with public health practice. 2. (*a*) What are the most important foreign ingredients in water? (*b*) Mention five methods of purifying water. 3. (*a*) What prevalent acquired defect in schoolchildren's eyes is directly due to school life? (*b*) Discuss the prophylaxis of eye defects. 4. Why should the registration of vital statistics be compulsory? 5. In what ways are health and efficiency of schoolchildren prompted by frequent physical examinations? 6. Describe the modern method of dealing with an epidemic of diphtheria among schoolchildren. 7. What diseases are transmitted by animals and insects? 8. Discuss antityphoid inoculation. 9. Name ten preventable diseases and indicate the mode of prevention. 10. Discuss modes of dissemination of diseases which can be transmitted by indirect contact. 11. Discuss the efficiency of formaldehyd as a disinfectant. Describe most efficient method of using it. 12. Describe an efficient method of disinfecting excreta.

SURGERY

1. (*a*) What conditions will cause bleeding from the stomach? (*b*) State briefly etiology, symptomatology, clinical and laboratory findings, and prognosis of gastric ulcer. 2. What symptoms and signs would result from fracture of the skull over the right rolandic area? 3. State briefly the general considerations in the treatment of gunshot wounds. 4. (*a*) Name the different varieties of goiter. (*b*) When is removal of the thyroid gland indicated? (*c*) When is the ligation operation indicated? (*d*) When is no surgical interference indicated? 5. (*a*) Diagnose posterior dislocation of hip. (*b*) Describe briefly the necessary manipulations to reduce said dislocation. What is the after-treatment? 6. Describe the operation and name structures encountered in ligation of the superficial femoral artery at the apex of Scarpa's triangle. 7. (*a*) Describe the operation of removal of the appendix. (*b*) What are the indications for said operation? 8. (*a*) Describe the symptoms and signs of oblique fracture of head of humerus. (*b*) Describe briefly the treatment. 9. Describe briefly a typical case of acute empyema, giving all aids to diagnosis of said condition. 10. Give the diagnosis, course and prognosis of cancer of the rectum. 11. Describe the treatment of acute gonorrhea in the male. 12. Differentiate gallstones from right-sided kidney stones.

CHEMISTRY AND TOXICOLOGY

1. Name and give the formulas for five salts of mercury. 2. What is the formula of hydrogen peroxid? What is its action on silver oxid; on finely divided platinum? 3. What is "bleaching powder"; its formula? How does it act as a disinfectant? 4. Define and discuss diffusion and osmosis. 5. Describe and discuss briefly HNO_3; its

chemical and physical properties. 6. Discuss arsenic (its occurrence, properties and toxic effects, and describe the use of one antidote). 7. Discuss lead poisoning and two effective means of overcoming the same. 8. Define "physiologic antidote" and "chemical antidote" and give an example of each. 9. Discuss hydrargyrism. 10. Discuss the indications and contraindications for the use of stomach pump. 11. Discuss carbolic acid poisoning and an efficient method of treatment. 12. Discuss the toxic effects of yellow phosphorus.

BACTERIOLOGY AND PATHOLOGY

1. What changes are found in a stained blood smear in primary pernicious anemia? 2. What elements might you find microscopically in the sediment of a normal urine? 3. Describe the microscopic field seen in: (*a*) a negative Widal reaction; (*b*) a positive Widal reaction. 4. What do you look for in a microscopic examination of stomach contents? 5. Define eosinophilia; name several conditions. 6. What are casts? Describe at least three varieties, and tell under what diseased conditions they are found. 7. Discuss briefly the etiology of chronic interstitial hepatitis, or cirrhosis of the liver, and describe the microscopic appearance of at least two varieties. 8. Describe embolism, infarction and thrombosis, and briefly discuss the pathology of each. 9. Define: (*a*) carcinoma; (*b*) sarcoma. Give the relative frequency of occurrence in the: (*a*) breast; (*b*) liver; (*c*) bone. 10. Describe the gross appearance of a bone at the site of osteomyelitis. 11. What are the causes of jaundice and how do *they* operate to produce this condition? 12. Define: (*a*) cloudy swelling; (*b*) atrophy; (*c*) malignancy.

MATERIA MEDICA AND THERAPEUTICS, PHARMACOLOGY, INCLUDING PRESCRIPTION WRITING

1. Name four commonly used mercury compounds (U. S. P.) and discuss briefly their therapeutic uses. 2. Discuss fully the possible therapeutic effects that would be expected of the following prescription: ℞ Tinct. nucis vomicae, 5.0; fluidextracti cascarae, 10.0; tinct. cardamon comp., 25.0; tinct. gentian comp., q.s.ad. 100.0. M. Sig.: Take one teaspoonful in half glass of water t. i. d., before meals. 3. What is apomorphin? State dosage, indications, modes of administration and action. 4. Discuss the indications and contraindications for the use of the following: ℞ Kalii iodidi, 18.0; aquae dest., -60.0; syrup sarsaparilla comp., q.s.ad. 125.0. M. Sig.: Take one teaspoonful, well diluted, t. i. d., p. c. 5. Describe and discuss three different modes of administering drugs for therapeutic purposes. 6. Discuss the conditions that modify the effects of drugs. 7. (*a*) Discuss the dosage of drugs as influenced by age, sex, size and weight of the individual. (*b*) Define idiosyncrasy and discuss one example. 8. (*a*) Discuss oleum ricini, its dosage, therapeutic action and indications. (*b*) Discuss three contraindications for the use of intestinal evacuants. 9. Discuss the systemic action of alcohol (internally administered.) 10. What is epinephrin? How is it administered? What are its principal effects? 11. Discuss salvarsan (its principal properties, dosage, best mode of administration, indications and contraindications.) 12. Describe the bromid salt most commonly used (as to its physical properties, dosage, therapeutic action and untoward effects).

Indiana July Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, July 13-15, 1915. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 43, of whom 40 passed, including 2 osteopaths, and 3 failed. Twenty-seven candidates were licensed through reciprocity. The following colleges were represented.

College PASSED	Year Grad.	Per Cent.
Howard University	(1914)	89.8
Dunham Medical College	(1902)	81.8
Northwestern University	(1915)	90.9
Rush Medical College	(1915)	89.3
Indiana University	(1915)	82.6, 82.6, 85, 85.6, 86.3, 86.4, 86.5, 87.1, 87.3, 87.3, 87.5, 87.5, 87.6, 87.7, 87.9, 88.1, 89, 89.3, 90.3, 90.4, 90.5, 92.7, 92.8, 93.7, 94.1, 94.7.
University of Louisville	(1915)	83.9, 84.7, 84.7, 87.6
Harvard University	(1915)	89.8
University of Michigan Medical School	(1915)	93.1
Western Reserve University	(1915)	91.6
Jefferson Medical College	(1912)	89.4
FAILED		
University of Illinois	(1915)	*
University of Toronto	(1906)	87.5†
National School of Medicine. Mexico	(1912)	73.2

College LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago	(1912)	Illinois
Chicago College of Med. and Surg.	(1910) (1913, 2)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago	(1901) (1910)	Illinois
Northwestern University	(1901)	Illinois
Rush Medical College	(1912)	Illinois
University of Illinois	(1913, 2)	Illinois, Missouri
University of Louisville	(1894) (1914) Kentucky; (1914)	Michigan
Johns Hopkins University	(1902)	Maryland
University of Maryland	(1912)	Maryland
Harvard University	(1893)	Nebraska
Detroit College of Medicine and Surgery	(1914)	Michigan
University of Michigan Medical School	(1902)	New York
Missouri Medical College	(1887)	Missouri
St. Louis University	(1913)	Missouri
University Medical College, Kansas City	(1911)	Missouri
Medical College of Ohio	(1875)	Ohio
Ohio State University, College of Medicine	(1914)	Ohio
Western Reserve University	(1911)	Ohio
Medico-Chirurgical College of Philadelphia	(1913)	Penna.
Western Pennsylvania Medical College	(1897)	Penna.
Meharry Medical College	(1906)	Tennessee

* Examination incomplete.

† Fell below the required average in one subject.

Book Notices

Diseases of Nutrition and Infant Feeding. By John Lovett Morse, A.M., M.D., Professor of Pediatrics, Harvard Medical School, and Fritz B. Talbot, A.B., M.D., Instructor in Pediatrics, Harvard Medical School. Cloth. Price, $2.50. Pp. 346. New York: The Macmillan Company, 1915.

The first part of this book contains chapters on the physiology of digestion, and the metabolism of the various food elements—the fundamentals, the proper foundation and introduction to the main part of the work, which is a clinical and practical discussion of infant feeding.

The laboratory worker will find in the early chapters a résumé of the latest views on the metabolism of early life with full reference to the work which has been done in this direction. That work has been carefully sifted, and critically analyzed. It is refreshing to come across such a sentence as this: "It seems wise to summarize what we *think* we know about the digestion and absorption of fat." This candor and frank acknowledgment of our limitations is characteristic of the book: repeatedly one reads, "but this is not proved," following the statement or description of a well-established clinical observation.

Pediatricians and general practitioners will find in the work much of practical value, much knowledge and detailed information which they can apply in their everyday practice. Breast feeding and artificial feeding are carefully discussed and many valuable hints given as to the management of difficult cases, the ideas set forth being in the main rational and common sense, yet "scientific" in that they are based on, and are the logical outgrowth of, facts in metabolism stated in the earlier chapters of the book. This correlation or "team play" between the different parts of the work, again, is one of its characteristics.

The subject of breast feeding receives the attention which its importance demands, fifty-five of the 336 pages being devoted to it. Directions as to the management both of the baby and the mother's diet and daily hygiene are given in detail. The more complicated subject of artificial feeding is next taken up and, cow's milk being the basis of all substitute foods, discussion of its qualities and characteristics forms the introduction to this general subject. A helpful and practical part in this discussion is a description of certified milk, with detailed directions as to the management of a dairy aiming to produce certified or clean milk.

The opening paragraph of the chapter on general principles of artificial feeding strikes the keynote of the authors' views on the feeding of babies:

> "In approaching the subject of artificial feeding it must be remembered that there are only a few food elements. A baby's food may contain all of these elements, it must contain some of them, it cannot contain any other elements. These food elements are carbohydrates, protein and salts. The carbohydrates comprise the sugars and starches."

The authors are careful to point out that expression of amounts in percentages is a method of calculation and not a method of feeding, and insist on the necessity of accuracy in our knowledge of what we are feeding our babies. The misconceptions and erroneous ideas concerning this method of calculation are cleared away, and its ease and simplicity are clearly evident on study of this particular part of the book. The absence of complicated algebraic formulas is refreshing. The method of calculating the caloric value of the baby's twenty-four-hour amount of food is also given its just weight and importance. It would have been simpler, however, had the authors used the metric system throughout in these calculations. They do use it in estimating the caloric needs of premature infants; why not of older babies also?

The chapters on the problems of infant feeding will be found invaluable to those conscientious physicians who wish to practice careful and efficient methods of feeding, to know what they are doing and thereby to save life.

As is to be expected in such a book of today, in the treatment of the digestive disturbances of infancy, stress is laid almost exclusively on the diet, medicine playing but little part in their proper management.

While this work is by no means perfect, it is one of the best and most complete expositions of the difficult subject of infant feeding which have yet been contributed to medical literature in any language. It is no exaggeration to say that, if the principles as expressed in this book would be taken to heart by the great body of general practitioners to whose hands after all is entrusted the feeding of the vast majority of the nation's babies, and applied diligently, intelligently and conscientiously by them to the management of the most helpless of their patients, the shamefully high infant mortality which characterizes our own as well as other countries would be materially diminished. That, after all, is, the object of all such work in our profession, the saving of life.

The Practitioner's Visiting-List, 1916. Leather. Price, $1.25 net. Philadelphia: Lea & Febiger, 1915.

The Medical Record Visiting-List or Physician's Diary for 1916. Leather. Price, $1.50. New York: William Wood & Co., 1915.

The Physician's Visiting-List (Lindsay and Blakiston's) for 1916. Sixty-Fifth Year of Publication. Leather. Price, $1.25. Philadelphia: P. Blakiston's Son & Co., 1915.

Among the various books peculiar to the holiday season are the annual visiting and record lists. These have been offered to physicians over a sufficiently long period for their make-up to have assumed a standard form. They vary, however, in the arrangement of the pages and in the subsidiary contents.

In the "Practitioner's Visiting List" are information on the periods of dentition, directions for estimating the day of confinement, tables and comparative scales of weights and measures, an article on the examination of the urine, a list of incompatibles, an article on artificial respiration, tables of eruptive fevers, of poisons and antidotes, of dosages and of therapeutic reminders, and an article on the ligations of arteries. The book, which is for thirty patients per week, contains 192 pages, which are numbered, and a table of contents. It is attractively bound in red leather. Separate departments are devoted to general memoranda, obstetric engagements, vaccinations, death registry, addresses of patients and nurses, and a cash account. The book has a pocket for notes, and a place for the insertion of a pencil.

In the "Medical Record Visiting List" are a table of approximate equivalents, an obstetric calendar, tables of weights and measures, of dosage, and of drops and solutions for subcutaneous injections, a few short miscellaneous facts, a table of poisons and antidotes; miscellaneous emergency treatments, articles on artificial respiration and signs of death, and hints on the writing of wills. The book, which is marked for sixty patients, has approximately 150 pages, with separate departments devoted to the daily record, special memoranda, consultations, obstetric practice, vaccinations, deaths, addresses of nurses and patients, and cash account. The book is attractively bound in black leather, and contains a pocket for notes, and a pencil.

In the "Physician's Visiting List" are a table for calculating the day of confinement, a table of contents, a table of incompatibilities, poisons and their antidotes, an article on the metric system, a table for converting apothecaries' weights and measures into metric, a table of doses and of quarantine periods in infectious diseases, an article on asphyxia, and a comparison of thermometric scales. The record pages are not numbered. The book, which is marked for twenty-five patients, contains approximately 100 pages, and is attractively bound in smooth black leather, with a well-fitting leather flap. It has a pocket for notes and a pencil.

From this résumé of contents, the relative advantages of the various lists may be estimated.

Miscellany

Pulmonary Diseases Among Miners

There has been apparently an unusual prevalence of pulmonary tuberculosis and a high death rate from it among the metal miners in southwestern Missouri. This condition has attracted considerable attention and has caused some alarm in that part of the country. To determine the facts in relation to this condition, the U. S. Bureau of Mines instituted an investigation of pulmonary diseases among miners in the Joplin district and its relation to rock dust in the mines.

In Technical Paper 105, A. J. Lanza and Edwin Higgins make a preliminary report of their investigations. The general opinion in this region was that lung diseases became more prevalent after the beginning of active mining in what is known as the sheet ground mines, and that the flint dust from drilling and other mine operations was directly responsible.

The records of the State Board of Health of Missouri for 1912 show 180 deaths from pulmonary tuberculosis in Jasper County, where these metal mines are located. From the Jasper County Antituberculosis Society records, however, it was learned that during the same year there were 720 deaths among miners who had worked two or more years underground. Not more than twelve of these deaths were from pneumonia, which was in some cases a terminal infection of tuberculous subjects. Not all of these deaths occurred in Jasper County, however, but some occurred in adjoining counties in Missouri and others in Kansas. This accounts for a considerable difference between the figures of the state board of health and those of the antituberculosis society.

Some interesting comparative figures are brought out with reference to the death rate in the metal mining counties and in other counties and cities in Missouri. The death rate in 1911 from pulmonary tuberculosis in Jasper County, where the zinc mines are located, was 14.08 per cent. of the total deaths; in 1912, 15.1 per cent.; in 1913, 15.5 per cent. In St. Francois County, which is the lead mining district, the percentage for 1911 was 11.8; 1912, 11.6; 1913, 13.1. In Greene County, which includes Springfield, in Jackson County, which includes Kansas City, and in St. Louis, not mining districts, the percentages for 1911 were, respectively, 9.27, 9.33 and 8.75. In 1912 in the same counties and cities the percentages were: 9.46, 9.07 and 8.93, and for 1913 the figures were 7.4, 8.8 and 9.1. It will be seen that in the two metal mining counties the deaths from tuberculosis exceeded those in the other counties and cities by considerable percentages.

These figures have been taken into consideration by industrial insurance companies doing business in the metal mining counties. One company required that all applicants for industrial insurance over 10 years of age must be examined as for ordinary insurance. This rule is in operation in only one or two other districts, and is said to be occasioned by the number of death claims on account of pulmonary tuberculosis. Another industrial insurance company doing a large business among miners and their families estimates that at least 90 per cent. of rejections and 75 per cent. of death claims are due to pulmonary tuberculosis.

In determining the effect of mining conditions in producing this higher death rate, the investigators studied the methods of mining with reference to drilling, blasting, shoveling, housing, ventilation, temperature, mine water and rock dust, besides some other collateral subjects with reference to the personal hygiene and personal habits of the miners.

Although the mine operators have succeeded for the past two years in making many substantial improvements in working conditions underground, and state mine inspectors have given the subject attention, there is still room for improvement in the working conditions of the mines which the investigators believe to be the chief source of the lowered state of health which results in the large incidence of tuberculosis. Rock dust is the chief vehicle of harm, done directly to the lungs by reason of the hard, sharp, comparatively large flinty particles of which it is composed. This dust is made by the drilling and blowing out of dry holes, by "squibbing," which means the blasting in holes in which the drill becomes blocked, and by the blasting of large boulders in the chambers of the mine, as well as from shoveling and dumping the ore.

The mine workings in sheet ground mines constitute practically one large open chamber which allows the dust to disseminate. Although the amount of dust in the air is not, comparatively, large, practically every man underground is exposed to the dusty atmosphere during his entire shift. This dust, it is believed, could be largely prevented, and two methods are mentioned: the use of some type of drill that provides for water passing through the core of the drill steel into the drill hole, and the spraying of the drill holes, ore faces and broken rock by means of a hose to which a nozzle is attached. A separate water line should be laid to every working face. None of the mines are yet fully equipped with water drills. Strict rules should be enforced against squibbing and boulder blowing while the shift is underground, and against the blowing of drill holes at all times. Ventilation should be improved by the opening of new shafts whenever practicable. By way of legislative provisions it is recommended that state mine inspectors should be empowered to decide what constitutes a dusty mine, and that operators should be compelled to run a water line to each working face. Every miner should be compelled to use the water. Breaking boulders by means of powder or dynamite should be prohibited, except when the shift has left the mine. Blowing of drill holes without first wetting them should also be prohibited.

It is believed, further, that a workman's compensation act would go far toward improving safety and sanitary conditions in the mines of the Joplin district.

The Larger Relations of the Hospital

The final test of a hospital's efficiency, according to R. M. Bradley (*Modern Hospital*), is not merely the treatment which it accords to the patients which it receives, but also the impression which it makes on the whole sum of sickness in the community. He summarizes the results of a canvass of two districts in New York, with a view to ascertaining this point.

It appeared that, in a total population of 17,000, 86.6 per cent. of the cases of sickness were cared for at home and not at the hospital, and that 75 per cent. of the typhoid deaths and 80 per cent. of the pneumonia deaths occurred at the home. Why were these desperate cases not cared for by the hospital? Another canvass to ascertain the hospital needs was made of all ascertainable cases of sickness in a central New York district with about 10,000 inhabitants. The number of beds needed was figured out; but analysis of the causes of illness sadly disarranged the beautiful estimate. For instance, the figures called for accommodations for many typhoid patients; but reflection suggested a few drainpipes as "a more radical and less expensive remedy for that particular ill." Certain unfortunate girls had no place where they could receive proper care during confinement; but would it not be better to place such helpless and feebleminded creatures under permanent custody than to aid them in producing offspring like themselves? The dwellings of many families were no better as places to live in than to be sick or die in. "Was the remedy better housing or more hospital beds?"

Bradley suggests that in future hospital planning will be carried out in connection with a social survey that will take account of the main sources of preventable illness. While, on the one hand, hospital provision must tend to increase as the people learn reliance on hospitals in proper cases, on the other hand it should tend to decrease with the application of methods of disease prevention and a system of home care that will prevent hospitals from being overloaded with the less urgent cases. Bradley indicates a method of tabulation intended to bring out how far the hospital is meeting the demands of the highest social efficiency. For such a purpose cases might be classified as (1) real hospital cases (cases in which the patients cannot without undue trouble and expense or danger to the community be cared for outside of the hospital); (2) cases in which home care or nursing is defective, and (3) cases in which the patient has no home. He also suggests that account be taken of the days during which convalescent patients have to be retained in hospital (thus crowding out more urgent cases) because there is no suitable place for them elsewhere. A system is needed which will coordinate the hospital with other social agencies.

Medicolegal

Liability of Associate Surgeon for Leaving of Sponge in Wound

(*Walker vs. Holbrook* (*Minn.*), *153 N. W. R. 305*)

The Supreme Court of Minnesota affirms a judgment for $1,000 damages against the defendant for alleged malpractice in the leaving of a piece of gauze or sponge in the body of the plaintiff in an operation for appendicitis and other troubles. The court says that one of the incisions never healed, but the presence of foreign matter, though the wound was inspected, was not demonstrated until parts of the gauze began to come from the wound. It was in the plaintiff's body nearly a year. The first contention of the defendant was that there was no contractual relation between him and the plaintiff; and the evidence relating to his employment was somewhat unsatisfactory. It was, however, sufficient to present the issue to the jury which could properly find that the defendant was employed by the other surgeon acting on the suggestion of the plaintiff. If this was true, he owed the plaintiff the duty of exercising reasonable care and skill, and the question as to whether or not he performed that duty was for the jury. The defendant's second contention was that he was not in charge of the operation, but was merely an assistant of the other or operating surgeon, and merely did the things which he was told to do, and that consequently the negligence or want of care, if any, was that of the other surgeon, who had died. The evidence was conflicting as to whether or not the defendant was employed by the other surgeon on his own motion or at the suggestion of the plaintiff. Whether or not the defendant was merely an assistant to the other surgeon, employed by him on his own initiative, doing the things that he was told to do, so as to free him from any charge of negligence, was, under the evidence, a question for the jury. There was evidence tending to show that the defendant actively participated in the operation, that he consulted with the operating surgeon, that he assisted in sewing up the wounds, and that he handled the instruments and did other things, from which, if the jury believed the testimony, they could find that he was performing the operation jointly with the other surgeon. The theory on which the action was tried and submitted to the jury was that the plaintiff was injured by the failure of the defendant to exercise reasonable care and skill, a duty resting on the defendant under the circumstances. The trial court properly submitted the case on this theory. The defendant, whether at the invitation of the plaintiff or of the other surgeon, associated himself with the latter and took an active part in the operation. In thus undertaking to act, he owed to the plaintiff the duty of performing the operation with the reasonable care and skill which ordinary surgeons use under such circumstances. It was not charged that there was any lack of skill. The evidence all pointed to want of care. The law requires reasonable care. But this care must be proportionate to the risks to be apprehended and guarded against. The degree of care must be commensurate with the circumstances under which the transaction is had, the seriousness of the undertaking, and the dangers to be anticipated. Reasonable care may thus under certain circumstances be the highest degree of care. A third contention of the defendant was that a certain custom obtained in the hospital where this operation was performed, and that the defendant and the other surgeon conformed to that custom, and to the practice and custom of reasonably skilled and careful operating surgeons at the time that the operation was performed. Evidence that the defendant followed the usual practice of surgeons in leaving the care of the sponges to the nurses, and that such was the general practice among good surgeons up to the period when the operation was performed, and that good surgeons at the time of the trial still followed that custom, was proper under the circumstances, but not conclusive on the court or the jury. General custom is not as a matter of law due care.

Validity of Statute Prohibiting Advertising to Cure Sexual Diseases—Sufficient Indictment

(State vs. Hollinshead (Ore.), 151 Pac. R. 710)

The Supreme Court of Oregon affirms a judgment of conviction of the defendant of having violated section 2095 of Lord's Oregon Laws, as amended in 1913, by advertising a certain proprietary remedy, guaranteed to cure gonorrhea or gleet. The court says that the indictment very clearly and specifically stated that the defendant violated the law "by then and there exposing and exhibiting to the view of a large number of persons, and displaying and publishing, in the aforesaid county and state, a certain advertisement, to wit, a sign, in words and figures as follows, to wit," and then set out in full the objectionable matter. This was clearly sufficient, although the defendant contended that the indictment did not contain a statement of the facts constituting the offense with sufficient clearness and distinctness to notify him specifically of the offense for which he was to be tried.

But the chief contention of the defendant was more serious, being the assertion that the statute on which the prosecution was based is unconstitutional and void. It was contended that the act is defective, in that the subject thereof is not fairly expressed in the title, and that the act embraces more than one subject. The title of the original statute as enacted in 1909 reads thus: "An act to prohibit the advertising of treatment or cure of venereal or other diseases, declaring the same a misdemeanor and prescribing a penalty therefor." The court thinks it will be conceded without argument that this title fully covers the scope of the act itself. The title of the amendment reads thus: "An act to amend section 2095, Lord's Oregon Laws, relating to advertising to cure sexual diseases." In the New Standard Dictionary the word "sexual" is given as synonymous with "venereal," and is so accepted in common usage. It follows that this contention of the defendant must fail.

The next point presented was that the act is unconstitutional and void in that it is class legislation, and is a violation of the constitutional guaranty of equal protection of the law. This may well be considered in connection with the final proposition that the act is void because it is not within the legitimate scope of the police power of the state and is a violation of the constitutional provision that no person shall be deprived of life, liberty, or property without due process of law. For many years it has been recognized by publicists and legislators that some drastic action is necessary to check certain social evils and to protect youthful and inexperienced humanity, not only from easy access to vicious and immoral practices, but also from the schemes of designing men, who, for the sake of financial profit, would prey on the calamities of the unfortunates who have sowed the wind and reaped the whirlwind. Further than this, it has been thought that the act of spreading broadcast, by means of advertising, the idea that certain venereal diseases are easily and cheaply cured, is against public policy, in that it has a decided tendency to minimize unduly the disastrous consequences of indulging in dissolute action. These views were evidently the moving principle of the legislators in the passage of the act under discussion. The purpose of the act is clearly in the interest of the public morals. It is not class legislation, for it applies to all who may be engaged in a like business.

The court regards the statute as a valid exercise of the police power of the state.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Oct. 13, 1915

The President, Dr. Edward E. Montgomery, in the Chair

SERUMS AND VACCINES

General Principles of Vaccine and Serum Therapy

Dr. Thomas McCrae: Two factors obtain in an attack of an infectious disease—the virulence of the infecting organism and the resistance of the individual. Each may vary, and the possibilities for differences are endless. The contest between the infecting organism and the individual attacked gives the features of the disease. Recovery from the attack means immunity; in some cases permanent; in others, temporary. The toxins can harm only when they unite with the cells; free in the blood they have no power to do harm. The toxin may unite with the cell and kill it, or it may unite and do little damage. This contest between the infecting agent and the body cells is an exceedingly specific matter. On this rests much of the principle of vaccine therapy. For example, take the number of strains of the pneumococcus. Infectious organisms find only a limited opportunity for development in the body, and in the majority of instances they are destroyed. The fact that many of the tissues of the body possess an immunity makes vaccine therapy possible. We speak of immunity under the two main heads of active and passive. The active is that in which the body manufactures its own protective substance; the passive, that in which the protective substance is introduced from without. In therapy we have the same division, active and passive immunization. The former is by vaccine, the latter by serum. The underlying principle in active immunization is by the use of vaccines to help the organism to produce the protective substance. The dose of vaccine must be such that the patient can overcome it by his own resistance, which is a difficult thing to estimate. In the use of vaccines it is advisable to make a strong distinction between acute and chronic infections. In the chronic form there is not the same danger as in the acute; the body has become more accustomed to the organism, and dangerous reactions are not so probable. In very acute cases we should keep in mind the danger if the infection is very severe and the body resistance low. In estimating the results of vaccine therapy, it should be remembered that in the majority of cases the body itself is well able to take care of the infection.

It is dangerous to draw conclusions from the results of vaccine therapy in a limited number of cases. As a general rule we are considerably safer in giving vaccine subcutaneously than intravenously. Small doses are to be employed at first. In the production of passive immunization we are introducing help from without. This is most useful in acute infections, and as with vaccines, the serum must be specific to give the best results. It should be given as a rule in large doses. The method of administration should be considered; whether this shall be subcutaneous, intramuscular, subdural or intravenous depends on conditions. There is not the same danger of doing harm as with the vaccines. In some instances we combine the two methods. In reference to the whole subject, we may say that we are dealing with very delicate reactions: how delicate it is often impossible to know. Caution is necessary, particularly in acute infections. The reactions are extremely specific; therefore, we must have specific knowledge and specific remedies before we can interfere successfully. In talking about the principles of vaccine therapy, we must not forget that perhaps the greatest principle of therapy is to be certain that our remedies will do no harm. Therefore, in regard to the use of vaccine, especially, let us always have a clear understanding of what we are doing, we agents with intelligence, and above all, be sure that we are not doing injury instead of good.

Vaccine and Serum Therapy of Local and General Infections

Dr. Alfred Stengel: No one can properly approach a discussion of vaccine and serum therapy without giving some sort of expression to his views regarding the general principles on which such treatment is based, and the extent to which his practice would be governed by the scientifically demonstrated principles that are applicable. In February, 1914, in a discussion before the Royal College of Physicians in London, Dr. Rolleston said he would divide the opinions regarding vaccine therapy into three groups: 1. The optimistic, held by those who, while under the fascination of a new conception of a really rational treatment, have seen successful cures. This attitude is usually modified in time. 2. The pessimistic, more often expressed in private than in print, according to which vaccines never do good, and owe their apparent use to coincidence or suggestion. 3. The doubtful or open minded. Rolleston said that he belonged to the last class. I, myself, claim to belong to the first, freely confessing that the fascination of theories supported by some demonstration in experimental investigations quite carried me away. I am not quite certain that I fulfil Rolleston's idea of the latter part of the characterization of Group 1 because I am not conscious of having had my views modified. Like others who have made trial of these methods of treatment, I have sometimes seen brilliant results, and again, have failed to find them in cases apparently entirely similar, which may indicate that we have much to learn regarding practical details. There are many reasons, however, why I feel that an attitude of conservatism should be held on the matter of vaccine and serum therapy, and I cannot but recall the contrast between the attitude of the profession toward antidiphtheritic serum and that now exhibited toward vaccines, all sorts of serum and similar preparations. Whereas antidiphtheritic serum, whose claims to recognition were founded on the most rigidly scientific demonstrations, was received with scant courtesy and even denied for a considerable period of time, the professional attitude at present is to receive with open arms any and all sorts of vaccine and serum treatments resting on no sort of foundation, or on the flimsiest evidence. Sometimes it has been said that progress in drug therapeutics has been largely based on experiment in man, and that serum and vaccine therapy should be advanced by the same method. There is a fundamental difference, however, in these two methods of treatment. So long as the gastro-intestinal tract is functionally intact, the administration of any nontoxic drug is a matter of little moment, and even toxic drugs in sublethal doses may be tolerated, or if irritating, rejected. The subcutaneous or intravenous injection of vaccines or serums is, however, an entirely different matter, and we should not forget the distinction. Another reason for conservatism is that vaccines and serums are distinctly capable of doing harm. It is often said that in serious diseases such treatment may as well be tried because it can do no harm. This statement is grossly incorrect. On the contrary, I could easily produce evidence that both vaccines and serums are capable of causing injurious effects. I do not wish to be misunderstood in offering these reasons for a more conservative attitude toward this whole question. No one who has read the medical journals or the newspapers need be apprehensive that vaccines and serums will fail to receive a fair trial, but there is grave reason to suspect that they will be abused.

Dangers and Futility of the Indiscriminate Use of Serums and Vaccines

Dr. M. Howard Fussell: A serum is specific only against the toxin generated by the organism used in the preparation of the serum. A vaccine will generate immune bodies only against the organism from which the vaccine is made. Failure to grasp these facts is perhaps responsible for the greater part of the indiscriminate use of vaccines and serum. Unfortunately, many practitioners base their belief in the value of vaccines and serums on the statements of manufacturing firms and their detail agents. Many manufacturing firms have distributed to the medical men brochures containing statements, some of which are true and others half true and misleading. It is questionable whether general infections are favorably affected by vaccines. Successfully to treat general or local infection with serum or vaccine we must use the serum or vaccine made from the causative organism. To use any stock vaccine with propriety, one made from the type of organism to which the infection is due is essential. A mixed or combined vaccine is composed of entirely unrelated organisms, not different strains of the same, and it is certainly carrying the use of shotgun prescriptions to a wide range to give organisms of entirely different characteristics. Such treatment is futile and may easily be dangerous. Phylacogens, according to their manufacturers, are neither serums nor vaccines, but "sterile aqueous solutions of metabolic substances or derivatives generated by bacteria grown in artificial media." "The phylacogens are made from a large number of species of the well-known pathogenic bacteria." I have read many of the case reports of patients said to have been cured by some of these specific phylacogens. They are equaled by many of the testimonials of "patent medicines" seen in the daily press. I consider the use of such preparations as these both dangerous and futile; dangerous because of the severe reactions which take place; futile, because their use is not founded on proper observation or followed by justifiable results. The dangers in the indiscriminate use of serums and vaccines are due chiefly to a misunderstanding of the basic laws and the following of the uncensored advice of the manufacturers of vaccines and serums.

Discussion on Serums and Vaccines

Dr. S. Solis Cohen: The keynote struck in the papers may be summed up in the word "caution." We must use these remedies intelligently, for definite purposes, under definite conditions. That may be said of any remedial measure. At the present time we must use a scientific empiricism in the application of biologic agents, for I am not so sure that we have arrived at a scientific explanation of the action of vaccines.

Dr. James Tyson: From my observation of vaccine and serum treatment in the hands of other men, I am convinced that the treatment is justified in a great many instances, especially after a trial of the older methods of treating such affections.

Dr. H. M. Christian: In the department of medicine in which I am specially interested I think we have fairly well crystallized in our minds the futility of vaccine therapy.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

(Continued from page 2029)

The Prevention of Pellagra: A Test of Diet Among Institutional Inmates

Drs. Joseph Goldberger, C. H. Waring and D. G. Willets, Washington, D. C.: Published in *Public Health Reports,* Oct. 22, 1915, p. 3117, and commented on in "Studies of Pellagra," editorial, The Journal, Nov. 20, 1915, p. 1818.

The Treatment of Pellagra by Diet

Dr. David G. Willets, Washington, D. C.: In June, 1914, the treatment of acute pellagra by a rich animal protein diet was begun at the Georgia State Sanitarium, Milledgeville, Ga., by W. F. Lorenz of the United States Public Health Service, under the direction of Surgeon Joseph Goldberger. Beginning Aug. 19, 1914, the work was continued by me until Oct. 24, 1914, when the therapeutic study was discontinued, and the preventive study reported in another communication (Goldberger, Waring and Willets) was begun.

Forty-three patients were treated. Of this number eight are excluded because death occurred after brief periods of observation, three because of the presence of complications in themselves competent to cause a fatal outcome, and two because they were transferred from the ward with severe complications after brief periods of residence on the pellagra ward. Of the remaining thirty patients eleven improved, seventeen recovered and two died, giving a mortality of 6.6 per cent. The treatment given was simply a generous diet, rich in animal protein; in some of Dr. Lorenz' cases bismuth subnitrate, emulsion of cod liver oil and an antiseptic mouth wash were prescribed.

No far-reaching conclusion can be drawn from the results obtained in this work. Those who have cared for insane patients will appreciate the difficulties one encounters in dealing with this class of individuals. Many of the patients were so negative or so excited that their actions could not be controlled. These factors all tend to retard favorable results from any form of treatment. A mortality of 6.6 per cent. in this type of patient must, therefore, be considered as an extremely encouraging result, and this must be kept in mind in judging the merits of any treatment other than diet.

DISCUSSION ON PREVENTION AND TREATMENT OF PELLAGRA BY DIET

Dr. J. F. Siler, Washington, D. C.: In our work in Spartanburg County we have constantly noted that diet has a very great deal to do with pellagra, its cure and prevention. As to whether an incomplete or poorly balanced diet is merely one of the most important predisposing factors or is the one essential factor still requires demonstration. Many epidemiologic observations warrant the inference that an incomplete diet is only an important predisposing factor bearing somewhat the relationship to pellagra that it does to tuberculosis. It has been a common observation with us that if a patient suffering with acute symptoms of pellagra followed our advice in applying the same treatment for pellagra as for tuberculosis—an abundance of fresh eggs and milk—his chance of recovery was much enhanced. Also, patients carrying out this line of treatment would, after recovery, revert to their former incomplete dietary, and yet pass through the following one, two, three or four years without any manifestations of pellagra. Some schools hold even today that tuberculosis is essentially a food deficiency disease for which the treatment is eggs and milk. It still remains to be demonstrated scientifically whether eggs, milk and fresh meat bear the same relationship to pellagra as to tuberculosis, or, on the other hand, contain large amounts of true pellagra-preventing vitamins as do peas and beans contain large amounts of beriberi-preventing vitamins.

Dr. H. F. Harris, Atlanta, Ga.: I arrived at Dr. Goldberger's conclusion shortly after I began working on the subject ten or twelve years ago. Subsequently I discovered that this idea was very old. Solair advanced the view definitely in 1781. He took ten patients and fed them on good food for a year and was rewarded by observing that the eruption failed to appear next year and good results were observed after that. I believe there are certain possibilities of spring recurrences being explained by bad maize. It is well known that the starches of maize and other cereals when acted on by molds produce poisons, and in accordance with this is the modern acceptation of pellagra by the Italian writers. It has been shown that it is too cold for molds to grow naturally in winter. They develop in the spring, and toxic phenols develop in the maize in large amounts. When the temperature goes up, the action ceases, and the poisonous phenols are perhaps changed. In summer this does not occur, while in the fall these poisons begin again to form, and it would be assumed that these poisons would be most likely to recur. Pellagra has uniformly and persistently occurred where people have persisted in eating maize, and disappeared where they ceased to eat it.

Dr. James Adam Hayne, Columbia, S. C.: If you can give a man food in proper proportions, in such a way that he can assimilate it, you will strengthen his resistance and make him throw off the disease. That is as far as the question of diet can affect the causation of disease. If a man who knew nothing about tuberculosis was taken to a tuberculosis camp and told that the patients were given meat, eggs, milk and other food in proper proportion; that their temperature was reduced, their physical well-being improved, and that, to all intents and purposes when they left the institution they were well, would he conclude that a properly balanced ration was the cure for it? He might conclude it was a cure for tuberculosis, but would he conclude that an improper diet was the cause of tuberculosis?

Dr. W. J. MacNeal, Washington, D. C.: There is poor nutrition among people who have good things to eat. Other factors in the body besides the food may predispose to the disease. We certainly have these summer diarrheas among well-to-do people. Children's diseases occur among those who have good diet as well as among those who do not. Overwork is a factor. The question of childbirth and operations are predisposing factors in pellagra. The nutrition of the aged gradually diminishes. Poor diet is only one factor. We have poor nutrition throughout the world, but pellagra is a local disease in its first attack, not necessarily in its recurrences, and that is the important dstinction to which Dr. Goldberger referred.

Dr. J. W. Babcock, Columbia, S. C.: I deny that pellagra is a local disease. You will find pellagra in all parts of the United States and in Canada; it is a universal disease.

Dr. G. C. Mizell, Atlanta, Ga.: The way the foods that Dr. Goldberger prescribed are prepared has a bearing that he has not spoken of in his paper. Four years ago I believed in forced feeding and in a great deal of food, and I pushed it. I now know that I lost some cases because I forced food. It is a mistake to force food on a pellagra patient, or to take a nursing infant from the breast. Let the infant continue nursing; results will bear out the value of this suggestion. Dr. Willets' patients were extremely emaciated. The weight of the patient, when he comes to you, will have a lot to do with the course of the disease. Emaciated patients recover more rapidly and are less likely to have a recurrence.

Dr. David G. Willets, Washington, D. C.: I fully appreciate that there are some very severe cases in which forced feeding must be used with caution, but to make the general statement that forced feeding of pellagra is incorrect would give a wrong impression. In the majority of acute cases the patients really need forced feeding. At least, that is the way it impresses me, from the response of my patients to diet. I wish to say that in the work I did and reported here, extremely careful attention was paid to the patients. They were weighed at very frequent intervals, and I took change in weight as being a pretty good index as to how the patients were getting on. Dr. Mizell is right about certain severe cases. One should proceed with caution in feeding the patients. It is best to give them small quantities at a time, but frequently.

Dr. Joseph Goldberger, Washington, D. C.: It is an interesting psychologic phenomenon that the profession is extraordinarily interested in the discussion of pellagra. I can get a rise out of physicians any time the cause of pellagra is mentioned, and they will talk by the hour; but if one diplomatically suggests the very simple or practical device of treating the patient, they will change the subject. There is an adage to the effect that "the proof of the pudding is in the eating thereof," and the only thing that I care to say in closing is, Suppose we stop talking so much. We do not have to inject salvarsan, etc.

Some Phases of the Work of the Robert M. Thompson Pellagra Commission

Dr. W. J. MacNeal, New York: This is essentially the second progress report of the Thompson-McFadden Pellagra Commission as published in September and October, 1914, in the *Archives of Internal Medicine.*

DISCUSSION

Dr. Joseph Goldberger, Washington, D. C.: The commission states that its extensive dietary study failed to indicate the presence of either a pellagra-producing or a pellagra-preventing food in the mill village populations studied, and it expresses the opinion that no such things exist. By reason of the inadequacy of the method of analysis applied to the data, no conclusions whatever are permissible. That this is so is perhaps best illustrated by referring to that portion of the dietary study dealing with milk. The commission suggests that the daily use of milk has preventive value; 13.5 per cent. of the families using milk daily had one or more cases of pellagra; 22.5 per cent. of those using milk habitually (as often as twice a week) had one or more cases, and 13.6 per cent. of those using this food rarely had one or more cases. Their results show that the "daily" and the "rare" use of milk have preventive value. This singular paradox alone is enough to convince the impartial student that this dietary study cannot be seriously considered. When the data in this study are properly viewed one finds clear indications of the existence in the mill villages studied by this commission of an inverse proportional relation between the percentage of families using meat and using milk "daily" and "habitually" and the degree of pellagra prevalent in that village. In other words, of two groups of villages, that group which shows a larger proportion of families using milk "daily" and "habitually" will have the smaller amount of pellagra.

The commission considers the results obtained from its domiciliary study as conclusively proving that pellagra is an infectious disease; but as in the dietary study, no conclusion whatever is permissible. The fundamental method of analysis employed in this domiciliary study is defective in that, as regards the so-called second zone, the percentage of incidence of new cases varies not alone with the actual number of cases, but also with the position of the houses in which the new cases may happen to appear.

As for the relation of pellagra to sewerage, as shown by the practical freedom of the sewered sections of Spartanburg, this may be an instance of "false correlation." When we recall that pellagra is essentially a disease of poverty an explanation for this seemingly mysterious phenomenon at once suggests itself. In a community having a sewered section and an unsewered section, it is very likely, and in Spartanburg it actually so happens, that the sewered section includes the best residential portion of the town. The sewered section is that part of the town in which the well-to-do people live, in which even the neophyte pellagrologist would not expect to find much pellagra, sewers or no sewers.

Dr. Roy Blosser, Atlanta, Ga.: Dr. MacNeal ignores sensitization altogether, but I think this is one of the greatest established facts in regard to certain foods. It means that during the development of pellagra the people who develop it may be using only a fractional part of the foods used by those who do not develop the disease, but they are so sensitive that the smaller amount has a greater effect. He did not say what percentage of the total number who had pellagra used maize. That is of vital importance. His dietary study is valueless unless he takes into account all the foods eaten. I am not saying this particularly because he left out sugar-cane products. He did not show what they ate in the sections with the good water closets, where they had never had pellagra. He did not show whether, when they installed good water closets, there was any change in what they ate. That I consider of great importance. He thinks the infection from bad closets might combine with the poor nutrition to cause pellagra, but he did not show that there was any poor nutrition. In my experience very often during the time that they show their earliest symptoms of pellagra, they show evidences of unusual nutrition; they are fat and overweight.

Dr. J. F. Siler, Washington, D. C.: It must be remembered that when we began our studies, corn itself was the article incriminated, and this study was made primarily to determine whether corn or any other particular article of food could be correlated with the occurrence of pellagra. We thought of considering groups of foods, but it took two of us about three months to work out the correlations presented by Dr. MacNeal. So far as the grouped consideration (statistical) of the diet of the individual is concerned, we found it to be most feasible to consider only the pellagrins. We were very much struck by the sewerage question, and the observations were so striking that we considered it desirable to present them in order that they might or might not be confirmed by other observers. We investigated two mills at Union, S. C., in 1914. One had the water carriage system of disposal and the other open surface privies. At these two mills we found that pellagra had diminished very markedly in the sewered mill following the installation of a sewage disposal plant, while in the other no such change for the better had occurred. Dr. Maddux says that few new cases occurred in 1914 in the sewered mill, while a large number of cases have occurred in the unsewered mill. Dr. Weston told me of two mills in Columbia, one with sewers and the other without, and that he knew of only two cases in the sewered mill village, and both of the patients had the disease on arrival. In the unsewered mill a large number of cases occurred in 1915. It is wise to follow such observations over a long period of time before arriving at any definite conclusions.

This dietary study has been a correlation as to the frequency of the use of certain foods. Of one food, in which there exists no correlation, no mention has been made. Practically every family throughout the South uses wheat flour every day. It forms the most important bread component of their dietary. Whether any changes have occurred in the milling of wheat flour in the last ten or fifteen years which could have removed the hypothetic pellagra-preventing vitamins, I do not know. I know that before the Civil War more whole wheat flour was used in the South, but so far as I have been able to learn, no important changes in milling have occurred during the past ten years. It might be possible that the finely milled white wheat flour could bear somewhat the same relationship to pellagra as does highly polished rice to beriberi. Last winter I saw a patient from the South who had suffered a very severe attack of pellagra in 1911, and in securing a history of her food habits was somewhat surprised to learn that for two years prior to the initial attack of pellagra she had been in the habit of eating not less than twenty-four whole wheat biscuits a day to correct constipation.

Dr. G. C. Mizell, Atlanta, Ga.: In a series of eighty-two cases out of the 100 that I presented here in 1912 which came under observation in 1911, or before, there were six families containing more than one case. This series represented sixty-eight families, composed of 341 persons. Up to date there has not been a single new case in these families since 1911. In addition to this series of cases, I have been able to follow up another series of eighty-three cases which came under my observation from 1911 to 1913. The last series shows the same points of interest as the first series. The two series total 165 cases, representing 147 families, composed of 764 persons.

Dr. James D. Bozeman, Fort Worth, Texas: Until October 10 we had treated in our institution, 114 cases of pellagra this year, representing about 41 per cent. of admittances. The majority of these cases were drawn from Texas territory; about 80 per cent. represents the families of ranchmen or farmers who own their own farms or ranches. Now these farmers or ranchmen will tell you that their chief diet is milk, butter, eggs, beef and fresh hog meat, with of course the usual garden vegetables, and it is seldom that you find one who will admit that he does not live off the products of his own ranch and garden. If you ask them about the consumption of corn bread, they will likely laugh at you and reply that corn is raised to feed to horses and hogs. Some 15 per cent. of these men will tell you that they have corn meal on their ranch and that some of their boys (cowboys) enjoy corn bread, but we hardly ever have a cowboy in our institution for treatment. When asked about lard they will tell you that they do not use cottonseed products, but that the lard they use is made from their own hogs, raised and killed on their own ranches.

Dr. H. F. Ivy, Whitney, Texas: I believe that pellagra is an infectious disease. Those of us who have done much surgery find that often a patient, unsuspected as a pellagrin, after an operation will develop a fulminating case of pellagra. I find that some persons after a long period of nursing—not of pellagrins—and anxiety, have developed pellagra. An excessive diet of sugar may eventually so derange the system that it will put us below par. Even too many beans will produce toxemia.

Dr. W. J. MacNeal, Washington, D. C.: The problem which confronted us was the analysis of the mass of data recorded on cards in the symptomatic fashion. I think the one method commonly used with at least 1,000 comparable observations is that adopted by Davenport and by Pierson. Where there are a number of variables in group statistics the theory of chance presupposes that in a large group under observation—anything above 1,000—any neglected factor will be of no avail. That is to say, the influence of any factor neglected in the analysis will have only a chance effect which will equalize itself in such a group. We were dealing with about 6,000 individuals and observations, and this was quite justified.

We must do something with the data besides theorizing with them. We must try and show some correlation. That is what we have attempted to do by the statistical method. It is probably unnecessary for me to point out that the table which Dr. Goldberger cites specifically relates to pellagrins and total families in which a case existed and did not originate. This is the correlation between the existence of a case in a family and the use of milk in that family at the time of our observation. So, from our point of view, this table has very little importance. Of course it all depends on whether or not you think there is any real difference and importance in distinguishing between this. All of our work has taken into consideration the first attack, as quite different from the subsequent attacks, and any one who has really studied pellagra and has followed it must acknowledge that there is a distinct and important difference between the first attack and subsequent attacks. The first attack occurs in certain definite places; the second attacks may occur anywhere. It is only by distinguishing between first and subsequent attacks that we have been able to bring out these distinctions.

(To be continued)

SOUTHERN MEDICAL ASSOCIATION

Ninth Annual Meeting, held at Dallas, Texas, Nov. 8-11, 1915

(Concluded from page 2031)

The Small Town: The Neglected Unit in Sanitary Administration

Dr. A. W. Freeman, Washington, D. C.: The fundamental sanitary needs of the small town are those of water supply and excreta disposal. The shallow well and the privy must be condemned. Neither the well nor the privy is sufficiently protected. A public scavenger and the can privy should be advocated. Such privies are easily cleaned, and the breeding of flies is kept down and public health protected. The great need of the South today is the improvement of the rural home.

Sanitation of the Rural Home

Dr. R. N. Whitfield, Florence, Miss.: The rural home needs more improvement, as a rule, than any other home. In the South the rural population is greatly in excess of that of the cities and towns, and the public health services have been performed in the cities and towns to the exclusion of the rural districts. One exception has been made, and that is the work done by the Rockefeller commission, which has been laboring five or six years in eleven of the Southern States. A full-time health officer should be placed in charge of every county in the South, and he should be a capable and competent man.

Intensive Community Health Work

Dr. John A. Ferrell, New York: Intensive community health work differs from ordinary health work in that a concrete health problem is taken and adhered to until measurable progress has been made. It is limited to a relatively small circumscribed area instead of being diffused throughout a large area, such as a state or a county. A detailed record or a survey is made of the area selected, including every home, school, church, road and stream, and usually the information is shown on a map. Every home is visited and inspected, and every person examined, as far as practicable, with reference to the particular health problem under consideration. A record of the disease in the past and its probable consequences is made so that when the work begins there is a definite starting point.

Rural Sanitation in the South

Dr. J. Howell Way, Waynesville, S. C.: The employment of a full-time country health officer should be on scientific merits rather than on a political basis. The chief difficulty in county work is the lack of a well-defined plan of procedure. A rule of standards and model system will be worked out for counties soon. Eventually, when methods of rural sanitation become standardized, and our counties grow in population as well, the unit system operated by state boards of health will naturally and appropriately give place to the whole-time county health officer; but for the next five to fifteen years the unit system possibly is destined to exercise a more practical and helpful influence on the progress of rural sanitation than can be invoked by any adherent solely for the whole-time county health officer plan, which so many counties do not feel they may institute as yet.

Immediate Necessity of Intensive Health Work in the South

Dr. A. L. Lincecum, Austin, Texas: Housing conditions are deplorable, especially among the tenants in the farming districts. The absence of screens on the doors, windows and porches of these homes costs annually for treatment of malaria more than the expense of screening would be.

Use of Radium in Uterine Bleeding Due to Myometrial Dgeneration

Dr. C. Jeff Miller, New Orleans: Radium has proved a boon in inoperable cases of carcinoma, but I would not recommend it as the sole treatment in operable cases. The only treatment that promises relief from cancer is its early removal by surgery. I have used radium in a number of cases with beneficial and satisfactory results. Radium, when properly screened, may be used as economically inside the body of a patient as by being kept in a medicine case at the office.

Malaria and Uncinariasis

Dr. W. S. Leathers, University, Miss.: Malaria and hookworm disease so devitalize the human body that typhoid and tuberculosis easily complete the destruction. The insidious diseases must be stamped out before any noticeable impression can be made on the diseases having a higher degree of mortality. Teaching simple sanitation to the people is one of the great duties of public health departments. I cannot understand why our government is spending millions to put water on lands in the West that will never be as productive as our lands of the South, and it will not give one cent to take the water off the land of the South. Our richest lands are those which become covered with water.

Immediate and After-Treatment of Railway Injuries

Dr. W. W. Grant, Denver: The importance and necessity of immediate first-aid treatment in such cases is apparent, by reason of the fact that these accidents are generally defined as contused, lacerated and mangled, and are much more prone to infection than smooth wounds. The application of iodin, hydrogen peroxid and alcohol, pending the transfer of the patient to a permanent place of treatment, is common. Probing is seldom justified under any conditions. It is dangerous to operate while the patient may still be suffering from the shock of an accident, and many surgeons do not realize the value of proper reaction before operating. To add a physical shock to physical injury will generally prove hurtful to the patient. There is no more urgent field for skilled surgery than the treatment of mangled feet, hands and fingers. Lacerated tissues are more liable to infection and heal more slowly than other wounds. The sewing up of torn and lacerated wounds is a sure harbinger of infection. Such wounds will have to be opened up again. Drainage tubes constitute the safest plan for the prevention of infection. Scalp wounds are not generally attended by severe shock, and heal rapidly; but the most insidious wound is the small punctured fracture. Every such wound demands early investigation, or serious results are liable to follow.

Treatment of Malaria with Reference to Its Eradication

Dr. T. E. Wright, Monroe, La.: In one of the hospitals used by a railway in North Louisiana, 747 cases of malaria among the railway men were treated during the years 1912, 1913 and 1914. Between Jan. 1 and Nov. 1, 1915, 249 cases of malaria have been treated. The patients remained in the hospital from four to six days. This short stay in the hospital was due to the intensive treatment given malaria cases. This economic feature of intensive treatment and prompt results when applied to the whole malarial district of the South is a matter of much greater importance and should receive serious consideration on the part of medical men. Intensive treatment of malarial patients must be employed in order to decrease the number of carriers. The intravenous use of quinin, administered with proper care, in doses of 10 grains, in proper dilution, repeated in from eight to ten hours once or oftener, according to the case, is the type of intensive treatment that more nearly sterilizes the blood of malaria than any other method heretofore employed. Fewer cases of recurrence will follow the intravenous use of quinin. The discomfort through this treatment of the patient is slight or of short duration, not lasting over five or six minutes.

The Sex Question in Public Health

Dr. Isadore Dyer, New Orleans: The sex question is essentially one of public health. Facts, not preachments, are needed in presentation of the sex question to young men and women. Perhaps the public school would be a good place to teach sex hygiene, and the proper men and women can be found to tell the children about the things that every child should know.

DISCUSSION

Dr. E. H. Martin, Hot Springs, Ark.: Children in public schools should be separated. Segregation of sex is practiced in a Mississippi town in the public schools. Co-education causes a boy to learn subservience to a woman, and he does not make a very good soldier in later years.

Dr. Allan W. Freeman, Washington, D. C.: I have been attending public health meetings for a number of years, and have never heard a frank and honest discussion of the sex question. It is a question of health and should be treated as such.

Syphilis: Its Relation to Public Health

Dr. Lloyd Thompson, Hot Springs, Ark.: All affected persons should be registered and a heavy fine should be imposed on the physician for failure to report. The marriage license should not be given to any one until he has been examined thoroughly and has withstood certain tests. Employers should require a bill of health of every employee and should refuse employment to any person who will not submit to a physical examination. If prostitution is permitted, it should be put under strict surveillance and regular medical examination.

Health Conservation Through Life Insurance Companies

Dr. J. L. Davis, Waco, Texas: The life insurance companies of the United States have taken the lead in matters of sanitation and right living. They have been advocating proper living and demanding it of their policy holders. Tuberculosis is recognized by insurance companies as exceedingly infectious, and for many years they have made careful inquiries into the lives of applicants for insurance along this line. They have gone so far as to ascertain whether the applicant has been associating with tuberculous people. Typhoid fever is the arch enemy of insurance companies. Next is alcohol, and the greatest temperance lectures of the age can be taken from the records of almost any life insurance company.

Sanitary Preparedness

Dr. Rupert Blue, Surgeon-General U. S. P. H. S., Washington, D. C.: The maintenance of sanitary preparedness is no less the duty of the individual than it is of the community. It is not altogether easy to teach so convincingly that the layman will appreciate these things. If the simple truths of sanitation are impressed on the plastic mind of the schoolchild, we gradually create a people in whom sanitary living is a habit. If by child hygiene we produce better and stronger men and women, these in turn will bring into the world stronger children, because they will have learned that mating with the weak and defective produces weak and defective children. Thus we shall have a practical eugenic betterment.

The impression I desire to leave in your minds is that, if America would avoid decay and retrogression, if she would be ready for the supreme trial of strength when the hour of calamity comes, she must retain her sanitary defenses at all times. The sane and healthy nation, republic of healthy minds in healthy bodies, adding by its labors, uninterrupted by disease, to the material and spiritual welfare of the world, is prepared alike for peace and war.

The Allen Treatment in Diabetes by Fasting

Dr. Isaac Ivan Lemann, New Orleans: Allen believes that we have been wrong in trying to maintain or increase the weight of our diabetic patients when glucosuria persists, for such attempts simply keep the body at a size beyond the capacity of the pancreas to provide sufficient internal secretion for it. Better, therefore, to have the body thinner and have enough pancreatic secretion to do the work of a smaller body. This pancreatic internal secretion he would have us conceive as an amboceptor binding blood sugar to the tissues. When the amboceptor is lacking, the unbound sugar is secreted by the kidneys. Allen's proposals are: (1) to starve the patient until the urine is sugar-free; (2) to add gradualy to his diet until the point of tolerance of protein and fat, as well as of carbohydrate, is reached; (3) to remain within these points of tolerance, no matter how low they may be and no matter how thin the patient may be. Attempts to increase the patient's weight by the addition of a large number of fat calories to the diet results in the return of the glucosuria. My short experience with Allen's method, embracing now five cases, has served to free me of the fear of precipitating a severe acidosis by the sudden starvation, and, secondly, it has convinced me in one severe case of its great possibilities in certain cases at least. The other four cases were mild. Two of them I have tried in vain to make aglucosuric by gradual reduction of carbohydrate intake, then of protein intake, and finally in one of them by the interposition of green days. These two patients became aglucosuric in twenty-four and forty-eight hours of starvation, respectively. The other two mild cases required twenty-four and seventy-two hours' starvation, respectively. In none of these four did acetone appear in the urine. None of the patients had any serious complaints. Not only was the disappearance of the glucosuria brought about more promptly and with less trouble both to the patient and to me than by the former technic, but also it was possible to build up these patients quite a livable diet and still maintain them aglucosuric. In the two patients whose points of tolerance I had tried to determine by the older method, I found the new tolerance quite satisfactory and far in excess of what it had been prior to the past. My brief experience with the method has been sufficiently satisfactory and enlightening to encourage me to proceed.

Pyelitis in Infancy and Early Childhood

Dr. L. R. DeBuys, New Orleans: The majority of cases of pyelitis occur in children under 3 years of age, and of these most of them under 2. In from 90 to 96 per cent. of the cases females are affected. It is highly probable that much of the trouble in the adult female kidney may have its origin in the infections of the kidney during infancy and childhood. Pyelitis may be primary or it may be secondary to a cystitis. The treatment of pyelitis may be included under four heads: (1) drugs; (2) irrigation of the pelvis by the direct method; (3) irrigation of the pelvis by the indirect method; (4) vaccines. Many drugs have been advocated, among them hexamethylenamin, potassium citrate, methylene blue, creosote and salol. Of these the first two are used most frequently. Hexamethylenamin is best given early and in large doses, from 2 to 3 grains, every three or four hours, to a child from 1 to 2 years of age. By far the most reliable method of treatment in pyelitis in the small patient is by irrigation of the pelvis of the kidney by the indirect method. By this is meant the giving of large quantities of liquids. It is well to dilute their food so that they may be always hungry, and in order to satisfy their hunger they must take large quantities of fluids to receive a sufficient quantity of nutriment. Vaccines are sometimes of benefit and should be autogenous. Their effect is not uniform and reliable, but in some instances has been of advantage. They should be given in doses beginning with 50,000,000 and increasing rapidly to 200,000,000 or even 250,000,000, the interval varying from three to five days, depending on the reaction of the patient and the recovery from the reaction. In the resistant and chronic cases the autogenous vaccine is more especially indicated. Should the vaccine not produce an immunity after from three to five vaccinations, as shown by the bactericidal property of the blood, its use should be discontinued.

Dietetic Treatment of Bronchial Asthma

Dr. Allan Eustis, New Orleans: A review of 178 cases justifies the following conclusions: 1. Most cases of bronchial asthma are due to absorption of proteolytic toxins. 2. These toxins may be absorbed from a suppurating accessory sinus in the nose or from the intestinal canal. 3. Treatment of intestinal toxemia is as important as any drainage of focal infections. 4. An alveolar abscess may be the focus from which the toxin is absorbed. 5. In the dietetic management of asthmatics, animal proteins, with the exception of buttermilk, should be eliminated from the dietary as much as possible.

Influence of Potassium Iodid on Syphilitic Reaction

Dr. Randolph Lyons, New Orleans: That iodin is the essential factor in producing the positive reaction in a nonsyphilitic individual is demonstrated by the fact that hydriodic acid, thyroid extract and possibly hyperthyroidism will produce a similar effect. When a luetin test is made, it is essential that no iodin in any form (potassium iodid) be taken internally. Furthermore, it is important to know that iodin has not been ingested for at least three weeks previous to the performance of the test. Torpid or later reactions occurring after intervals of two weeks are usually due to the ingestion of potassium iodid. The reaction may be influenced after an interval of two months by the subsequent administration of potassium iodid (Sherrick). Anomalous reactions may generally be attributed to potassium iodid. Activation of the luetin test with mixed treatment vitiates it. Clinical differentiation between the two, luetin reaction and iodin reaction, cannot be made with any degree of certainty. When a positive test develops very rapidly, an iodin reaction may be expected. The extreme prevalence of the use of iodin in some form (potassium iodid) will necessitate a critical review of the published reports of positive reactions in order to eliminate the iodin reactions. This will undoubtedly lower the percentage of positive results.

Influence of the Injection of Blood on Anemia and Infections in Children

Dr. J. Spencer Davis, Dallas, Texas: In the injection of whole blood we have the therapeutic means of increasing the number of white blood corpuscles. In many cases a crisis in the disease can be brought on, and the destruction of bacteria in the body is hastened. We have found it of great value in the acute infectious diseases of children, such as scarlet fever. Like all other therapeutic measures, it sometimes fails where it is most needed, and its value is dependent on the ability of the individual to respond to the injection. I have never seen any bad results following the injection, although at the site of the injection we have the same series of color changes which occur in an ordinary bruise.

Scurvy Versus Rheumatism

Dr. Dandridge P. West, New Orleans: The prognosis of scurvy depends on the early recognition of the disease, severity of the symptoms, and the complications. Death in untreated cases results usually from hemorrhage, exhaustion and bronchopneumonia. In recognized cases, the treatment is highly satisfactory, and none is more easily instituted. It may be covered briefly by the rule: Discontinue all previous feedings, especially if they have been patented, boiled or sterilized, give fresh milk, fruit juices, and if the digestion will stand it, purée of potato or green vegetables. In all suspected cases the effect of treatment, the therapeutic test, is of the greatest value, inasmuch as the results show in forty-eight hours, and no harm, as a rule, can be done by waiting so long. If in doubt when the baby is unduly irritable on being handled, and shows perhaps local manifestations of joint pain, preclude first the idea of rheumatism, change the diet to raw milk, and give orange juice.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

November, XVIII, No. 3, pp. 329-598

1 Development of Human Pharynx. Pharyngeal Derivatives. B. F. Kingsbury, Ithaca, N. Y.
2 Lymph-Flow and Associated Morphologic Changes in Early Superficial Lymphatics of Chick Embryos. E. L. Clark, St. Louis.
3 Origin of Definitive Sex-Cells in Female Chick and Their Relation to Primordial Germ-Cells. C. H. Swift, Chicago.
4 *Model to Illustrate Probable Action of Tectorial Membrane. I. Hardesty, New Orleans.
5 Development of Blood Vessels of Mammary Gland in Rabbit. H. M. Wahl, Madison, Wis.
6 Study of Wandering Mesenchymal Cells on Living Yolk-Sac and Their Developmental Products; Chromatophores, Vascular Endothelium and Blood Cells. C. R. Stockard, New York.

4. **Action of Tectorial Membrane.**—According to Hardesty, the tectorial membrane is a vibratory structure and from its consistency, shape, proportions and position, is the chief vibratory structure in the cochlea. It may vibrate in such a way that a modification of the telephone theory of hearing may be applied to it. Sound waves of low vibration frequency produce vibrations in the entire tectorial membrane regardless of amplitude, while those of higher frequency produce vibrations in varying extents of it, depending on their amplitude. Among the sound waves of the higher vibration frequencies capable of being appreciated, the extent or length of the tectorial membrane in which efficient vibrations may be induced depends more on the vibration frequency or pitch than on the amplitude of the sound waves. The higher frequencies being damped out more readily than the lower, varying extents of the membrane are affected according to the vibration frequencies of the waves applied, the highest frequencies affecting the thin, basal end of the membrane alone. Some evidences of what may be considered resonance in the tectorial membrane were indicated, but were thought questionably trustworthy as such. No resonance of the form demanded by the Helmholtz theory is possible. It is suggested that no resonance or analysis of sound is accomplished by the cochlea in itself other than such as may be possible in the evidences that, beginning with its basal end, different extents of the tectorial membrane may be thrown into vibration by different sound waves, depending on the frequency and amplitude of vibration. It is admitted that waves of low frequency and high amplitude may induce vibrations also in less flexible and otherwise less adapted

basilar membrane as a whole. Attention is called to the fact that its chief load, the spiral organ, increases in size in passing from the base to the apex of the cochlea and that this suggests a vibratory behavior possible in it similar to but not so comprehensive as that claimed for the tectorial membrane.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

October, III, No. 4, pp. 183-246

7 Barbados in British West Indies. Pellagra in Barbados. J. F. Siler, U. S. Army.
8 Transmission of Malaria in Philippine Islands. E. L. Walker.
9 Endamebiasis of Mouth. K. M. Lynch, Charleston, S. C.

Annals of Ophthalmology, St. Louis

October, XXIV, No. 4, pp. 611-835

10 Carcinoma, Apparently Primary, Arising from Ciliary Processes. E. R. Neeper, Colorado Springs.
11 Peripheral Annular Infiltrate of Cornea Following Scleral Perforation. F. Lane, Chicago.
12 Albinism in Man with Special Reference to Eye. W. E. Gamble, Chicago.
13 Blind Spot. H. S. Gradle, Chicago.
14 Complete Left Lateral Hemianopsia with Glucosuria as Result of Slight Trauma. F. E. Woodruff, St. Louis.
15 Mydriatic Action of Dextrohyoscyamin. R. J. Terry and M. Wiener, Washington, D. C.
16 Conscious Vision in Development of Amblyopic Eye. F. P. Lewis, Buffalo.
17 Is Migraine a Forerunner of Glaucoma? R. S. Lamb, Washington, D. C.
18 Herpes Zoster Ophthalmicus. B. Chance, Philadelphia.
19 Fifty Consecutive Intracapsular Cataract Operations. W. A. Fisher, Chicago.

Archives of Pediatrics, New York

October, XXXII, No. 10, pp. 721-800

20 Plea for Accurate Statistics in Infants' Institutions. H. D. Chapin, New York.
21 Apparently Complete Recovery After Operation for Cerebellar Tumor. L. Porter, San Francisco.
22 *Rapidly Advancing Pulmonary Tuberculosis; Report of Case. F. Hall, New Rochelle.
23 Some New Features in Diagnosis of Scurvy, with Brief References to Metabolic Changes. A. Brown, Toronto, Canada.
24 *Management of Enuresis. A. Newlin, Philadelphia.
25 Fatal Afebrile Nonparalytic Polioencephalitis. Treatment by Autoinoculation with Spinal Fluid. L. C. Ager, Brooklyn.

22. **Rapidly Advancing Pulmonary Tuberculosis.**—The case reported by Hall was evidently one of a common type of tuberculosis. A pneumococcus infection of the respiratory tract occurred in a child with tuberculosis largely confined to bronchial lymph nodes, the tuberculosis spread rapidly throughout the lungs and body. The Roentgen ray made evident early the tuberculous lesions eliminating the diagnosis of simple bronchitis, influenza infection or bronchopneumonia. It showed the progress of the disease from the hilus into the lobes, most marked in the right lower and the appearance of a cavity before these were evidenced by physical signs. The von Pirquet test gave a marked reaction early in the disease before the patient failed. It was faint as the child became weaker and absent a few days before death. Tubercle bacilli were not found until late in the disease, when the diagnosis was already well established. Then they were found first in the stools, later in the sputum.

24. **Management of Enuresis.**—The method of management of enuresis, whether it be diurnal or nocturnal, or both, that has given Newlin the best results, consists in the simple procedure of anticipating the involuntary act by a voluntary emptying of the bladder. This is the usual accompaniment of any treatment, but, Newlin says, when carried out systematically, can preclude the use of drugs absolutely; it gives far better results than when the chief reliance is placed on medicines with only perfunctory instructions as to the actual management of the child itself. This method of handling even obstinate cases of enuresis is rarely carried out systematically, but when it is so conducted gives almost invariably successful results. The chief obstacle encountered is the difficulty of impressing on the mother or nurse the fact that unless the instructions are absolutely faithfully followed the result is failure.

The nurse is given a sheet of paper with the hours of the day and night placed in a vertical row at the left-hand margin under the heading of the day of the week. If the enuresis occurs on an average of every two hours, she is instructed to put the child on the chamber every hour for the first twelve hours. If she finds the clothing wet at any such time the hour is noted on the chart. At night the child is lifted almost as frequently during the early hours, that is, up to 11 o'clock or midnight; after that every second hour is usually all that is necessary for the first night. At the end of the first twenty-four hours she then either has a clear chart or one with several hours marked as indicating the time of the enuresis. On the second day she is guided by her chart of the previous day, and she may extend the length of time between the voluntary urinations, always, however, anticipating the hours marked as "wet" on the day before, placing the child on the chamber at least a half hour before the time indicated.

Bulletin of Johns Hopkins Hospital, Baltimore

November, XXVI, No. 297, pp. 367-390

26 *Studies on Cerebrospinal Fluid and Its Pathway. Calcareous and Osseous Deposits in Arachnoidea. H. Cushing and L. H. Weed, Boston.
27 *Calcium Factor in Hemophilia. A. F. Hess, New York.
28 Bacteriologic Results in Chronic Leukemia and in Pseudoleukemia. C. H. Bunting, Madison, Wis., and J. L. Yates, Milwaukee.
29 Iconographic Notes on Girolamo Fracastoro. A. C. Klebs, Baltimore.
30 *Experimental Study of Factors Responsible for Noninfectious Bone Atrophy. E. G. Grey and G. L. Carr, Boston.
31 Origin of Lactic Acid Bacteria in Milk. P. F. McGuire, Baltimore.

26. **Calcareous and Osseous Deposits in Arachnoidea.**—Cushing and Weed summarize the results of their study as follows: Calcareous depositions in the form of psammoma bodies, or corpora amylacea of varying stages of development and of varying size, are of common occurrence in the arachnoidea of man and of the lower animals. Associated with this process of calcification there is apt to occur a hyperplasia of the arachnoidal mesothelium. The deposits of lime salts are apparently laid down in cell bodies and in this membrane can bear no relation to the blood vessels. The occurrence of true bone formation in the arachnoid of man should be regarded as a similar phenomenon, except that one may consider the process of ossification to be proliferative rather than degenerative. The so-called dural endotheliomas show histologically the same cellular arrangements with calcareous osseous depositions that are commonly found in the arachnoid and therefore take their origin in all probability from the mesothelium of this membrane.

27. **Calcium Factor in Hemophilia.**—Typical hereditary hemophilia is not associated with a deficiency to calcium. Hess' investigations showed that the addition of calcium to the blood in vitro delays rather than hastens coagulation. Furthermore, a deficiency could not be established by quantitative determinations of the calcium in the blood, and a metabolism study showed that the exchange of lime salts, as well as of numerous other inorganic as well as organic substances, differed in no way from normal.

30. **Study of Factors Responsible for Noninfectious Bone Atrophy.**—A destruction of the sensory nerves to a part according to Grey and Carr occasions no direct local atrophy of bone. A destruction of the motor nerves, on the other hand, leads to a certain amount of atrophy. This, however, is indirectly the result of inactivity of disuse and is directly proportional in extent to the degree of paralysis present in the part. Local venous congestion leads directly to no recognizable changes in the structure of bone. Local anemia due to injury to the arterial supply, except in an extreme degree, likewise occasions no bone atrophy so long as the part remains functionally active. Inactivity atrophy may appear soon after immobilization of a limb—as early as the fourth or fifth day in rabbits. It is probably due to a decrease or to an absence of the functional stimuli necessary to the normal nutrition of bone. Immobilization retards the process of repair in bone injuries.

Cleveland Medical Journal

September, XIV, No. 9, pp. 581-630

32 Branchiogenic Carcinoma; Report of Case. M. L. Richardson, Cleveland.
33 Epidemiology of Whooping Cough and Diphtheria in Cleveland in 1914. R. G. Perkins, Cleveland.
34 Problems of Wounded Man in War. D. Marine, Cleveland.

Journal of Laboratory and Clinical Medicine, St. Louis

November, I, No. 2, pp. 79-154

35 Present Status of Abderhalden Reaction and of Theory of So-Called Abwehrfermente. J. Bronfenbrenner, Pittsburgh.
36 Protein Metabolism. J. J. R. Macleod, Cleveland.
37 *Treatment of Syphilis of Nervous System by Intradural Injections (Old Salvarsan). U. J. Wile, Ann Arbor, Mich.
38 Pharmacology of Bronchial Asthma. D. E. Jackson, St. Louis.

37. **Treatment of Syphilis of Nervous System.**—Fifteen patients have been treated by this method by Wile. None have suffered any ill consequences. In all but two patients definite objective improvement could be noted in the spinal fluid. With full allowance for the possible suggestive element, there was nevertheless a marked subjective improvement in the majority of the cases. Such improvement was not seen to be transitory but appears to be permanent. Three patients have disappeared from observation, but none of the remaining twelve have relapsed with regard to symptoms. Four patients have been restored to usefulness and are making a livelihood, which before their treatment they were unable to do. The patients showing the most marked improvement were those suffering from early brain or cord syphilis, but encouraging results were also noted in cases of tabes dorsalis. No patient received over three injections, but it seemed to the author that further treatment in cases in which improvement had occurred would be indicated.

Journal of Medical Research, Boston

November, XXXIII, No. 2, pp. 147-322

39 Histologic Study of Internal Secretory Glands in Mice Bearing Spontaneous Tumors. G. L. Rohdenburg and F. D. Bullock, New York.
40 Vascular Changes Following Intravenous Injections of Fat and Cholesterin. O. Klotz, Pittsburgh.
41 *Spontaneous Primary Tumors of Liver in Mice. Studies on Incidence and Inheritability of Spontaneous Tumors in Mice. M. Slye, H. F. Holmes and H. G. Wells, Chicago.
42 *Influence of Exposure to Roentgen Rays on Formation of Antibodies. J. P. Simonds and H. M. Jones, Chicago.
43 *Effect of Injections of Benzol on Production of Antibodies. J. P. Simonds and H. M. Jones, Chicago.
44 Studies in Experimental Transfusion. R. Ottenberg and W. Thalhimer, New York.
45 *Bacteriologic Study of Epidemic of Septic Sore Throat. C. Krumwiede, Jr. and E. Valentine, New York.
46 *Method of Producing Tetanus Toxin. J. F. Anderson and J. P. Leake, Washington, D. C.
47 Etiology of Protozoan Disease of Turkeys Known as Blackhead, Enterohepatitis, Typhlitis, etc. T. Smith, Boston.
48 Blastophthoric Effect of Chronic Lead Poisoning. C. V. Weller, Ann Arbor, Mich.
49 Direct Reading Pȯtentiometer for Measuring and Recording Both Actual and Total Reaction of Solutions. W. T. Bovic, Boston.

41. **Spontaneous Tumors of Liver in Mice.**—Twenty-eight primary tumors of the liver were found by the authors in 10,000 mice of all ages dying natural deaths and carefully necropsied, but one other case is recorded in the literature. All were liver cell adenomas, one showing malignant structure and multiple metastases in the lung, two with malignant structure without metastases, and the remainder exhibiting all degrees from probable malignancy to simple adenomas. No tumors of bile duct type were found. Sarcoma-like growths were found in six, but these are more probably granulomas. No hemangiomas or other tumors were found. There were three carcinomas secondary to mammary gland tumors, and three secondary sarcomas. None of the tumors seemed to be the result of cestode infection of the liver or other evident cause. The coexistence of liver tumors with other primary tumors is high, there having been multiple tumors in ten of the twenty-eight cases; in three of these both tumors were hepatic, in the other seven, different organs were involved. Only six secondary tumors were found in the liver, three being from mammary gland carcinomas, one from a mesenteric sarcoma, and two secondary osteosarcomas.

42. **Influence of Roentgen Rays on Antibody Formation.**—The effect of exposure to Roentgen rays on the production of different antibodies is summarized by Simonds and Jones as follows: (a) The formation of agglutinins is appreciably lowered, although not so markedly as in the case of rabbits injected with benzol. (b) The attempt to study bacteriolysins for typhoid bacilli was less satisfactory than in the case of other antibodies. The authors' results do not warrant a positive statement, but the indications are that the production of bacteriolysins for *B. typhosus* in their animals was not greatly interfered with by exposure to Roentgen rays. (c) The opsonic content and the complement fixing power of the serum roentgenized rabbits did not differ appreciably from that of control animals.

43. **Injections of Benzol on Antibody Production.**—In the experiments detailed by Simonds and Jones rabbits were injected subcutaneously with a mixture of one part benzol and two parts olive oil. The doses were, as a rule, so adjusted that each animal received approximately 1 c.c. of benzol per kilogram of body weight. A depression in the production of hemolysins, agglutinins, and opsonins was evident in the animals injected with benzol as compared with normal controls injected with the same antigen. The depression was most marked in the case of hemolysins and least so in that of opsonins.

45. **Bacteriologic Study of Septic Sore Throat.**—The epidemic studied by Krumwiede and Valentine occurred during June, 1914, in Rockville Center, Long Island, a village of 4,250 inhabitants. It was soon evident that the common element among the infected persons was their milk supply. Out of 232 cases 205 obtained their milk from one dairy. Streptococci similar culturally and identical in their agglutination were isolated from cases of septic sore throat and from the udder of one cow, showing no evidence of mastitis, except the peculiar character of the milk from one quarter. The bacteriologic as well as the epidemiologic facts almost certainly show that the infection was primarily of human origin. In tracing the source of such an epidemic, the authors point out that the efforts should be towards finding cases of sore throat among those engaged in producing the milk, not mastitis in the cow alone. If human streptococci are found in mastitis, they are most likely secondary agents in an already existing inflammation due to bovine strains. The streptococci in different epidemics differ culturally and those similar culturally differ in their immunity reactions. Cultural similarity of strains from man and cattle is insufficient to prove their identity. Cultural identity in every detail or immunologic identity is essential.

46. **Method of Producing Tetanus Toxin.**—Anderson and Leake place on record the method of making tetanus toxin which has been used with minor modification at the Hygienic Laboratory of the United States Public Health Service since 1905, and, at the suggestion of the laboratory, in most of the establishments manufacturing antitoxin subsequently. At the Hygienic Laboratory the toxin is prepared for the purpose of standardization of tetanus antitoxin in accordance with the American method, while in the antitoxin establishments it is prepared for the active immunization of horses. The important points in the method are the method of preparation, freshness, and reaction of the medium, the preliminary cultivation, and the growth without the use of oil, vacuum, inert gas, or pyrogallate—a great advantage; the anaerobiasis is attained by inoculating liberally into liter flasks immediately after steaming. For details the original article should be consulted.

Journal of Parasitology, Urbana, Ill.

September, II, No. 1, pp. 1-50

50 Occurrence of Trypanoplasm, Probably Trypanoplasma Borreli Laveran et Mesnil, in Blood of Common Sucker, Catostomus Commersonii. J. W. Mavor, Madison, Wis.
51 Two New Cases of Polyradiate Cestodes. W. D. Foster, Washington, D. C.
52 Sarcocystis Tenella, Raillict. J. W. Scott.
53 Egg Variation in Trematode Species. W. W. Cort, St. Paul, Minn.
54 Some New Gregarine Parasites from Arthropoda. M. E. Watson, Chicago.
55 Pneumonyssus Foxi, Nov. Sp. An Arachnoid Parasitic in Lung of Monkey. (Macacus Rhesus.) F. D. Weidman.
56 Cestode Cysts from Muskrat. E. Linton, Philadelphia.

Journal-Lancet, Minneapolis

November 15, XXXV, No. 22, pp. 619-648

57 *Subdiaphragmatic Abscess. E. S. Judd, Rochester.
58 Syphilis of Nervous System. W. A. Jones, Minneapolis.
59 Streptococcicosis. H. L. Ulrich, Minneapolis.
60 Convergent Strabismus; Its Causation and Treatment. A. E. Johnson, Watertown, S. D.
61 Prostatectomy, with Special Reference to Preliminary and Postoperative Treatment. E. C. Robitshek, Minneapolis.

57. **Subdiaphragmatic Abscess.**—In the Mayo's series of thirty-six patients cited by Judd there were eleven deaths. In almost every instance, death was due to an extension of the infection to the liver and to the formation of multiple abscesses in this organ. From a review of these cases, it seems to Judd that better results will be attained (1) by efforts to make earlier diagnoses, (2) by being suspicious of any case that shows more sepsis than can be accounted for, and (3) by employing the aspirating-needle early. When drainage has been established, it is important to maintain it until the infection has all disappeared and until there has been ample time for the cavity to become obliterated.

Medical Record, New York

November 27, LXXXVIII, No. 22, pp. 903-944

62 Study of Fifty-Nine Thousand and Two Hundred and Seventy Exposures of Ordinary Life Insurance Showing Urinary Impairments at Time of Acceptance. J. B. Ogden, New York.
63 *Form of Typhus That Is Endemic in New York City. N. E. Brill, New York.
64 Value of Immunized Milk as Prophylactic and Remedy for Tuberculosis. J. Rosenberg, New York.
65 Results of Salvarsan and Mercury in Eighteen Cases of Primary Syphilis. J. Constas, Washington, D. C.
66 Suction Tongue Depressor. N. E. Titus, New York.

63. Abstracted in The Journal, November 27, p. 1945.

Missouri State Medical Association Journal, St. Louis

November, XII, No. 11, pp. 475-516

67 Intra-Ocular Sarcoma; Report of Four Cases. J. H. Thompson, Kansas City.
68 Congenital Aphakia. J. W. Sherer, Kansas City.
69 Peripheral Vasomotor Changes in Shock. W. E. Muns, Columbia.
70 Some Types of Myocardial Disease. F. Fahlen, St. Louis.
71 Bone Regeneration. G. A. Beedle, Kansas City.
72 Diseases of Verumontanum. L. Bartels, St. Louis.
73 Practical Sterilizing Pocket Thermometer Case. O. H. Brown, St. Louis.

New Mexico Medical Journal, Las Cruces

November, XV, No. 2, pp. 41-84

74 Gastric Symptoms in Relation to Abdominal Disease. W. Senger, Pueblo, Colo.
75 Inguinal Hernia. R. W. Corwin, Pueblo, Colo.
76 Spontaneous Rupture of Hydronephrosis. K. D. Lynch, El Paso, Texas.
77 Modern Treatment of Fractures. J. R. Espey, Trinidad, Colo.

New York Medical Journal

November 27, CII, No. 22, pp. 1073-1120

78 *Sanitary Study of Condensed Milk. W. H. Park, M. C. Schroeder and P. Bartholow, New York.
79 Climatic Inducements for Overmature and Early Senescent. J. M. Taylor, Philadelphia.
80 Modern Infant Feeding. G. D. Scott, New York.
81 Enlargement of Thymus; Report of Case. J. Grossman, New York.
82 Atrophic Rhinitis. W. Ferguson, New York.
83 Hematuria in Renal Neoplasm. C. Denaclara, Palau, France.
84 Nonsurgical Treatment of Exophthalmic Goiter. I. Bram, Philadelphia.
85 Chronic Constipation in Infants. J. Epstein, New York.

78. **Sanitary Study of Condensed Milk.**—The authors summarize the results of their studies as follows: The value of sweetened condensed milk depends on the care and cleanliness used in manufacture. There is a want of evidence that the bacteria or chemical constituents are capable of affecting the health. Only the use of the best quality of sweetened condensed milk is to be commended in the feeding of infants. Sweetened condensed milk, when carefully prepared from whole milk, has special indications as an infant food. They may be thus expressed: Many infants are unable to digest the fat of cow's milk, even when two or three volumes of water are added. In such cases the half digested curds of casein are vomited. The change in these circumstances to sweetened condensed milk allays the vomiting. These facts are well established clinically. Sweetened condensed milk has generally a constipating effect. The opposite view that it produces diarrhea seems to be wanting in evidence. Clinical evidence agrees with Finkelstein's observation that the intestinal irritation caused by milk is an effect of the action of the liquid portion, when freed of fat, sugar, and protein. Sugar appears to have a food value superior to fat, as shown by Hellesen.

West Virginia Medical Journal, Wheeling

November, X, No. 5, pp. 145-180

86 Uterine Displacements with Special Reference to Prolapse of Uterus and Vaginal Walls. A. P. Butt, Davis.
87 Valvular Lesions of Heart; Diagnosis, Prognosis and Treatment. S. D. Hatfield, Iaeger.
88 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. R. U. Drinkard, Wheeling.
89 Relation of Pathologic Tonsil to Systemic Infection. C. E. Grimm, St. Marys.
90 Treatment of Wounds of Mine Injuries and Sanitation of Mining Camps. W. A. Lynott, Pittsburgh.
91 Pericolic Membranes; Etiology, Diagnosis and Treatment. T. K. Oates, Martinsburg.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 25, II, No. 2856, pp. 461-492

1 Surgery on Gallipoli Peninsula. J. Morley.
2 Three Cases of Gunshot Wounds of Large Arteries, with Traumatic Aneurysm. J. A. C. Macewen.
3 Treatment of Wounds in War. E. G. Kennedy.
4 Recrudescence of Local Sepsis in Completely Healed Wounds. C. J. Bond.
5 Trench Nephritis; Report of Five Cases. N. Raw.
6 Artificial Pneumothorax. F. C. Coley.
7 Case of Rotatory Nystagmus with Recovery Under Optical Treatment. T. S. Barrie.

November 13, II, No. 2863, pp. 697-736

8 *Clinical Aspects and Diagnosis of Paratyphoid. J. A. Torrens and T. H. Whittington.
9 Bacteriologic Experiences with Typhoidal Disease and Dysentery. J. C. G. Ledingham and W. J. Penfold.
10 *Tetravaccine; Typhoid Plus Paratyphoid A Plus Paratyphoid B Plus Cholera. A. Castellani and R. W. Mendelson.
11 Paratyphoid "A" Fever. A. H. Safford.
12 Emetine Treatment of Amebic Dysentery. G. C. Low.
13 Case of Septicemia Treated by Intravenous Injection of Eusol. J. L. Smith, J. Ritchie and T. Rettie.
14 Wound Infections and Their Treatment. A. E. Wright.

8. **Diagnosis of Paratyphoid.**—Torrens and Whittington found that there are eight symptoms which occur in at at least 20 per cent. of the cases at the onset. In order of frequency these are: 1. Headache (85 per cent.). 2. Diarrhea (55 per cent.). 3. Abdominal pain (35 per cent.). 4. Aching pains in the limbs (30 per cent.). 5. Shivering (25 per cent.). 6. Extreme general weakness (25 per cent.). 7. Backache (25 per cent.). 8. Epistaxis (20 per cent.). Headache is usually vertical in distribution, though a migrainous type, especially severe behind the eyes, has been present in several cases of para A. Abdominal pain is rarely severe or colicky and is usually generalized, and does not often last more than two or three days. The initial diarrhea is rarely severe, being usually limited to three or four loose stools per diem. Pain other than abdominal pain or headache is usually referred to the back or limbs. Extreme general weakness is often sudden in its onset, and sometimes this and headache are the only symptoms. Epistaxis is rarely volunteered by the patient as one of his symptoms. While shivering is liable to occur in the course of any infection with the liberation of toxins or bacteria into the blood stream, yet the occurrence of repeated shivering attacks seems of special significance of the onset of paratyphoid. This is especially true of paratyphoid A, in which onset, and in which it is liable to occur with rigors throughout the disease.

Cough is complained of in nearly 20 per cent. of the cases, and seems more common in para B, but is rarely troublesome. Vomiting is far more common in paratyphoid than in typhoid. This is especially so in para B cases, in which vomiting occurred in 17 per cent. Dizziness and deafness occurred in 7 per cent. of all cases. Sore throat or hoarse voice as evidence of laryngitis or pharyngitis occurred only in 5 per cent. of the cases, all those being cases of para B. Temperature during the onset. Patients in whom the onset was rapid have said that their temperatures were 102 to 103 when first taken. Cases which have started in a hospital in which the patient was being treated for some wound, and in which the temperature was being taken as a routine measure, show a rapid rise, the maximum usually being reached in forty-eight hours. It seems fairly certain that the "step-ladder" rise so frequently seen in typhoid is far from common in paratyphoid. During the second week, in the average patient, the temperature ranges between 99.2 and 102.4. Of the cases analyzed 60 per cent. showed this remittent type of fever, while about 20 per cent. were intermittent. A really steady temperature in the second week was only seen in 5 per cent. of the cases; 70 per cent. of all cases of para B and 40 per cent. of para A are of twenty days' duration or less. In about 30 per cent. of all cases of each form the pyrexia lasts fifteen days or less. In the average case the temperature in the second week and at the beginning of the third week does not reach as high as 103. Only about 35 per cent. of all cases of paratyphoid ever reach 103, and only about 12 per cent. reach as high as 104.

The pulse is one of the most important aids in diagnosis. The rate is uniformly slow as compared with the temperature. A temperature of 102.5 with a pulse of 70 is characteristic and is more than significant of a group infection. Without any apparent change in the general condition, the rate may be at one time 65 and at another 85 or 90, and, curiously, a high temperature may coincide with a low pulse rate and vice versa. The quality of the pulse is characteristic and important. There is a most marked softness or compressibility present. The blood pressure in a small series of cases examined with the sphygmomanometer was found to vary from 80 to 100 mm. Hg. Spots are present in as many as 75 per cent. of all cases at some time during the disease. They appear in crops, and last three or four days, as in typhoid. The spleen is either palpable or enlarged to percussion in nearly 60 per cent. of cases; it can be felt in about 35 per cent. of all cases some time during the course of the disease. Examination of the heart is negative. Examination of the lungs will show bronchitis in less than 30 per cent. of the cases. The central nervous system shows no constant abnormality.

10. **Typhoid Plus Paratyphoid A Plus Paratyphoid B Plus Cholera.**—The number of individuals inoculated by Castellani and Mendelson with the tetravaccine amounts to 50,000 and more than 120,000 by colleagues. The reactions were usually mild and consisted usually of a small area of redness, a slight local temperature and some tenderness. General reactions were seldom complained of, and when inquired into revealed a slight headache and a general inaptitude. These particulars were carefully looked into in all cases on the second inoculation. The left arm is chosen, the skin over the insertion of the deltoid, and a quick stab, as though one were shaking a drop of ink from a pen, results in placing the point of the needle at the exact depth. The syringe is held in the right hand between thumb and index finger, while the tip of the ring finger is placed just above the point of the needle, acting as a check to the force applied. No after-treatment, as massage or sealing the puncture, is used.

The authors examined the blood of more than 100 individuals inoculated with the tetravaccine for agglutinins. The individuals inoculated with the tetravaccine produce a large amount of agglutinins for typhoid, a fairly large amount of agglutinins for paratyphoid A and paratyphoid B, a certain amount for cholera, which varies between the limits 1:20 and 1:150. Comparing the results with those obtained in control individuals inoculated with typhoid, paratyphoid A, paratyphoid B and cholera, the amount produced is not distinctly smaller. There was no septic or other accident in any of the more than 50,000 men the authors have inoculated, this entailing more than 100,000 injections, nor any untoward accident observed by colleagues who inoculated in Serbia more than 120,000 men with the tetravaccine. The inoculated persons develop protective substances for the four germs: typhoid, paratyphoid A, paratyphoid B and cholera.

Lancet, London

November 13, II, No. 4811, pp. 1063-1120

15 Wound Infections and Their Treatment. A. E. Wright.
16 *Nervous Affections of Sixth and Seventh Decades of Life. **J. M.** Clarke.
17 *Gunshot Injuries of Peripheral Nerves. W. Harris.
18 *Gunshot Injuries to Peripheral Nerves. R. H. J. Swan.
19 Cases of Tetanus-Like Spasm Localized to Wounded Limb. R. D. Rudolf.
20 Case of Oral Sepsis. A. Abrahams.
21 Zinc in Potable Water. J. C. Thresh.

16. **Nervous Affections.**—Turning to those affections more purely of nervous origin, Clarke says that the period from 50 to 70 compares favorably with that of either childhood and adolescence or the age from 25 to 50. In both the latter periods of life falls the incidence of the nervous diseases due to infections and intoxications from which the age after 50 is mostly exempt. The main period of onset of the hereditary and familial diseases, those included under Gowers' designation of abiotrophy, occurs in childhood and adolescence, while from 20 to 50, together with some tabiotrophic diseases whose onset is late, the nervous affections due to syphilis and alcohol are rife. After 50 the chances of the occurrence of cerebrospinal syphilis are comparatively slight. Lastly, the purely nervous diseases which are especially characteristic of this period of life are paralysis agitans, some of the combined scleroses of the spinal cord and certain muscular atrophies of central origin. Clarke suggests that it is possible that some of these affections owe their origin to that process of premature senescence or defective vital endurance of certain neuronic systems known as abiotrophy, and that this pathologic process may occur at any age. Paralysis agitans especially, in its narrow age incidence, uniformity of symptoms, progressive character and occasional familial tendency, suggests this mode of origin.

17. **Gunshot Injuries of Peripheral Nerves.**—The following is a summary of the points made by Harris: The importance of an accurate history of the details of the wound or wounds, and of the immediate effects. A careful and methodical examination of the paralysis, both motor and sensory, is necessary to determine whether it matches with the known anatomic distribution of one or more nerves, or of a portion of a plexus, or whether it resembles the phenomena produced in hysteria. Careful charts of the sensory loss are more important than the presence of complete muscular paralysis, with reaction of degeneration, in estimating the severity of the injury of a mixed nerve. The various stimuli used in testing by hard or light pressure, pin-prick, scratch, camel-hair brush or cottonwool, are tests of different system or fibers. Hard pressure will still be perceived except in total interruption of the nerve conductivity by actual division or by its inclusion in dense scar. Commencing recovery of sensation may in some cases be observed within a few days only of secondary suture of the nerve. Variations, however, in the sensibility must be allowed for, as this may vary from day to day within narrow limits, or according as the limb is warm or cold.

18. **Gunshot Injuries to Peripheral Nerves.**—Swan has seen 63 cases of gunshot injury to peripheral nerves. Of these cases, 38 were operated on, involving the exploration of 41 individual nerves, for in 3 cases the injury involved two distinct nerves. Of the 25 patients not operated on, 6 refused any operative treatment for conditions in which it was practically certain that a nerve was badly injured; in 3 it was deemed inadvisable to attempt any operation; and in 4 cases operation has been deferred until such time as the wounds made by the bullet have healed. In the remaining 12 patients gradual improvement and recovery to function returned after an interval varying from two to twenty-four weeks after the injury. Swan says that unless the symptoms point to a partial injury to the nerve he knows of no point to distinguish between complete nerve division and involvement in dense scar tissue. He has operated on cases in

which there have been complete anesthesia and paralysis of the muscles supplied by the nerve and with complete reaction of degeneration, but in which he found the nerve undivided, but densely fixed by scar tissue to surrounding structures. The anatomic lesion is of small moment, however, as operative treatment is required in either case, and the sooner it is done when asepsis can be guaranteed the better the prognosis for the patient. In cases of complete nerve division there is no question of the procedure to adopt —the ends must be dissected free, the bulbous proximal end removed until nerve bundles can be seen, a small part of the distal end resected, and the two ends accurately joined, tension on the nerve being relieved by stretching the nerve and by suitable position of the limb. In cases in which the nerve is firmly involved in scar tissue, and which on dissection is found to be dense and thickened, the best thing to do, if nerve will allow, is to resect the fibrous portion and join the two ends by accurate suture.

Bulletin de l'Académie de Médecine, Paris

October 19, LXXIV, No. 42, pp. 429-463

22 *Diagnostic Importance of the Modifications in the Tendon Reflexes Under the Influence of Chloroform. J. Babinski and A. Frémont.
23 The Children Born from Rape. (Le viol de guerre et la protection de l'enfance.) H. Henrot.
24 *Intubation to Maintain the Circulation in Wounded Artery. (De l'intubation dans les plaies des grosses artères.) T. Tuffier.
25 Bacteriologic Examination of Beer. (Les bières des Flandres.) L. Roussel and Others.

22. Differential Importance of Modification of Reflexes by Chloroform.—Babinski says that the works published on this subject to date discuss merely the physiologic behavior of the reflexes under the influence of chloroform. He and his co-worker, on the other hand, present evidence to show that the behavior of the reflexes has differential importance in abnormal conditions. It affords an objective means of distinguishing between actual nervous disease and hysteria, for one thing, and between different forms of nervous disease. In six wounded soldiers whose cases are described in detail, the asymmetric accentuation of the reflexes, their asymmetric disappearance and asymmetric reappearance, confirmed the assumption of organic disturbance. The survival of the elective exaggeration of the tendon reflexes, even during the phase of relaxation of the muscles, reveals the extent of the disturbance in the central nervous system resulting from the peripheral lesion. It explains the tenacity of the disturbance and its clinical importance, justifying the patient's complaints and the functional disturbances, when otherwise there might be suspicion of malingering.

24. Summarized in the Paris Letter, November 27, p. 1929.

Paris Médical

September 11, V, No. 18, pp. 305-320

26 The Triple Vaccine for Typhoid Fever. A. Chantemesse.
27 Extension for Fractured Humerus. R. Grégoire.
28 Service for Dentistry and Protheses for the Active Army. (Stomatologie aux armées.) Gaumerais.
29 Gage for the Excursions of Joints. (Le compas d'angle destiné à mesurer le degré d'extension et de flexion des articulations.) P. Guillaumet.
30 Improvised Douche Apparatus. L. Binet.

September 18, No. 19, pp. 321-336

31 *Decalcification of Bones in Paralyzed Members, Both Organic and Neuropathic. H. Claude and R. Porak.
32 Treatment of Suppurating Wounds in War. J. Andrieu.
33 Simplified Stereoroentgenography. B. de Laborie.

September 25, Nos. 20-21, pp. 337-372

34 *Wounds of the Eyes and Orbit in War. F. Terrien.
35 Inferior Hemianopsia from Projectile in Left Lower Side of the Occiput. E. Ginestous and P. Bernard.
36 War Wounds of Larynx and Trachea. Guisez.
37 The Ear and Traumatisms of War. (Appareil auditif et traumatisme de guerre.) M. Grivot.

31. Decalcification of Bones in Paralysis.—A number of typical cases are described and illustrated. The findings are tabulated in 15 cases of paralysis of the hand without any signs of neuritis, also in 4 of paralysis from a direct wound of the brachial plexus, 3 of the ulnar, 4 of the median, 2 of the radial and 2 involving both ulnar and median nerves. Decalcification was evident in all the groups, and hence it cannot be regarded as a sign of a lesion of any nerve, as it was often as pronounced in the neuropathic and hysteric cases or after immobilization for fracture as when the nerve had been severed. The latter alone may entail osteoporosis, but it is equally liable to develop from the lack of exercise during immobilization, from disturbances in the circulation in the region, or from a constitutional predisposition. It occurs in the same way as wasting of muscles or local sweating or hyperkeratosis in cases of disuse of a member from any neuropathic or organic cause.

34. Injuries of the Eyes in War.—Terrien discusses the direct injury of the eyeball or orbit or both from projectiles, indirect injury from a wound near or from the shock of an explosion without direct injury of the tissues, and, finally, visual disturbances of psychic origin. A number of illustrations are given to illustrate technical points in repair. In one of the cases illustrated a flap was taken from the thigh to make a new culdesac, permitting the wearing of an artificial eye. In some cases men knocked down by an explosion, without direct injury, were totally blind when they regained consciousness and some could not hear and others had aphasia. In others both vision and hearing were slightly impaired. He has encountered eighteen cases of these visual disturbances. Vision began soon to improve and gradually returned to its former status except for some slight reduction of visual acuity and difficulty in focussing objects. The immediate blindness is evidently the consequence of the concussion from the explosion and conditions progressively right themselves. When the disturbances drag along without tendency to improve, a psychoneurosis may be assumed and treatment instituted on this basis.

Revue Médicale de la Suisse Romande, Geneva

October, XXXV, No. 10, pp. 533-604

38 Supplementary Measures to Improve the Condition of the Wounded. (Le traitement complémentaire des blessures de guerre et les services de physiothérapie.) Long.
39 *Joint Manifestations of Hemophilia. (De l'arthropathie hémophilique.) C. M. Du Pan.
40 Wounds of the Spine. (Des lésions vertébrales dans la chirurgie de guerre.) A. Jentzer.
41 Favorable Experiences with Heliotherapy for Pulmonary Tuberculosis. Meyer.
42 Enterogenous Albuminuria in Pregnant Woman. D. Christidès and P. Besse.

39. Hemophilic Joint Affections.—Du Pan relates that a boy of 15 was brought to the hospital on account of a very painful tumor of the ankle which seemed to be a sarcoma on the point of ulcerating, except that sarcomas are not so agonizingly painful. The tibia was not tender, and although there were local heat and fever, yet there was no involvement of glands, no lymphangitis or fluctuation. A small incision brought dark blood but no pus, and the little cut bled continuously for three days, confirming the final assumption of hemophilia. Under calcium chlorid and diphtheria antitoxin the oozing of blood was finally arrested. His family showed the usual skipping of the second generation and reappearance of the hemophilia in the sons of the daughters, three of the five sons being pronounced hemophiliacs.

In treatment, the main thing is to suspect the hemophilia instead of taking the joint trouble for acute articular rheumatism or a tuberculous process, as is too often done. Du Pan declares that this error in diagnosis has often proved fatal; he cites various cases in which puncture of the joint for supposed hydrarthrosis has caused bleeding to death. In Poncet's case, the fatal hemorrhage followed application of the actual cautery at several points. König has reported two cases with fatal outcome after resection of the knee, and the list is a long one of these sad blunders in diagnosis.

The blood accumulating in the joint causes sudden pain and swelling and the limb is held as in acute rheumatism. The region feels hot and there may be fever, but the skin keeps its normal color throughout the whole trouble. There are, as a rule, several successive attacks involving different joints, but mostly the knee or elbow, one at a time, with or without some slight local trauma preceding. The hemarthrosis may be entirely absorbed, but usually it persists and irritates the joint, with chronic arthritis as the result. In the second phase this arthritis resembles in every respect a white swelling; there is thickening of the synovialis, impotence of the limb and wasting of muscle. The pain is less in this stage; the swelling becomes more general, and the culdesacs are distended, but the local heat does not increase. There is elastic fluctuation in the synovial culdesacs, as with a tuberculous process, and partial ankylosis develops. After the inflammation has subsided, insidious destruction may continue; but there is never an abscess or fistula and never any enlargement of glands from hemophilia alone. The sudden onset excludes malignant disease, but hematomas in muscle may be taken for cold abscesses and incision lead to fatal hemorrhage. Submucosa hemorrhages in pharynx and glottis in a second case reported were mistaken for Ludwig's angina or diphtheria. In Du Pan's first case, a subperiosteal hemorrhage, the length of the thigh had been mistaken for phlebitis. Hemophilic hemorrhage in the stomach has often been treated as for a bleeding ulcer, and, from the lungs, for pulmonary tuberculosis.

The family antecedents and tests of the coagulating power of the blood will reveal the tendency to hemophilia. Its first manifestations generally appear before the age of 2, and the hemophiliacs generally outgrow the tendency by 22. It very rarely happens that a hemophiliac succumbs to hemorrhage after 22. The most threatening hemorrhages are generally during teething or puberty. Fatal epistaxis carries off fully 50 per cent. of the hemophiliacs. Others have succumbed to hemorrhage from the gums, lungs, kidneys, etc.; two brothers died from conjunctival hemorrhage. The skin covering a hematoma is stretched, shiny, and bluish or black, with a peripheral red zone. These hematomas never suppurate, but the blood coagulated in them may undergo calcareous infiltration. The literature on hemophilia and theories as to its mechanism are discussed in detail.

Horse serum to date has proved more effectual than anything else in treatment of hemophilia, but its action is only transient. Keller found that the coagulation of the blood in women did not seem to be affected by removal of both ovaries, so that the lack of ovarian secretion cannot be the primary cause of hemophilia. Ovarian treatment has been tried, but with no appreciable results. With a recent hemarthrosis, immobilization and compression with a cotton pad protect the joint and favor absorption. When the coagulating time has been reduced by general treatment, it may be possible to incise and remove the clots distending the joint and thus ward off chronic arthritis. In the chronic stage we are disarmed. No one is justified in operating to correct deformity or ankylosis in a hemophiliac unless he has reached adult age, and it has been ascertained that the blood coagulates in an approximately normal manner. In hemophiliac families the children should not have their teeth pulled, but vaccination has never been known to bring on hemorrhage. The hemophiliac should select a sedentary occupation.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 30, XLV, No. 44, pp. 1377-1408

43 *Prevalence of Atherosclerosis. S. Saltykow.
44 The Experiences at Bern with Salvarsan to Date. (Unsere Erfahrungen mit Salvarsan.) O. Nägeli. Commenced in No. 42.

43. **Prevalence of Atherosclerosis.**—Saltykow accepts as evidence of atherosclerosis even the minutest yellow patches visible on the heart valves or intima of the arteries. He has been searching for them at necropsies, and reports that he found them in 77.5 per cent. of the total 1,200 cadavers examined. Excluding all infants less than 3 months old, the proportion was 91.5 per cent. Above the age of 8 every cadaver presented evidence of atherosclerosis to a greater or less extent.

Deutsche medizinische Wochenschrift, Berlin

October 28, XLI, No. 44, pp. 1297-1324

45 Hunger. (Ueber die Hungerempfindung.) L. R. Müller.
46 Combined Treatment of Syphilis. (Ueber Salvarsannatrium und die kombinierte Quecksilbersalvarsanbehandlung.) E. Hoffmann.
47 Bacteriologic Diagnosis of Cholera. (Die bakteriologische Choleradiagnose, unter bes. Berücksichtigung der von Aronson und Lange neuerdings angegebenen Choleranährböden.) E. Bötticher.
48 *Appearance of Immature Leukocytes in the Blood in Infectious Diseases. (Auftreten unreifer Leukozyten im Blut bei Infektionskrankheiten.) B. Photakis. To be continued.
49 Chronic Pancreatitis. M. Einhorn. To be concluded.
50 *Alcoholic Polyneuritis with Paralysis of Left Side of Diaphragm and Left Vocal Cord. W. Löffler.
51 *Exposure to Tuberculosis in Childhood as Factor in Tuberculosis Later. (Ueber die Gefährdung von Kindern durch tuberkulöse Ansteckung.) E. Bergman.
52 Practical Experiences with Fürstenau's Intensimeter. F. M. Meyer.
53 *"Scrofula" in Adults. (Zur Skrofulosefrage.) A. Bauer.

48. **The Appearance of Immature Leukocytes in the Blood.**—Photakis tabulates the blood findings in thirty-two cases of various acute infectious diseases to call attention to the importance for the prognosis of the appearance of immature leukocytes in the blood. He found the immature forms numerous in five eighths of his cases, and these were all the severer ones. This finding shows the toxic action on the bone marrow of the infectious agent, and thus serves more or less as an index of the intensity of the intoxication. The irritation of the bone marrow is manifested first by a neutrophil leukocytosis without immature forms; then metamyelocytes appear; then, along with them, appear myelocytes and promyelocytes, indicating the progressive phases of the irritation. In the severer infections, especially with sepsis, all the immature forms are encountered, down to myeloblasts as in the leukemic blood picture. The internal nuclear structure of the immature cells takes the stain differently from ripe cells; it is amblychromatic instead of the trachychromatic structure of the nucleus of the maturer cells. By the response to Pappenheim's staining technic (May — Grünwald — Giemsa) it is possible to differentiate each cell according to its age and maturity, and thus estimate to a certain degree the severity of the infection.

50. **Alcoholic Polyneuritis.**—The neuritis was accompanied with paralysis of the diaphragm and vocal cord on left side. The patient was a robust hotel-keeper of 29, and the nerves affected with paralysis were those which run along together in the neck on the left side. Nothing could be found to explain this localized paralysis except alcoholism; the attenuation of the reflexes and the reaction of degeneration indicated a peripheral nervous trouble. The paralysis of the phrenic nerve rapidly subsided. The diaphragm was soon working properly, but the paralysis of the left vocal cord, radial and peroneal nerves persisted for some time, but finally all retrogressed to a complete cure, except that there is still some slight paresis of both peroneal nerves. This prompt recovery is of special interest as, usually, polyneuritis involving the vagus and phrenic nerves is considered very dangerous on account of the danger of fatal arrest of respiration.

51. This article was summarized recently, November 6, page 1686, when it appeared in a Scandinavian journal.

53. **"Scrofula" in Adults.**—Bauer protests that the clinical picture which used to be called "scrofula" is by no means restricted to children. It occurs comparatively often in adults, but unfortunately it is seldom diagnosed, and it fails to get proper treatment. He has encountered adults with the typical cheesy glands in the neck and eczematous conjunctivitis, who were past 50 and had never had their lungs examined. Knowledge of the possibility of scrofula in adults is especially important for lung specialists. He refers in particular to the article by Schelble, on "scrofula," reviewed in these columns, page 1683, abstract 71, which makes no mention of scrofula in adults.

Münchener medizinische Wochenschrift, Munich

October 26, LXII, No. 43, pp. 1453-1488

54 *Treatment of Weak Vision in One Eye. (Ueber Behandlung einseitiger Schwachsichtigkeit.) L. Heine.
55 Development of Organs in Response to Work Demanded of Them. (Zur Frage: Arbeitsleistung und Organentwicklung.) F. Külbs.
56 Neosalvarsan in Treatment of Tertian Malaria. A. H. Vandenhoff.
57 Artificial Sheath for Nerves after Suture and Neurolyses. (Galalith zur Tubulisation der Nerven nach Neurolysen und Nervennähten.) S. Auerbach.

58 Nitra Lamp for Radiotherapy. H. L. Heusner.
59 Hygiene in the Camps of Prisoners of War. (Hygienische Erfahrungen bei Kriegsgefangenen.) G. Seiffert.
60 *Public Assistance for the Poor and Repression of Drunkenness. (Armengesetz und Trunksuchtsbekämpfung.) Rupprecht.
61 Open Puncture of the Pleura. (Einige Bemerkungen zur "offenen Pleurapunktion" nach Adolf Schmidt.) L. Spengler.
62 Gunshot and Shell Wounds of Spine and Spinal Cord. (Schussverletzungen des Rückenmarks und der Wirbelsäule.) P. Frangenheim.
63 Abscess of the Brain. (Zur Therapie des Hirnabszesses.) P. Manasse.
64 Plastic Operation on the Dura after Grazing Wound of the Skull. (Duraplastik bei Rinnenschuss am Schädel.) E. Streissler.
65 *Encephalolysis for Traumatic Epilepsy and Headache. O. Witzel.
66 Fitness for Military Service of Men with Heart Disease. (Zur Beurteilung der Kriegsverwendungsfähigkeit unserer Herzkranken.) F. Adolph.
67 Immediate Emergency Removal of Injured Eye. (Ueber Enukleation und Exenteration verletzter Augen im Felde.) R. Deutschmann.
68 *Management of Operative Infection. (Finger- und Handinfektion bei Aerzten.) L. Heidenhain.
69 Amputation Stumps and Immediate Protheses. K. Nieny.

54. **To Strengthen Unilateral Weak Vision.**—Heine relates that a reliable and intelligent man, now 57, as a child could read only the headings in the newspaper with one of his eyes. The other eye was apparently normal, and he found that he could see better with the weak eye by looking through his partly closed fist. By systematically exercising the eye in this way, vision materially improved and the benefit was permanent. Bandaging the better eye for a few hours each day is also liable to strengthen the weak vision in one eye; Heine has witnessed the transformation of unilateral strabismus into the alternating form in children. In one boy of 8 tenotomy was done on the right eye for convergent squint. Vision in this eye had been 1/30, but in a week it was 1/4, and in another fortnight nearly normal, but in binocular vision it was still defective. In a large number of cases of supposed congenital weakness of vision in one eye, he found that the eye could see better through a narrow opening or slit. In many the visual acuity increased from 6/36 to 6/18 by the use of the slit, and he thinks that systematic exercises of this kind might yield material benefit. The stenopaeic hole or slit may help more than the best glasses, especially with congenital amblyopia. He relates a few typical cases and expatiates on various technical points to bear in mind.

65. **Adhesion of Nerve or Brain to Cicatrix Factor in Neuralgia and Traumatic Epilepsy.**—Witzel long ago pointed out that the agonizing neuralgia after amputation was due to cicatricial incarceration of the end of the nerve. The nerve should be divided high enough up to prevent this being possible. His experience with wounds of the skull shows similar conditions here, the cicatricial tissue grows to the brain and induces traumatic epilepsy or headache. This can be avoided or cured by separating the brain tissue and pushing it down, cutting out the cicatricial tissue at the site of the wound, and introducing a flap of fat under the dura as a cover to protect the brain. He gives three illustrations of the exact technic. The surface of the brain is smoothed off, but without extensive extirpation of the cicatricial tissue. The flap of fat is taken from the thigh and it is cut twice as large as the gap in the skull, so it can be pushed far back under the skull all around, between the brain and the dura. The fat side is turned toward the brain, the fascia side upward. No attempt is made to fill the gap in the skull by a plastic operation; in fact, this would militate against the success of the encephalolysis.

68. **An Imperative Warning to Physicians and Surgeons.**—Heidenhain relates that from his student days he has always heeded Billroth's warning that in case of an operative infection the poison is much less apt to spread if the limb is kept perfectly still. He has cut and scratched himself at operations numbers of times in the course of his long practice, but has never had any ill effects from them, as he has always made a point of wearing the arm in a sling for twenty-four or forty-eight hours, with a small moist compress over the wound to keep it from sticking. He always gave up all work during this time and had others help him to dress and undress, and even help to feed him. He escaped all ill effects so constantly that he began to think he was immune. Not many years ago he dressed a small operative cut on the hand of a young pathologist and tried to impress on him the necessity of refraining to use his arm for two days. Heidenhain then left town for a week; on his return he learned that the young man was dead. He had worn the sling for half a day and then had gone swimming. A chill that night was followed by fatal sepsis.

Heidenhain's recent experience has confirmed him still more irrevocably in his conviction of the imperative necessity for absolute repose for the limb in these cases. He cut his middle finger a trifle in operating an empyema. The cut did not go below the papillary layer of the skin and he kept his hand in a sling in going his rounds, but that evening, pressed with work, he used the typewriter for an hour. The spot became painful then and the next morning a subcutaneous phlegmon developed, requiring extensive incisions, and three weeks elapsed before it healed and three more before function was regained. His many years of freedom while he kept the injured limb still, and his serious trouble the one time he failed to keep it still, testify to the soundness of Billroth's advice to keep the limb immovable for two days.

Therapeutische Monatshefte, Berlin

October, XXIX, No. 10, pp. 533-588

70 Cholera. G. L. Dreyfus.
71 Present Status of Treatment of Pneumonia. A. Fraenkel.
72 Thorium X in Treatment of Certain Skin Diseases. J. Jadassohn.
73 Hydrochlorie Aeid and Charcoal in Treatment of Gastrogenous Diarrhea. O. Porges.
74 An Arsenical-Alkaline Mineral Water in Treatment of Children. (Erfahrungen über den therapeutischen Wert der Guberquelle bei Kindern.) M. L. Mayerhofer and O. Schey.
75 Salicylic Acid in Treatment of Suppurative Affections of the Skin. (Die Behandlung der Furunkel und anderer eitriger Hauterkrankungen mit Salizylsäure.) H. Berkenbusch.
76 *Restrictions on Advertising of Proprietaries to the Public. (Oeffentliche Ankundigung von Arzneimitteln.) (Editorial.)
77 *The Manufacturing Chemists and the Medical Profession. (Pharmazeutische Industrie und Aerztestand.) (Editorial.)
78 Pharmacist Protests against Restrictions on the Dispensing of Certain Potent Drugs without a Prescription. (Die Vorschriften über die Abgabe starkwirkender Arzneimittel.) (Editorial.)

76. **Restrictions as to Advertising of Proprietaries.**—The military authorities in the state of Hannover have issued a decree along much the same lines as our Pure Food and Drugs Act, so far as the advertising is concerned. Our exchange quotes the decree with approval and then also asks why such a decree is promulgated and enforced only while the state is under martial law. Each of the provisions, it emphasizes, is fully as much to the advantage of the public health during peace as during war times.

77. **The Manufacturing Chemists and the Medical Profession.**—Two advertisements which recently appeared in German newspapers are reproduced with the comment that they afford opportunity for congratulating the medical profession anew on the high opinion held by the manufacturing chemists of professional honor among physicians.

The first reads: "Physician Wanted. A remunerative and convenient country practice with sickness insurance societies is open in southern Hannover for immediate possession to young physician who gives the preference to the original preparations of manufacturing chemists" . . .

The second reads: "Physician Wanted. What physician, one with the title of professor preferred, will father a new pharmaceutical tested by physicians with good results? . . ."

Our exchange remarks that the fact that such demands can be publicly voiced suggests that there are in our ranks some black sheep who will stoop to dally with the sordid writers of the first advertisement, or father the child in the foisting procedure aimed at in the other.

Wiener klinische Wochenschrift, Vienna

October 21, XXVIII, No. 42, pp. 1129-1152

79 Wounds and Contusions of the Kidneys. (Kriegsverletzungen der Niere.) R. Lichtenstern.
80 *Vaccination against Dysentery. (Ruhrschutzimpfung.) K. Hever and F. Lucksch.

81 *Carbohydrate Fermentation in Stomach with Normal Motor Function. (Gibt es eine Kohlehydratgärung im motorisch intakten Magen?) P. Saxl.
82 *Typhoid Gastritis. S. Plaschkes.
83 Wounds of Cranial Nerves. (Schussverletzungen der Hirnnerven.) O. Ausch.
84 Volvulus and Gangrene of Meckel's Diverticulum. R. Monti.
85 Adapting Farm Wagons for Carrying the Wounded. A. Weiss.

80. **Vaccination Against Dysentery.**—There was a mortality of 19.4 per cent. in the sixty-seven cases of dysentery in a small town, all in about one month. Then all the sick were sent to a special hospital. Search was made for carriers in the infected houses and several were found and sent away also. All the adults left were inoculated with a polyvalent vaccine, a total of 342 persons out of a population of 800. About 243 were inoculated twice. The reaction was always mild, generally merely a little local redness, swelling and painfulness. A few had headache, and there was diarrhea for a few days in some. In exceptional cases there was a little fever, with a chill, the day of the inoculation. The fifty-one children over 4 years old, in the infected houses, were all given an injection of polyvalent immune serum. The epidemic was promptly arrested.

82. **Typhoid Gastritis.**—Plaschkes examined the stomach content after a test breakfast in large numbers of soldiers with typhoid, restricting his research to those whose fever had subsided. He found evidences of severe gastritis with impairment of motor functioning and digestive power in all but 4. In only these 4 of the total 14 with pronounced gastritis was the acidity normal; in 3 there was no free acid and in 7 it was abnormally low. One had severe urticaria and all had abnormally large amounts of mucus. He examined the stomach content from numbers of other patients with dysentery or paratyphoid, finding conditions in regard to the acidity practically normal. There is reason to assume, therefore, he says, that the gastritis of typhoid is peculiar to this disease. Tests of typhoid bacilli in vitro showed that their proliferation was checked by gastric juice. On the other hand, the finding that the overwhelming majority of typhoid patients have a specific gastritis, persisting into convalescence, is surely an indication to supply such patients with the lacking acid, and the diet should be that given in other forms of gastritis, in small frequent meals. The rapid progress in his cases when food of this kind was given, with hydrochloric acid, confirms the practical importance of these views. They also suggest that infection does not necessarily always occur through the stomach. Typhoid preceded cholera in 44 cases recently reported by Walko, but no instance is known in which typhoid followed on cholera. In prophylaxis of cholera, therefore, the systematic giving of hydrochloric acid far into convalescence of typhoid may prove important.

Zentralblatt für Chirurgie, Leipzig

October 30, XLII, No. 44, pp. 785-800

86 Siphon Drainage of Stomach through Fistula in Conditions of Atony in Stomach and Intestines. (Die Magenfistel mit Heberdrainage.) H. Gross.

Zentralblatt für Gynäkologie, Leipzig

October 30, XXXIX, No. 44, pp. 763-778

87 *The Transperitoneal is the Preferable Technic for Cesarean Section. (Extraperitonealer oder transperitonealer Kaiserschnitt?) K. Baisch.

87. **Cesarean Section in the Cervix.**—Baisch relates that none of the eleven women whom he has delivered by extraperitoneal cesarean section behaved afterward as if there had been a laparotomy. There was no tendency to paralysis of the bowels. Recovery was amazingly simple and rapid in comparison to the convalescence after classic cesarean section. In a twelfth patient he renounced the extraperitoneal technic because the woman had been laparotomized twice, once for extra-uterine pregnancy and once for postoperative hernia. In another case sterilization had to be done. In both these cases the incision was low in the cervix, opening up the peritoneum widely. Recovery was simple and rapid in both, as also in the seventeen following cases of transperitoneal cervical cesarean section.

The incision, 10 cm. long, is made on the linea alba, through skin and peritoneum, and the uterus is opened on the median line in the thin and stretched lower segment. No attempt is made to separate the bladder, or to make the incision in the peritoneum transverse, or to loosen up the peritoneum. If necessary to tampon the uterus, after extraction of the child, the tampon is brought out through the vagina. No attempt is made to drain the abdominal cavity either through the abdominal wall or the vagina. The distended uterus holds the intestines out of the way so they do not present at all, and any fluids from the uterus are soaked up by two flat sponges wrapped in gauze compresses and worked down between the uterus and the abdominal walls. The incision in the uterus is reenforced double with peritoneum sutured over the uterus suture, and this is covered with omentum. This prevents any escape of uterus contents into the abdominal cavity. By making the incision in the uterus in the most stretched segment, the coaptation and suturing of the thin walls proceed with special ease, and during the involution of the organ there is no traction or pulling aside of the walls. The fold of peritoneum in that region is so voluminous that it can be laid in a double fold over the suture in the uterus wall; there is not such an excess of peritoneum in the fundus region, so this is impossible elsewhere. Conditions therefore permit as simple and rapid recovery as after the extraperitoneal technic.

Only thirteen of the total nineteen cases treated by this transperitoneal technic were "clean" cases. The others had been repeatedly examined by midwife or obstetrician, without gloves, and in several the membranes had ruptured twelve, twenty or twenty-four hours before. Two of the women were already slightly febrile and the fluids in the uterus were fetid. Labor had dragged along for days in many cases; in two primiparas of 40, seventy hours had elapsed since the birth process had begun, and with several others, thirty or forty hours had elapsed. In every instance the puerperium was normal in every particular, although the conditions were in many of the cases less favorable than in the extraperitoneal series. In the two febrile cases, perforation of the living child had even been contemplated. The children were all delivered alive but one died from an intracranial hemorrhage; the operation had evidently come too late in this case. No high forceps, prophylactic version, premature delivery or a pelvis enlarging operation was required in any of the cases. The operation was done on account of contracted pelvis, rigid birth passage in elderly primiparae, cicatricial atresia of the vagina, etc. Eight of the women were allowed to leave the clinic the tenth or eleventh day. The transperitoneal technic thus proved to have all the advantages of the extraperitoneal method and to surpass it in some respects.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 27, XXXVI, No. 74, pp. 1153-1168

88 Localization of Metal Bodies in the Tissues with Electrovibrator. V. Maragliano.

Policlinico, Rome

October 31, XXII, No. 44, pp. 1469-1504

89 Acute Inflammation of the Liver. (Contributo clinico allo studio del cosidetto fegato infettivo acuto.) G. A. Pietri.
90 Treatment of Purulent Pleurisy. M. Mitra.

Riforma Medica, Naples

October 30, XXXI, No. 44, pp. 1205-1232

91 Treatment of Arrhythmias. III. (Terapia delle aritmie. Aritmie batmotrope; disordini di eccitabilità.) G. Rummo.
92 Leishmania Anemia; Two Cases. (Contributo clinico ed anatomopatologico allo studio dell'anemia da Leishmania.) A. Fagiuoli. Commenced in No. 43.
93 Primary Perithelioma of Lymph Glands. G. D'Oria. To be continued.

Brazil-Medico, Rio de Janeiro

October 16, XXIX, No. 39, pp. 305-312

94 *Possible Mycotic Origin of Leukemia. (Pesquizas etiologicas na leucemia.) E. Dias.
95 Epidemic Cerebrospinal Meningitis. Travers, Jr.
96 Tuberculosis in Parturients. (Subsidio ao estudo da tuberculose na puerperalidade.) A. Farani. To be continued.

October 23, No. 40, pp. 313-320

97 Classification of Siphonaphtherus in Brazil. (Notas de syphonapterologia.) R. de A. Cunha.
98 Typhoidal Condition in Chronic Malaria. (Typhose palustre.) A. A. da Matta.

94. **Leukemia a Mycosis?**—Dias found what he calls a bacilliform germ with pronounced polymorphism in two cases of severe myeloid leukemia with extreme enlargement of the spleen. He succeeded in inducing in animals, inoculated with the germ, a progressive and peculiar splenomegaly with enlargement of glands. The facts observed suggest that the germ in question has some etiologic connection with the myeloid leukemia, suggesting a possible mycosis as the origin of the trouble. The whites numbered 100,000 and 244,000 in the two cases. The animals were inoculated with venous blood and with the products of punctures of the spleen. Other animals inoculated with spleen tissue from these also developed the same progressive enlargement of spleen and glands and other signs of septicemia.

Russkiy Vrach, Petrograd

XIV, No. 38, pp. 889-912

99 *The Action of Peptone on the Heart, Vessels and Blood Pressure. S. A. Pissemsky.
100 *Etiology of Multiple Neuritis. N. I. Leporsky.
101 *Serum Sickness at the Pediatric Clinic in Moscow, 1904-1913. O. I. Molchanova.
102 *Intestinal Digestion in Man after Excision of a Large Portion of Lower Intestine. N. A. Gurevich.
103 *Cholera and Amebic Dysentery. V. L. Yakimoff and A. P. Demidoff.
104 *Treatment of Sciatica with Rectal Saline Infusion by the Drop Method. N. A. Gubin.

99. **Action of Peptone on the Heart, Vessels and Blood Pressure.**—Pissemsky studied the action of peptone on the isolated heart, coronary vessels, peripheral arteries, and the vessels of the isolated intestines and kidneys of rabbits. He used mostly Witte's peptone, but also peptone prepared from albumin and blood. The substance was passed through the vessels in solutions of 1 : 200, 1 : 1,000 and 1 : 10,000. The latter two solutions caused weakening of cardiac contractions, while stronger solutions (1 : 200) stimulated the heart to contract, the cardiac rhythm remaining uninfluenced. Strong solutions (1:200) also produced marked dilatation of the coronary arteries. The same occurred, but was transient, with weaker solutions, or the weaker solutions showed no effect. The action of the peptone on the peripheral vessels was studied on rabbit's ears with the method of Kravkoff. The action was vasoconstricting with all concentrations and with any kind of peptone. However, the arteries of isolated intestines showed dilatation from large doses, but weak solutions had no effect. Somewhat similar was the action of peptone on the vessels of the isolated kidney. The blood pressure (0.5 gm. peptone to one kilogram body weight) either remained unchanged, or rose, contrary to what may be observed in dogs in which the same doses cause a fall in the blood pressure.

100. **Multiple Neuritis from Tapeworm.**—Leporsky collected from the material of the University clinic of Dorpat sixty-four cases of tapeworm *(Bothriocephalus latus)* observed in five years. Of these sixty-four cases, fifty-one showed more or less marked involvement of the nervous system in the form of polyneuritis, which in 14 per cent. of the cases was severe. He gives histories of three cases of polyneuritis in which no other explanation for the polyneuritis except this parasite could be found. With the expulsion of the worm there was immediate improvement. Leporsky is of the opinion that a toxin is formed in the intestines, whence it penetrates into the nervous system, causing various central and peripheral nerve disorders, such as chorea, epilepsy, neuralgia, and multiple neuritis. A polyneuritis of this etiology might be called "enterotoxic polyneuritis." Sometimes no definite nerve symptoms are produced, but merely general complaints of weakness, and of pain in the joints and muscles. These symptoms are usually taken for rheumatism, when they are in reality due to the presence of the tapeworm. With the expulsion of the latter these rheumatoid pains disappear at once.

101. **Serum Sickness and Allied Phenomena.**—Molchanova found so-called serum phenomena, such as urticaria, fever, adenitis, etc., in 56.7 per cent. of the patients given diphtheria antitoxin, and in 64.3 per cent. of those treated with antistreptococcus serum for scarlet fever. In those cases in which the antitoxin or serum for scarlet fever had been injected more than once, such phenomena were present in 100 per cent., but when the antitoxin was injected for the first time, complications were noted in 47.5 per cent. and in 59.6 per cent. in the scarlet fever cases. The first sign of the serum disease was swelling of a gland in the inguinal region, as the serum was usually injected in the abdominal skin or in the gluteal muscles. The adenitis very seldom appeared in the axilla or neck, and it was the latest of the serum phenomena to disappear. The most frequent sign, however, was a rash in the form of urticaria, erythema multiforme, measles-like, scarlatinaform or hemorrhagic. The latter was found in 2.2 per cent. after diphtheria antitoxin and in 10.4 per cent. after antistreptococcus serum injections.

Of other rarer complications, Molchanova mentions affections of the joints (arthralgia, synovitis), elevation of temperature and albuminuria (in 0.3 to 0.4 per cent. of the cases) and edema of the face, lids, upper lip, scrotum and prepuce. The edema was not associated with albuminuria, casts or increased blood pressure; rather was there a fall of the latter. A very disagreeable complication was gastro-intestinal disorders, vomiting, diarrhea and abdominal pain. In four cases only there occurred cardiac collapse, with one death. All these complications occurred usually from seven to twelve days after the injection of serum, or if the patient had had an injection some time before, the interval was from one to five days. Concentrated serum gave fewer complications. Calcium chlorid (2 per cent. solution, a teaspoonful three or four times daily) did not prevent occurrence of complications. The anti-anaphylactic method of Besredka was used in fifteen patients (2 c.c. of antitoxin was injected intramuscularly, followed two or three hours later by the curative dose hypodermically or intramuscularly), but it did not prevent complications. The latter were rather mild, however, and hence Molchanova warmly recommends this method.

102. **Intestinal Digestion in Man After Excision of Large Portion of Lower Intestine.**—Gurevich has been studying the extent of assimilation of alimentary substances in a man who had had 159 cm. of ileum removed. He found that only the carbohydrates are normally assimilated; nitrogen and fats, very poorly. Instead of the 12.1 per cent. which is the normal rate for unassimilated nitrogen, there was 48.15 per cent. The tests were carried out seven months after the operation, during which time the carbohydrate metabolism had become normal; that of albumin and fats was still deficient. Yet the patient was gaining in weight and was cheerful, though he still had persisting diarrhea.

103. **Cholera and Amebic Dysentery.**—Yakimoff and Demidoff recommend to examine suspicious cholera cases, during epidemics in tropical regions, not only for cholera vibrios, but also for ameba. It is necessary to stain the latter (Giemsa); it is easy to find them then. There may be a combined infection with amebic dysentery and cholera.

104. **Saline Infusion in Treatment of Sciatica.**—Gubin obtained excellent results in the treatment of sciatica with rectal injections of salt solution (1.4 teaspoonful sodium chlorid to two glassfuls of hot water) with the drop method. He used this method in seven patients and all recovered. The general reaction was profuse sweating and increased diuresis. A detailed report of one case with the description of the method, and illustrations, is given.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

October 9, II, No. 15, pp. 1727-1814

105 Extermination of Body Lice. (Eenige opmerkingen over de bestrijding der kleederluizen.) N. H. Swellengrebel.
106 Improved Technic for Physiologic Electric Tests with Two Interrupted Currents. (Een reactietaster voor twee elkaar vervangende stroomen.) A. A. Grünbaum.
107 Paratyphoid Effusion in the Knee in an Infant. (Een zeldzaam geval van hydrops genu paratyphosus bij een zuigeling.) F. P. J. Doeleman.

Hospitalstidende, Copenhagen

November 3, LVIII, No. 44, pp. 1127-1150

108 Functional Disturbances in Gait in the Young. (Infantile funktionelle Gangforstyrrelser.) P. Lorenzen.

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THE KINETIC DRIVE

ITS PHENOMENA AND ITS CONTROL *

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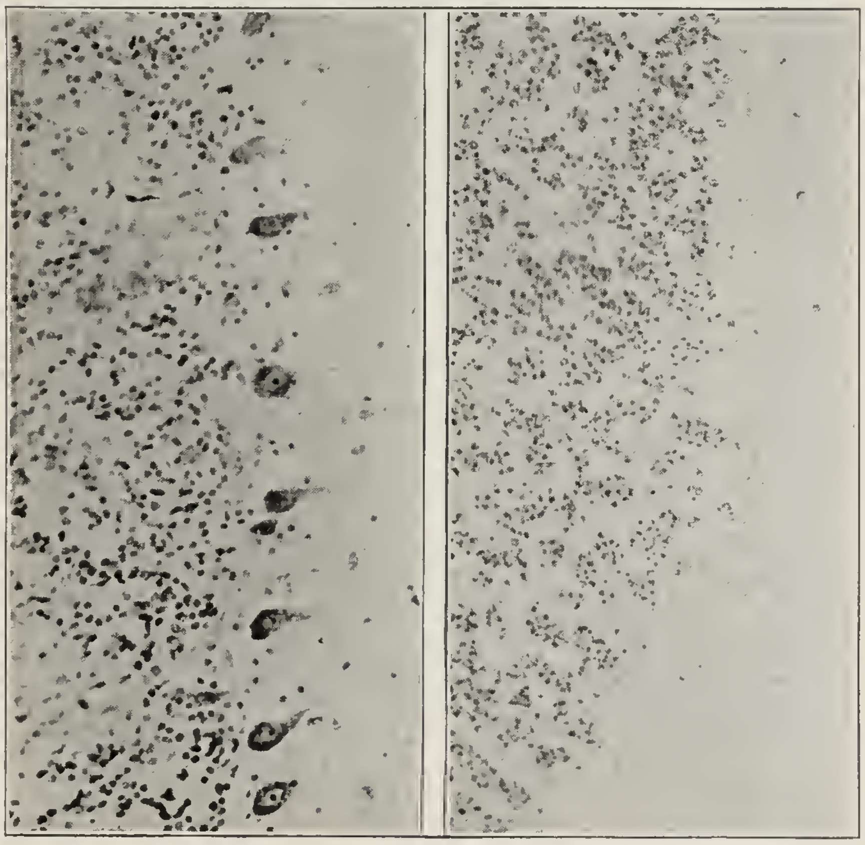
INTRODUCTION

The species of animal now dominating the earth more completely than any other is at this moment in a state of abnormal activity — the back-wash of the European war is seen in the quickened pulse everywhere even in this land. Not only in war, but in peace also, the complicated machinery of civilization created by man often drives him to his own destruction. Nowhere is this industrial and commercial driving more intense than in this city. It has occurred to me, therefore, that it might be interesting to attempt an analysis of the mechanism by which this speeding is accomplished, and relate it to the speeding which is due to other stimuli such as infections, autointoxication, physical injury, etc. Since the process of speeding is identical with that of the transformation of potential into kinetic energy, the state of increased energy transformation might fittingly be called the *kinetic drive.* To facilitate discussion I shall assume an unwarranted attitude of dogmatism which may be evaluated at leisure.



A.—Section of normal cerebellum of rabbit.

B. — Section of cerebellum of rabbit showing effect of extreme emotion (fright).

Fig. 1.—Photomicrographs showing effect of fright on the brain cells of a rabbit. Note the almost complete disappearance of Purkinje cells in *B*.

THE KINETIC MECHANISM

Man is a mechanism, an automaton, whose primary work is the transformation of energy by means of a system of organs especially adapted to this end. In these organs during sleep is stored the energy which during consciousness, in response to environmental contacts with distance, contact or chemical ceptors, is transformed into muscular action, into heat or into the representations of muscular action, such as emotion or "mental processes."

The impulse or driving force, which causes the transformation of energy within the organism, is supplied by certain parts of the brain, and in the brain is found also the mechanism which makes the final manifestations of the transformed energy specific to the environmental contact which initiated the driving.

The initiators of the kinetic drive may be roughly classed as *contact ceptor stimuli* — physical injury, heat, cold, etc.; *distance ceptor stimuli* — written and spoken language, sight, smell, etc., and *chemical ceptor stimuli*—infection, autointoxication, pregnancy, excessive food, poisons, etc. Whether or not any one of these stimuli acts singly or in combination with others, the end-effects are identical. The effects of any one, therefore, may be studied as typifying all the rest.

The organs, which from moment to moment vary and control, accelerate or retard the driving force of the brain are the supra-renals, the pacemaker of the kinetic system is the thyroid, and the final act of adaptive energy transformation is performed by the muscles.

The primary process within the brain, by means of which its driving force is created and sustained, is oxidation. Oxygen is supplied by the lungs. If the blood be acid, oxygen cannot be carried by the hemoglobin. Energy transformation depends, therefore, on the maintenance of the alkalinity of the blood. Since the transformation of energy in the body is always accompanied by the formation of acid by-products, the continuance of the process of energy transformation demands a mechanism or mechanisms by means of which the acid by-products can be neutralized and eliminated. These needs are met by the liver, the kidneys and the lungs. The acid by-products of energy transformation are to a large extent broken down in the liver into simple compounds which are harmless to the kidneys by which these soluble end-products are eliminated; while the gaseous end-products are eliminated by the lungs.

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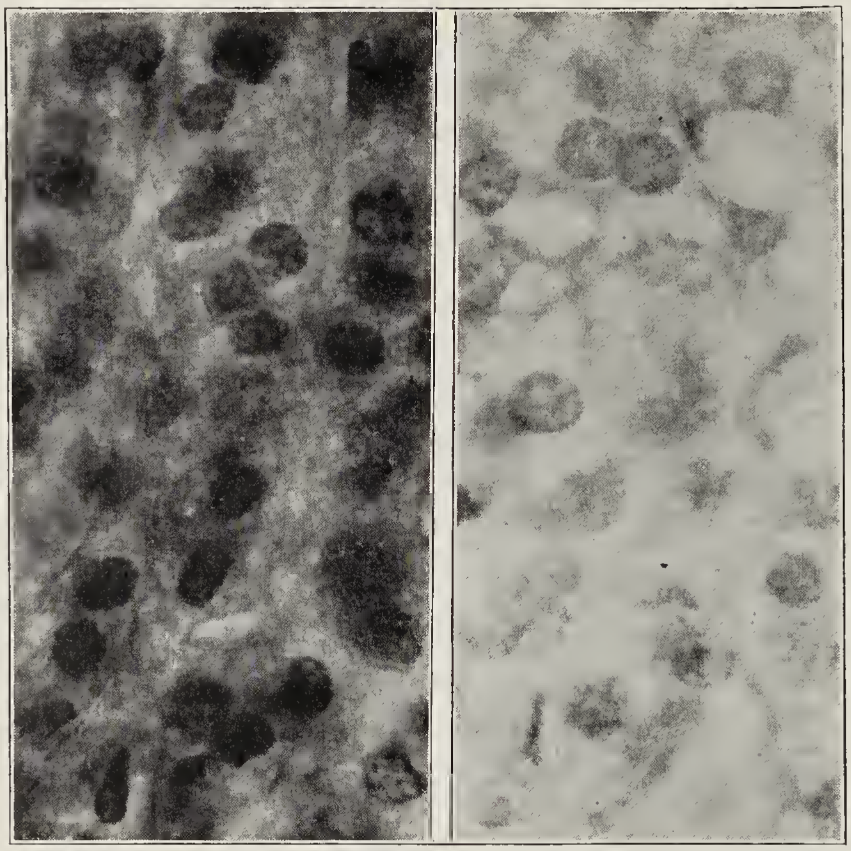
* Wesley M. Carpenter Lecture, read before the New York Academy of Medicine, Oct. 7, 1915.

If the system of organs, which we postulate is primarily adapted for the transformation of energy, acts as a *unit* and is restored only during sleep, then every excessive excitant of muscular action or of heat production between periods of sleep — such as prolonged consciousness (insomnia), muscular action, emotion, mental exertion, infection, foreign proteins, even pregnancy, etc., should cause identical changes in the histologic structure and the function of each organ concerned in the transformation of energy or in the neutralization and elimination of the resultant acid by-products; and in addition, intense and short, as well as long continued activation by any one of these agents should cause also identical acute and chronic diseases. In other words, insomnia, intense emotion (Figs. 1, 2 and 3), extreme exertion, infection, foreign proteins, pregnancy, etc., should cause histologic changes in the brain, the suprarenals and the liver, an increased output of adrenin, hyperplasia of the thyroid and a change in its iodin content, and changes in the glycogen content of the muscles and of the liver.

If the foregoing be true, then it would follow that each of these activators would cause an increased production of acid by-products. Therefore, exertion, infection, emotion, mental activity (increased consciousness) and foreign proteins or pregnancy should produce certain identical clinical phenomena. First of all, we know that each of these activators causes increased respiration, increase in the frequency and force of the heart beat, thirst, excitability, perspiration, increased acidity of the urine, and identical manifestations of fatigue and exhaustion. If the suprarenals determine the driving force of the brain from moment to moment, and if each activation of the *kinetic system* causes an increased output of adrenin, then it would follow that adrenin alone would produce the basic phenomena caused by an excitant of energy transformation — such as exertion, injury, infection, emotion, pregnancy, etc., and would produce identical histologic lesions; and it does. In addition, adrenin given over a long period of time causes myocarditis, glucosuria, albuminuria, fatigue and in addition many symptoms of cardiovascular disease and of cardiorenal disease.



A. — Section of normal suprarenal of rabbit.

B. — Section of suprarenal of rabbit showing effect of extreme emotion (fright).

Fig. 2.—Photomicrographs showing effect of fright on the suprarenals of a rabbit. In *B*, note the widespread loss of cytoplasm and the disappearance of nuclei.

FUNCTION OF THE SUPRARENALS AND OF THE THYROID IN THE KINETIC DRIVE

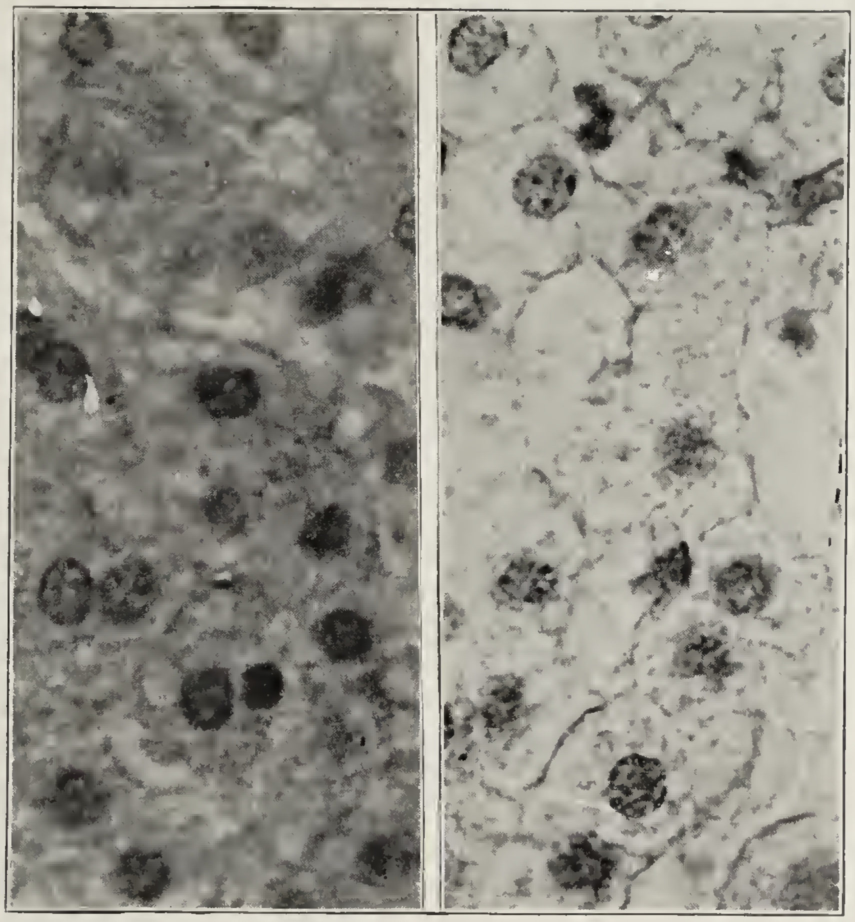
If adrenin causes phenomena identical with those produced by emotion, exertion, infection, etc., and if, vice versa, emotion, infection, exertion, etc., each causes an increased output of adrenin, then we may infer that it is through the increased mobilization of adrenin that increased energy transformation is accomplished by each of these activators. Again, if this be the rôle of adrenin, we should find that in a state of suprarenal deficiency, the manifestation of energy transformation would be diminished. And we find that this is true, for after double suprarenalectomy, there is an increasing and finally a total loss of muscular power and of heat production.

If the nerve supply of the suprarenals is divided and then an adequate suprarenal stimulus applied, the output of adrenin is not increased. If the nerves are intact and a large dose of morphin has been given, the application of an adequate suprarenal stimulus causes no increased output of adrenin (Figs. 4 and 5).

We therefore conclude that the brain controls the transformation of energy by first driving the suprarenals, thus mobilizing adrenin, which is carried to the brain in the blood stream. The result of the chemical combination of oxygen, adrenin and brain cell substance appears to be the production of energy impulses, these impulses being probably identical with electricity (Crehore and Williams). The electromotive force thus supposed to be fabricated in the brain is transmitted to the muscles, where the energy is finally transformed into heat, running, fighting, etc. Since the suprarenals hold but a limited supply of adrenin, one would expect to find in the body some organ whose function is the secretion in abundant quantity of some substance by which the efficiency of adrenin is increased. The belief that this function is performed by thyroid secretion is strengthened by the researches of Osterhaut, who found that iodin causes an increased permeability of living vegetable tissue to the passage of electricity. The activity of thyroid secretion is directly proportional to the amount of iodin it contains, and we know that excessive doses of iodin alone cause all the phenomena of emotion and exertion, and, inversely, that emotion, infection, exertion, etc., cause changes in the iodin content of the thyroid. If, in the midst of iodism, double suprarenalectomy be performed, the phenomena of iodism should be diminished.

In this interrelation of the brain, the thyroid and the suprarenals, we have what perhaps is the master key to the automatic action of the body; that is, through the special senses environmental stimuli reach the brain and cause it to liberate energy, which in turn activates certain other organs and tissues, among which are the thyroid and suprarenals. The increased output of thyreoiodin, by facilitating the transmission of electric currents through semipermeable membranes, increases the passage of nerve impulses and sets the pace for energy conversion. In consequence the suprarenals are driven to increased activity, and the increased adrenin in turn excites the brain to still greater activity, the results of which are equivalent to increased work of the sympathetic nervous system. These results are principally the following: increased heart beat, increased respiration, raised blood pressure, increased sweating, thirst, the transfer of much of the blood from the splanchnic area to the surface, increased output of glycogen, increased power of the muscles to metabolize glycogen, increased acid excretion in the urine, certain histologic and chemical changes, and exhaustion.

The phenomena of the kinetic drive in animals and in man are therefore essentially the phenomena of the kinetic drive of a locomotive. The locomotive consumes carbon in the form of coal; man consumes carbon in the form of glycogen. The locomotive produces heat and motion; man produces heat and motion. The locomotive produces gaseous and solid acid by-products; so does man. If the exchange of gases in the firebox of a locomotive is stopped, energy transformation ceases — the locomotive dies; if the exchange of gases in man is suspended, man ceases to transform energy — man dies.


A.—Section of normal liver of rabbit.

B. — Section of liver of rabbit showing effect of extreme emotion (fright).

Fig. 3.—Photomicrographs showing the effect of fright on the liver of a rabbit. In *B*, note the vacuolated spaces and other signs of disorganization.

CONTROL OF THE KINETIC DRIVE

Turning from the phenomena of the kinetic drive to methods of control, we find first that morphin controls the rate of energy transformation in response to any stimulus. Whatever the activation, whether infection, emotion, injury or exophthalmic goiter, morphin controls the outward phenomena, such as the pulse rate, respiratory exchange, sweating, thirst, restlessness, acid excretion, fever, muscular action and pain.

The value of opium in infections and in pain is one of the foundation stones of medicine. And here I must pause for a moment to pay tribute to a talented New York physician — Alonzo Clark — who on empiric grounds made a daring innovation in the opium treatment of peritonitis.

Even today we must concede that next to surgical treatment the administration of opium is the most efficient treatment for peritonitis. Guided by researches made in my laboratory, in collaboration with my associates, I have combined the administration of opium with surgical treatment in only those cases of peritonitis in which the kinetic drive threatened to kill the victim. In such cases a quick *anociated* operation under nitrous oxid, Fowler's position, huge hot packs, saline infusions, sodium bicarbonate and glucose, plus the Alonzo Clark opium treatment for from twenty-four to forty-eight hours have given startlingly good results. Opium blocks the kinetic drive; draining relieves tension; water and alkalies control acidosis, and the patient gets well. Death from acute peritonitis from any cause has all but disappeared from the Lakeside Clinic. The amount of opium must be determined not by quantity but by its effect on the drive; the respirations should be reduced to from 12 to 15 per minute. In severe cases there must be no therapeutic faintheartedness.

The final test of any theory in medicine is in the crucible of the clinic. Our laboratory findings support not only the kinetic theory, but also the postulate that the kinetic drive may be controlled by the use of morphin, nitrous oxid and alkalies. In the laboratory we have found that morphin prevents the mobilization of adrenin (Figs. 4 and 5); that morphin and nitrous oxid block energy transformation, and prevent the histologic changes wrought by physical injury, infection and emotion (Figs. 6, 7 and 8), and that alkalies counteract the effect of a kinetic drive by supplying the rapidly increasing deficiency of neutralizing bases. These laboratory findings have been tested in Lakeside Hospital in a long series of operations on the stomach and the intestines, on the biliary tract, the pelvic organs and the appendix, in clean cases and in cases complicated by the severest acute infections, with a resultant remarkable reduction in both morbidity and mortality.

The excessive energy transformation caused by physical injuries such as blows, crushes, penetrations, surgical operations, etc., like that caused by infection, may be blocked by morphin and nitrous oxid and the effect minimized by alkalies and water, and as in the infections, the dosage should be proportional to the intensity of the activation. In surgical operations the brain may be insulated — and in consequence its driving power prevented by local anesthesia in the surgical field or by blocking the spinal cord or the nerve trunks communicating with the field. While it is safe to block the kinetic drive by morphin in cases of acute injury or of acute infection, it is unsafe to use opium to block the effects of intense emotion, because of the danger of habit formation. The tendency to habit formation, however, is the strongest possible evidence of the power of morphin to control the kinetic drive. The emotional drive with its consequences, identical with the consequences of infection, exertion or physical injury, is best met through training and education leading to a philosophy of life that insulates the individual against destructive psychic stimuli. Thus may the individual be anociated in the large clinic of life just as, through local anesthesia, the patient is anociated against the drive of the surgeon's knife.

Never before has there been such an opportunity for studying the behavior of the human mechanism under the strongest physical and psychic stress as in warring Europe today. There observations of the injured, of soldiers in the field, of prisoners and of refugees gave me an unparalleled opportunity for studying the human kinetic drive on a vast scale. The illustrations show the gross effect of the combination of extreme emotion and exertion as they are manifested in the facies and bearing of Belgium refugees and of wounded soldiers, while the photomicrographs show the effect on the brain, the suprarenals and the liver of some of the kinetic stimuli to which these men had been subjected (Figs. 9, 10, 11 and 12).

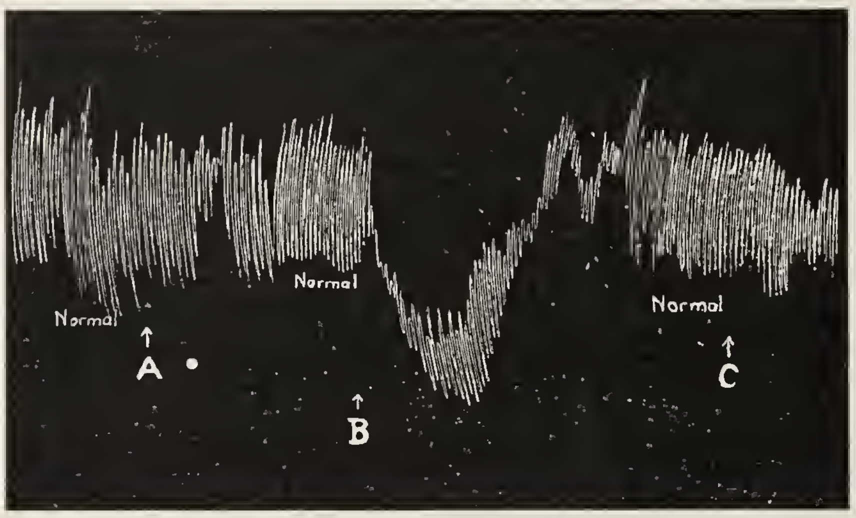


Fig. 4.—Tracing which, with Figure 5, illustrates the protective effect of morphin in anaphylactic shock (Cannon test). In this tracing it is shown that the adrenin which appears in the blood as a result of anaphylaxis inhibits the contractions of the intestinal muscle. *A,* 5 c.c. blood added from dog before anaphylactic dose was given; *B,* 5 c.c. blood from dog in anaphylactic shock; *C,* 5 c.c. blood added from anaphylactic dog, after standing twenty-five minutes.

THE CHRONIC KINETIC DRIVE

Turning now from the individual acutely driven by injury, by infection, by emotion, let us consider the individually *chronically* driven by the stimuli of want, ambition, anger, jealousy or grief, by infection, by pain and by autointoxication. In the acute kinetic drive the individual is endangered by death from exhaustion or from acid intoxication, whereas in the chronic drive, the danger is that one or another of the overdriven organs or tissues may be permanently injured. In an acute drive, simple and direct control is possible; in a chronic drive we may encounter the added difficulties of pathologic changes in one or more organs or tissues. I shall, therefore, discuss separately methods of control in those cases of chronic drive in which no organic change exists and in those in which organic changes do exist.

The common chronic drives are mental and physical overwork, chronic infections, excessive diet and pregnancy, the emotions of fear, hate, jealousy, shame and despair, and foreign proteins, as in intestinal stasis. These conditions present every-day problems and demand but little discussion. Since the lesions of these various driving causes are the same, however; since infection, emotion and overwork produce identical end-effects; since usually two or more of these operate simultaneously, and since the emotional states are most amenable to control, it becomes obvious why these conditions have often been controlled by means which have apparently no direct therapeutic value, such as faith in the physician, travel, diversion, prayer, healing springs, philosophy and Christian Science. Again and again, in the domain of regular medicine as in the domain of irregular medicine, the exclusion of worry has relieved the drive sufficiently to allow the body processes to overcome the primary disease. But the reverse is true also — innumerable men, under the strain of a chronic drive, are pushed beyond the narrow limits of safety by the added drive of grief, worry or shame. Is it not possible that when it is understood that the various kinetic stimuli have interchangeable physical values, the game of health will be more skilfully played? Incidentally, the chronic drive presumes a mild chronic acidosis — at least. This, as Lawrence Henderson suggests, might be in part counteracted by alkalies and water.

Passing now to that group of individuals whose organs have become affected by excessive energy transformation, we meet our greatest difficulties. The proper prosecution of this theme would mean an extensive work on medicine. I shall therefore give but a few illustrations.

EXOPHTHALMIC GOITER

First of all, perhaps the most typical of the kinetic diseases is exophthalmic goiter. In exophthalmic goiter the kinetic system is driven by a continuous activation, because in this disease there has been established a pathologic interaction between the brain and the thyroid, whereby the threshold to all stimuli is kept continuously low. Exophthalmic goiter exhibits a progressive alteration in every function of the body, leading eventually to exhaustion, with visible lesions, depending on the duration and severity of the disease, in every organ and tissue of the body, not alone in the brain, suprarenals and liver, but also in the heart and blood vessels, the muscles, the thyroid, the thymus, the pancreas, the spleen, the lymphatics, the skin, the skeletal muscles, the teeth, the hair and the bony skeleton. Extreme and protracted exhaustion from excessive exertion, excessive emotion or chronic infection causes similar lesions.

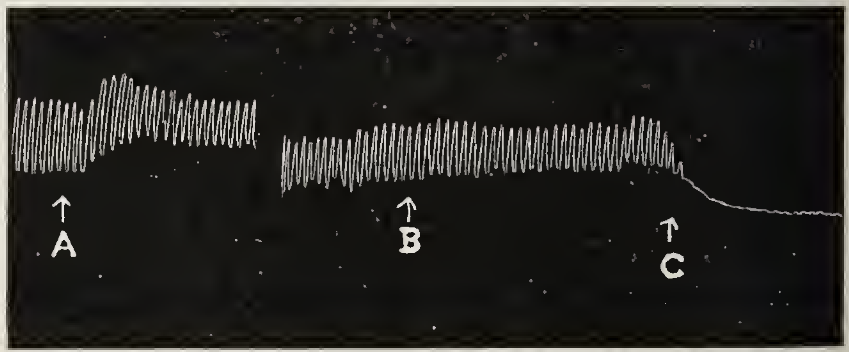
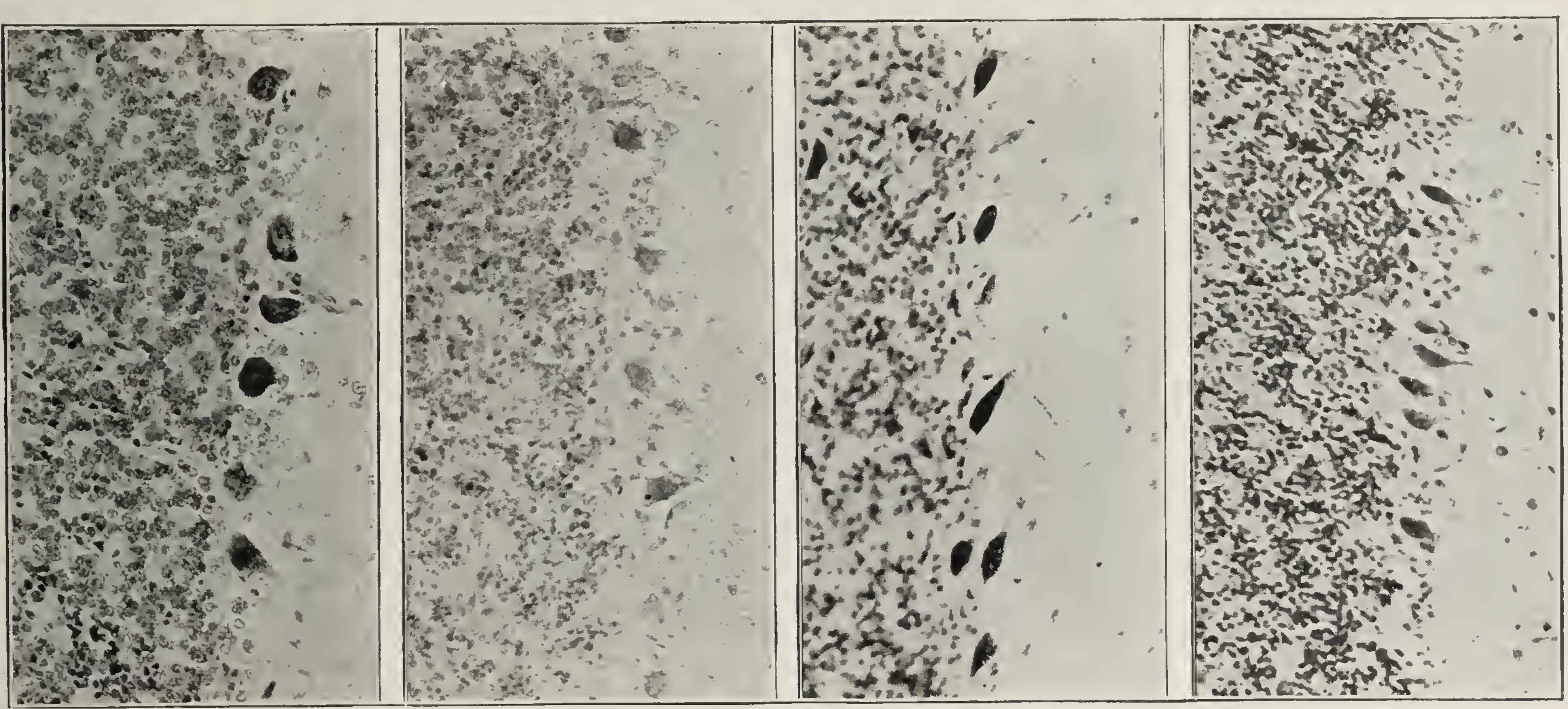


Fig. 5.—Tracing which, with Figure 4, illustrates the protective effect of morphin in anaphylactic shock (Cannon test). This tracing shows that the injection into a morphinized animal of beef serum, which in the normal animal would have caused a strong anaphylactic reaction and a greatly increased output of adrenin, causes no increased output of adrenin, as is evidenced by the contractions of intestinal muscle as in normal blood. Since morphin acts directly on the brain, this experiment evidences not only the protective effect of morphin, but also the dependence of the suprarenal on the brain for its activity. *A,* 5 c.c. control blood added from dog; *B,* 5 c.c. blood added from dog five minutes after intravenous injection of 15 c.c. beef serum; *C,* a few drops of pure adrenin added.

In other words, the principal phenomena of exophthalmic goiter are identical with the leading phenomena of any other kinetic drive of a corresponding degree of intensity, and may be duplicated by fear, anger, sexual excitation, physical exertion, overwork or acute infection. Conversely, many of these activations cause hyperplasia of the thyroid. Thus fear, anger or sexual emotion may cause temporary enlargement of the thyroid; there is hyperplasia of the thyroid in pregnancy, in chronic infections, and perhaps in intestinal autointoxication as well.

There is a fundamental resemblance between certain aspects of exophthalmic goiter, of iodism, of suprarenalism, of emotion and of infection. The resemblance so often noted between exophthalmic goiter and excessive emotion is not surprising in view of the frequency with which the disease is traced to an emotional origin; for among the stimuli initiating exophthalmic goiter, protracted emotion is, perhaps, the most dominant. In a majority of cases, careful inquiry will disclose some deeply entrenched disturbing emotional factor — a great grief, the existence of harassing home conditions, poverty or shame, business reverses, overwhelming responsibilities, an unhappy love affair, or some acutely distressing thought, which drives the kinetic system incessantly. In my own experience, in cases of exophthalmic goiter, for the causation of which no factor in the external environment can be held responsible, the internal environment has usually supplied the disturbing factor, infection or autointoxication, for example. I have never known a case of exophthalmic goiter to result from hard physical labor, unattended by "psychic" strain, or from energy voluntarily and naturally expended.

Whatever the exciting cause of exophthalmic goiter, however, whether unusual business worry, disappointment in love, a tragedy, a strong fear, the illness of a loved one, intestinal autointoxication, an acute or chronic infection, or the administration of excessive doses of iodin or thyroid extract, the symptoms are identical and closely resemble the phenomena of one of the great primitive emotions.



A.—Section of normal cerebellum of a dog.

B.—Section of cerebellum of a dog after injections of diphtheria toxin.

C.—Section of cerebellum of a dog after injections of diphtheria toxin plus morphin.

D.—Section of cerebellum of a dog after injections of diphtheria toxin and the continuous administration of nitrous oxid for four hours.

Fig. 6.—Protective effect of morphin and of nitrous oxid on the brain cells of dogs which had received injections of diphtheria toxin. Compare the Purkinje cells in *C* and *D* with the disintegrated hypochromatic cells in *B*.

INFECTION

There is a period of excessive kinetic drive in fever which exactly corresponds to the kinetic drive in emotion, and which signifies the preparation of the organism for self-defense by chemical activity, just as emotion signifies the preparation of the organism for self-defense by motor activity. The evolution of a receptor mechanism for foreign proteins may be explained on the ground that only by oxidation is the body able to split up and eliminate foreign proteins. The one method of inducing oxidation is through the kinetic system. The living protein molecules of the body are more resistant than the foreign protein molecules, and hence the body is purified by fire — by oxidation.

It would seem, therefore, that fever is the result of a driving of the kinetic mechanism by an infection (foreign protein) stimulus for purposes of self-defense by the splitting up of the molecules of the foreign protein through the transformation of latent energy into heat; and it would seem that emotion is the result of a driving of the same mechanism by a psychic stimulus for purposes of self-defense or procreation, in part at least, by muscular action; while exophthalmic goiter is a purposeless driving of the mechanism by some obscure disarrangement connected with a pathologic change in the function of the thyroid.

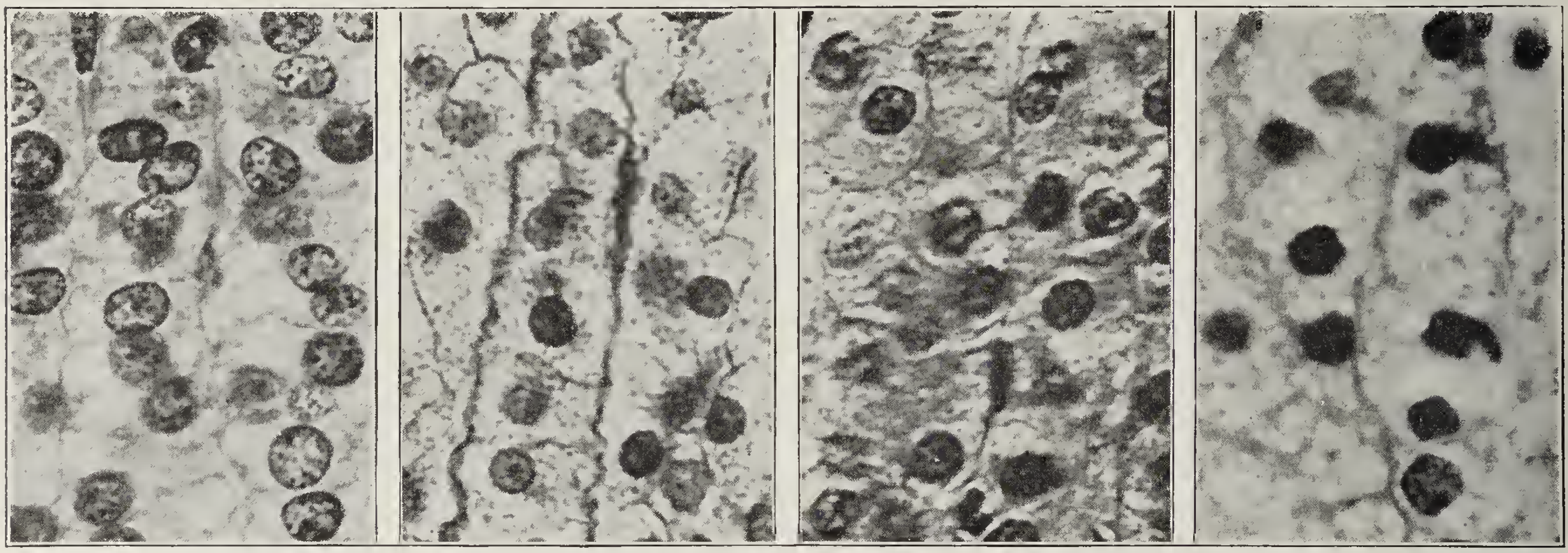
Reasoning from the secure facts of the clinic and the less secure data of the laboratory, I conclude that the primary lesion of exophthalmic goiter is the establishment of an abnormal facility for the passage of action currents in the central nervous system. As previously stated, Osterhaut has given us definite data as to the effect of iodin on the electric permeability of skelp. There is evidence on a vast scale that such a state of increased electric permeability exists in exophthalmic goiter. It has been stated that electric currents are increased in the skin of patients with exophthalmic goiter. Exophthalmic patients are extremely sensitive to all stimuli, infection, autointoxication, injury, emotion and electricity.

That these several activations involve the same mechanism is borne out by many points of similarity between exophthalmic goiter and infections. The likeness of the phenomena of the kinetic drive in exophthalmic goiter to those of chronic infections, particularly of tuberculosis, is so marked that it is not at all uncommon to find diagnosticians of wide experience recommending treatment for tuberculosis to a patient with exophthalmic goiter, and an operation for exophthalmic goiter to a patient with tuberculosis. In two different cases of the same degree of intensity, it may be almost impossible to distinguish the case of exophthalmic goiter from the case of tuberculosis. Sometimes the two conditions may be present in the same patient. The following symptoms are common to both exophthalmic goiter and tuberculosis: tachycardia, increased respiration, flushed face, tremors, persistent slight fever, nervousness, rapid loss of weight, digestive disturbances, increased acid secretion of the urine, hyperplasia of the thyroid and of the lymph glands and enlargement of the heart. Even at necropsy the lesions — barring the tuberculosis focus itself — may be so nearly identical in the two cases as to baffle differentiation. In tuberculosis as in exophthalmic goiter, the entire kinetic system is overdriven.

Thus the kinetic theory of exophthalmic goiter, of infections and of emotion supplies a possible biologic interpretation of the induction of these states, of their mutual resemblance, and of the method of their control. All are modified by rest; all are temporarily controllable by morphin; all cause increased H-ion concentration in the blood, and, therefore, tax heavily the organs of acid neutralization, namely, the respiratory center, the kidneys, the suprarenals and the liver. *The increased respiratory rate in each of these conditions is accounted for by the specific stimulative effect of the increased H-ion concentration of the blood on the respiratory center.* The demand for neutralization of the increased acidity incident to emotion, work, infection or exophthalmic goiter is responded to by increased activity of the liver. If the acidity is increased so rapidly that neutralization cannot keep pace with it, then nephritis may develop as an effect of the acid by-products on the kidneys. Hence in intense emotion, exertion, infections and exophthalmic goiter, albumin and casts are frequently and sugar is sometimes found in the urine, and in extreme cases acute acidosis may develop. The acidosis of emotion, of infection and of exophthalmic goiter is expressed in each case by thirst. The cycles of vomiting in exophthalmic goiter are probably caused by acidosis, which is the most common cause of death in this disease. Thus, in the immediate symptoms and in the end-effects, even to the resulting acidosis and pathologic lesions, we find a close resemblance in the essential phenomena of exertion, emotion, infection and exophthalmic goiter — phenomena which are harmonized and interpreted by the kinetic theory.

CARDIOVASCULAR DISEASE

The analogy between diseases of the thyroid and diseases which among other organs involve the suprarenals is borne out by many clinical points. For example, exophthalmic goiter and cardiovascular disease have many characteristics in common. Each of these conditions bears an intimate relation to foreign protein activation and to "nervous strain." The etiology of exophthalmic goiter is much the same as that of cardiovascular disease. In each of these diseases a recall of the unhappy circumstances or conditions which led to or precipitated the acute stage is sufficient to cause an exacerbation of all the symptoms. The most efficient means by which each of these diseases may be modified are rest, diversion, and change of scene and occupation. In each the secretion of the gland most involved seems to bear a specific relation to the production of the disease. For instance, as has been stated, the cardinal symptoms of exophthalmic goiter may be produced in a normal person by the administration of thyroid extract, and in the patient with exophthalmic goiter the administration of thyroid extract, even in small quantities, causes an immediate exacerbation of the symptoms. In like manner, adrenin aggravates the symptoms of cardiovascular disease, and when given to a normal animal in excessive dosage is said to produce lesions similar to arteriosclerosis. Like results cannot be obtained by the administration of the secre-



A. — Section of normal suprarenal of dog.

B. — Section of suprarenal of dog after injection of diphtheria toxin.

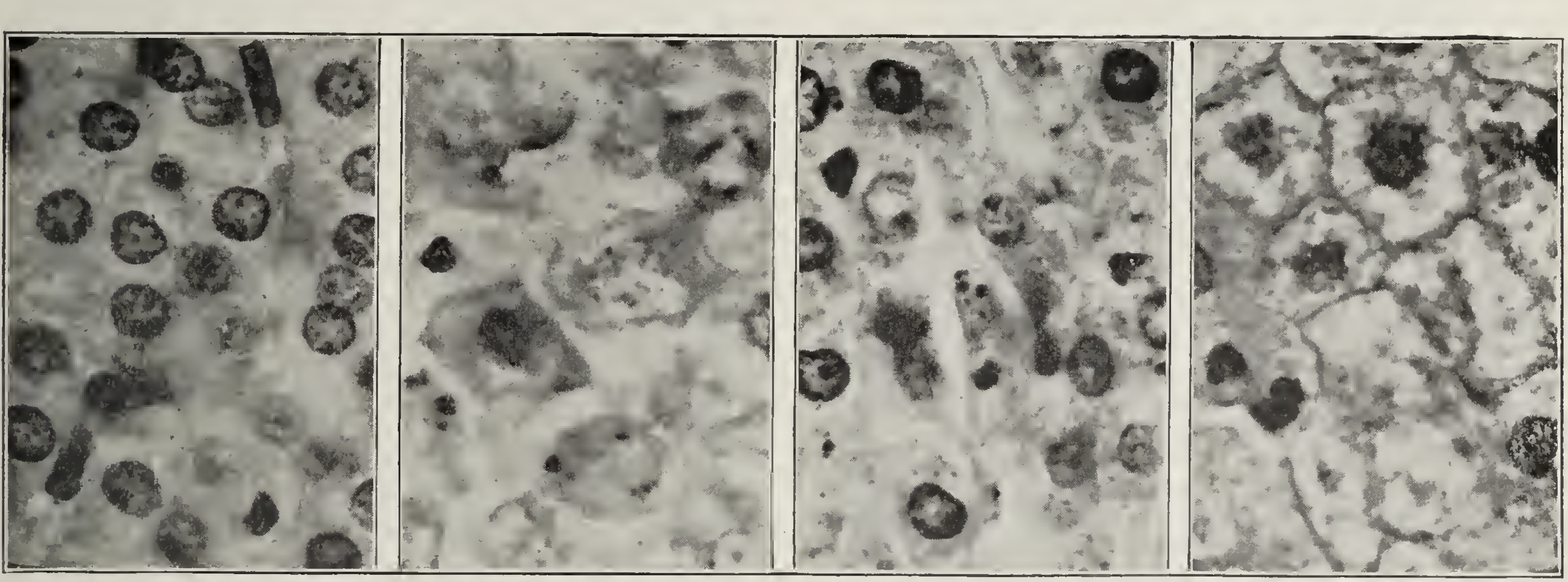
C.—Section of suprarenal of a dog after injection of diphtheria toxin plus morphin.

D.—Section of suprarenal of a dog after injection of diphtheria toxin and the continuous administration of nitrous oxid for four hours.

Fig. 7.—Protective effect of morphin and of nitrous oxid on the suprarenals of dogs which had received injection of diphtheria toxin. Note the general disappearance of cytoplasm and nuclei in *B*, compared with the normal appearance of *C* and the conserved nuclei in *D*.

tion of any other gland in the body. In exophthalmic goiter the thyroid is always enlarged; in cardiovascular disease, the suprarenals are usually enlarged.

The literature of the etiology of arteriosclerosis is a long record of superlative stimulations and deep depressions; a story of great risks taken and great losses borne; of heavy burdens carried and long strains endured; of vast responsibilities assumed; of excessive dissipation; of chronic infection; of autointoxication; of overindulgence in food and intoxicants; of great joys and great griefs; of hopes, anxieties and despair. It is essentially a story of the modern world; of power and progress and success; of liberty and luxury and of their antitheses; of mental tolerance combined with bitter, crushing oppression. The contemplative scholar of the middle ages, the bucolic Swede, the wandering Scotch bard, the Italian peasant probably did not know arteriosclerosis, except as the logical accompaniment of a ripe old age. The director of vast financial enterprises, the man who holds the fates of thousands in his hand, he who carries tremendous physical burdens, the Chinese coolie, the Japanese rickashaw man, the athlete of the western world, the emotional American, the excitable Jew, the bank president, the *bon vivant* — these are the men whose days are shortened by early hardening of the arteries; who preempt to themselves the cardiovascular, and likewise the cardiorenal diseases. The superlatively emotional Jew, besides being a frequent victim of cardiovascular disease, is likewise a frequent sufferer from the allied condition, endarteritis obliterans. Among animals, the high spirited wild animals in captivity, the mettled race horse and the dray horse, fretted and driven often beyond its capacity, are frequent sufferers from cardiovascular disease. The somnolent, unfettered cow is exempt.



A.—Section of normal liver of a dog.

B.—Section of liver of a dog after injections of diphtheria toxin.

C.—Section of liver of a dog after injections of diphtheria toxin plus morphin.

D.—Section of liver of a dog after injection of diphtheria toxin and the continuous administration of nitrous oxid for four days.

Fig. 8.—Protective effect of morphin and of nitrous oxid on the livers of dogs which had received injections of diphtheria toxin. Note the vacuolation of *B*, and compare with the conservation of nuclei and cytoplasm in *C* and *D*.

BRIGHT'S DISEASE

In the great strain laid on the organs of reduction and elimination by the excessive acid by-products resulting from the kinetic drive of emotional activation, physical exertion and infection, we may find common causes of Bright's disease. We have shown by experiment that in frightened rabbits, enraged cats and traumatized dogs the kinetic system can be driven at such a rate of speed that the organism is unequal to the task of neutralizing the too rapidly formed acid by-products so that they can be eliminated without injury to the kidneys. In addition, we have shown that when the activity of the brain has been depressed by morphin, the rate of transformation of energy is decreased and the production of acid by-products correspondingly lessened. If, as seems probable, the suprarenals and the liver are the most important agents by which the reduction of the acid by-products is accomplished, then a habitual failure of these organs to perform this function might lead to an accumulation of harmful compounds which would directly facilitate tissue degeneration in the kidneys, thus causing nephritis. In Bright's disease, hyperplasia of the suprarenals is frequently seen.

DIABETES

The more powerful excitants of the kinetic system cause an increased output of adrenin, and adrenin causes the mobilization of the glycogen stored in the liver so that, among other results of kinetic activation, glucosuria is produced. While glucosuria is not diabetes, it represents a step toward this disease, and one would expect, therefore, that the kinetic drive which in one individual causes the breakdown of the thyroid, in another of the brain, and in another of the suprarenals, in others might produce diabetes. That this is so is shown by the fact that diabetes is improved by the conditions which obviate psychic strain. The identification of the common causes of diabetes with the common causes of exophthalmic goiter, arteriosclerosis, neurasthenia and Bright's disease may explain why, in the words of a certain phrase maker, "when stocks go down in New York, diabetes goes up"; why diabetes is more commonly found in large cities, among individuals and races who are constantly under a strain of business perplexities, and are constantly within sight and hearing of thousands of irritating and harassing episodes, and why it is rare in localities where leisurely and quiet ways of life prevail. In the fact that here, again, the emotional trade-driven Jew is a frequent sufferer, we have important matters for consideration.

Diabetes not only numbers among its common causes the common causes of other kinetic diseases, but also as in the case of exophthalmic goiter, arteriosclerosis, neurasthenia, etc., it is improved by rest, diversion and dietetic control.

SURGICAL METHODS OF CONTROLLING THE KINETIC DRIVE

It would seem to follow that a chronic disease which is made worse by increasing the kinetic drive would be improved by lessening the drive, and in like manner, would be improved temporarily by blocking the drive by means of morphin. Morphin is but a temporary expedient, however, and the results of its use may be worse than the disease caused by the drive. If the effects of morphin are produced by its control of the driving force of the brain, thus preventing the brain from driving the suprarenals and the thyroid, then a like result to that produced by morphin could be secured by breaking the connection between the brain and the thyroid and the suprarenals, by the excision of a portion of the thyroid and of the suprarenals, and, if still further blocking of brain impulses be required, by dividing the cervical sympathetics as well.

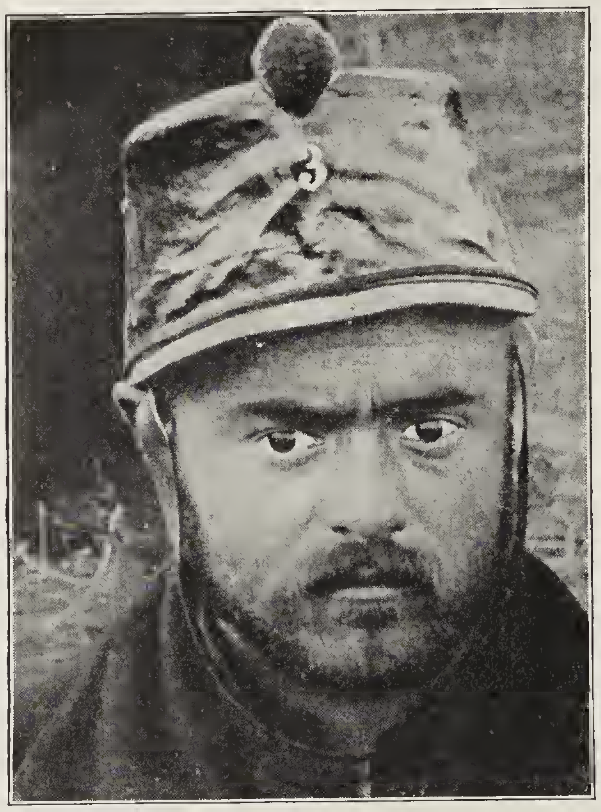


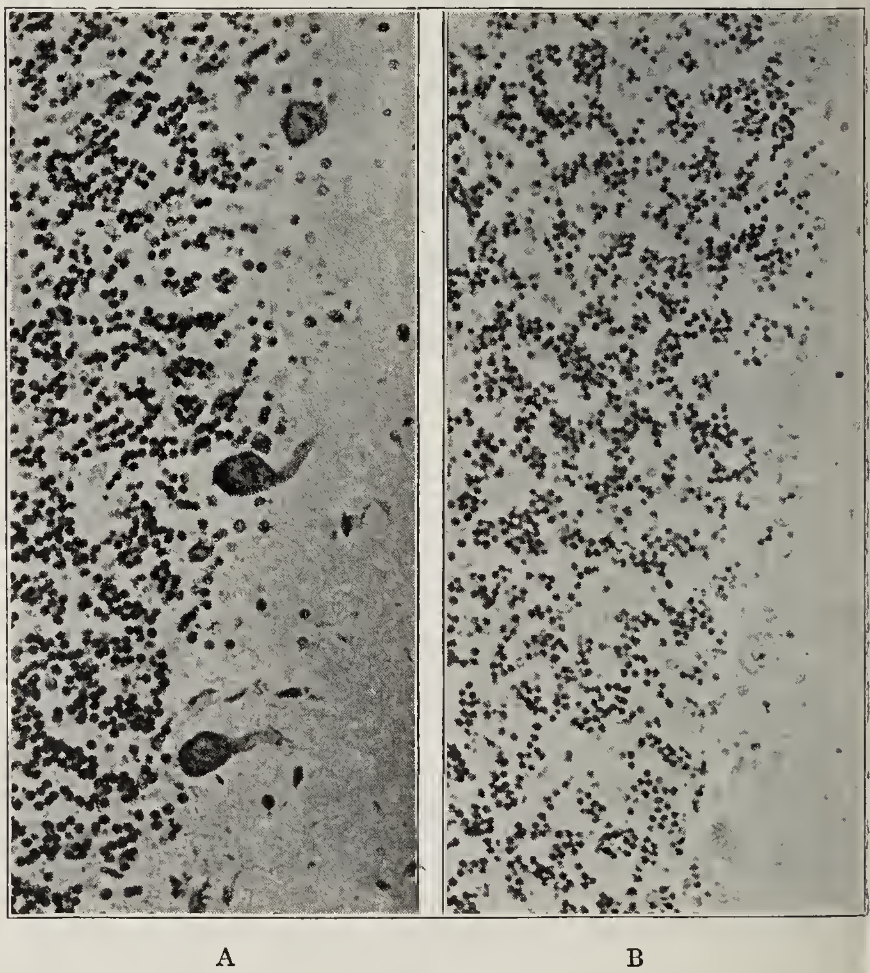
Fig. 9.—Soldier showing the characteristic facies common to both psychic and physical stress.

One would not expect these procedures to produce any subjective change in the patient. No function would be lost. He could work, be subject to emotion, and respond to infection as before, with the following exceptions: His power of physical exertion would be *diminished,* as would his response to emotional stimuli or to infection. His acid excretion would diminish, and his sugar tolerance would increase. In short, those diseases that are *temporarily* improved by morphin should be permanently improved by this process of *dekineticization.*

On this conception I have ventured on new surgical ground and have performed fifteen operations on patients with chronic diseases resulting from an excessive kinetic drive. I first operated on eleven hopeless epileptics, then on a patient with cardiovascular disease, on three patients with Raynaud's disease, and finally on an advanced diabetic. All made good operative recoveries. The operation, which was performed in different stages, comprised the excision of one suprarenal, the excision of approximately three fourths of the thyroid, and the division of the cervical sympathetics.

It is now two and a half years since the first of these operations was performed. It was not expected that epilepsy would be cured, but that the force of the attacks would be diminished, and perhaps the intervals lengthened, for since the epileptic attack represents a powerful temporary kinetic drive, it seemed possible that the severity of that drive might be modified. No patient has been cured, but all made good operative recoveries, and the severity of the attacks and the length of the intervals have been favorably influenced. The fact that some of these cases showed an increased sugar tolerance confirmed us in our belief that the same procedure might be of avail in cases of diabetes. The principal net result of these operations on epileptic patients was the assurance that in man as in animals these procedures do not interfere with normal functions. This fact being established, other fields are now being approached cautiously.

In Raynaud's disease there is a striking diversion of blood to the extremities, in ebbs and flows. These rhythms are in a measure determined by emotion, by cold, etc. Since it is known that Raynaud's disease is most common in that emotional race, the Hebrew, that the most significant effect of emotion is the increased mobilization of adrenin, and that one of the results of the increased fabrication of adrenin is the transference of blood from the inner organs to the surface of the body, it would seem that this otherwise hopeless disease might with propriety be attacked on a kinetic basis. Three patients thus treated by me, the first two and a half years ago, give fair promise



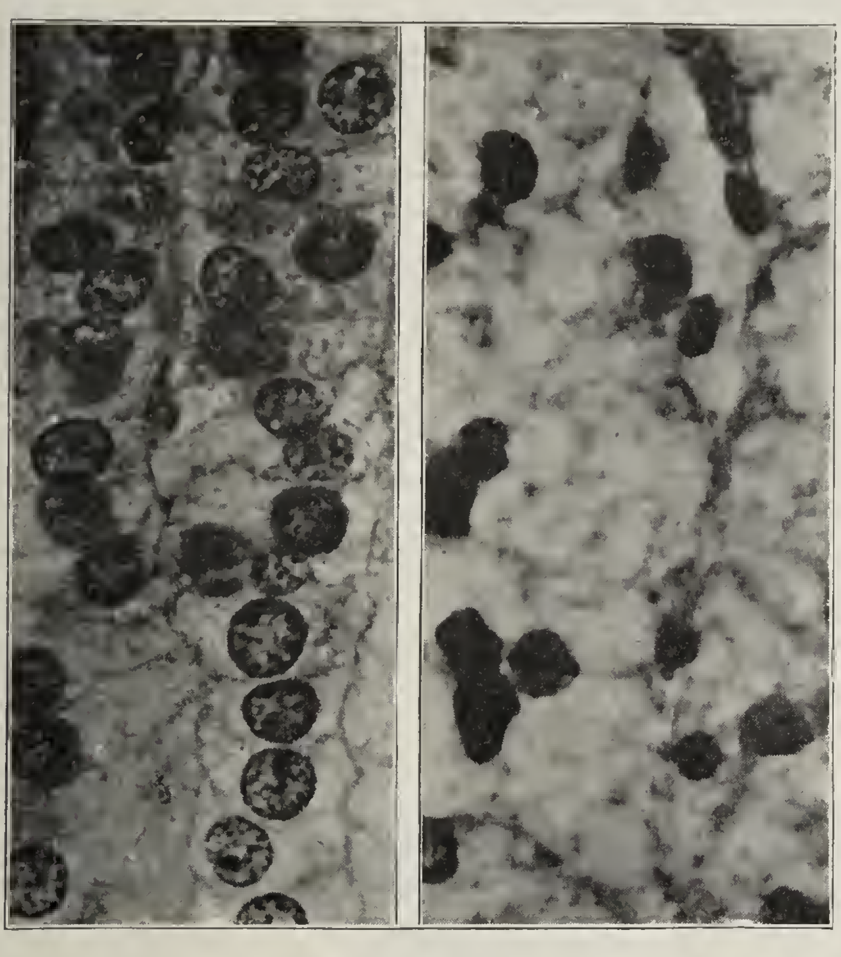
A.—Section of normal human cerebellum.

B.—Section of cerebellum of a soldier who had suffered from hunger, thirst and loss of sleep; had made the extraordinary forced march of 180 miles from Mons to the Marne; in the midst of the great battle was wounded by the explosion of a shell; lay for hours awaiting help and died from exhaustion soon after reaching the ambulance. Compare the faded out, exhausted Purkinje cells with the Purkinje cells in *A.*

Fig. 10—Effect of extreme activation on the brain cells of a soldier.

of recovery. But in a disease of such chronicity, the different phases of which are manifested in such long rhythms, judgment must be reserved until a long time has elapsed and until many cases have been observed.

Since the kinetic drive may be concerned in greater or less degree in the causation or continuance of Raynaud's disease, exophthalmic goiter, Bright's disease, cardiovascular disease and diabetes, on *a priori* grounds it is evident that either none or all of these will be benefited by a surgical reduction of the driving power of the kinetic system.



A.—Section of normal suprarenal.

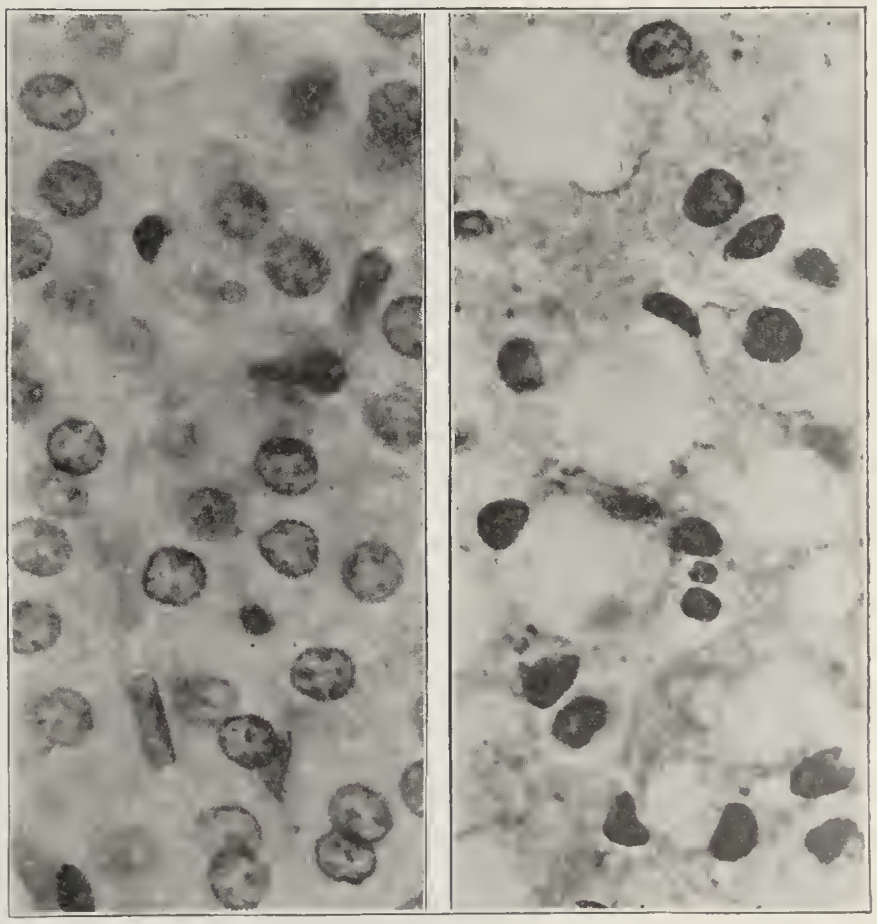
B.—Section of suprarenal of soldier described in Figure 10. The general disintegration of the cells, loss of cytoplasm, and misshapen and eccentric nuclei illustrate the effect of emotion, exhaustion, lack of sleep, pain, infection and trauma.

Fig. 11.—Effect of extreme activation on the suprarenals of a soldier.

I have already compared the effects of the kinetic drive on the normal human mechanism to the normal action of the locomotive. In like manner the problem presented by these kinetic diseases may be compared to the effect on a damaged automobile of reckless driving by an irresponsible chauffeur. In such a case the machine may be prematurely wrecked, whereas with careful driving at a moderate speed even the damaged automobile may give long service. Vast numbers of men and women today possess such damaged mechanisms, which the stress of present-day life is driving to inevitable destruction. Included in this doomed throng are many of the most useful men and women — the very kinetic temperament to which they owe their achievements proving to be also their greatest menace. It is for such cases as these, in which medicine fails to provide the necessary kinetic control, that this surgical procedure is proposed. In considering this operation, it must be borne in mind that we are dealing with poor surgical risks, and as far as the suprarenalectomy is concerned, a technically difficult operation. Every possible protection, therefore, should be provided. It is most important that the operation be performed under nitrous oxid-oxygen, rather than under the lipoid solvent, ether. The principle of anociation should be applied throughout the operation, as the excessive acid-products resulting from cutting or handling sensitive tissues may diminish too much the narrow margin of safety and dispatch the patient. Especially is this true of diabetes.

The value of surgical modification of the kinetic system in that intense kinetic drive, exophthalmic goiter, is established. We know that by dividing the nerve supply of the thyroid, ligating the thyroid arteries, or excising a portion of the thyroid gland, this disease is modified or cured. In these cases the blood pressure falls, the myocarditis improves, albumin and casts disappear, the sugar tolerance is raised, the intense neurasthenia is improved. In other words, the renal, cardiovascular, glycogenetic and psychic phenomena simultaneously improve. I have no doubt that in exophthalmic goiter the excision of a suprarenal, or the division of the nerve supply to the suprarenals, would also facilitate the cure.

I have referred to the lessening of glucosuria by operation in certain cases of exophthalmic goiter. It is well known that in cases of either suprarenal or thyroid deficiency, sugar tolerance is raised, while, on the contrary, the injection of excessive amounts of adrenin or of excessive thyroid extract mobilizes sugar. Therefore, in intractable diabetes may it not be possible that the diminution of the total mass of the suprarenals and of the thyroid may sufficiently increase the sugar tolerance to mitigate or actually to cure the disease?



A.—Section of normal liver.

B.—Section of liver of soldier described in Figure 10. The general disintegration of the cells, the loss of cytoplasm, and the vacuolated spaces within the cells illustrate the effect of emotion, exhaustion, lack of sleep, pain, infection and surgical trauma.

Fig. 12.—Effects of extreme activation on the liver of a soldier.

The patient with diabetes whom I have so treated through the courtesy of Dr. C. F. Hoover and Dr. C. D. Christie, Lakeside, is a man, aged 42, who was admitted to Lakeside Hospital in January, 1915. For a period of six months until June 25, when the first operation was performed, the amount of sugar in the urine had ranged daily from 9.5 to 202.5 gm., with an average of 96.4 gm. At no time during these six months until the morning of the first operation was he known to be sugar free. In June at intervals of three and seventeen days, respectively, the following operations were performed: (1) section of the right cervical sympathetic; (2) left suprarenalectomy, and (3) excision of the left cervical sympathetic with partial thyroidectomy. The patient made a good operative recovery. On the day of the first operation the sugar content of the urine was 83.6 gm.; on the following day it was 8.4 gm., since which time, with the exception of a few instances between the last two operations, he has been continuously sugar free. This patient now —four months after his first operation—is taking approximately 250 gm. of carbohydrates daily, and since his operation he has gained 9 pounds. It should be stated that Dr. Christie has continued a careful medical supervision of the case, employing the Allen treatment. Therefore, to obtain the surgical net result, we must subtract from this striking improvement the undetermined factor of the Allen treatment.

SUMMARY

The kinetic theory harmonizes many facts in the great clinic of life as well as in the restricted clinic of medicine; it emphasizes the value of a mechanistic view of life in the study of both normal and pathologic processes, and it suggests a philosophy of life by means of which self-preservation may be secured through kinetic control.

According to the kinetic theory, the resemblance of many normal and pathologic processes — exertion, emotion, infection, autointoxication, etc. — suggests that the mechanism by which they are produced is identical with the mechanism by which the transformation of energy and the elimination of acid by-products are accomplished; that is, that these conditions are caused by variations in the kinetic drive.

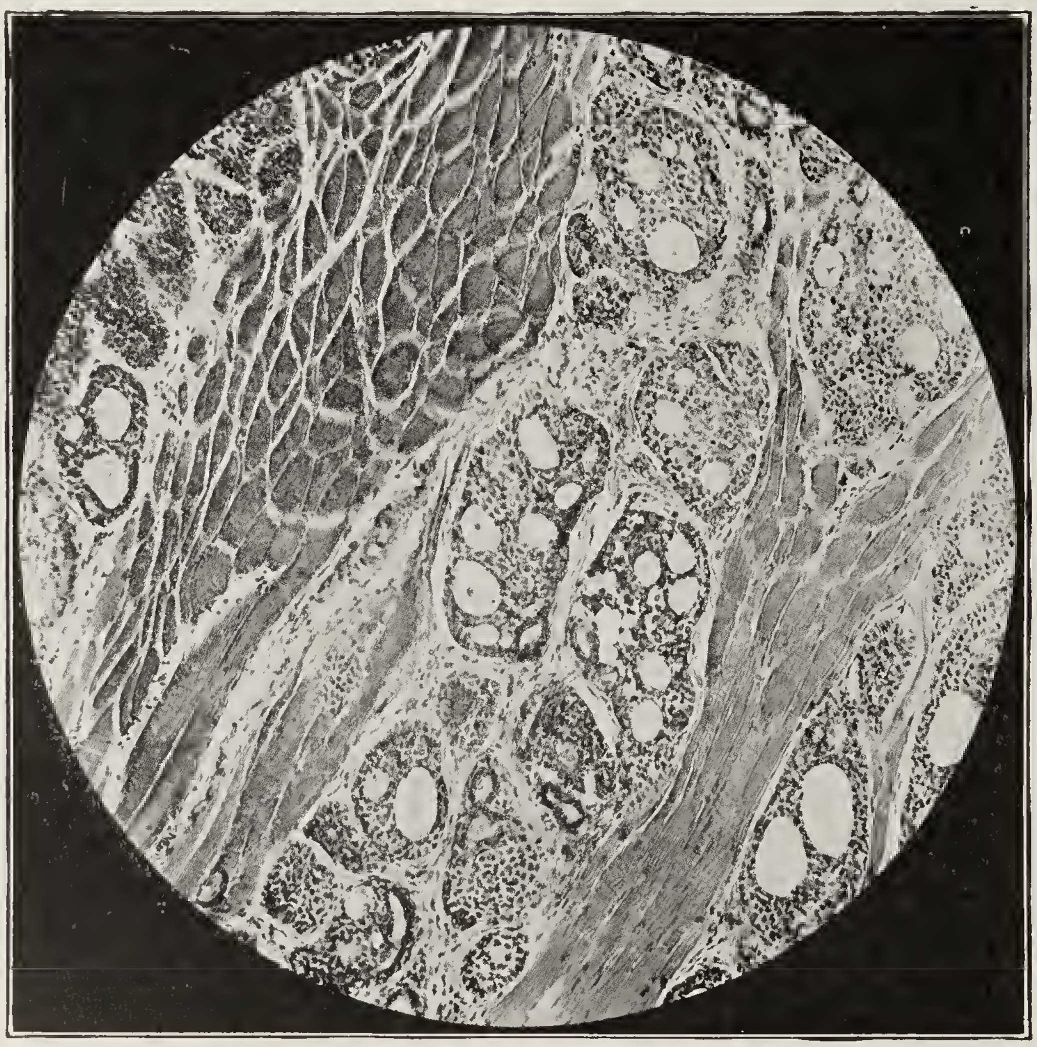


Fig. 1.—Photomicrograph of section of tumor.

Since an excessive kinetic drive may be the result of the simultaneous action of various factors in the external and the internal environment, then the control of one or more of these factors will lessen the drive and mitigate its effect. Thus the substitution of hope for fear may relieve the organism of one driving factor and by so much relieve the strain on the kinetic system. In other cases the depression of the activity of the brain by morphin or by nitrous oxid anesthesia controls an acute kinetic drive.

For still other cases in which disease has resulted from the physical injury wrought in certain organs by an excessive drive, *it is proposed as a problem, not as an accomplished fact,* that the activating organs of the kinetic system, the suprarenals and the thyroid, be reduced in size and that their communication with the driving organ — the brain — be in part severed. By an analogous method the result of an intense kinetic drive — exophthalmic goiter — is modified or cured; the accompanying cardiovascular, cardiorenal, myocardial and neurasthenic symptoms are coincidentally relieved, and sugar tolerance is raised.

If exophthalmic goiter which is due directly to the overspeeding of the kinetic system is thus relieved by partial excision of one of the driving organs, the thyroid, this mechanistic treatment effecting simultaneously the cure of the condition brought about by the driving power of exophthalmic goiter itself, then the logical conclusion is that these allied diseases, when brought into existence by other kinetic drives, may be mitigated or cured by a dekineticizing operation. *A large amount of experimental data not yet published suggests this problem.*

THE TREATMENT OF PAROTID TUMORS BY RADIUM *

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The second report of the Radium Institute of London describes a number of favorable results, characterized either as improvements or as cures, obtained in parotid tumors through the application of radium. The pathologic histology of these growths is not further specified in the text. The literature of the past few years contains occasional references to parotid tumors favorably influenced by means of radium; in no instance, however, so far as I am aware, had any of these tumors been submited to a careful microscopic study. It is, however, unquestionably a matter of importance to determine whether or not any particular type of parotid tumors is especially suitable for radium treatment. Not all of the cases which have been so treated have been cured, and it would make for greater precision in treatment, if it were possible to determine that certain types of parotid tumors respond to the treatment whereas others do not. In the case which is here reported a small portion of the tumor was removed for diagnosis, and it is on that account that the case is reported in detail.

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* From the General Memorial Hospital.

The patient, an unmarried woman aged 38, was admitted to the General Memorial Hospital, Dec. 20, 1913. She gave the following history: Seven years previously she first became aware of pain located behind the right ear. Following this she observed an induration and swelling which first occupied the region in front of and below the ear. The swelling gradually increased in size, eventually involving the entire lower half of the ear and the upper part of the neck behind the ear. Difficulty in opening the mouth and pain during mastication induced her to have a number of teeth removed. In 1912 she developed the symptoms of facial paralysis on the right side. Toward the end of 1912 the right eyeball became somewhat more prominent.

The condition on admission was described as follows: The right ear appears very much deformed, the lower half being involved in an indurated mass which extends forward on to the face, and back of the ear over the mastoid process and the upper part of the neck. This mass measures from side to side 3½ inches, and from above downward 2½ inches. It is extremely firm and resistant to pressure, the surface slightly irregular and nodular. The margins are fairly well defined from the neighboring healthy tissues. The growth is firmly fixed to the deeper structures. The skin is movable over it except behind the ear, where it is firmly adherent. In the area where it is adherent the skin presents a reddish discoloration and has dilated superficial vessels. The lower half of the ear, which forms part of the mass described above, is distorted and densely infiltrated, and is firmly fixed to the remaining tumor mass.

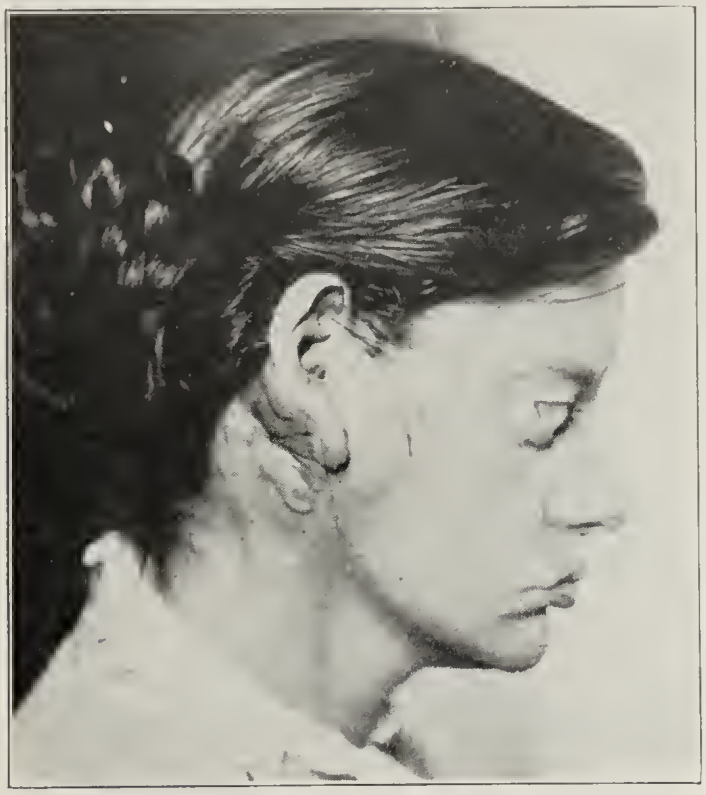
Fig. 2.—Appearance of patient, January, 1913.

There is a complete right-sided facial paralysis with right lagophthalmus.

Both eyeballs are more prominent than normal, but the right eyeball more so than the left. The pupils are equal, regular, and react normally. The right abducent nerve is paralyzed.

December 29, a small specimen of tissue was removed from that part of the tumor lying behind the ear. The microscopic section presents strands of epithelial-like cells in the midst of which lie hyaline masses. The appearance corresponds to that frequently described as cylindroma. On these sections Dr. Ewing rendered the diagnosis of "adenoid cystic epithelioma." A neighboring lymph node, which was removed with the tissue, had not been invaded by the tumor process. On the other hand, the sections show that the muscle bundles had been extensively infiltrated and were in large part destroyed. None of the types of tissue which ordinarily characterize the mixed tumors of the parotid could be discovered in the sections.

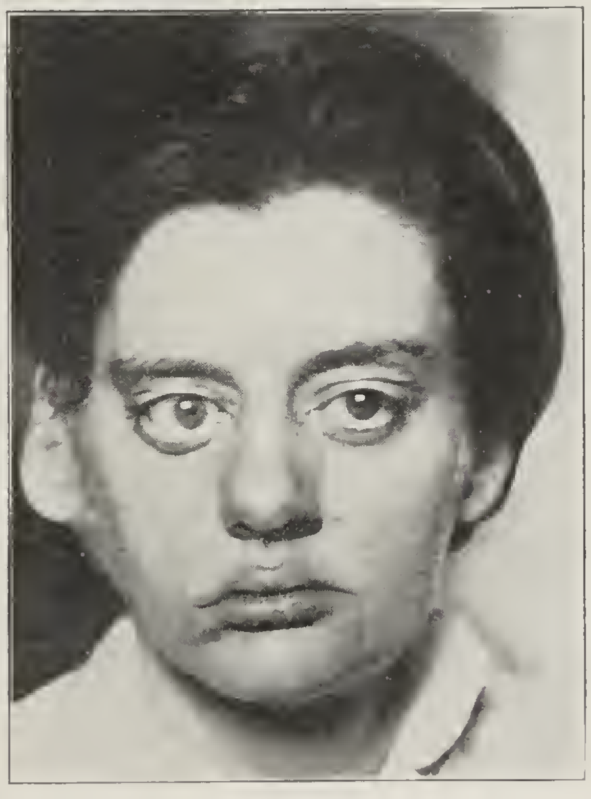
Fig. 3.—Appearance of patient, January, 1913.

The classification of this tumor is of interest, inasmuch as it belongs to a type which has caused considerable discussion. Originally Billroth gave these tumors the name of cylindroma, for the reason that hyaline bodies of various shapes, but predominantly cylindric, could be expressed from them when fresh. As regards the histogenesis of cylindroma, there was considerable difference of opinion, some holding them to be sarcoma, some endothelioma, and still others carcinoma. It is now known that the hyaline character is one which may be shared by various types of tumor, and the name is therefore merely of descriptive, not of generic value. Discussion of this type of salivary gland tumor has in recent years centered chiefly around the question as to whether they are endothelial or epithelial in origin. Owing to the work of Hinsberg and many others, including latterly Marchand, the epithelial origin has now become well established. Krompecher accepted this view, but attempted to go a step further, and ranged these tumors with the basal-celled carcinomas, which have so charateristic a structure among skin tumors. It is true that in many respects they present a striking analogy with the basal-celled cancers. They are usually well encapsulated, nodular, slowly growing tumors, which may be surgically removed without likelihood of recurrence. Exceptionally, however, the epithelium shows an infiltrative tendency, and breaks through the capsule. Microscopically, also, the structure is similar in many respects to the basal-celled tumors. For these reasons it seems proper to consider these tumors as a separate group, differing in certain important features from adenocarcinoma as commonly understood. Although they resemble the basal-celled group in certain respects, it is not likely that they have the same cellular ancestry, for the reason that they have no connection with the epidermis. It seems correct to trace their origin to the salivary gland itself. Not improbably they arise, as Ribbert and others have held, from congenitally ectopic masses of glandular tissue, which assume an excessive, but not a malignant growth in later life. Thus it will be evident that the independent position of these tumors among the adenocarcinomas gives a rational ground to the expectation that they might react to therapeutic measures in a somewhat exceptional manner.

In January, 1914, a small incision was made into the tumor below and behind the ear in the most prominent part of the swelling. Into this incision a trocar was driven to the depth of about 1 inch. Into this cavity a tube containing radium was introduced. In all, the patient received eighteen such applications. The tube consisted of 10 mg. of radium bromid shielded by 1 mm. of lead. It was left in position at each application for four hours. The applications were made at first at intervals of three or four days, and subsequently at intervals of a week or more. The applications caused no pain and very little local reaction. Within two weeks after the beginning of the treatment the tumor began to undergo a marked change characterized by a diminution throughout its entire extent. At the same time the induration gradually disappeared. February 10, the patient was discharged. At this time the tumor had almost entirely disappeared, and the parts had been restored to a condition approximately normal. The lobe of the ear, however, still remained slightly swollen and indurated, a condition which has now completely disappeared. The cheek, the neck and the mastoid region present no trace of their previous condition. After her discharge from the hospital, the patient returned at intervals of about two to four weeks to receive Roentgen-ray or radium treatment. At the present time there is no indication of any recurrence, although treatment has been suspended for many months. The permanency of this recovery is, of course, not yet established.

The facial palsy, which was unquestionably due to destruction of the facial nerve either by infiltration or by pressure, has not receded.

A puzzling feature of this case is presented by the condition of the right eye. Ophthalmologists to whom the patient has been referred have attributed the ocular condition to the presence of a retrobulbar mass pushing the eye forward and involving the sixth nerve. Whether or not this mass can be brought into relation to the parotid tumor is a matter of speculation. The ocular condition has not been affected by the treatment.

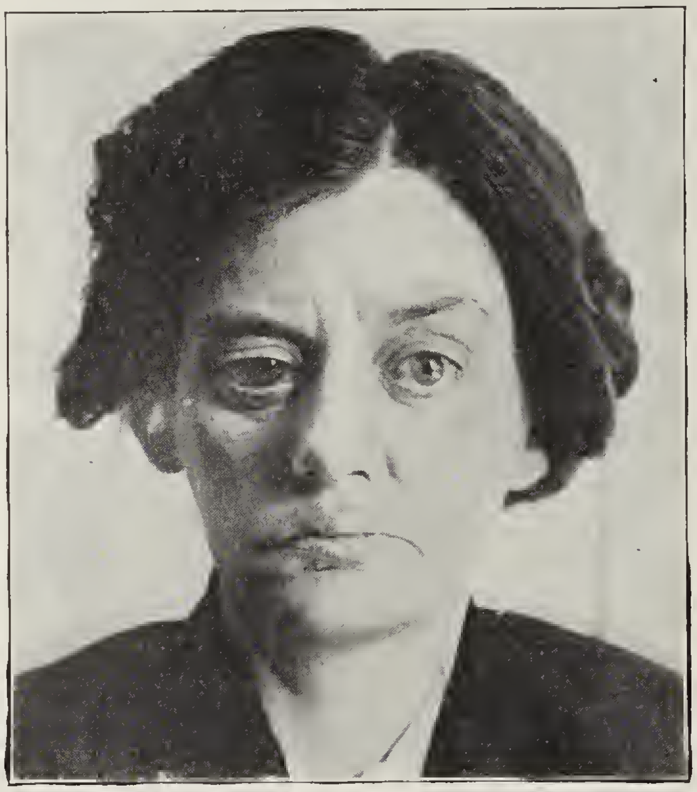

Fig. 4.—Appearance of patient, July, 1915.

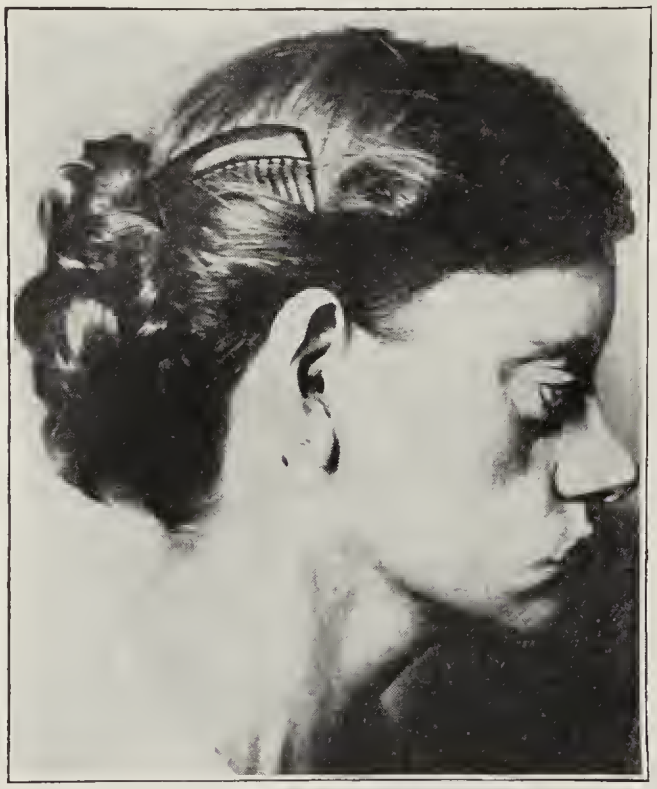

Fig. 5.—Appearance of patient, July, 1915.

SUMMARY

A parotid tumor of seven years' duration, presenting certain characteristic pathologic features, was treated for a period of six weeks by the insertion of radium into the tumor. The tumor disappeared, and after an interval of almost two years presents no recurrence.

Medical School Inspection.—The North Carolina State Board of Health is actively advocating the medical inspection of schoolchildren in counties which do not have a whole-time county health officer, that a system in inspection arrangements may be perfected whereby the local county board of health and school officials may arrange with the state board for an inspection. The board furnishes competent experienced physicians for this work, which is to be made a part of the unit system of the work to be performed by the state board in counties whose incomes do not, in the opinion of local public sentiment, justify the installation of a whole-time health officer.

TRICHINOSIS

REPORT OF A CASE WITH THE TRICHINA LARVAE IN THE SPINAL FLUID

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Early in 1914, Van Cott and Lintz[1] reported the finding of actively motile larvae in the spinal fluid of a patient with trichinosis. Since that time their findings have not been confirmed until the finding of the larvae in the case herewith submitted.

History.—A. K., man, aged 19, a laborer, entered my service in the medical ward of the Cook County Hospital, Oct. 29, 1915, stating that he had had pains in the muscles of the arms and legs for four weeks, and that he was unable to straighten them out. At the time of the onset of his sickness he noticed a slight edema of the eyelids which lasted three days. Severe drenching sweats and periods of chilliness and fever had been present for one week. On the night before entrance to the hospital he had a slight nosebleed. He did not complain of any gastro-intestinal distress of any kind, nor had he had any headache. Before entering the County Hospital he had been for three weeks in another institution where the diagnosis of trichinosis had been made from the history and muscular pain, but a piece of muscle tissue had not been excised for examination.

The patient had eaten half a pound of raw hamburger steak every Saturday night for three weeks. He did not smoke, was a moderate drinker and denied venereal disease.

Examination.—The patient appeared to be severely prostrated and was unable to move around in bed without considerable pain. There was marked rigidity of the neck and tenderness of the intercostal muscles; the abdomen was diffusely tender to touch, both on superficial and deep pressure; the spleen was not enlarged. There was marked tenderness of the biceps of the arms and of the calf muscles, while the other muscles appeared to be less tender; he was unable to extend the arm on account of the severe pain in the biceps. The Kernig sign was present; there were no Babinski and no exaggeration of the patellar reflexes. October 30, an excised piece of muscle from the biceps showed as many as ten unencapsulated trichinae in a low power field, many of which were also seen in the expressed muscle juice. A blood examination at this time revealed 8 per cent. eosinophils, 77 per cent. polymorphonuclears and 15 per cent. small and large mononuclears, 13,000 leukocytes, 4,200,000 reds and 83 per cent. hemoglobin. Two subsequent examinations, November 23 and 24, showed 37 and 38 per cent. eosinophils, respectively.

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[1] Van Cott, J. M., and Lintz, William: Trichinosis, The Journal A. M. A., Feb. 28, 1914, p. 680.

The patient's temperature on admittance was 101.2 F., and ranged from 99.6 to 101.4 during practically the whole time he was under observation, becoming normal about November 21. At that time he developed an acute tonsillitis with a temperature of 102 which lasted for three days and from which he recovered completely. A blood culture at that time was negative.

November 1, 20 c.c. of clear, serous spinal fluid under high pressure were removed, positive to Nonne and Noguchi tests, and showing about a dozen actively motile trichina larvae in the centrifuged specimen. A puncture, November 8, yielded negative results, aside from still positive Nonne and Noguchi tests; a cell count was not made at the time.

Treatment and Results.—Following the administration of calomel, November 6, an enormous number of trichinae were found in the stool; these were found in small masses of mucus. The embryos were also found in the blood with the use of the Herrick and Janeway technic.

The patient now seems to have recovered completely, and is able to be up and about in the ward, performing the duties of a ward man. There is practically no muscular tenderness.

The points of special interest in this case are the presence of the trichinae in the spinal fluid without symptoms referable to the brain or cord, the absence of gastro-intestinal symptoms, the small percentage of eosinophils at the height of the disease and their increase as the patient's condition improved.

Trichina larva, from spinal fluid, mounted on phenol gelatin.

Kafka[2] states that the cysticercus and trypanosomes have been found in the spinal fluid. On account of the absence of cerebrospinal symptoms in the majority of patients with trichinosis, the spinal fluid has not been examined for the parasite. The positive Nonne and Noguchi tests would indicate a meningeal irritation; this might be a clue as to the manner in which the parasites enter the spinal fluid.

In the consideration of the manner in which the parasites may enter the spinal fluid there are three possible sources of entrance: 1. Directly through the central capillaries of the choroidal villi. 2. Cushing[3] states that the perivascular lymphatics contribute to the cerebrospinal fluid, and it is possible that the organisms may gain entrance to the cerebrospinal fluid through this route. 3. Directly through the cerebral cortex into the subarachnoid space.

Sicard[4] cites a case of trichinosis which came to necropsy in the Boston City Hospital in which the trichinae were found in the cerebrum. It would seem probable, however, that the easiest mode of entrance would be through the choroid plexus.

The absence of gastro-intestinal symptoms has been noted on several occasions. McClure[5] in thirty cases reports diarrhea in nineteen, constipation in three, anorexia in fourteen. As the latter two symptoms have not provoked the distress that the diarrhea does, it can be seen that these symptoms may be easily overlooked. It has also been noted[6] that when rats are fed large quantities of trichina-infected meat, they die within one or two days without intestinal lesions.

The low eosinophil count during the height of the disease is not remarkable if we parallel this finding with the low leukocyte count in severe pneumonias, or the low resistance to infection when the body is overwhelmed by toxins. Gruber[7] found that very severe and unfavorable cases of trichinosis show a low eosinophil count. Van Cott and Lintz[1] cite an instance of 5 per cent. eosinophils in a fatal case just before death. Herrick,[8] quoting Opie, makes a statement to the same effect. Only after the acute symptoms had subsided and recovery seemed certain did this patient's eosinophil count rise from 8 to 38 per cent. I have repeatedly seen patients with mild trichina infections at the Cook County Hospital with from 50 to 60 per cent. eosinophils.

While several examinations of the stool failed to show the parasite, the administration of large doses of calomel caused them to appear in large, tangled masses; coincident with the appearance of the parasites in the stools the patient's condition began to improve.

CONCLUSIONS

1. Trichina larvae can be found in the cerebrospinal fluid.
2. Meningeal irritation undoubtedly exists, as is shown by the positive Nonne and Noguchi tests.
3. Severe infections show low eosinophil count during the acute stage, which increases with convalescence.
4. Vigorous catharsis with a view of clearing the intestinal tract from all parasites which have not yet penetrated into the mucosa appears to have limited the infection.

25 East Washington Street.

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[2] Kafka, V.: Ztschr. f. d. ges. Neurol. u. Psychol., 1912, vi, Nos. 4 and 5.

[3] Cushing: Studies in Cerebrospinal Fluid, Jour. Med. Research, September, 1914.

[4] Sicard: Med. Rec., New York, Aug. 15, 1914.

[5] McClure, C. W.: Jour. Iowa State Med. Assn., March, 1915.

[6] Staubli: Trichinosis, 1909.

[7] Gruber: Neue Studien uber die Pathologie der Trichinose, München. med. Wchnschr., 1914, p. 645.

[8] Herrick: Jour. Med. Research, February, 1913.

Comparative Vivisection.—The castration of an animal as performed on the farm by far exceeds in cruelty and callousness of performance anything which I have ever witnessed in a laboratory. A few hundred animals are used in all our laboratories for all purposes. The census report shows that in California, in 1909, there were born 163,728 bull calves. It is fair to assume that 150,000 were castrated. There were born 41,927 colts. Of these approximately one half were probably males, and making deductions for those kept as stallions, there were here at the lowest estimate 19,000 geldings. There were 283,741 pigs born, which means probably 135,000 males to have their testes ripped out. A total each year in California of 304,000 operations. Comparing these in number and violence with the work in biological laboratories and medical schools, the latter becomes wholly insignificant. But the gelding of the boar does not have emotional appeal, and we hear little about it. Dehorning of cattle is painful, but saves vastly more pain than they would inflict on one another.—S. S. Maxwell, *Science.*

SUMMARY OF CHEMOTHERAPEUTIC STUDIES IN EXPERIMENTAL TRYPANOSOMIASIS *

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JOHN A. KOLMER, M.D.
Professor of Pathology
AND
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PHILADELPHIA

METHOD OF STUDY

1. *Therapeutic Experiments.*—In our investigations, the following four parasites were employed: the *Spirochaeta recurrentis* (the parasite of relapsing fever), the *Trypanosoma brucei* (the parasite of Nagana disease of horses), the *Trypanosoma lewisi* (a saphrophytic parasite in rats), and *Trypanosoma equiperdum* (the parasite of la dourine or horse syphilis).

Inasmuch as the influence of the drug administered on the duration of life of the infected animals was one of the important criteria of its efficiency, we found the *Trypanosoma lewisi* unsatisfactory because it does not as a rule kill the animal. The spirochete of relapsing fever led to confusing results because of the frequent remissions and the disappearance of the parasite from the peripheral blood. The *Trypanosoma brucei* killed rats within a few days, a period too short to study the effects of the weaker agents. The *Trypanosoma equiperdum* was found admirably adapted to the purposes of our studies, and was the parasite generally employed by us. It kills the rats in from five to seven days after injection.

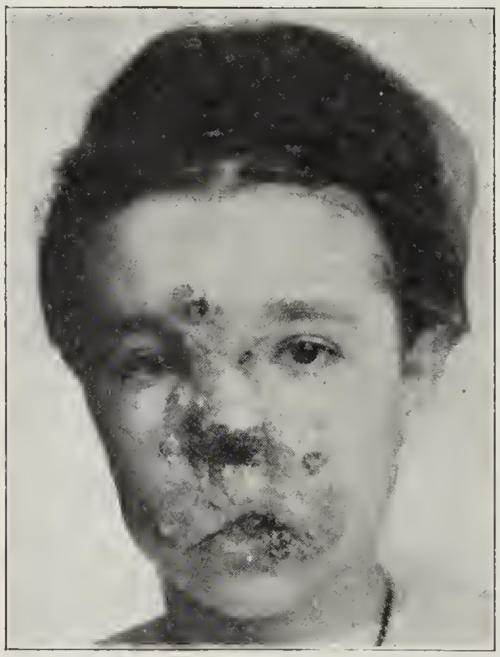
Fig. 1.—Patient with hereditary syphilis.

The series of rats were infected by intraperitoneal injection with *Trypanosoma equiperdum* according to the methods of Kolmer.[1] By these methods, contamination is avoided and approximately known numbers of trypanosomes injected. We have found this a matter of considerable importance, inasmuch as irregular methods of infecting the test animals, as by injecting enormous numbers of trypanosomes in one series and only a few in another, may readily influence the results, whereas with a uniform method, succeeding series of rats may be infected with approximately the same and known numbers of trypanosomes with uniform results capable of comparison.

Rats were infected intraperitoneally twenty-four hours before the intravenous injection of the solution of the chemical under study. With the numbers of trypanosomes injected by us (generally from 100,000 to 150,000 per rat) the parasites were practically never found in the peripheral blood until after the first twenty-four hours. We have experimented with other methods consisting of the infection of the test animal followed immediately by the injection of the drug, and also by allowing forty-eight hours or more to elapse between infection and the administration of the drug, when the parasites had multiplied sufficiently to be found in the peripheral blood; but the foregoing method has yielded us the best results.

Each animal was carefully weighed, and the quantity of the chemical injected was proportioned to the body weight. It would be a serious error to inject a series of rats with increasing doses of the drug regardless of the weights of the animals; in all of our work, the chemicals were administered according to each hundred grams of body weight, and each dose was prepared separately in a sterile vial for each individual animal.

The chemicals under study were administered dissolved in sterile distilled water so diluted that the dose was contained in exactly 1 cubic centimeter. Intravenous injections were made into the jugular vein or in some instances into the caudal vein, the former method being preferred because it permits of absolute accuracy under conditions in which the loss of even a drop or two of the solution might seriously influence the results.

Chemicals which were not soluble in water were employed in oil or incorporated in a fatty menstruum

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* An extended publication of the results abstracted here will be published later.

[1] Kolmer, J. A.: A Method of Transmitting Blood Parasites; Jour. Infect. Dis., 1915, xvi, 311; A Method of Transmitting Known Numbers of Trypanosomes, with a Note on the Numeric Relationship of Trypanosomes to Infection, ibid., 1915, xvii, 79.

TABLE 1.—INFLUENCE OF INTRAVENOUS INJECTIONS OF MERCURIC CHLORID AND ENESOL ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 126,000 TRYPANOSOMA EQUIPERDUM †

Substance	Rat No.	Weight, Gm.	Dose per 100 Gm.	Daily Examination of Blood						
				1	2	3	4	5	6	7
Mercuric chlorid	1	70	.0003	∓	+	+++	++++	death		
Mercuric chlorid	2	63	.0003	—	—	++	++	++++	death	
Mercuric chlorid	3	48	.0002	—	few	few	++	++++	death	
Mercuric chlorid	4	74	.0002	—	few	+	++++	++++	++++	death
Mercuric chlorid	5	70	.0001	—	few	+	++++	++++	death	
Enesol	6	51	.001	—	+	++++	++++	++++	death	
Enesol	7	51	.0008	—	+	++	++++	++++	++++	death
Enesol	8	69	.0006	—	+	++++	++++	death		
Enesol	9	61	.0004	—	+	++++	++++	death		
Control	10	45	0	—	+	++++	++++	death		
Control	11	97	0	—	+	++++	++++	death		
Control	12	77	0	—	+	+++	++++	death		
Control	13	62	0	—	+	++++	++++	++++	death	

† In the tables, — equals number of trypanosomes in the peripheral blood; few equals 1 to 2 in a field, or in every other field; + equals about 5 to 10 in a field; ++ equals about 10 to 20 in a field; +++ equals large numbers that may be roughly counted (not accurately); ++++ equals very large numbers; cannot be counted.

and injected intramuscularly into the thighs. Soluble drugs were also administered by mouth to rabbits and rats by means of a proper sized catheter used as a stomach tube.

In every experiment at least four controls were included. All animals were examined daily by securing a drop of blood from the tail on a microscopic slide, spreading with a glass cover and examining at once with ⅙ objective and a No. 4 eyepiece (Leitz). The results were recorded according to the number of trypanosomes observed in a large number of fields, according to the scheme given under Table 1.

There were necropsies after the deaths of the majority of the animals, and histologic examinations were made of the organs. As pointed out in a former paper, even with the most careful attention to the weight of the animal, the dosage and the technic of infection and of administration of the drug, animals would not infrequently succumb for inexplicable reasons; likewise quantitative relations with minute and closely graduated doses of a chemical do not always yield uniform and graduated results. It appears to be impossible to conduct biologic experiments of this character with justified expectation of precise mathematical results.

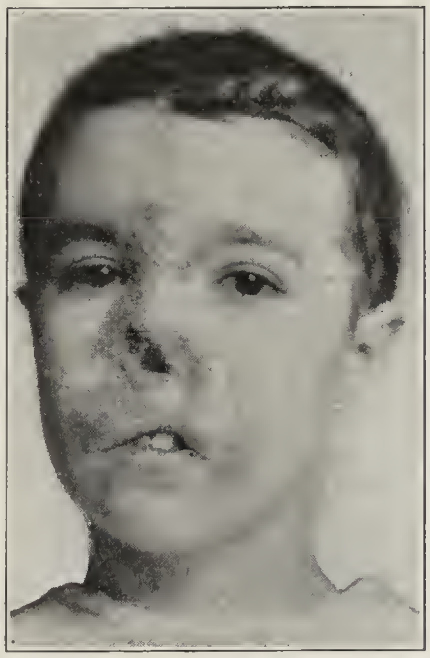

Fig. 2.—Patient in Figure 1 about two weeks later. Patient received one dose of 0.2 gm. of the salvarsan prepared in our laboratories; no other treatment.

2. *Toxicity Experiments.*—The detailed results of an extensive series of experiments on the toxicity of the water soluble and insoluble salts of mercury will shortly appear in another communication.[2]

In testing the toxicity of mercurial and arsenic salts, white rats and rabbits were employed. Two methods of determining toxicity were employed by us, namely, the determination of (1) the immediate lethal dose (dosis lethalis) and (2) the largest dose that is tolerated over a prolonged but arbitrarily fixed period of time (dosis tolerata).

As in the therapeutic experiments, each drug was administered according to the weight of the animal, the dose for each animal being separately prepared in sterile vials with sterile solvents and diluents.

In determining the immediate lethal dose of a chemical, rats and rabbits were injected intravenously and the immediate effects noted and recorded; for the tolerated dose, rats and rabbits were injected intravenously with water-soluble chemicals and intramuscularly with water soluble and insoluble substances.

Rats were largely employed in the study of the toxicity of the mercurials, and both rats and rabbits for salvarsan and allied products.

In determining the lethal dose of salvarsan and allied compounds in rabbits, the substances were prepared with sterile water as the solvent and diluent, and in such manner that 15 c.c. contained the entire dose per kilogram of body weight determined on. The animal was then injected intravenously with 10 c.c. of the solution followed in a few minutes by the remaining 5 c.c. if no untoward effects were noted. Each animal was then kept under close observation until death occurred, or for at least a month if it survived. After necropsy, the internal organs were submitted to gross and histologic examinations. In this manner we have made a great number of necropsies after the administration of various doses of salvarsan and allied products and at varying intervals after administration. This material is being studied at present, and a full report will be made at a future time.

The intravenous injection of a lethal dose of salvarsan into a rabbit is followed almost immediately by violent convulsions followed by a period of general paralysis. Smaller doses may produce a brief convulsion followed by paralysis especially involving the hind legs, the animal recovering in from a few minutes to an hour.

The injection of 15 c.c. of the fluid rapidly and without interruption is more likely to produce immediate effects than the injection of 10 c.c. followed in a few minutes by the balance of 5 c.c. The injection of 10 c.c. of sterile water or normal salt solution alone is without effect on a rabbit of average weight.

INTERPRETATION OF FINDINGS, AND THEIR BEARING ON THE TREATMENT OF SYPHILIS

Of the various drugs employed by us, the only ones that were found capable of destroying the *Trypanosoma equiperdum* (and indeed, trypanosomes generally) in the blood of infected animals were those

TABLE 2.—INFLUENCE OF INTRAVENOUS INJECTIONS OF COPPER SULPHATE AND SODIUM CACODYLATE ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 108,000 TRYPANOSOMA EQUIPERDUM

Substance	Rat No.	Weight, Gm.	Dose per 100 Gm.	Daily Examination of Blood							
				1	2	3	4	5	6	7	8
Copper sulphate	1	61	.0008	—	few	+	+++	+++	++++	death	
Copper sulphate	2	57	.0006	—	+	+	++++	++++	death		
Copper sulphate	3	58	.0004	—	+	+	++++	++++	death		
Copper sulphate	4	57	.0002	—	few	few	few	++	++++	death	
Copper sulphate	5	54	.0001	—	few	+	++++	++++	death		
Sodium cacodylate	6	72	.01	—	few	++	++++	++++	death		
Sodium cacodylate	7	75	.008	—	few	++	++++	death			
Sodium cacodylate	8	102	.006	—	few	++	++++	++++	++++	++++	death
Sodium cacodylate	9	82	.005	—	few	++	++++	death			
Sodium cacodylate	10	120	.004	—	few	++	++++	death			
Sodium cacodylate	11	71	.003	—	few	++	++++	death			
Sodium cacodylate	12	106	.002	—	few	++	++++	death			
Sodium cacodylate	13	92	.001	—	few	++	++++	death			
Control	14	90	0	—	few	++	++++	death			
Control	15	101	0	—	few	++	++++	death			
Control	16	75	0	—	few	++	++++	death			
Control	17	83	0	—	few	++	++++	++++	death		

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[2] Schamberg, Jay F.; Kolmer, J. A., and Raiziss, G. W.: Jour. Cutan. Dis., to be published.

belonging to the arsenobenzol group, namely, salvarsan and neosalvarsan.

FAILURE OF MERCURY, COPPER, ENESOL, SODIUM CACODYLATE AND IODIN

Mercury, copper, enesol[3] and sodium cacodylate in the maximum nonlethal dosage exerted no appreciable effect on the number of trypanosomes in the blood, or on the duration of life of the experimental animal. Scores of experiments were carried out with all of the well-known mercurial salts and with a number of new organic mercurial compounds made in our laboratory, but with the same results as were obtained with mercuric chlorid. Iodin was likewise employed intravenously, but failed to exert any trypanocidal influence. We recognize that the failure of these substances to influence trypanosomiasis does not indicate that they are equally inefficacious in syphilis. Experimental trypanosomiasis is an overpowering infection in which the blood soon swarms with parasites which rapidly destroy life, unless a powerful trypanocidal drug is employed. The trypanosomes react in large measure to the influence of drugs, as do the spirochetes; the spirochete of relapsing fever, which is resistant to the drugs mentioned above, is readily destroyed by salvarsan.

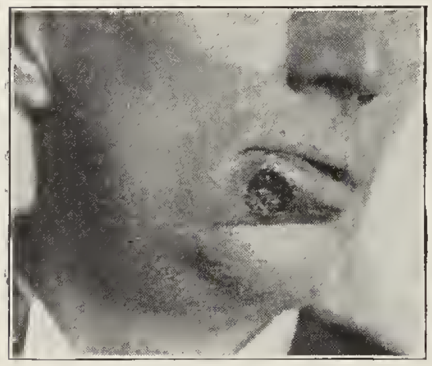

Fig. 3.—Patient with chancre of the chin with accompanying adenopathy.

We know, however, from clinical experience that mercury and the iodids exert a curative influence on the lesions of syphilis. Whether they do so by the formation of some intermediate product which exerts a noxious influence on the spirochetes, or whether they stimulate the formation of antibodies, or whether they act in some other manner, is yet unknown.

We are publishing elsewhere our studies of the toxicity of mercury; the effective dose of salvarsan is distinctly less poisonous than the effective dose of mercury. This is due to the relatively low organotropism of salvarsan as compared with mercury. By reason of this fact, salvarsan can be given in massive doses. Experimental animals will stand 60 milligrams or more of salvarsan intravenously, per kilogram of body weight, whereas 3 mg. per kilogram of mercury intravenously proves fatal.

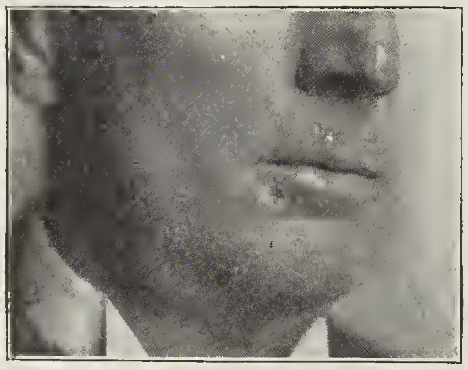

Fig. 4.—Patient in Figure 3 two weeks later. Patient received two injections of 0.3 and 0.6 gm., respectively, of the salvarsan prepared in our own laboratories.

Our findings in animals convince us that weekly intramuscular injections of insoluble mercurials must of necessity lead to cumulative effect, with frequently severe damage to the kidneys. We believe the safest effective way to employ mercury is by inunction.

TABLE 3.—INFLUENCE OF INTRAVENOUS INJECTIONS OF SALVARSAN (GERMAN AND DERMATOLOGICAL RESEARCH LABORATORY PRODUCTS) AND NEOSALVARSAN (GERMAN) ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 125,000 TRYPANOSOMA EQUIPERDUM

Substance	Rat No.	Wt. Gm.	Dose per 100 Gm.	Daily Examination of Blood																							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Salvarsan (German)	1	88	.0057	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (German)	2	92	.0043	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (German)	3	72	.0042	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (German)	4	76	.0028	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (German)	5	91	.0011	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	++	+++	+++
Salvarsan (German)	6	80	.0008	—	—	—	—	—	—	—	—	+	++	+++	++++	++++	death										
Salvarsan (Dermatological Research Lab.)	7	88	.0058	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (Dermatological Research Lab.)	8	72	.0055	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (Dermatological Research Lab.)	9	67	.0045	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Salvarsan (Dermatological Research Lab.)	10	92	.0022	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	death		
Salvarsan (Dermatological Research Lab.)	11	71	.0014	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	++
Salvarsan (Dermatological Research Lab.)	12	74	.0008	—	—	—	—	—	—	—	—	—	+	++	++	+++	++++	death									
Neosalvarsan (German)	13	75	.01	—	—	—	—	death																			
Neosalvarsan (German)	14	66	.009	—	death																						
Neosalvarsan (German)	15	58	.0077	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Neosalvarsan (German)	16	65	.0046	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Neosalvarsan (German)	17	75	.002	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	few	+	++	+++	death
Neosalvarsan (German)	18	72	.0012	—	—	—	—	few	few	+	++	death															
Neosalvarsan (German)	19	72	.0009	—	—	—	—	—	few	+	++++	++++	death														
Neosalvarsan (German)	20	67	.0006	—	—	—	—	—	few	+	++	+++	++++	death													
Control	21	56	0	—	few	++	++++	++++	+++	+++	death																
Control	22	51	0	—	few	+	+++	+++	+++	death																	
Control	23	51	0	—	few	++	+++	++++	++++	++++	death																
Control	24	52	0	—	few	++	++	++++	++++	death																	

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[3] Enesol: An Arsenic and Mercury Preparation of Uncertain Composition, Propaganda, The Journal A. M. A., July 26, 1913, p. 293. Enesol has recently been shown to be a mixture of basic mercuric salicylate and methylarsenic acid.

EXPERIMENTAL STUDY OF THE SALVARSAN PREPARED BY THE DERMATOLOGICAL RESEARCH LABORATORIES

The German product and the arsenobenzol prepared by us have been tested out on animals on a number of occasions. The accompanying tables represent the average result. It will be seen that the two preparations do not vary materially in their trypanocidal influence. Both products, in adequate dosage, are capable of producing a permanent sterilizing effect. When the dose is insufficient, trypanosomes may appear in the blood at the end of two or three weeks. After they appear they invariably lead to the death of the animal. We have found the sterilizing dose with the *Trypanosoma equiperdum* to be about 15 mg. per kilogram of body weight. Neosalvarsan has proved to be inferior in its effect to salvarsan. This experimental finding harmonizes with the preponderance of clinical experience.

Toxicity Tests.—Our product has given most gratifying results as far as the immediate lethal intravenous dose is concerned.[4] In the table setting forth these experiments it will be seen that 60 mg. per kilogram of body weight is almost uniformly tolerated by rabbits, and at times they will stand considerably larger doses. Unless this amount is well borne, we do not regard the drug as a proper one to employ; not that its use would jeopardize the life of a patient, but rather that it would be prone to produce more severe reactive symptoms. The tolerated dose in rabbits is about seven to eight times greater per kilogram than the maximum dose that is given to man.

TABLE 4.—TOXICITY OF SALVARSAN (GERMAN AND DERMATOLOGICAL RESEARCH LABORATORY PRODUCTS) FOR RABBITS BY THE INTRAVENOUS INJECTION OF SINGLE LARGE DOSES

Date	Product	Weight of Rabbit, Gm.	Dose per Kilo of Body Weight, Mg.	Immediate Results	Duration of Life
4/ 6/15	German	1,676	70	Convulsions and paralysis	Few minutes
6/ 9/15	German	1,050	60	No effects	21 days
11/16/15	German	2.113	36*	Convulsions and paralysis	Few minutes
11/16/15	German	1,681	55.2	Convulsions and paralysis	Few minutes
4/ 6/15	Dermatological Research Laboratory (P_1)	1,425	70	Paralysis; recovery	24 days
4/15/15	Dermatological Research Laboratory (P_1)	1,328	79	No effects	36 days
5/ 8/15	Dermatological Research Laboratory (P_{12})	1,130	70	Convulsions and paralysis	Few minutes
6/ 9/15	Dermatological Research Laboratory (P_{13})	1,320	60	No effects	Over 6 months
10/22/15	Dermatological Research Laboratory (P_{17})	1,335	60	No effects	Over 1 month
10/23/15	Dermatological Research Laboratory (P_{18})	1,635	60	No effects	Over 1 month
10/29/15	Dermatological Research Laboratory (P_{19})	1,630	60	No effects	Over 1 month
11/29/15	Dermatological Research Laboratory (P_{20})	1,837	60	No effects	Over 1 month

* This tube of salvarsan, No. A 25893, was purchased in the open market.

CLINICAL RESULTS

We have administered our arsenobenzol intravenously over 175 times without any accidents whatsoever. In a proportion of cases such reactive symptoms of chilliness, headache, slight fever, nausea and occasionally vomiting may occur, but these pass away in the course of a few hours. The therapeutic results we believe to be indistinguishable from those obtained with the German product. A healing influence on lesions is often evident in from twenty-four to forty-eight hours. In the accompanying photographs are seen the effects of one and two doses of the drug, respectively.

Several hundred doses have been administered by others than ourselves, and the reports we have received correspond with our own observations.

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[4] Rabbits that survive this dosage will as a rule live in apparent good health for a month, at which time necropsies are made for histologic study.

BERIBERI IN THE AMAZON BASIN

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PORTO VELHO, RIO MADEIRA, AMAZONAS, BRAZIL

Beriberi is, as yet, a very common disease in the Brazilian portion of the Amazon Basin, and that means nearly the whole of the greatest river basin in the world. The view of some foreign physicians in regard to this disease in Brazil is that perhaps beriberi here may be different from that met in other portions of the globe. After having seen beriberi in San Francisco in 1906, however, and later treating and observing it in the hospitals on the Isthmus of Panama from 1907 to 1909, with a more recent experience in the employ of the Madeira-Mamore Railway Company during six years, from 1909 to the present time, in preliminary and location engineering parties, construction camps, operation camps and in the Candelaria Hospital, I am convinced that the beriberi of all these places is the same disease.

The Madeira-Mamore Railway lies 1,500 miles from the mouth of the Amazon River, on the east bank of the Madeira River, in a dense tropical forest. Malaria of a pernicious type, with its other form, blackwater fever, dysentery, pneumonia, ankylostomiasis, beriberi and leg ulcers are the commonest cause of patients entering the Madeira-Mamore Hospital at Candelaria, the only hospital for many hundred miles in any direction. This institution is well screened and well equipped.

An excellent article on beriberi conditions as seen here, by Dr. Carl Lovelace,[1] former chief surgeon of the Madeira-Mamore Railway Company, is intended to show that beriberi in the Amazon Basin cannot have a food basis. Under the prophylaxis and treatment as there laid down, seven doctors (one Scotchman and six Americans), some nurses and many laborers developed beriberi and were consequently either deported or buried. Today, with few exceptions, the medical men of Brazil follow the same idea and have no faith in the teaching that beriberi is caused by a food deficiency.

On coming to this country on vacation this September, I was much surprised to learn that many American physicians who have seen and treated beriberi in various parts of the world as well as in the Southern States still believe that this malady is propagated either by a micro-organism or is a place disease. In recent conversations on this subject with some of these medical men, it appeared that there is much diversity of opinion and much faulty treatment.

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[1] Lovelace, Carl: The Etiology of Beriberi, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2134.

The object of the present paper is to demonstrate how readily beriberi may be cured as well as caused to disappear from any locality by the application of well-known dietary principles.

At Candelaria, the Madeira-Mamore Railway Hospital had 30,430 admissions during the four years ending Jan. 1, 1912, and in that number there were 963 cases diagnosed as beriberi. Since then construction work has been superseded by operation, with a consequent decided lessening of the number of employees and a corresponding decrease in the number of hospital admissions; but cases of beriberi are always present in the wards.

As I had long been a believer that a lack in the food was the causation of this disease, a decided change was immediately instituted in the food supplied at Candelaria Hospital when I became head of the medical department of the railroad, in November, 1912. It was impossible to enforce my views beyond the limit of the medical department. Previous to November, 1912, the diet had been, for the first-class employees, on the line and in the hospital: tinned vegetables in considerable variety, tinned baked beans (mentioned separately particularly), tinned soups, tinned meats, tinned fish, farina de agua, fresh Irish potatoes, dried Spanish onions, a few other fresh vegetables, some fresh fruit but more often the tinned variety, ices from tinned milk and cream, fresh milk (for patients only) and eggs daily, polished rice, and the following from white wheat flour: macaroni, hot cakes, bread and pastries. The food, especially at the hospital, was always abundant, of much variety and very tastily prepared.

The laborers and second-class patients ate polished rice daily (when not replaced by macaroni made of white wheat flour), farina de agua, one and one-half medium sized loaves of white wheat flour bread (13 ounces actual weight), tinned codfish, tinned meats, fresh Irish potatoes almost always one time daily, and fresh meat or fresh fish once daily, while sacked dried beans were frequently prepared.

When I took charge the following changes were made: Polished rice, macaroni, tinned vegetables, tinned fruits, tinned soups, tinned fish and tinned meats were practically eliminated. It was not possible to omit the white wheat flour, as the management would not consent to buy whole meal wheat flour or rye flour. First-class patients and employees received at breakfast: fresh fruit, cereal porridge, fresh eggs with ham or bacon, coffee or cocoa and toast, and at lunch and dinner: two or three different fresh vegetables consisting of Irish potatoes, sweet potatoes, yams, pumpkins, squashes, string beans of many varieties, tomatoes, cabbages, kale, okra, yucca (or cassava or macaxeira), baked plantains, eggplant, corn, cucumbers, radishes and lettuce. From dried peas and beans and lentils appetizing dishes appeared daily. Soups of many varieties prepared freshly from beriberi-preventing articles were served at lunch and at dinner. The fresh fruits on the table at breakfast and at lunch were from the following: papayas (papaw of the West Indies), bananas of many varieties, watermelons, muskmelons, oranges, limes, mangoes, pineapples, water lemons, coconuts and alligator pears. Very occasionally tinned fruits appeared. There were fresh meat twice and usually fresh fish once daily. For the patients the milk was almost all fresh, but tinned milk is yet used by the well employees. A herd of cows is gradually being formed so that tinned milk is doomed.

For the laborers and second-class patients the same eliminations in regard to rice, macaroni and tinned stuffs were observed and the following diet provided: breakfast, half loaf of bread of white wheat flour, hot coffee, and as much as the man would care to eat of the following: fresh cornmeal porridge, baked or boiled yucca, or baked plantains (cooking bananas). Lunch at 11:30 a. m. and dinner at 6 p. m. were prepared from the following: always a tasty soup of beans, lentils, fish chowder, bouillon, or fresh vegetables; fresh meat once or twice a day, fresh fish once a day, half loaf of bread, and two vegetables from the following: ordinary dried beans and peas comprising six different varieties, and the following fresh vegetables: pumpkins, yucca, Irish potatoes, sweet potatoes, yams, plantains, beans, kale, eggplant and okra. Fresh fruit daily or papayas, bananas, pineapples and oranges has lately been added.

From these lists it is easily seen that previous to November, 1912, the first-class employees, if large bread and pastry eaters with a fondness for rice and macaroni, would easily overstep the danger line of lack of vitamins (neuritis or beriberi preventing principles) which are contained in the bran or inner skin of some grains, beans and peas, fresh vegetables, fresh fruits, fresh milk, eggs and fresh meat.

The laborers with the diet that contained large amounts of white bread, polished rice, macaroni, farina de agua and tinned meats suffered considerably from beriberi, relatively much more so than the first-class employees.

By the changes in the diet, effected since 1912, beriberi has been eradicated from the medical department of the Madeira-Mamore Railway, so that there has not been so much as one case among doctors, nurses or laborers during the past three years. Absolutely the same surroundings have existed at the Candelaria Hospital for the first-class employees, laborers and patients during the past five years, every one always having plenty of fresh air in the quarters, living in screened houses and drinking the same water. The kitchen, screened also, has had no renovation that has modified these conditions.

Beriberi is much less prevalent among the other departments as the ideas of proper food value, demonstrated in Candelaria, are gradually being taken up outside the hospital. In 1913, Mr. Essaba lost 40 per cent. of his laborers on his rubber plantation on the Jaci Parana River from beriberi; that is, many of them died, while those patients that did not succumb were invalided down the Madeira River. The plantation lies two days by launch travel from the Madeira-Mamore Railway line where it crosses the Jaci Parana River. Mr. Essaba, hearing that there was something new in the prophylaxis and treatment of beriberi as practiced at Candelaria Hospital, consulted me. He promised to carry out instructions, and within a few weeks' time beriberi disappeared from his plantation and has not reappeared. The only change he made was in the diet as outlined above.

Since 1912 the treatment at Candelaria Hospital for beriberi has been changed to a strict dietary condition consisting of:

1. Soups of beans and peas, fresh vegetables, fish chowder and eggs.
2. Meats: all varieties, but served in underdone condition.

3. Eggs, usually six daily.
4. Fresh cow's milk several times daily.
5. Irish potatoes, beans and peas and other fresh vegetables.
6. Fresh fruits.
7. Rice bran two times daily.
8. No bread allowed as there is no whole wheat or graham or rye bread to be had here as yet.

Strychnin, one-thirtieth grain, every six hours, by mouth or hypodermically always is given; digipuratum in ampules as indicated.

Formerly, persons suffering from beriberi were immediately sent down the river to the sea as soon as possible; but now, unless there is marked paralysis (and the latter cases appear only among nonemployee patients who live remote from the Madeira-Mamore medical department), they remain at hospital from five days to four weeks and are then returned to work, having been very carefully instructed in regard to diet.

By this changed system of treatment many thousands of dollars yearly are saved the various commercial communities in the avoidance of steamer passages invaliding the beriberi patients to salt water as formerly practiced, an increased security of life is felt by the employees so that they are now willing to remain a reasonable time at their contracted stations, a more normal wage has appeared in place of the very excessive former scale, a great decrease in the number of deaths has been secured and a much increased daily working power has been obtained.

Patients who have been treated for beriberi at the hospital are returned to the same surroundings in which the disease was contracted, and as long as they follow the dietary instructions given them, never return again with this malady. In 1909 the average stay of first-class employees on the Madeira-Mamore Railway was four months. The mortality of this disease at this hospital is now almost nothing, whereas previously it had averaged about 15 per cent.

Since 1912 the medical department has striven to have introduced for the consumption of our employees the unpolished rice for the polished, and wheat flour with the bran not removed, for the common white wheat flour, with also a plentiful supply of rye flour. Shipments of all the foregoing have recently been ordered, and it is expected that within a few months' time beriberi, the disease most dreaded by the inhabitants of the Amazon Basin, will disappear from the list of the ailments suffered by the employees of the railroad.

From observations made in Brazil, it would seem that beriberi must be more common in the United States of North America than the number of cases reported would indicate.

EXPERIMENTS

Farina de agua, with the Brazilians of the Amazon Basin, is more esteemed than bread, and is partaken of in quantity, especially by the laboring classes, at all meals. This product of the prolonged maceration of the wild or poisonous mandioca (*Manihot utilissima*), has been shown by the following experiments carried on by me for the past year with chickens to produce in fowls a condition clinically the same as avian polyneuritis or beriberi. These experiments indicate a very important source of beriberi not usually met in other parts of the world, and never previously mentioned as an additional cause of this disease in Brazil. Probably the fact that the Brazilians suffered from beriberi so much more, proportionately, than the other nationalities in this region was due to the consumption of this farina de agua in addition to their other faulty diet.

Experiments with chickens were conducted at Candelaria Hospital during 1914 and 1915 as follows:

June 7, 1914, four cocks and eight hens, all apparently in good health, were divided into four lots of three birds each and placed in adjoining compartments, one cock and two hens in each division. All compartments were about 8 feet wide, 10 feet long and 7 feet high, and were well ventilated and protected. The chickens had plenty of fresh water at all times.

Lot 1.—Food: Farina de agua solely, moistened and in dry form. Fowls at first ate this food readily, but later with much less appetite.

Cock died July 25, 1914, emaciated, very weak and paralyzed.

One hen died May 2, 1915, emaciated, very weak and paralyzed.

One hen, liberated July 16, 1915, was weak and emaciated, but when last seen, July 28, 1915, was regaining her strength.

Lot 2.—Same diet as Lot 1.

Cock died emaciated and paralyzed, Sept. 1, 1914.

One hen died April 2, 1915, emaciated and paralyzed.

One hen died July 10, 1915, emaciated and paralyzed.

Lot 3.—Food: Farina de agua and Brazilian rice, each on alternate days. This rice is polished, but not highly as is Carolina rice.

Cock died Dec. 27, 1914, emaciated, weak and paralyzed.

One hen died in condition similar to the cock, July 14, 1915.

One hen, alive but very weak and emaciated, liberated July 16, 1915, died July 19.

Lot 4.—Food: Ordinary chicken food such as grass, kale, kitchen scraps, corn, cooked beans, etc.

Cock and one hen remained perfectly well and in good weight throughout. Liberated July 16, 1915.

One hen died suddenly, Nov. 11, 1914; was fat and strong till day of death. Cause of death unknown.

SUMMARY AND CONCLUSIONS

Beriberi in Brazil is the same as found elsewhere.

Its cause is the same lack of vitamins in the food.

Its eradication and cure consist in the furnishing of sufficient vitamins in the diet.

THE TREATMENT OF PARESIS BY INJECTIONS OF NEOSALVARSAN INTO THE LATERAL VENTRICLE *

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Ever since the effect of salvarsan on syphilitic infection was satisfactorily demonstrated, it has been the hope of alienists that paresis, so long uninfluenced by any form of treatment, might be cured or at least ameliorated by this remedy. To this effect many investigators have treated this affection by injections of salvarsanized serum into the spinal fluid and, more recently, into the cerebral fluid under the meninges. Little if any benefit so far has been obtained in reducing the clinical symptoms of paresis by either of these methods. It is true that the cell count has shown an appreciable diminution, and in some cases there has seemed to be some slight amelioration in the clinical symptoms; but so far nothing of any consequence has been accomplished.

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* Read before the American Neurological Association, May 7, 1915.

* Owing to lack of space, this article is abbreviated in The Journal. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped, addressed envelope.

It occurred to us that possibly the injection of salvarsan into the cerebral ventricle might accomplish more. At any rate it could not accomplish less, provided the operation could be safely performed.

In the first patient operated on, Jan. 12, 1915, salvarsanized serum was used. The symptoms of the disease were well marked. Before the operation the spinal cell count was 75, and the ventricular fluid showed 220 cells. The reaction was strongly positive. The technic of the operation and of all subsequent operations will be described later in this paper. The patient bore the operation well; there was no reaction, and he was able to leave his bed in two days. January 26, the second operation was performed. The spinal fluid and the ventricular fluid were both examined, and a remarkable reduction in the cell count was noted. The spinal fluid showed 10 cells, the ventricular fluid 15 cells. In this instance salvarsanized serum as prepared by Swift and Ellis, which was used in the first operation, was not employed. Six-tenths mg. of neosalvarsan was injected directly into the ventricle. There were no disagreeable symptoms following this operation, and the patient was again enabled to leave his bed in forty-eight hours. February 24, the third operation was performed on the same man, and was the exact counterpart of the second operation. Before the operation the ventricular fluid showed 40 cells.

Another patient who also showed well-developed symptoms of the disease was operated on March 18, and in this case the neosalvarsan in the same dose was injected directly into the lateral ventricle. Further operations on this patient were prevented by the patient being seriously burned in a fire at his home, owing to which he had to be removed from our care and subsequently was taken into another state and we lost sight of him.

Having established that the operation could be successfully accomplished, and believing that if any benefit was to be derived at all it could be only in the early stage of the disease, we selected such a subject and performed the first operation, March 12. His reactions were strongly positive. The spinal and ventricular fluids both showed a count of 5 cells; the patient was able to leave his bed in twenty-four hours. The second operation on this patient was performed March 31, and the third operation, April 21. Before the third operation the reaction of the cerebrospinal fluid was negative and of the blood doubtful.

These seven operations are all that we have done, but the method employed by Dr. Sharpe shows that it can be successfully accomplished without any danger to the patient at all. Furthermore, it will be shown in the second part of this paper that the effect of the injection when made into the ventricle has a far wider distribution than when made into the spinal fluid.

In regard to the effect of this method of treatment on the clinical symptoms of paresis, not much can be said at present. However, the third case holds out some encouragement. The man has been under close observation ever since; he has improved mentally and physically, and is able to do work he could not do before. He has become more natural in manner, quieter, and more self-composed. The emotional elements which were so characteristic before the operation have disappeared, and he is certainly better than he was when we first saw him.

Of course it will take many more cases than these to determine whether this operation will accomplish more than is done by the subdural and the spinal methods. We have certainly shown that the operation can be successfully performed, and we believe that further experience with selected early cases will show its decided superiority from a clinical standpoint.

THE INTRAVENTRICULAR INJECTION OF SALVARSANIZED SERUM

This method, the intraventricular injection of salvarsanized serum, we have carried out on three patients on Dr. Hammond's service at the Post-Graduate Hospital, the first injection being given Jan. 12, 1915. We must confess that we were at first somewhat disturbed at placing a quantity of a possible irritating fluid so deep in the brain substance, but when we consider that the ventricles all the way to the fourth are lined with a layer of nonabsorbing cells, there is probably not much to fear from an injection which is not actively toxic. The first patient received salvarsanized serum, three injections; the second, three injections of neosalvarsan, added to serum, according to Marinesco's method, but using only 0.6 mg. neosalvarsan. The third patient received one injection by Marinesco's method. In the next patient we intend to use Ogilvie's serum. While the first two patients have shown definite changes for the better, a statement of the progress at this early date would be valueless. A most surprising thing has been the lack of reaction on pulse rate and temperature. One patient had a temperature of 100.4 with headache for one day following two of the injections, with no change in pulse rate. The others showed no reaction whatever.

METHOD OF INJECTION

Under ether anesthesia, a small skin flap, slightly larger than the trephine used, is made a little in front of the bregma and 2.5 cm. from the sagittal sinus. A button of bone 1.5 cm. in diameter is removed and the dura incised. The slender cannula with blunt point is introduced at a point free from underlying cortical vessels and passed downward and a little backward into the lateral ventricle. The head of the table is lowered, and from 10 to 20 c.c. of fluid allowed to escape. The head of the table is now raised, and a funnel containing the serum is attached to the cannula by short rubber tubing. The fluid enters entirely by gravity and is very slowly introduced. The cannula is then withdrawn and the scalp wound sutured. In the second and subsequent injections the scalp over the trephine opening is infiltrated with novocain, and the ventricular injection is carried out as described above. As the brain is not sensitive, a general anesthetic is not required in second injections. The fluid withdrawn from the ventricle at each injection is sent to the laboratory for complete examination.

It was at first suggested that we introduce the serum by callosal puncture. Foerster and also Ballance,[8] we believe, used this method. But callosal puncture is more difficult to do; there is a chance, though slight, of wounding the sinus or one of the small pial veins which occasionally bridge over to the sinus from the inner margin of the hemisphere. Further, on account of the higher pressure in the ventricles, the puncture in the callosum remains patent, and much of the serum would follow the cannula out of the ventricle when it is withdrawn. The chief objection to the callosal puncture is that it is not applicable to injections under local anesthesia, the falx, in common with the rest of the dura, being exquisitely sensitive.

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[8] Ballance, C. A.: Brit. Med. Jour., 1914, i, 596.

These considerations led us to adopt rather the penetration of the first or second frontal convolution which, so far as known, is a silent area.

It may be urged that repeated punctures through brain substance may result in the formation of scar tissue and later trouble. This may be true; yet in a hydrocephalic child on whom ten or twelve tappings of the ventricle had been done through the same area of the brain, at necropsy, macroscopic examination of the punctured area showed no formation of scar tissue, or even that an instrument had traversed it.

COMPARISON OF METHODS

What are the disadvantages of the ventricular method in comparison with the intraspinal and subdural routes?

The intraspinal method is a much simpler procedure than either of the other methods, and requires no anesthetic. But the serum is distantly placed, and on experimental grounds but little of it reaches the cortex.

The ventricular method may be considered a more formidable undertaking than the subdural, though in brain surgery, in skilled hands, ventricular puncture is a minor operation.

What are the advantages, if any, of the ventricular method over the intraspinal and subdural routes?

To determine, if possible, the relative amount of diffusion and rapidity of absorption by the subdural and intraventricular methods of injection, a series of experiments were carried out in the Department of Physiological Surgery of New York University and Bellevue Medical College.

There were six series of experiments, one animal of each series having a solution of trypan blue introduced under the dura and the other into the lateral ventricle. The quantity injected varied from 2.5 to 10 c.c., and the animals were killed at periods of time varying from one hour to seventy-two hours following injection. The two animals of each series received equal quantities of stain, and were killed at the same time. The injections were made to conform in detail to the same procedure on man.

Prof. Douglas Symmers of the Department of Pathology of Bellevue Hospital Medical College examined the brains and the following is his report:

> In the brains injected subdurally, the meninges of the injected side were deeply stained, but the corresponding cortex was only slightly tinged and there was no penetration of the loose tissues lining the sulci. The most deeply stained areas were at the base of the brain posteriorly, the dye having evidently gravitated there in the subdural space before passing through the arachnoid to the subarachnoid space. The hemisphere opposite the site of the injection showed no effects of the stain, either in its meninges or elsewhere. No stain was demonstrable in any of the ventricles. The cervical cord and its meninges were deeply stained, the intensity diminishing as the cord proceeded downward. On microscopic examination, the cells of the brain and cord were found to be unaffected by the dye.
>
> In the brains injected intraventricularly, the stain was found to be well distributed through the meninges and cortex of both hemispheres, including the prolongations into the sulci, and extending forward to the tips of the frontal lobes and the olfactory bulbs. The ventricles themselves, the cerebellum and the base of the brain were deeply stained. In the spinal cord, the stain in the one-hour animals extended only to the midcervical region, but in the eighteen-hour animals, the stain not only penetrated to the cauda equina, but colored the tissues of the intervertebral foramina and the sheaths of the posterior root ganglia. Microscopically, the cells of the cord were unaffected by the dye.

These experiments demonstrate conclusively that solutions placed subdurally have difficulty in diffusing, and are rapidly drained out of the cranium.

Apart from the subject we are discussing, these experiments may supply the answer to the question of the direction of flow of the cerebrospinal fluid. The dog injected intraventricularly with 8 c.c. of stain, and killed in one hour, showed deep staining of both hemispheres, including tips of the frontal lobes and the olfactory bulbs; but the stain extended down the cord only to the midcervical region.

Another dog, under the same conditions, and receiving the same quantity of stain, killed in one hour and twenty minutes, showed the same staining of the brain; but in the cord the stain extended to the upper dorsal region.

A third animal with the same quantity of stain killed in two hours showed the same staining of the brain, and in the cord the stain extended to the lower dorsal region. This was not due to lack of stain, for stain escaped when the meninges were opened at necropsy. It was due to lack of time for the stain to spread, for in the fourth dog injected, under the same conditions, but with less stain, 6 c.c., and killed in nineteen hours, the stain had spread over the brain entirely and over the cord throughout its entire length and along the roots of the cauda. These experiments show, at least in dogs, that the direction of flow of cerebrospinal fluid is from the ventricles up over the cortex and then down over the cord.

What are the advantages, then, of the intraventricular method?

Placing the serum in the lateral ventricles is placing it subarachnoidally at once, and also insures an even distribution over both hemispheres in juxtaposition to the cortical cells before it is drained out of the cranium. Furthermore, the ventricular puncture obviates the lumbar puncture which is necessary in the subdural method, before the serum is introduced. Again, the ventricular method brings the serum in contact with tissues that are not reached by the subdural route, namely, the ventricular system itself, and the base of the brain. That it is necessary the serum should reach all accessible parts of the brain is shown by a case of Cushing and Sladen,[9] who reported the case of a child with cerebrospinal meningitis and subsequent hydrocephalus, in whom "after four months the diplococcus was found to be still living in the dilated ventricles, whereas the organisms had been killed off in the subarachnoid fluid." Also, in our first patient, lumbar puncture gave 75 cells per cubic millimeter, and the next day ventricular puncture yielded 220 cells per cubic millimeter. This may or may not indicate involvement of the ventricles in the disease process.

Finally, as shown by Mott,[10] the perivascular sheath spaces which extend between the neurons deeply into the brain substance, and drain it of waste products, communicate directly with the subarachnoid space. A serum, therefore, placed beneath the arachnoid membrane, comes into contact with the brain tissue, and this end is, we think, achieved best by the ventricular method.

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[9] Cushing, H., and Sladen, F. J.: Jour. Exper. Med., 1908, x, 548.

[10] Mott, F. W.: Lancet, London, 1910, ii, 1, 79.

How many injections should be given?

We believe that in this we should be guided both by the serology and by the clinical symptoms. But if the serology does not show steady progressive improvement under treatment, one should be guided rather by the clinical symptoms: The number of injections naturally will vary with different patients and according to the extent and the severity of the disease process. An unfavorable reaction to injection has been negative so far in our patients. We intend to gradually increase the amount of salvarsan in the serum, and perhaps in this way reduce the number of injections necessary.

CONCLUSIONS

1. In comparison with the deadly nature of paresis, the hazard of intradural treatment, by whatever method, is of little moment.
2. On experimental and clinical grounds, both the subdural and intraventricular methods are superior to the intraspinal route, in the treatment of paresis.
3. From an experimental and theoretical standpoint, the intraventricular method is superior to the subdural route, and we believe it to be safer.
4. The intraventricular method, with careful technic, and a due regard for the anatomy of the brain and the delicate nature of the tissues one is invading, is, we believe, practically free from danger.
5. If the freedom from unfavorable symptoms so far achieved in intraventricular injection can be maintained, it will be imperative to so treat paresis in its earliest stages, with greater chance of marked improvement and perhaps permanent arrest of symptoms.

THE POSSIBILITY OF RECOVERY OF MOTOR FUNCTION IN LONG-STANDING HEMIPLEGIA

A PRELIMINARY REPORT

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It is well known that in the hemiplegias due to cerebral lesions, there are usually early recoveries of function for different segments when the other acute symptoms of hemorrhage, or embolism, or trauma, subside. The trunk muscles are affected the least in a hemiplegia, and there may be a complete return of voluntary control of them shortly after the cerebral accident. The legs also frequently recover to a great extent, and although in many cases the distal segments may show evident signs of functional impairment, the larger muscles for the thigh and knee movements may be used with a surprising degree of ease and force. Voluntary control of the arm movements is less likely to return; but if there is a return it is, as with the leg, better for the proximal than for the distal elements. These recoveries ensue within a few weeks or months and are normal. They result from the absorption of the clot, or the loss of the inhibition (or diaschisis, to use the term employed by von Monakow). Subsequent improvements also take place, and at times a patient recovers his ability to perform a variety of movements in an apparently normal manner. "After two years no further gain is to be expected." [1] After the early improvement which has been mentioned, "the case will be practically stationary," [2] and the so-called residual paralyses are to be observed. There are also secondary results. The limb which at first was flaccid may become flexed (in the case of the arm) or overextended (as happens with the leg). In the arm segment, for example, the fingers are flexed, the wrist is flexed and pronated, there is flexion at the elbow, and the arm is adducted at the shoulder joint. These constant flexions result in contractures, with limitation of the possible passive movements at the joints, and the contractures are a deformity. "The appearance of contractures implies lasting functional loss wherever they develop." [2] This is the usual statement of the course of cerebral hemiplegia.

The results of experimental lesions in animals agree with the observations on man, with the exception that the paralyses are not permanent in such animals as dogs, cats and rabbits, and there is some doubt regarding the permanence of functional loss in monkeys and in the higher apes. What difference exists between man and animals appears to be one of degree or completeness of functional loss and of time of motor recovery. In animals the residual symptoms are more commonly those of asthenia, or of ataxia, or of paratonicity, rather than complete motor inabilities and contractures.

A few casual observations made some years ago and results of animal experiments by one of us (F.), together with experimental results of others, suggested the possibility that conclusions regarding the permanency of paralysis from cerebral accidents were neither accurate nor scientifically grounded, and that more attention should be paid to possible improvement in these cases. In order that this view might be put to test, and that any results that might be obtained should not be open to criticism on the score that we were dealing with the normal early recoveries which can be expected in cerebral hemiplegics, the cases which were selected were old cases in which, in accordance with the dictum of neurologists, further improvement might not be expected. All of the patients to a considerable extent, and some to an extreme extent, had developed contractures. It was our object to determine, if possible, whether or not any improvement could be brought about, and if so to what extent. All the cases were selected for us by other physicians, who were asked to send young persons, if possible, but no other limitation was placed on the choice except the ability of the patients to go to the laboratory for the tests. During four months we have had opportunity to work with five patients, who had been committed to this institution and who exhibited different degrees of paralysis and also different mental abnormalities. The arm segment, being the most affected in all cases, was chosen for the treatments.

Three general methods were employed. The first was that of massage and vibration. For the muscles which were strongly contracted effleurage, or stroking, was employed. The contracted muscles were stroked in order to reduce the hypertonicity, if possible. For the same reason the hand was grasped and the arm shaken or vibrated until there had been a distinct loosening of the muscles. The extensors were also percussed (tapotement) to give them the benefit of the mechanical stimulation, and the nerves of the arm were also stimulated by deep pressure.

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[1] Church and Peterson: Nervous and Mental Diseases, Ed. 8, Philadelphia, W. B. Saunders Company, 1914, p. 223.

[2] Church and Peterson: Nervous and Mental Diseases, p. 222.

All kinds of movements of the arm were also produced passively, when possible, special attention being given to extensions on account of the continued flexions. It was not found possible to pronate or supinate the arm in some cases at first, and the amount of passive extension was limited during the early treatments. In some cases much pain was experienced in these procedures.

The first two methods were employed in order to make possible the third, which was that of trying to get the patients to use voluntarily the extensor muscles in some simple activities. In some cases voluntary movements on the part of the patients could not be obtained for some weeks, but in all cases these were eventually obtained, as is indicated below.

HISTORIES AND RESULTS

Brief case histories of the patients with indications of the results of the treatments are as follows:

Case 1.—*History.*—Man, aged 58, a former telegraph and telephone lineman, twenty years ago fell from a pole and fractured his skull in the left parietal region. This accident resulted in a right hemiplegia with an epilepsy. Four operations have been performed on him, and a large piece of the skull has been taken away. After some of the operations he became more normal, but was not entirely well. For the past seven years on account of his paralysis, etc., he has been unable to work, although for some time after his accident he was employed as a street sweeper. There are a spastic paralysis of the right side, contractions of the flexors of the forearm and hand, and adduction of the arm. The right ankle is almost immobile. The right side of the face is involved, and saliva drools from the mouth. There is no apparent muscular atrophy. He is aphasic, both motorially and sensorially, for he cannot name objects and his conversation is very limited and he does not appear to understand much that is said to him. The Wassermann reaction with the blood serum was negative. Mentally, there is an almost complete amnesia. He replies to questions regarding his wife, children, business, home, etc., "I forgot it," but he has an oft-repeated series of sentences referring to his condition, which he uses as explanations of everything, and which he says whenever he does not apparently understand. Thus, "I feel all right, I can sleep, I can eat when I can get it, but it's the arm, from here down." He complied with simply expressed requests, but not with more complicated ones. It may be that the apparent sensory aphasia is only a kind of amnesia, the patient forgetting almost immediately what is said to him. After he had been in the laboratory about twenty times he was asked if he had ever been in it, and replied that he had not. He did not remember having had any exercises with his arm. This is a case in which the amount of cooperation was at a minimum, and whatever effects were produced could be referred to the daily work rather than to any efforts made by the patient independently.

Results.—At the time work with this patient began he could not make voluntary movements of his arm, hand or fingers. His arm was bathed daily with hot water an hour before he came to the laboratory. Massage and passive movements were used, and the arm at the shoulder was forcibly abducted by means of a sling connected with a pulley at the ceiling. The first voluntary movement which we tried to get him to make, besides the gross arm movements, was that of opening his fingers after a ball was placed in his hand. The number of seconds which it took to loosen his fingers was noted. At first this movement was almost impossible for him, but after a comparatively few trials he was not only able to perform this movement but was also able to pick up the ball. The time of grasping and of letting go of the ball gradually decreased, although it was observed on more than one occasion when the number of these tests was large, thirty or more consecutive trials on one day, that the later trials took much longer than those at the beginning of the series. Not infrequently also it was observed that the lengthening of the time of grasping would be much prolonged, and there appeared to be a kind of spasm of the flexors. The quickest time for grasping and dropping the ball in ten trials was thirty-seven and a half seconds, but usually the ten trials ranged from sixty to about eighty seconds. The improvement in the ability of this patient to perform those movements on which he had been practiced was very noticeable not only with respect to the time of performance but also with respect to the accuracy of movement. No measure of the accuracy was made, and the conclusions regarding this factor are, therefore, due to the casual observations which we made and are qualitative.

Case 2.—*History.*—Woman, aged 36, nine years ago during childbirth had an apoplexy, but subsequently bore two children at intervals of a year. She became aphasic at the time of the apoplexy, but has regained some of her speech ability. There is a right-sided spastic paralysis, more marked in the arm than in the leg. At the time the present work began, the forearm was flexed on the upper arm, and the wrist and fingers were flexed with the exception of the forefinger, which was slightly extended. There have been convulsions dating from the apoplexy; although not at first numerous, they occurred as often as eighty-eight times in one month, but recently have been very few in number. The Wassermann reaction with the blood serum on three occasions has been negative, single positive, and trace, respectively. The cerebrospinal fluid was negative; there were 2½ cells per cubic millimeter. Mentally, she was depressed when admitted to the hospital, but has greatly improved, although depression is still present and prominent at times. She gets very angry at her inability to express herself and at her motor inabilities. She cooperated well in the work, doing all that was asked of her, although at times rather surlily.

Results.—When the tests were begun, the patient could not raise the arm voluntarily in any direction without a considerable degree of flexion at the elbow, which with a maximum effort developed into a clonus. Rotation of forearm and extension of the wrist were impossible; wrist adduction and abduction very slight; dynamometric tests of the grip showed no power. Passive movements and the different forms of mechanical exercise of the muscles, especially of the extensors, were performed daily, and the patient was urged to perform similar simple movements voluntarily. The latter were done slowly, in a jerky, uncertain manner, and they often ended in a clonus. The trunk muscles were used to help out the movements of the arm in the performance of a given task, and the larger arm muscles helped out the movements of the hand and fingers. During the efforts to move the paralyzed arm segments, the paralyzed leg frequently went into a clonic state. The ball test used with Case 1 was also used with this patient, and with results of considerable interest. At the time she was first able to grasp and to drop the ball she performed the movements in eighteen and nineteen seconds, respectively (average of three successful trials in ten trials). Subsequently after she had acquired the ability to extend the fingers better, the fingers appeared to be flaccid, and the time for grasping and for dropping the ball greatly increased at first (three to four minutes), but improvement took place gradually and at the present writing she averages four and twenty-five seconds, respectively, in the successful trials for grasping and for dropping, although at times she is able to drop the ball in two seconds. Grip is now slight but apparent with the dynamometer, averaging about 4 kilograms. The patient is able to use a pencil for drawing lines, although not enough coordination is present to have them straight. The other movements are performed more steadily than at first, and with greater excursions, and they are not accompanied by clonic movements as in the beginning.

Case 3.—*History.*—Man, aged 30, a former soldier, in 1909 when in the Philippines had a fever the nature of which is not known, and owing to this the patient says he became paralyzed and aphasic. At that time the diagnosis of "gumma in the left cerebral hemisphere" was made, but the reason for this definite diagnosis is not clear. At one time the Wassermann reaction with the blood serum was weak, and twice subsequently it was negative. The patient exhibited a typical right-sided hemiplegia with aphasia, although he can to a certain extent make his wants known and can say a few words respecting common objects. There was a hemiplegic gait; the foot was practically useless; the arm segment showed marked contractures. Forcible passive extension at the elbow and wrist and movements at the shoulder could be made only with considerable "crackling" at the joints, and the patient complained of great pain when these movements were extreme. The fingers and hand could be extended only by the application of great force. The aphasia of this patient is largely motor, although he understands some things only after repeated explanations, and he cannot read. Mentally, he is said to be demented; but the aphasic condition may account for this statement because it is difficult to determine how much he knows and how much interest he has in his surroundings. He appears to be in the "moron" class, although on account of the aphasia his mental status is difficult to determine. At any rate, it is certain that his intelligence is slight and that he was poorly educated. He is apparently very lazy and cooperates very slightly.

Results.—For three months this patient had passive movements and massage, but during that time he could not perform any except the grossest kind of movements of the arm. He was unable to grasp objects and to make extensor movements of the hand and forearm, but at the present writing is gradually, but very slowly, obtaining some control both of the forearm movements and the finer movements of the hand and fingers. By using the thumb and the ball of the hand he can hold a tennis ball, and by extension of the thumb he can release it. He can also hold in a clumsy fashion a pencil, and can draw with it lines on a sheet of paper. The lines are made mostly with the larger arm muscles. At first the lines were not continuous, and were similar to the lines which a small child makes. Now, the lines are continuous and are straighter. They show great variations in force by the differences in darkness and breadth. This patient was also practiced on the "piano" board, an apparatus made of contiguous squares which were to be pointed out consecutively by the forefinger, each square by a separate movement. In this exercise the patient cannot use the extended forefinger, since he is unable to extend it sufficiently long for this purpose. His hand is strapped to a board in a normal position, and a cardboard pointer is fastened to the board opposite the index finger. At first he was able to make in five minutes sixty movements with his right hand when it was guided with the sound left hand; later, without the help of the left but with the cooperation of the trunk muscles, he was able to make 112 movements in five minutes, and at the present time, when the sound left hand and the trunk muscle assistance is taken away by strapping him into a chair and restraining these movements, he is able to make 120 movements with the right arm alone in five minutes. No measurements of the amount of movement about the arm joints were made for three months on account of the apparent inability of the patient to perform the movements voluntarily. At the time the first measurements were made, the movements were found to be slight, and after a month all had increased in extent. The following figures give the angular amounts of movement of different kinds, the first figure being the amount after three months' passive movement and massage, the second being the amount of movement after the succeeding one month's daily voluntary efforts. Shoulder: forward, 28 and 98; backward, 25 and 44. Elbow: flexion, 94 and 107; rotation, 0 and 90. Wrist: flexion, 4 and 33; abduction, 16 and 24; adduction, 23 and 41. Grip (by dynamometer) was 4 kg. before and 6.8 kg. after the month's work. All these measurements are averages of five trials.

Case 4.—*History.*—Man, aged 36, had severe headaches in 1907, and later a convulsion with right facial and arm paralysis and aphasia. Several months later there was added a paralysis of the leg. At present there is almost complete right hemiplegia with aphasia. The arm is flexed at the elbow and is spastic and slightly atrophied. Little motion is possible. A year after the paralysis of the leg an attempt was made to get the patient to use the leg with the aid of crutches, but this did not succeed, perhaps owing to the lack of cooperation. The aphasia at the time of the present series of tests was practically complete. He could copy some printed words, but could not say them. He understood practically nothing, and could not repeat what he heard. Mentally, he has varied; usually he is very emotional, and apparently very appreciative of the attention shown him, and he cooperates when he is made to understand by signs what is wanted of him. On account of his lack of speech understanding, it was not possible to determine how much he understood of what was wanted; but his actions in an otherwise normal individual would indicate an overzealousness.

Results.—This patient was practiced on holding and dropping a tennis ball, and on the "piano" apparatus, as well as being treated with massage and passive exercises. Not so much improvement was manifest in this patient as in the others with whom we have worked, but this may be due to the short time that work was in progress with him. Some improvement was noticeable, however, in the time for the performance of the above-mentioned tasks. Work with this patient was discontinued temporarily on account of lack of time, but it is expected that we shall begin again at a later date.

Case 5.—*History.*—Woman, aged 58. The history of this case is very incomplete, for it is not known when the hemiplegia began. It probably began several years ago, since she exhibited contractures. It is stated that she had at different times, "fits," after which she could not properly speak. When she entered the hospital she showed motor aphasia with apraxia.[3] There were evidences of hemiplegia; her gait was a characteristic one; the right side of the face was paretic, and face movements could not be performed properly. The leg could be used, but at the time of her entrance to the hospital she was not able to walk well without assistance. The arm could be used for some of the gross movements, but there was a flexion at the elbow and wrist and fingers. There was hypertonicity of the muscles, and the reflexes on the right were exaggerated. There was no atrophy. The Wassermann reaction was negative. Mentally, she has been depressed on account of her not being able to go home, but during the time of the present work she has been more cheerful. She cooperated best of all the five patients, and was enthusiastic except at those times when the passive movements caused her pain.

Results.—We shall not repeat the data showing the improvement of this patient for the simpler methods of adduction, abduction, pronation, etc., of the different arm segments, for they resemble greatly those of Case 3. The movements of this patient not only became more free but they were also executed with greater ease and rapidity than when the tests began. After about eight weeks of the simple exercises, when she had learned to use the thumb and forefinger together, she was given a piece of muslin turned over for hemming and a needle and black thread to determine her ability to sew. Her movements in doing this work were very awkward at first, as might have been expected, and they were slow. At first also the movements were comparatively large, and this is shown by the fact that she averaged in the first week only 21.2 stitches in five minutes, and these extended over an average space of 122 mm. This work was continued daily for five weeks, and during the last week she averaged 33.5 stitches in five minutes, these stitches covering an average space of 78.5 mm. To practice the extension of the fingers and the combined coordinated movements of the arm and hand she was also given tennis balls to throw into a waste paper basket, which was set against the wall at a distance of about 6 feet from her. The first day she was able to throw into the basket only 2 balls of 25, but after four weeks averaged 15.8 out of 25. Shortly after she had learned to use the hand she was given a fan during the warm weather, and she was urged to use it with her right hand. She grasped the fan properly, but could not make the necessary combinations of hand and arm in her first trials; but in a few days she succeeded so well that she was able to fan herself with the so-called paralyzed arm and hand better than with the left arm and hand.

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[3] A report of this aspect of the patient's condition has been made by A. B. Evarts: Report of a Case of Aphasia and Apraxia, New York Med. Jour., 1914, c, 1193.

COMMENT

The results which we have obtained with these five patients show very clearly the possibility of a return of function in a paralyzed segment even after the paralysis has existed much beyond the time limit set by some neurologists for possible improvement. As far as the results from these cases go we have the right to say that the time limit beyond which improvement may not take place cannot be set. Furthermore, there appears at present no indication of a limitation of the quantity of improvement which may be attained by suitable and sufficiently prolonged therapeutic measures. It is also to be noted that these five cases differ with respect to the locations of the cerebral lesions (as far as these can be determined by clinical as contrasted with postmortem examination). One of the cases (Case 1) is doubtless a purely cortical case; another (Case 5) has been diagnosed as cortical, and the other three cases have signs which indicate more plainly capsular lesions. The examination of our records shows that improvement has taken place almost equally well whether the lesion be cortical or capsular.

The underlying causes of the cerebral lesions differ. Case 1 is definitely traumatic; Case 5 is probably arteriosclerotic; Case 4 is definitely syphilitic; Case 2 is probably syphilitic, and Case 3 is only possibly syphilitic. The most marked and quickest improvement took place in Case 5, and the least in Cases 1 and 4. We do not consider that these facts reveal any relation of special disease to the return of function, both because we have too few cases of any one kind for a definite conclusion and because we find great individual differences in cooperation of the patients, which latter fact appears to us to be more important. Since the diseased conditions which we mention, arteriosclerosis, syphilis and traumatism, are the most frequent causes of hemiplegias and other cerebral palsies, it would appear likely that most cases of cerebral paralysis can be treated so that improvement will take place.

Moreover, it should not be forgotten that the patients with whom we have dealt are patients who have been committed to an institution for the insane. They are, therefore, not mentally normal, and we could not expect and, in fact, we did not get the amount of cooperation from them which can rightly be expected from mentally normal patients. Our experience with the rapid improvement of Case 5 leads us to the belief that improvement may be rapid when the active cooperation of the patient can be obtained, but that without this cooperation, or with a minimum of it, improvement may be produced but slowly and to a slight degree. This is shown by the slowness of the patient in Case 3, who has been mentioned as lazy and noncooperative.

The facts which we have given briefly, and which we hope to add to and to publish in full at a later date, point to the conclusion that patients with any kind of cerebral paralysis should not be immediately consigned to the chronic, or incurable, or irrecoverable class, but should be intelligently dealt with just as any surgical case, and the effort should be made to relieve if not to cure. Every effort should be made to put into use with these patients all the means at our command to bring about a restoration of function or at least an amelioration of their helplessness. There appears to be no good reason why the discomfort and the deformity of contractures in cases such as we have worked with should be permitted to exist. Because of its popular pseudotherapeutic connotation we hesitate to use the term "mechanotherapy," but we would urge that properly used massage, passive movements, hot baths and packs, followed or accompanied by attempting to obtain on the part of the patient voluntary muscular contractions, be employed in all such cases. We recognize that treatment of the character mentioned cannot be given by any one, for, to speak only of massage, the ordinary slapping and rubbing which a patient may get at the hands of some well-meaning (but in this respect ignorant) relative or nurse may do more harm than good because the flexors may be stimulated much more than the extensors and the flexor condition be exaggerated. It is necessary to have some knowledge of the muscles involved, to limit treatments to those muscles which should be treated in this manner, and to see that the voluntary movements when they can be produced are directed to improvement in the movements which are in need of improvement. Elaborate apparatus is not needed, for much may be done with common objects which are to be found in any household. The principal requirement is a knowledge of the structures involved and their functional relations, with some ingenuity in the devising of means of bringing about movements of certain characters which should be practiced, and also different means which may help to stimulate the patient's interest and to show plainly to him the course of his improvement.

The facts are also of interest in a theoretical way in relation to our conception of motor cerebral control. If after the so-called motor cortex is destroyed, or the fibers in the internal capsule sectioned, by hemorrhage or by an anemia, there is a possibility of return of motor control; we shall have to modify our conceptions of how the different parts of the brain act in the production of movement. Experimental and clinical results are already at hand to indicate that there are great anatomic and functional differences in different brains and that the relations of the motor cortex to the limbs are not so simple as they have been supposed to be.[4] For recoveries of functions such as we have described there are many possible explanations. The simplest is that we deal not with motor inabilities but with exaggerated asthenias. This is an explanation of some of the motor deficiencies of animals from which the motor cortex has been excised. We should then look on the different forms of cerebral paralysis as exaggerated difficulties of movement and not as inabilities to move. We may also explain the recoveries as due to the assumption by another portion of the brain of the function of the motor cortex and the motor fibers. This was a favorite explanation of the motor recoveries of animals after ablation of the motor area on one side, it being assumed or concluded that the other hemisphere assumed the function of motor control on both sides of the body. That this explanation will not hold, in animals at least, is shown by the fact that animals which have recovered motor power of the limbs after the removal of the motor cortex of one hemisphere do not lose this motor ability if the motor cortex of the other cerebral hemisphere be subsequently destroyed. Another possibility is that the cerebral motor cortex may not be necessary for the production of movement but that this cortex is only regulatory. It has been shown that if the motor cortex on one side be excised, a considerable number of the pyramidal fibers at the medulla on that side do not degenerate, and it would seem that, assuming the pyramidal fibers to be wholly motor in function, some of the motor impulses may arise in portions of the brain other than the precentral cortex. The facts which we have already collected indicate that lesions of the motor cortex or of the upper part of the pyramidal tract in man do not abolish function, but put the function in abeyance until such time as the appropriate condition is present for the production of movement. We should probably not speak of permanent paralyses, or of residual paralyses, but of uncared-for paralyses. This we say because many of the conditions which we have met appear to resemble, if they are not real, phenomena of disuse, rather than actual inabilities.

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[4] See, for example, Franz, S. I.: Symptomatological Differences Associated with Similar Cerebral Lesions in the Insane, and Variations in Distribution of the Motor Centers, Psychol. Monog., 1915, pp. 162.

THE MANAGEMENT OF PNEUMOTHORAX OCCURRING AS A COMPLICATION OF NEPHRECTOMY *

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In cases demanding nephrectomy there not infrequently are found conditions external to the kidney itself which make an accidental opening of the pleural cavity very difficult to avoid. Indeed, such injury to the diaphragm may occur in certain instances even under the most expert hand and with the most skilful dissection. It may even occur during an operation of the so-called subcapsular type. The cases in which this accident is most apt to arise are those in which the perirenal tissue has been greatly infiltrated with inflammatory products, thus fixing the kidney closely to its surroundings. Dense adhesions to the diaphragm are more commonly found on the left side, owing to the fact that the kidney is normally higher on this side, and not in close relation to the liver. During the removal of such a kidney, the procedure necessary for exposure may easily make an accidental rent in the diaphragm. This most often occurs at the upper angle of the lumbar wound by traction either on the retractor or on the kidney mass, while an endeavor is being made to deliver the upper pole.

Incision of the pleura may also happen in the presence of a rudimentary twelfth rib, in which case the operator may overlook this rib altogether, and call the eleventh the twelfth. Such a mistake can be avoided by examining the ribs before operation, either on the patient or on the roentgenogram.

While it is true that the pneumothorax caused in the manner referred to is usually small in amount and devoid of any special dangers except those of possible infection, this may not be so in each instance. It seems also to be true that the genito-urinary surgeon is, in many instances, content to sew up the tear in the diaphragm as soon as it is discovered without any attempt closely to formulate to himself just what the possible contingencies of air in the chest may be, and what should be done to meet them.

The severity of the functional disturbances following pneumothorax depends on the size of the opening in the parietal pleura. If no adhesions are present, the lung collapses; but if the hole is smaller than the cross-section of the trachea, it will only collapse slowly, step by step, with each succeeding inspiration. During the time required for this, it is very probable that the inadvertent rent in the diaphragm will have been recognized and closed. But even though the lung be entirely collapsed, in a case in which the hole is smaller than that of the glottis or trachea, the pressure differences on either side of the mediastinum will not be so great as to cause any dangerous lowering of respiratory function in the great majority of cases. Adequate ventilation will be maintained by an increase in the depth and frequency of respiration. There will be no dyspnea or cyanosis, and no special burden thrown on the heart.

It is in those instances in which the wound in the pleural sac is sufficiently large to allow free action of atmospheric pressure, that is, larger than the cross-section of the trachea, that phenomena follow dangerous to life. In such instances the air enters rapidly, and in the side bearing the pneumothorax there results a continuous positive pressure. This compels the mediastinum to bulge toward and from the well side with each succeeding respiration; and it is under such conditions that the active lung cannot expand enough to meet the demands of life. The oxygen supply is diminished while the carbon dioxid is piled up, causing dyspnea and cyanosis of increasing severity.

The latter condition is not very often caused by tears of the diaphragm such as are made in the manner referred to in this communication, though, to be sure, such tears, from the very manner of their occurrence, must always be of indeterminate length and size. But whether the tear be large or small, it is my conviction that conditions within the thorax should be restored to the complete physiologic normal at as early a moment as is conveniently possible. Should the lesion of the thorax be a large one and the patient show alarming signs of deficient ventilation, forceps such as are used for a sponge carrier, or ones with moderately blunt bite, should be pushed into the chest and made to grasp the collapsed lung. By making steady, moderate traction on this, the mediastinum can be supported, and the uninvolved lung given a chance to carry on respiration till the tear can be sewn small enough to relieve the alarming symptoms. The forceps are then removed, and the sewing finished.

Similarly also, a small tear should be closed as soon as discovered. If time permits, it is well to tack a bit of fat or muscle tissue over the line of suture, so as to make air-tight closure more speedy. Closure of the diaphragm being ended, the operator may then proceed with the removal of the kidney; but before the final dressings are applied and the patient returned to bed, or even sooner if symptoms of insufficient ventilation persist, the air in the chest should be removed by aspiration. This is best done by puncture low on the

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* From the James B. Brady Urological Institute, Johns Hopkins Hospital.

side in the midaxillary line of the thorax. The trochar should be given a slant to correspond with the arching diaphragm, and suction should be made until, as read by a manometer attached to the aspirator, the chest shows a negative pressure of minus 7 to minus 10 millimeters of mercury. The latter procedure is important because it not only reexpands the lung to its normal position immediately, thus making atelectatic areas through collapse of the alveoli less likely, but also, if bacteria have entered the chest cavity at the time the pneumothorax occurred, these may become circumscribed in their action by the plastic apposition of visceral and parietal layers of pleura.[1]

REPORT OF A CASE OF ESOPHAGOTRACHEAL FISTULA

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There are two forms of congenital occlusion of the esophagus, one in which the upper and lower parts of the occluded esophagus are united by a fibrous cord, and the other in which the lower portion opens into the trachea or one of the bronchi. The latter appears more usual (Osler).

St. Clair Thomson says that imperforation appears to be an arrest of development rather than a pathologic process in the fetus, while Losee explains the causes of esophagotracheal fistula, embryologically, by the fact that the proximal and distal portions of the esophagus have different sources of origin. The buccal cavity, pharynx and upper extremity of the esophagus develop from the ectoderm, and the intestinal tract, including the distal portion of the esophagus and respiratory apparatus, from the endoderm. Fistulous communications between esophagus and trachea are almost always situated at its bifurcation, and the conclusion may be drawn that the membrane separating the esophagus and trachea close last at this location.

According to statistics collected by McKenzie, sixty-two cases of esophagotracheal fistula have been reported in the literature. Since then Losee[2] has reported two in the new-born.

CASE REPORT

History.—A secundipara was delivered of a full-term female child by Dr. F. L. Day; labor was normal. Within a few hours, attention was attracted to the baby who became asphyxiated and was relieved by removal of large quantities of thick mucus from the mouth. The baby nursed well, but food regurgitated in a very short time, as the infant would gag and choke and seem asphyxiated. Relief was obtained by passing a catheter, sometimes through the nasal orifices and sometimes through the mouth, and removing the mucus. During the last days, the mucus was blood-stained, owing, no doubt, to the passing of the catheter. Meconium was passed for the first three days, but there was no bowel movement on the fourth day and no report of stool on the fifth day. As no roentgenogram was taken, the diagnosis of stricture of the esophagus was made. (Ellis had seen a similar case last year of which no report was made.) The temperature on the fifth day was 102, when the child died of inanition and bronchopneumonia.

No operation was tried because gastrostomy seems to be of no avail, as milk introduced into the stomach is apt to be discharged into the trachea. Holt says, "Complete obstruction in the esophagus is almost of necessity fatal; the patient dying from inanition two or three days after birth." In the case reported by Losee, however, the patient lived for ten days.

Necropsy.—This revealed a full-term child, on appearance perfectly normal except that the nares were filled with clotted blood, owing, no doubt, to the passing of the catheter. The abdominal cavity seemed normal. The intestines were inflated with gas. The stomach was tied off and cut at the pylorus. The esophagus was dissected as far as the trachea. The bronchi were cut at the bifurcation, and the trachea and esophagus removed *en masse*. The lungs showed minute hemorrhages on the surface. A catheter passed through the proximal end of the esophagus showed that it ended in a blind pouch at the fifth tracheal ring from the bifurcation. At the third ring from the bifurcation, the distal end of the esophagus opened into the trachea causing a stricture at this site. Macroscopically, there was apparently no continuity of the esophagus between the third and fifth rings, not even a fibrous cord. The remainder of the esophagus to the stomach seemed normal.

COMMENT

St. Clair Thomson says, "Congenital imperforation of the esophagus is generally regarded as a rare condition, but probably it is more frequent than has been thought, the comparative rarity causing it to be overlooked or symptoms attributed to some other cause."

Symptoms generally manifest themselves early. In this case attention was attracted to the infant in a few hours because of marked accumulation of mucus in the throat with gagging and asphyxiation. Vomiting is the chief symptom, and its occurrence should attract attention if the child is vigorous, if it sucks strongly and eagerly and if ingestion of food leads to coughing and choking.

Not being familiar enough with the minute anatomy of the new-born, we do not feel competent to say that the site of the various dilatations of the trachea change from birth to adult life. According to Braune and Stahel, the trachea is slightly expanded at the bifurcation, while in this case there was a stricture on the posterior wall, internally, below the esophagotracheal fistula. This stricture of the trachea was not due to pressure of the aortic arch, as the arch is normally situated a few tracheal rings above this site.

The probable explanation of this stricture is that there was an overgrowth of cells, either endodermal or ectodermal or a combination of the two, at the junction of the esophagotracheal fistula, causing stricture of the trachea.

Heat and Bacteria.—Many of the pathogenic organisms can grow only within a very narrow range of heat, and it is remarkable that their optimum temperature should correspond with that of the human blood. Considering their sensitiveness to temperature, it is not surprising that microbes should be affected by climate and season, and even by changes of weather. Most pathogenic organisms take on a more intense activity in hot countries, and their virulence is no doubt affected by excess or deficiency of heat in the individual. It follows from these facts that if the temperature of the human body could be temporarily raised a few degrees, the microbes of many parasitic diseases, if present in the body, would be destroyed, and this is no doubt the "intention" and the effect of pyrexial reactions.—R. Fortescue Fox, *Clinical Journal*, Nov. 3, 1915.

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[1] For detailed information on the subject of pneumothorax the reader is referred to the following:
Garré and Quincke: Lungenchirurgie, Ed. 2, 1912.
Quinby and Morse: Experimental Pneumectomy: the Application of Data so Obtained to the Surgery of the Human Thorax, Boston Med. and Surg. Jour., 1911, clxv, 121.

[2] Losee: Bull. Lying-In Hospital, New York, January, 1914.

THE DIFFERENTIAL DIAGNOSIS OF LESIONS OF THE LABYRINTH AND OF THE CEREBELLUM *

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In this review we shall confine attention to three symptoms common to lesions in the labyrinth and in the cerebellum, namely, nystagmus, vertigo and ataxia. We shall not attempt to discuss adequately these three symptoms in their various modifications by extension of the disease or its effects to surrounding structures, but shall chiefly consider lesions which are strictly and definitely labyrinthine and lesions which are strictly and definitely cerebellar. We hope thus to be able to emphasize the points common to each and to note essential differences, if any, and thus arrive at the intelligent understanding essential to diagnosis.

When one talks of a lesion definitely labyrinthine and definitely cerebellar one immediately thinks of experimental lesions. As Dejerine[1] has pointed out, clinical lesions are not often confined, so far as their effects go, wholly to the cerebellum. An abscess of the cerebellum is accompanied by the production of toxins which act, through the medium of the circulation, on neighboring or even on remote structures; a new growth in the cerebellum brings about changes in the general intracranial pressure, resulting in changes in the cerebral circulation, and, usually also, in an increased pressure of the cerebrospinal fluid.[2] The increased pressure of the cerebrospinal fluid will in itself often lead to vertigo, quite apart from the destructive effect of the neoplasm, and the physical pressure of the tumor on the medulla oblongata and the floor of the midbrain may give rise to other phenomena not directly related to the structures involved in the lesion. While the clinical picture may be necessary for diagnosis, the experimental picture must not be neglected in drawing conclusions with reference to normal function, and disturbance of function must be the basis for a rational diagnosis.

While much of what is presented here is based on experimentation on animals done by us, it has received sufficient verification in man both in cases we have observed and cases recorded by others — often, as in the case of cerebellar nystagmus, without a full appreciation of the significance of what is recorded.[3]

When we consider how close anatomically and physiologically the labyrinth is to the cerebellum, and when we recall that many of our labyrinthine cases when they come under observation have affected the posterior cranial fossa with more or less involvement of the cerebellum; and that so many cerebellar lesions are complicated by pressure on the vestibular nerve, it is little wonder that the most careful of observations leave us often hopelessly involved. It is for this reason that we feel tempted to try to outline the essential differences of labyrinthine and of cerebellar lesions.

It will be well here to attempt to define the physiologic function of the labyrinth and of the cerebellum. This appears necessary because so much confusion has arisen concerning the primary disturbance and the remote effects associated with lesions in these organs.

The primary function of the labyrinth is to give information of the change of position of the head in space.[4] Its end-organ signals all movements of the head or, more correctly, all acceleration of movement. Rapid changes of aspect of the head in space demand prompt and rapid motor reactions to preserve equilibrium or to break a fall. A moment's thought will lead us to see the wide-reaching range of its reflex associations. Thus it must be in touch with all the mechanism which tends to readjust the body and be able to call into play compensatory movements to maintain equilibrium. There is no other sense organ in the body which will give this information quite so efficiently as the labyrinth, and hence, there is always a certain amount of permanent deficiency of motor response after total loss of the otic labyrinths.

As a result of this we find (1) that the labyrinth is in such direct touch with the eyes that each movement of the head may have, when necessary, such compensatory movements of the eyes as are necessary to maintain the normal relation of the eyes to the horizontal.[5] This, as we[6] have shown, is a direct reflex response independent of the cerebellum, with the probable object of insuring that retinal images shall not be disturbed by each movement of the head. (2) We find that the labyrinth is intimately connected with the body musculature so as to prevent loss of balance. When the usual limit of stimulation of the labyrinth is overstepped there are developed among other symptoms, nystagmus, and a fall to the side of the lesion, or to the side of the less intense stimulation.

The fundamental action of the cerebellum is not so easily expressed nor are investigators agreed with regard to its full significance. Sherrington would place it as the ganglion of the proprioceptors, that is, those end-organs or receptors which are buried in the body and adapted to react to stimuli developed in their neighborhood in the organism itself.[7] It thus becomes a great coordinating center for the proprioceptors, and its destruction renders difficult or impossible the associating of movements directed to the same end.

Babinski says that normally the cerebellum exercises a control action on voluntary movements. Mills[8] expresses his conception thus: "The fundamental symptom in cerebellar disease is asynergy" — defining synergy as "the power or faculty by which movements more or less complex, but functionally definite, are associated in a special act or acts." "Movements are mismeasured, giving dysmetry or hypermetry because the patient with cerebellar disease is unable motorially to associate the different elements of such movements." He quotes with approval Ferrier's idea of the cerebellar activity: "Every form of active muscular exertion necessitates the simultaneous cooperation of an

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* Read before the American Otological Society, May, 1915.

[1] Dejerine: Semiologie des affections du système nerveux, Paris, 1914, p. 436. Luciani: Human Physiology, London, 1915, iii, 457.

[2] Frazier, C. H.: The Cerebrospinal Fluid in Health and Disease, The Journal A. M. A., April 3, 1915, p. 1121.

[3] For example, Stewart and Holmes: Brain, 1904, xxvii, 529.

[4] Wilson, J. Gordon, and Pike, F. H.: Some Considerations on the Physiology of the Otic Labyrinth, Arch. Int. Med., December, 1914, p. 911.

[5] Sherrington: The Integrative Action of the Nervous System, New York, 1906, p. 337.

[6] Wilson, J. Gordon, and Pike, F. H.: The Effects of Stimulation and Extirpation of the Labyrinth of the Ear and its Relation to the Motor System, Philosoph. Tr. Roy. Soc., 1912, cciii, 127.

[7] Sherrington: The Integrative Action of the Nervous System, pp. 348 and 130.

[8] Mills, Charles K., and Weisenburg, Theodore H.: Cerebellar Symptoms and Cerebellar Localization, Including Kinematographic Observations on Cerebellar Phenomena, The Journal A. M. A., Nov. 21, 1914, p. 1813.

immense assemblage of synergic movements throughout the body to secure steadiness and maintain general equilibrium." These ideas are fundamentally alike—so we will not be far from the current views when we say that the cerebellum is of importance to correlate such unconscious sensations from muscles and joints as assure the continuity and proper degree of motor activity in all our movements. In our opinion, Luciani's objections to considering the cerebellum as the great central organ for the maintenance of equilibrium[9] have not been satisfactorily met.

Mills classes as special symptomatic manifestations of asynergy, hypermetry adiadokocinesia and tremor. As symptoms resulting from asynergic efforts: asthenia (lack of motor power), atonia and ataxia. Since the loss of strength is never complete, Sherrington[10] characterizes these conditions as parasthenia and paratonia.

One sharp distinction between cerebellar function and labyrinthine function lies in the fact that the cerebellum is an afferent station for the proprioceptive impulses and the labyrinth is not. Impulses simply originate in the labyrinth. The cerebellum lies in one efferent path from the cerebrum to the cord; the labyrinth does not. The labyrinth is a peripheral sense organ.

LABYRINTHINE NYSTAGMUS

Nystagmus occurring as a result of a labyrinthine lesion consists of two phases, a slow lateral deviation, labyrinthine in origin, followed by a quick return movement, cerebral in origin. This idea, expressed by us in former papers, has been confirmed by all our subsequent experiments, still unpublished. On the basis of these experiments, we feel safe in saying that the impulses leading to the quick movement in labyrinthine nystagmus come from the cerebral hemisphere on the side to which the slow deviation of the eyes is directed. The quick movement fails when the cerebral hemisphere to the side of the slow deviation of the eyes is extirpated. These movements are synchronous in both eyes and vary definitely in direction with the labyrinth which is affected. In lesions produced experimentally or due to pathologic processes in the labyrinth, the movements are primarily horizontal, and it is the horizontal movement that is of importance. The rotatory movement apparent at times, so far as our present knowledge goes, does not appear to have much diagnostic value, and insistence on it appears to us to confuse the issue. When observed this rotatory movement is designated according to the direction of the quick movement at the upper end of the vertical iris meridian. In nystagmus, after experimental lesions, the rotatory movements are of secondary importance and are most noticeable very early and again as the nystagmus is passing away.

In experimental work the deviation is always to the side of the lesion. We have never seen a case in which the deviation was to the side opposite the lesion so long as one labyrinth remained intact. At first there is at times a slight vertical action, especially on the side of the lesion, the eye deviating slowly down, but even here it tends to the side of the lesion. This stage, however, passes in a few hours. As has been noted elsewhere,[11] in the very early stages the deviation can be made to go to the side opposite the lesion by mechanical pressure.

An important question here arises as to whether we ever have a labyrinthine lesion with deviation away from the side of the lesion, that is, with the quick phase to the side of the lesion. Theoretically, it is easy to reply that in the early stages of acute labyrinthine disease we have a serous effusion into the osseous labyrinth resulting in an irritation or stimulation within the semicircular canals which will produce such a deviation and nystagmus. All the observations we have made leave no doubt in our minds that the normal stimulus for the end-organ is pressure. But the pressure which arises in the course of a labyrinthine effusion is diffuse and different from the pressure arising from the definitely directed physiologic pressure of the fluids in the canals. The pathologic effusion in such a small confined cavity rapidly becomes general, if it be not so from the first, and results in a depression of activity. We have no evidence that generalized pressure will act on the nerve terminals to cause an irritative lesion.

In a serous labyrinthitis the effusion may be into the perilymph or the endolymph. On general principles one would say that the evidence at present shows that in many cases the increase is in the perilymph, especially in cases which result in complete recovery. In serous labyrinthitis the deviation is to the side of the lesion, the quick phase is to the sound side. In the cases recorded with the slow deviation to the sound side during the course of an acute or chronic otitis media or following a mastoid operation but without the presence of a fistula, the opinion of Alexander[12] is that this indicates the period of irritation, presumably from serous effusion into the labyrinth. It appears to us, however, that such cases are more correctly to be regarded as an irritation of an inflamed vestibular nerve, which inflammation may be outside the osseous labyrinth. In the cases of nystagmus to the diseased side which we have observed occurring either during the course of an acute otitis media or after a mastoid operation, the deviation away from the side of the lesion had occasionally such additional symptoms (pain over the region of the fifth nerve, or paresis of the sixth or seventh) as pointed to some distinct involvement of the petrous temporal.

There is an interesting table given by Ruttin[13] of the direction of the quick phase of nystagmus. He there tabulates two varieties of labyrinthine lesions in which *on looking to the right or to the left* the general rule of slow deviation to the side of the lesion is not followed. These are (1) circumscribed labyrinthitis in which the quick phase is directed to the diseased side or to the sound side or to either side—to the right on looking to the right, to the left on looking to the left, and (2) diffuse suppurative latent labyrinthitis in which also the quick phase is directed to either side on looking to that side.

In circumscribed labyrinthitis the irregularity of the nystagmus is associated with a membranous labyrinth more or less intact but with a fistulous opening in the bone. Ruttin[14] thus exemplifies it: "A patient with chronic middle-ear discharge has complained for some time of vertigo and perhaps also of tinnitus. On examination there is more or less deficiency of hearing but not complete loss, the fistula test is positive, the caloric reaction is present, spontaneous nystagmus is present, and often toward both sides, that is, on moving eyes to right or left voluntarily." In the diffuse suppurative latent labyrinthitis we have a mechanical irritation of the nerve often associated with caries of the petrous temporal.

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[9] Luciani: Human Physiology, London, 1915, iii, 448, 466.

[10] Sherrington: In Schaefer's Textbook of Physiology, 1900, ii, 903.

[11] Wilson, J. Gordon, and Pike, F. H.: The Effects of Stimulation and Extirpation of the Labyrinth of the Ear and their Relation to the Motor System, Philosoph. Tr. Roy. Soc., cciii, 127-160.

[12] Ruttin: Klinik der serösen u. eitrigen Labyrinth Entzündungen, Vienna, 1912, p. 83.

[13] Ruttin: Note 12, p. 39.

[14] Ruttin: Note 12, p. 35.

The explanation in these chronic cases of this irregularity in the labyrinthine reaction on looking to the side is not very obvious, but we suggest that it is due to irritation of an inflamed vestibular nerve. A suggestion of Luciani[15] is perhaps applicable here. Claude Bernard, in his experiments on the nerves of recurrent sensibility, was unable to get his most pronounced sensory effects on stimulation of the peripheral portion of the ventral nerve roots immediately after the nerve roots were exposed in the spinal canal; the sensory effects were noticeable only when stimulation was made at least one hour after the nerve roots were exposed. Bernard attributed this delay to the time required for the recovery of the nerve trunks from the shock resulting from division of the ventral roots. Luciani is not inclined to credit this hypothesis of shock, but inclines to the belief that the nerve trunks become more sensitive to stimulation in the course of a few hours because of the development of the inflammatory reaction in the exposed nerve roots. It is common knowledge that inflammatory processes in the joints or elsewhere often render the nerve endings of affected regions more sensitive to mechanical pressure, but it is equally well known that specialized nerve endings, for example, the olfactory endings, suffer early from inflammatory processes. While it is possible that the vestibular nerve trunks might be rendered more susceptible to stimulation by the development of the inflammatory reaction along their course, inflammation within the ampullae would be more likely so to injure the cristae acusticae as to alter the normal threshold for pressure from the canals as a stimulating agent. Under such conditions, it may be that head movements or increase of pressure in a localized area, which normally would not produce vestibular irritation, may become an efficient cause of vestibular irritation.

We believe that the nystagmus in both directions, namely, in looking to the right the quick phase to the right, the slow to the left, and in looking to the left the quick phase to the left and the slow to the right, can be best explained by our hypothesis of two distinct sets of nerve fibers in the vestibular nerve for reasons already given. This hypothesis, as we have already explained, is based essentially on Lee's findings that the differences in direction of movement of the eyes varies with the intensity of mechanical stimulation of the vestibular nerve endings, and our own observations on the results of stimulation when but one labyrinth is present.

According to this hypothesis the vestibular nerve contains two groups of nerve fibers functionally distinct:

(a) A numerous group of fibers excited by a strong stimulus turning the eyes to the opposite side.

(b) A less numerous group of fibers more easily excited and hence affected by a weaker stimulus turning the eyes to the same side.

In an inflammation of the left vestibular nerve both sets of fibers are affected and stimulated. On looking to the left, a cerebral act, the left internal rectus and the right external rectus are relaxed so far as cerebral impulses are concerned. The labyrinthine impulses are, however, still coming in to these muscles since there is no reason to suppose that cerebral action has any effect on the inflammation along the course of the vestibular nerve.

Sherrington[16] has shown that electrical stimulation of the cortical area for movement of the eye muscles will, as an example, bring about contraction of the left external rectus and the relaxation of the left internal rectus, and that the mechanism for the inhibition of the antagonistic muscles is subcortical. From this it will be seen that the suppression of the quick phase in labyrinthine nystagmus on voluntarily turning the eyes in the direction of the slow phase is associated with the relaxation of the opposing muscles whose tension we believe is the primary cause of the quick movement. In any case of cortical relaxation or inhibition of a muscle, the relaxation is never complete, and the muscle is never slack. A skeletal muscle always gapes when cut transversely. In the lesions under consideration (say of the left labyrinth), in looking to the left the stimulus coming to these relaxed fibers from the stimulation of one set of fibers from the left labyrinth causes a contraction of these muscle fibers and a slow movement to the right. Similarly, in looking to the right the left external rectus and right internal rectus are relaxed so far as cerebral impulses are concerned and the stimulus from the other set of left labyrinthine fibers causes a slow movement to the left. There thus results a double nystagmus on directing the eyes to the right or the left.

We have so far only considered pressure on the terminal organ in the labyrinth. In lesions involving the vestibular nerve intracranially, causing pressure on or irritation of the nerve, there may be a deviation away from the side of the lesion. Many of the so-called deviations of nystagmus are cerebellar or jointly cerebellar and labyrinthine and as such do not come within the scope of this paper.

CEREBELLAR NYSTAGMUS

We have much to learn concerning cerebellar nystagmus. For instance, we do not know sufficiently accurately the localities in which lesions may occur, yet be associated with no nystagmus; we have not sufficient data to differentiate between an irritative and a destructive lesion. There are numerous experiments which show that cortical irritation of the cerebellum with the electrical current produces no effect so long as care is taken to limit the excitation to the cortex. Luciani, Risien Russell and Horsley have shown that stimulation of the dentate nucleus produces deviation of the eyes to the side of the nucleus stimulated.

The various articles descriptive of cerebellar nystagmus appear to us to be lacking in that clearness and definiteness which we are arriving at in labyrinthine nystagmus. Here one is trammeled by observations made in cases which are not definitely cerebellar as well as by lack of appreciation of some of its characteristics. We do not propose to present more than one quotation to exemplify this, and this we take from the school which has done much to advance the clinical applications of the physiologic facts although, it must be confessed, with some violence to these facts. Neumann[17] in his work on cerebellar abscess says:

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[15] Luciani: Physiologie des Menschen, Jena, 1907, iii, 309; Human Physiology, London, 1915, iii, p. 204.

[16] Sherrington: Proc. Roy. Soc., London, 1893, liii, 412.

[17] Neumann: Otitic Cerebellar Abscess, London, 1909, p. 18.

> The focal symptoms of disease of the cerebellum are due, on the one hand, to lesion of Deiter's nucleus and the afferent and efferent tracts, and, on the other hand, to lesion of the secondary tracts, which belong to the same side of the body, and stand in relation to the co-ordination of muscular sense. The lesion of Deiter's nucleus produces vestibular nystagmus, vertigo, and vestibular ataxia. . . . As regards nystagmus, this is always of a rhythmical character, and shows on the whole the characteristic of a vestibular nystagmus, thus according with the description given by Bárány. The differentiation of vestibular nystagmus of cerebellar origin from that originating peripherally in the semicircular canals is made on the one hand by careful functional testing of the vestibular apparatus, similar to that carried out by Bárány in our clinic; whilst, on the other hand, the course of the disease and the accompanying symptoms assist in the diagnosis.

If the description here given sums up the current opinion of cerebellar nystagmus we cannot agree with it. Exception has to be taken to each paragraph. If the first sentence means anything it means that cerebellar nystagmus is due to lesions of Deiter's nucleus and appears based on the erroneous idea that the labyrinthine nystagmus is dependent on an anatomic course through the cerebellum. This we have shown is erroneous. So far as the second is concerned of course a lesion of Deiter's nucleus will produce vestibular nystagmus because, as has been shown, it lies on the central path between the afferents from the ear and the efferents to the eye. We do not believe that cerebellar nystagmus shows on the whole, the characteristics of labyrinthine nystagmus. Unfortunately this teaching has formed the basis for most of our text book articles. It lacks sound anatomic and physiologic basis and is not in keeping with experimental results. More than that it is not in keeping with exact clinical observations.

Experimental work early impressed on us that if there be one thing characteristic of cerebellar nystagmus it is that it is not comparable to labyrinthine nystagmus. It differs from it: (a) in uniformity of direction, and (b) in character.

Some years ago we stated that cerebellar nystagmus was essentially ataxic and we have seen no reason to alter that opinion. Its distinctive feature is its character — its oscillatory nature approaching toward an ataxia of the eye muscles. With the animal at rest it is lessened or may disappear. It is increased by fixation — especially at the beginning and during the intensity of the fixation. In other words, it is to be regarded as an asynergia. Behind glasses, when the patient ceases to focus, it tends to become less marked, and here again differs from labyrinthine. This is in keeping with what has been said above in regard to the known function of the cerebellum. A lesion here will produce an incoordination of movement; and movements of the eye muscles offer no exception.

In direction the slow deviation may be away from the side of the lesion though it may be to the sound side, depending on whether we are dealing with an irritative or destructive lesion. But it tends to be irregular in the plane of its direction with the head at rest.

VERTIGO

Vertigo, as we have stated elsewhere,[18] is the confusion resulting from the coming into consciousness of afferent impulses concerned with orientation in space which ordinarily are associated (integrated) but now for some reason have become dissociated. We will not concern ourselves here with the variety of sensations which are embraced under the term vertigo, the majority of which are too indefinite to be of value in diagnosis. We will only refer to vertigo associated with the sensation of rotation. It is well to emphasize that in vertigo we are dealing with a subjective sensation and as has been said elsewhere[19] "One notes how difficult it is to get a distinct history of subjective sensations even from intelligent patients, and further, how much less reliable are the subjective sensations of apparent movement of external objects."

The law applicable to apparent rotation following stimulation or destruction of the labyrinth is that apparent rotation of oneself is always in the direction of the rapid phase of nystagmus. There is not the same unanimity in regard to the apparent rotation of objects. "In postrotary visual dizziness Bárány sees the visual field oscillate from side to side in both directions; whereas Mach, Breuer, Delage and most other observers see it whirl contrariwise to the preceding actual rotation and Helmholtz saw it whirl sometimes with and sometimes contrary to, the direction of the preceding rotation."[20] Our observations confirm the findings of Holt that as a rule the postrotatory apparent rotation of objects is contrariwise to the preceding actual rotation, that is, in the direction of the quick phase of nystagmus. If no nystagmus be present the apparent rotation of self points to the side of the lesion.[18]

Less uniformity exists in cerebellar cases. On this point careful observations were made in a series of forty cases of tumors involving the cerebellum by Stewart and Holmes.[21] The direction of the subjective movements were so constant that they were led to regard this as of serviceable diagnostic value. They found that:

> (1) In both intracerebellar and extracerebellar tumors the sense of displacement of external objects in front of patients is from the side of the lesion to the opposite side. Thus if the tumor be on the left side, the apparent movement of objects is from left to right.
>
> (2) In intracerebellar tumors the subjective rotation of oneself is always from the side of the lesion to the healthy side, that is, in the same direction as the apparent movement of external objects.
>
> (3) In extracerebellar tumors the subjective rotation of oneself is always from the healthy side toward the side of the lesion, that is, in the opposite direction to that of the displacement of external objects.

It will be noted that the apparent displacement of external objects is similar to that generally occurring in labyrinthine lesions and that the apparent rotation of oneself varies with the position of the tumor. The relationships in intracerebellar tumors are the same as in labyrinthine lesions. The diagnostic importance of the direction of subjective movements in cerebellar lesions has been questioned,[22] but even if not generally applicable they offer suggestions of value to aid in the diagnosis.

ATAXIA AND DISORIENTATION

When we talk of ataxia we mean incoordination of movement—a disturbance in the particular organ itself. When we talk of disturbance of orientation we mean that the organism has a special mechanism

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[18] Wilson, J. Gordon, and Pike, F. H.: Vertigo, The Journal A. M. A., Feb. 13, 1915, p. 561.

[19] Wilson, J. Gordon, and Pike, F. H.: Note 18, p. 563.

[20] Holt: On Ocular Nystagmus and the Localization of Sensory Data During Dizziness, Psychol. Rev., November, 1909, p. 388.

[21] Stewart and Holmes: Brain, 1904, xxvii, 525.

[22] Lewandowsky: Handbuch der Neurologie, Berlin, 1910, i, 843.

which adjusts the normal relationship of the body and its movements to its position or change of position in space. The organism has numerous peripheral organs which signal in any change of position in a particular part—the ear, eye, muscles, joints, etc. As the head is the most important segment of the body, so without doubt the labyrinth and the eyes are the most important receptive organs for the sensations necessary for orientation. This is seen in the difficulties our labyrinthineless dogs have in walking with the eyes bandaged and the difficulties that deaf mutes and labyrinthineless dogs have in swimming. In the latter case, in the absence of contact with solid bodies and in a medium in which appreciable differences of external pressure are excluded, the labyrinth is the only agency capable under all conditions of giving adequate information of the change of position of the head in space. The action of the eyes is apparently less general and slower but this we will discuss more fully in a later paper.

All these inflowing messages have to be correlated to produce a harmonious action of the whole organism—and probably the cerebellum is one organ which participates in this. This correlation no doubt involves the afferent fibers which the cerebellum receives from the vestibular nerve, and its very close relationship with the vestibular nuclei in the pons and medulla. While it is probable that the cerebellum participates in the integration of the impulses from the labyrinth with others from the periphery into the higher uniform function of maintaining a given orientation in space, yet certainly the cerebellum is not the sole central organ for orientation. In passing it may be noted that it is this disturbance with the inflowing impulses from the periphery that is the scientific basis of attempts to localize particular cerebellar areas.

In both cerebellar and labyrinthine lesions there is a deviation to one side in walking — to the side of the lesion if it is unilateral. With the eyes open the patient corrects this; with the eyes shut, he may correct it, but usually, and especially in cerebellar cases, corrects too much, and then deviates to the sound side. This deviation has nothing to do with ataxia. It is a disturbance of orientation in space, is involuntary and appears in its most pronounced form in animals. The sensation of such involuntary movements which is common in cerebellar disease must correspond to objective involuntary movements.

When we consider the disturbances of orientation and the ataxia common to cerebellar and vestibular lesions we find, as the most obvious symptom, that the patient stands with the feet spread wide apart, that there is inability to stand on one foot, that the gait is uncertain and that the body tends to turn to the right or the left. A discussion of the variations of muscular strength or of muscle fatigue does not come within the scope of this paper.

Labyrinthine lesions differ from cerebellar (1) in the existence of Romberg's sign in labyrinthine lesions; (2) variations in the attitude of the head influence the lack of equilibrium of the body in labyrinthine and not in cerebellar lesions; (3) an affection of the labyrinth does not definitely involve those movements of isolated parts which result in dysmetria; (4) in labyrinthine disease movements of rotation or disorientation are not so readily perceived.

(1) Romberg's sign: The disturbances of equilibrium during walking and standing are increased, in labyrinthine disease, by shutting the eyes. Suppression of visual control does not have the same effect in cerebellar lesions. Sight is of less use to the cerebellar patient in maintaining the erect position although probably of some use and there are said to be cerebellar cases in which Romberg's sign is positive,[23] but as Dejerine insists, they are rare. Romberg's sign is rare in destructive lesions of the cerebellum, as atrophy or sclerosis; rather frequent in abscesses, tumors, or in lesions which affect other structures in their vicinity, and one may seriously question whether, in the cases of which Bárány speaks, the cerebellum alone is involved, either directly or indirectly. In labyrinthine disease standing on one foot is more difficult, especially on the foot on the side of the lesion. This, however, is of no value if the patient has a peripheral sensory disturbance.

(2) Relation of the attitude of the head to the disturbances: (*a*) Goltz and Ewald showed many years ago that the pigeon deprived of its semicircular canals is not able to maintain its balance if the position of the sustaining base is changed. This experiment has been repeated by many workers in other animals, and on it is based von Stein's goniometric test. This consists in placing a patient with bandaged eyes on an inclined plane, the slope of which may be varied. It is found that in labyrinthine cases the patient does not perceive, or perceives but slowly, the changing inclination of the plane and lets himself fall. (*b*) In labyrinthine lesions the direction of falling, with the patient in the Romberg position, bears a direct relation to the plane of the nystagmus. Bárány has elaborated certain rules to show how the attitude of the head and the quick phase affect the fall; but, as we pointed out some years ago, there is a general rule for all positions of the head, namely: that the patient falls in the direction of slow phase of the nystagmus. And, as we have shown, even with the cerebellum injured, the labyrinthine reaction, nystagmus, attitude and falling, can be elicited by labyrinthine stimulation. As Bárány pointed out there is not the same connection between the direction of nystagmus and the direction of falling in cerebellar affections.

(3) Lewandowsky[23] says that the particular character of cerebellar ataxia is the disturbance in standing and walking, *"Störung der Aufrechten Haltung und des aufrechten Ganges."* This results in those oscillations, that drunken gait, the titubation vertigineuse of Duchenne, so characteristic of cerebellar disease and not seen in labyrinthine lesions. Further, the cerebellar patient shows dysmetria; his movements lack their proper proportion or measure in time and space; they are too rapid and too abrupt and miss their aim; the initial impulse is too strong, the speed too great, the arrest too late.

The ataxia apparent after labyrinthine removal is due to a failure of the proper adjustment of the muscles necessary to the maintenance of equilibrium and orientation, owing to a failure in the accurate perception of the change of aspect of the head in space. To put it briefly we might say that whereas the cerebellar ataxia is dynamic the labyrinthine is chiefly static.

(4) We have sufficiently referred to the fact that in disease of the labyrinth the movements of orientation and disorientation are not perceived so readily. On this subject no more remarks are called for at this time.

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[23] Lewandowsky: Handbuch der Neurologie, Berlin, 1910, i, 842.

In this discussion on the differential diagnosis of labyrinthine and of cerebellar disease we have not referred specially to the fact that in labyrinthine disease the physiologic action of the labyrinth can be shown, by the usual caloric and rotation tests, to be lost. This fact we feel is so appreciated by neurologists and otologists that it is not necessary to dwell on it.

We have, therefore, in pure labyrinthine and pure cerebellar cases sufficient data at our disposal to decide the question of differential diagnosis. It is difficult in the mixed cases. If, however, we can exclude with these data the purely local labyrinthine and the purely local cerebellar we have gone some distance to locate the lesion, and can proceed intelligently to cases that involve both structures.

THE RELATION OF HEAT TO SUMMER DIARRHEAS OF INFANTS [*]

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ST. LOUIS

From observations that have been made on laboratory animals, diarrhea would not appear to be one of the characteristic effects of heat. Dorlencourt and Schreiber produced death in dogs by exposing them to high temperatures without observing diarrhea. Von Salle observed that diarrhea might or might not occur when young puppies were exposed to high temperatures. Aron subjected monkeys to the direct heat of the sun, and caused death without observing diarrhea. Hiller, in tabulating a large number of so-called heat-strokes in man, found that diarrhea occurred in less than half.

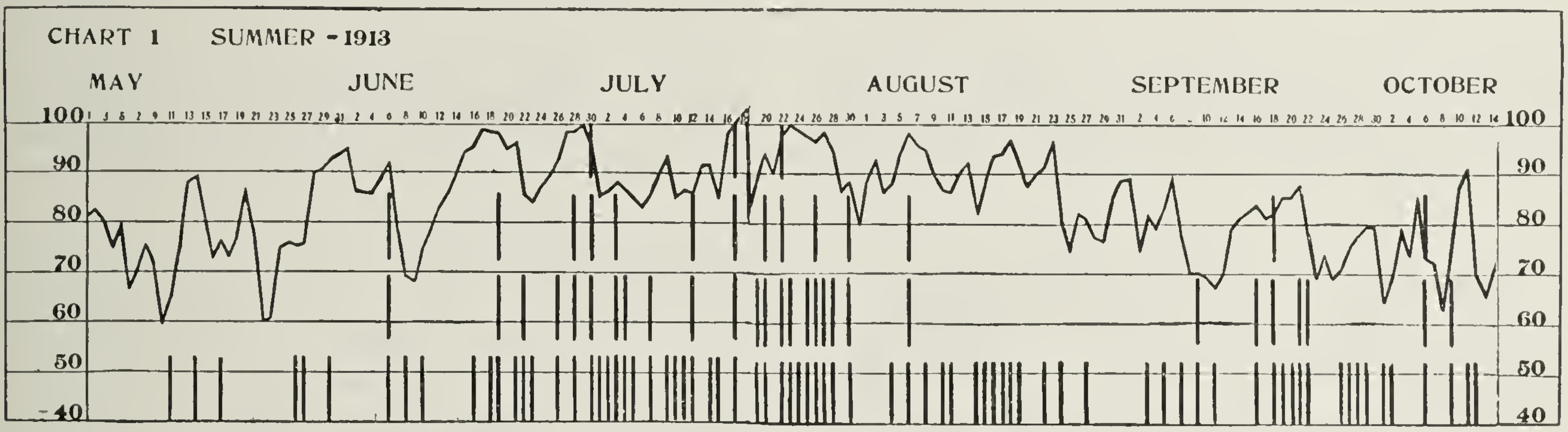

Chart 1.—Diarrhea and temperatures, 1913. In this chart and Chart 2, the irregular horizontal line denotes maximum daily temperatures from May 1 to October 15 (U. S. Weather Bureau, St. Louis). Each upright line at the lower margin indicates a case of acute diarrhea on a certain date; additional cases are indicated by lines added above.

TABLE 1.—SUMMARY OF CHART 1, SUMMER OF 1913, EIGHTY-SIX ONSETS

Temperatures	No. of Onsets	Per Cent.
From 60 to 70	3	3.5
From 70 to 80	8	9.3
From 80 to 90	30	34.9
From 90 to 100	45	52.3

That heat is capable of disturbing physiologic health may, however, be admitted. Disturbances in man may occur at temperatures of 75 F. (Rubner). Disturbance of the normal respiratory exchanges denoting acceleration of the rate of metabolism has been noted at about this temperature (Sutton). If moderate exercise is taken, symptoms of heat retention may occur at 78 F. (Haldane). As the environmental temperature rises, heat production becomes less (Langlois). A rise in body temperature may be produced by heat (Kleinschmidt, Heim, Genersich, John). Acetone and blood may appear in the urine, suppression of urine or even anuria may occur, there is a fall of blood pressure, the pulse rate rises, and the body surface becomes hyperemic, to be followed by pallor, unconsciousness and shock, completing the well-known picture of "heat-stroke."

TABLE 2.—SUMMARY OF CHART 2, SUMMER OF 1914, ONE HUNDRED AND THIRTY-SIX ONSETS

Temperatures	No. of Onsets	Per Cent.
From 60 to 70	5	3.7
From 70 to 80	16	11.8
From 80 to 90	46	33.8
From 90 to 100	69	50.7

TABLE 3.—SUMMARY OF CHARTS 1 AND 2, SUMMERS OF 1913 AND 1914, TWO HUNDRED AND TWENTY-TWO ONSETS

Temperatures	Onsets, Per Cent.
From 60 to 70	3.6
From 70 to 80	10.8
From 80 to 90	34.2
From 90 to 100	51.4

TABLE 4.—PERCENTAGE INCIDENCE COMPUTED ON A BASIS OF ONE HUNDRED DAYS

Temperatures	Onsets, Per Cent.
From 60 to 70	11
From 70 to 80	14
From 80 to 90	29
From 90 to 100	46

In the case of infants, these observations have peculiar significance because of the much greater surface area of the infant compared to body weight than is the case with the adult and the correspondingly greater need for rapid loss of heat. This is in the proportion of about 3 : 1. That metabolism is more rapid in infants than in adults is shown by the relatively larger gaseous exchanges, the carbon dioxid coefficient normal to the adult rising in the infant almost to a point corresponding to the differences in surface area. That the heat output of infants increases as the weight decreases was shown by Langlois, and more recently by Murlin and Hoobler in the case of weak and atrophic infants. The latter writers found this difference greater in the second half of the first year than in the first half. Variot and Lavialle observed that clothing may interfere sufficiently with heat-loss to be noted by the calorimeter. This point, concerning the dangers of overclothing in summer, was the substance of a study by Helmholz, in which it was found that infants possess a capacity of withstanding high atmospheric temperatures provided they are not overburdened with clothes.

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[*] From the Department of Pediatrics, Washington University Medical School.

[*] Read before a meeting of the St. Louis Medical Society, May 31, 1915.

It is not possible to say whether or not diarrhea is one of the symptoms of heat disturbance. Very likely it is not, and it would seem that if a child who is suffering with what has been called heat retention is not fed, he will probably not have diarrhea; but if he is fed, and under such circumstances does have diarrhea, it would seem that the heat retention rather than the food was the cause of the diarrhea, because in the absence of high temperatures food does not exhibit this power, even when more or less highly contaminated with bacteria and their products (Rietschel).

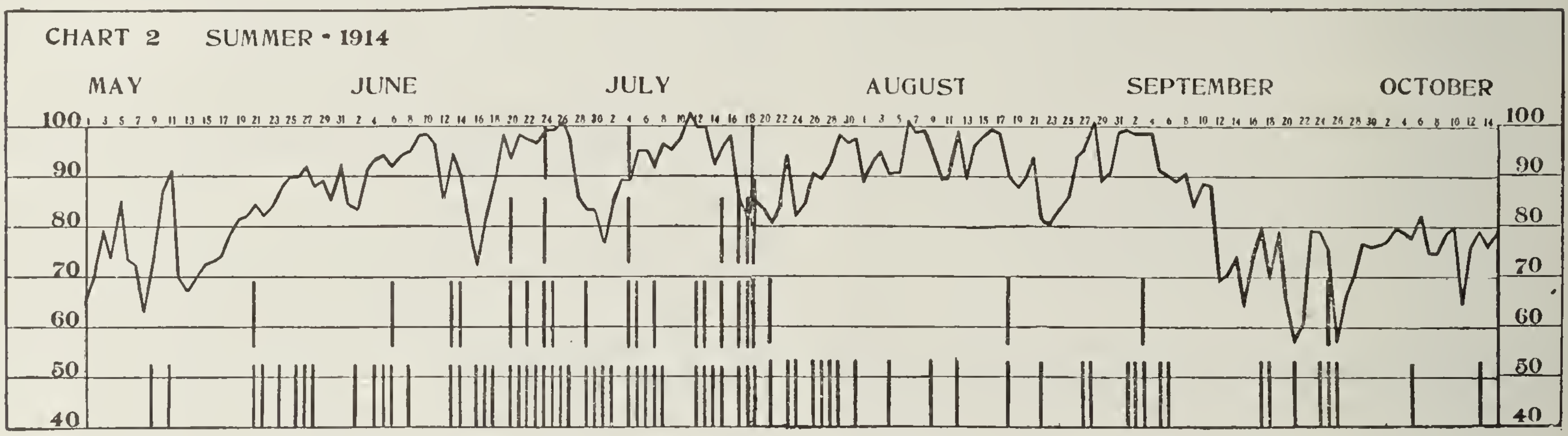

Chart 2.—Diarrhea and temperatures, 1914.

Liefmann's observation, that diarrheas occur three times as often in summer as in winter among breastfed babies, has peculiar significance in this connection, as has also the observation of Holt and Park that diarrheas among tenement babies occur with great frequency among those fed condensed milk, which is not ordinarily considered a highly contaminated food.

Because of these somewhat contradictory observations a study was undertaken to determine whether or not, among the babies of the poor, a relation between the higher temperatures and the day of onset of diarrheas could be made out, no regard being paid to the feeding of the infants until the data collected had been summarized. In the summer of 1913, eighty-six instances of acute diarrhea were collected in which the day of onset could be satisfactorily obtained.[1] In the summer of 1914 an additional 136 cases were collected, sixty-two of them, I wish gratefully to acknowledge, by Dr. T. C. Hempelmann.

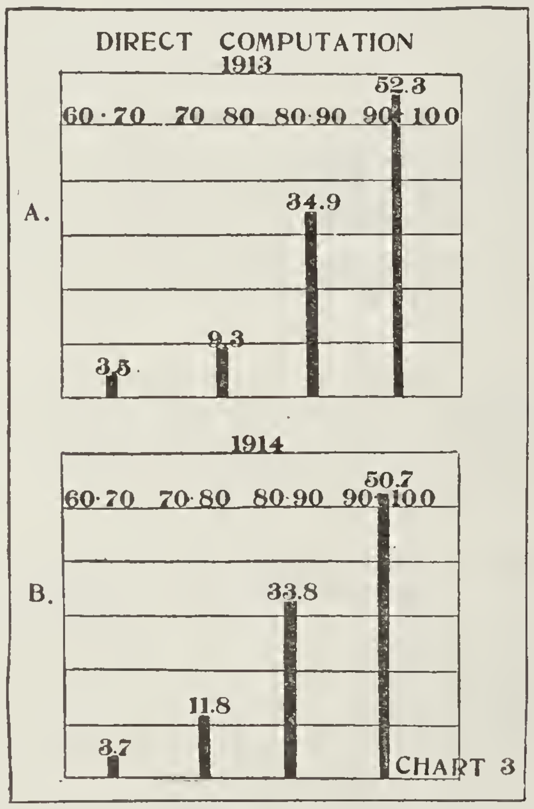

Chart 3.—Diagram showing the relation of heat to the onset of diarrheas among dispensary infants in St. Louis (Tables 1 and 2).

In collecting the cases, we were as careful as we could be to satisfy ourselves as to the health of the babies on the days preceding the disturbance of the bowel. Only those babies previously well for at least two weeks were recorded, and if the onset of diarrhea had occurred more than two days before being reported by the mother, no record was made of it. As to what constituted a diarrheic attack, five or more stools in one day in a baby accustomed to not more than two or three, or four stools, if definitely thin and watery, in a baby who, up to the day noted had had normal or well-formed stools, were, in either case, considered an acute onset. Mild or questionable cases were excluded. Practically all the babies listed were acutely sick, usually with fever and other symptoms of gastro-intestinal disturbance of the so-called "summer type." All the infants were in the first two years of life; about 80 per cent. were in the first year.

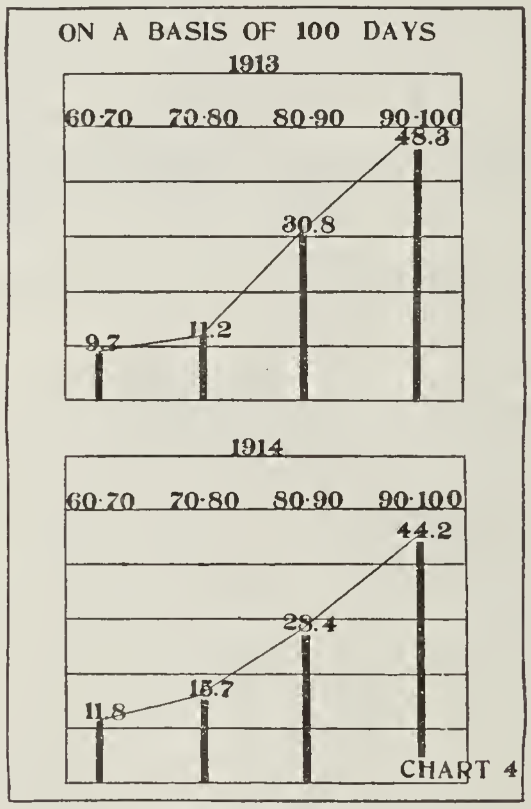

Chart 4.—Diagram showing that the relation of heat to the onset of diarrheas was not due to a coincident number of hot days (Table 4).

Summaries of Charts 1 and 2 are found in Tables 1 and 2, and a summary of the two summers in Table 3. By comparing the two summers, a singularly consistent relation between the higher temperatures and the day of onset of the diarrheas is seen. Apparently, this becomes evident at 70 to 80, it is much stronger at 80 to 90 and quite marked at 90 to 100.

After these charts had been drafted, the question arose as to whether the frequency of the diarrheic onsets was not really the result of a corresponding frequency of hot days. The number of days at each respective temperature-group was therefore placed on a common basis of 100 days and, by preserving the ratios originally found, the effect on the incidence of onsets was again determined. Table 4 shows that this was not the case.

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[1] The 1913 work was reported at a meeting of the St. Louis Pediatric Society, June 12, 1914, but was reserved for publication until the work of another summer could be added to it.

SUMMARY

The studies reported in this paper in no way furnish evidence pertaining to the manner in which the influence of heat is exerted. They do show, however, in a large series of dispensary infants (222) developing acute attacks of diarrhea, that there was a direct relation between the degree of temperature and the onset of the diarrhea, over half (51.4 per cent.) of the babies becoming ill on days when the temperature was 90, although there were but 31 per cent. of such days in the two summers.

The observations were made among babies of the poor among whom diarrheas in summer are very prone to occur. Most of them were rationally fed, usually on some mixture of certified milk when breast milk was not available. It was especially interesting to find that thirty of them (13 per cent.) were exclusively breast-fed, and that twenty-two more were partially breast-fed, which is evidence that heat may very well influence the baby who is taking clean food. The knowledge gained of home conditions was not thorough enough to be worth tabulating, although home visits were made by nurses in practically every case. The reports of the nurses agreed very well with observations made at the clinic that a great majority of the babies were overburdened with clothing and suffered as do the babies of this class from lack of cleanliness and the usual surroundings of poverty.

706 North Kingshighway.

A CASE OF VARICES OF THE MALE URETHRA

Ernest G. Mark, M.D., and Harvey E. McCarthy, M.D.,
Kansas City, Mo.

We wish to report the following case which is of interest on account of its rarity and case history.

History.—E. M. G., aged 46, married, passenger brakeman. General history of no importance. No history of hemophilia. Twenty years ago he had gonorrhea once, followed a few years later by stricture, for which perineal urethrotomy was done. He has had sounds passed at intervals since, followed by no reaction.

Present History.—July 28, 1914, while lifting a train box on a train he felt sudden pain in the region of the urinary bladder, followed by a desire to urinate. He voided urine, but as the act of urination was performed in the dark, he does not know whether any blood was passed. A few minutes later he noticed his clothing in the neighborhood of the genitals was damp, and on investigation found it quite bloody. He urinated five or six times during the night of July 28, without pain; noticed clotted blood at first followed by clear urine and then pure blood. He kept towels around the genitals for dressing and says that four towels were saturated with blood during the night.

Examination.—The patient entered the hospital the following day, at which time we were called in consultation by Dr. John G. Hayden, his attending physician. He was anemic, and bleeding was independent of urination. His hemoglobin, as reported by Dr. Hayden, was 70 per cent. He exhibited no tenderness or pain over the renal region, bladder or urethra. The prostate was slightly enlarged but not hard or nodular. Clots presented at the external meatus and despite the administration of 10 c.c. of normal horse serum several hours previously by Dr. Hayden, stripping of the urethra provoked active bleeding.

After cocainization with a 2 per cent. solution containing quite a fair percentage of epinephrin, a cystoscope, 23 French, was introduced with slight difficulty. The use of the cocain solution was by reason of the fact that previous use of instruments had caused him much pain. The reason for the use of epinephrin is obvious.

Cystoscopy revealed no diseased condition in the bladder or posterior urethra. No clots were present and from neither ureter was any blood being passed.

After withdrawal of the cystoscope, the Mark urethroscope was passed with some difficulty to the bulbous urethra. On withdrawal of the tube nothing was found, with the exception of some areas of hard infiltration, until the anterior part of the scrotal urethra was entered.

In the region of the penoscrotal juncture on the roof of the urethra, a peculiar appearance was noted. An irregular, soft mass of a reddish-black color was seen projecting into the canal as a distinct tumor. This color disappeared entirely under air inflation, and irregular striae were noted, becoming yellowish under pressure, with the exception of one point near the center, which retained the color of intense congestion. On close observation this was seen to be a small tear or rupture in the mucosa. On alternate distention and release of air, it became clear that the striae were vessels which were emptied of their blood under distention, and which immediately filled up on release of pressure. The point of rupture was unquestionably the source of hemorrhage. The desire to urinate was beyond doubt caused by the filling up of the anterior urethra with clotted blood, with subsequent back pressure.

There can be no question that the mass observed was a venous angioma.

But two cases of varix of the male urethra have, in so far as the search for material extends, been reported—one by Klotz (*New York Med. Jour.*, Jan. 26, 1895) and a case of Young's reported by Fowler (*Johns Hopkins Hosp. Rep.*, xiii, 91, 1906). The reports in full of these cases are given by Lewis and Mark ("Cystoscopy and Urethroscopy," p. 205).

626 Lathrop Building.

Transfusion by the Citrate Method in a Sixty-Hour-Old Baby with Melena Neonatorum.—In view of the interest manifested in the citrate method of transfusion, the following case is worth reporting: A girl baby, weighing 8 pounds, was delivered with low forceps because of an incompletely rotated head. The delivery was made without difficulty and with no apparent injury to the child. During the first fifty hours, the child was irritable and cried. It then passed a small amount of bright blood from the bowels, and three hours later a larger amount of dark blood, at which time it was given a subcutaneous injection of normal horse serum. During the next seven hours eight or ten stools were passed composed exclusively of dark blood. The ears were colorless, lips and finger-nails cyanotic, and the child was having difficulty in breathing. The median basilic vein of the baby was raised through a small incision, and 60 c.c. of citrated blood were injected with a record syringe and needle. The child's color was noticeably improved in both the ears and the lips, respirations were easy, and for the next two hours it slept. During the next few hours two more stools of dark blood were passed, evidently that remaining in the bowel at the time of transfusion. From that time recovery was uneventful. The blood used in transfusing was prepared by placing in a sterile container 10 c.c. of sterile 2 per cent. sodium citrate solution and adding to that 100 c.c. of blood removed from a vein in the father's arm with a syringe and needle. The father's veins were small, and the needle introduced did not allow blood to escape rapidly enough, so a syringe was used to facilitate matters, the blood being immediately mixed with the citrate solution.—H. Woltmann, M.D., Mansfield, Ohio.

Morbid Introspection.—The movements of the body machinery do not often rise into the consciousness of the normal man, but are a continuous moving picture show to the neurasthenic.—*Monthly Health Letter.*

New Instruments and Suggestions

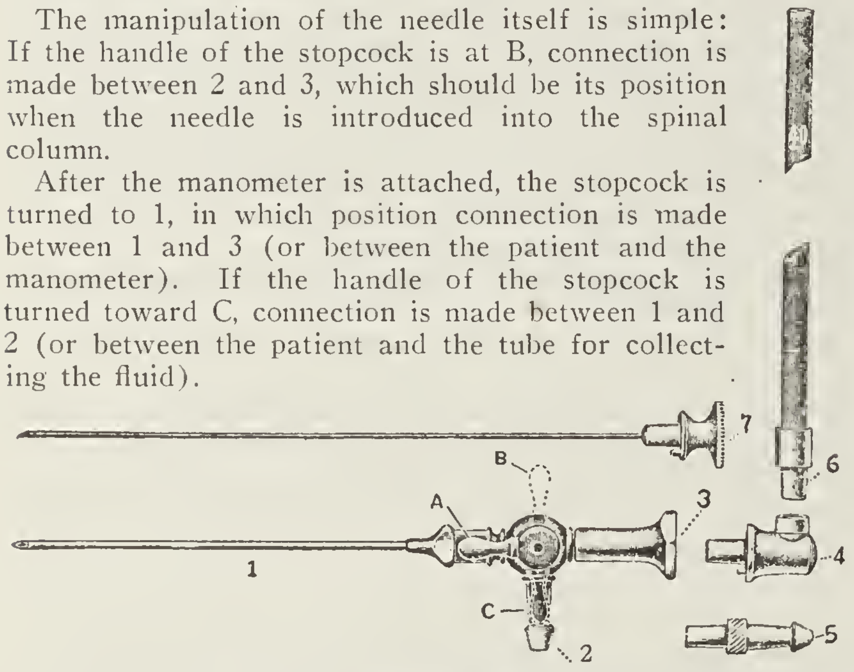
AN IMPROVED LUMBAR PUNCTURE NEEDLE

Julian Mast Wolfsohn, M.S., M.D., San Francisco
Instructor in Neurology, Leland Stanford Junior University, School of Medicine

Since intraspinal medication is becoming such an important adjunct in the therapeutics of syphilis of the central nervous system, accuracy and ease of administration of the drug used are all important. Therefore a modification of the lumbar puncture needle described by me in The Journal, April 19, 1913, p. 1204, has been perfected. This new needle has many advantages over the old, in that: (1) an assistant is not needed to hold the manometer; (2) there is a three-way stopcock which rotates through only 180 degrees, and (3) the administration of intraspinal medication is facilitated. The special features of the former needle are to be found in this new needle.

The manipulation of the needle itself is simple: If the handle of the stopcock is at B, connection is made between 2 and 3, which should be its position when the needle is introduced into the spinal column.

After the manometer is attached, the stopcock is turned to 1, in which position connection is made between 1 and 3 (or between the patient and the manometer). If the handle of the stopcock is turned toward C, connection is made between 1 and 2 (or between the patient and the tube for collecting the fluid).



Improved lumbar puncture needle.

For injection the Lüer syringe is inserted directly into 4, or if another container is used, it is connected by rubber tubing to 5, which is inserted into 4, and the fluid allowed to flow by gravity into the subdural space.

2502 Fillmore Street.

A POLYCHROME STAIN WITH ADVANTAGES OVER THE GIEMSA *

Frank A. McJunkin, M.D., Boston

Numerous modifications of the Romanowsky stain have been used in microbiology and hematology. Of these the Giemsa stain is useful in the staining of smear preparations for spirochetes and protozoa, while the Leishman, and Wright's modification of the Leishman are of greater value for the staining of blood.

In the stain described here, the method of ripening the methylene blue used by Novy and the method of obtaining solution of the dyes used by Giemsa are made use of. It has the advantage over Novy's method that a single permanent solution is used, and over Giemsa's method that the stain is of greater intensity and much less expensive.

THE ROMANOWSKY STAIN

A solution of eosin and methylene blue, made by adding an aqueous solution of eosin to a freshly prepared aqueous solution of methylene blue, stains nuclei blue and cytoplasm red. However, when the solution of eosin is added in the right proportion to a slightly alkaline methylene blue solution that has stood for a number of days or that has been heated, the staining is different. The nuclei of the cells treated with such solutions are red, while the cytoplasm is blue. This color reaction characterizes the Romanowsky solution and all subsequent modifications of it. The structures of smear preparations stained in this way not only show a beautiful color differentiation but they are also heavily stained. This color differentiation and the intense staining of structures make the stain of the greatest value in the study of protozoa and other organisms.

The staining characteristic of such ripened alkaline methylene blue solutions was noted by Romanowsky in 1891, and since then a very large number of modifications of his method of preparing the staining solution have been described. The red staining of the chromatin material by polychrome solutions received several explanations, and by some investigators was ascribed to a single chemical compound to which the term "azur" was applied. More recent chemical investigation indicates that more than a single compound formed by the action of dilute alkalies on methylene blue has this property.

THE GIEMSA STAIN

Giemsa states that he has prepared in a pure form the substance that stains the chromatin red, but the method of preparation, so far as I know, has not been published. It may be purchased from Grübler & Co. and their agents under the name of Azur 1. The Azur combined with methylene blue and eosin and dissolved in methyl alcohol and glycerin gives a single solution which, when added to water, makes an excellent polychrome stain. The Azur 1 and the solutions made from it are expensive, but the simplicity of their application and the good results obtained have led to their extensive use.

THE NOVY STAIN

A method of preparing polychrome methylene blue has been devised by Novy and used in the bacteriologic laboratory in the University of Michigan for the past ten years. One gm. of methylene blue (Grübler's B. X.), 0.25 gm. of sodium carbonate (anhydrous), 50 c.c. of twice distilled glycerin and 50 c.c. of distilled water are placed in a 500-c.c. beaker provided with a mechanical stirrer. The temperature is then raised to 88 C. by heating with a Bunsen burner and kept between 87 and 89 C. for one hour while the solution is constantly stirred at the rate of about 200 revolutions per minute. During the heating, distilled water is added in sufficient amounts to make up the loss from evaporation, and the solution finally made up to the original 100 c.c.

The polychrome methylene blue prepared in this way is placed in a dropping bottle, "A," while a 1 per cent. solution of methylene blue in 50 per cent. glycerin is placed in a second dropping bottle, "B," and a one-half aqueous solution of eosin in a third bottle, "C." At the time of making each stain, about 9 drops of "A," 7 drops of "B" and 2 drops of "C" are added to 15 c.c. of distilled water. The number of drops of each must be ascertained for each new batch of polychrome methylene blue solution. Excellent results may be obtained by this method. The polychrome methylene blue solution steadily changes on standing, as the methylene blue is in a slightly alkaline aqueous solution.

THE POLYCHROME STAIN FOR PROTOZOA DESCRIBED HERE

In this stain the polychrome methylene blue, the methylene blue and the eosin are combined in a single solution by using methyl alcohol and glycerin as solvents. In this way there is obtained a single solution which is used like the Giemsa, which stains nuclear material more intensely than the Giemsa solution, and is less expensive and easily prepared. (The stain already prepared may be obtained from Bausch & Lomb Optical Company, Rochester, N. Y.)

In preparing the polychrome methylene blue solution, first measure accurately from a buret into a 500 c.c. beaker 50 c.c. of deci-normal sodium carbonate. The carbonate solution is titrated against a standard acid using as an indicator a 1 per cent. alcoholic solution of methyl red and diluted until there is no factor. To the carbonate solution add 1 gm. of methylene blue (Grübler's B. X.) and 50 c.c. of glycerine

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* From the Pathological Laboratory of the Boston City Hospital.

(Merck U. S. P.). The glycerine may be measured in a 100 c.c. graduate. Place the beaker in a water bath and equip with a mechanical stirrer which is run at the rate of about 200 revolutions per minute. A thermometer is placed in the solution in the beaker and the temperature raised to 87 to 89 C. where it is kept for one hour and thirty minutes. The water in the bath outside the beaker should be regulated at 94 to 96 C. At the end of forty-five minutes, add 20 c.c. of distilled water to the stain. At the end of the hour and thirty minutes, remove the beaker from the water bath and pour its contents while warm into a 100 c.c. graduate. Add 5 c.c. of distilled water to the beaker to remove any carbonate that may have precipitated out and pour this into the graduate also. Let the stain stand in this graduate and measure into a second graduate enough methyl alcohol (Merck reagent or Kahlbaum acetone free) to make the total volume 100 c.c. when added to the stain. This methyl alcohol is poured from the second graduate into a 4-ounce bottle and 0.75 gm. of methylene blue (Grübler's B. X.) and 0.25 gm. of eosin (Grübler's yellowish water soluble) added to it. Shake the bottle to secure solution of the methylene blue and the eosin in the alcohol. After the dyes are completely dissolved in the methyl alcohol, pour the polychrome methylene blue solution from the graduate into the bottle. The volume of dye in the bottle is now 100 c.c. The weights of the dyes must be accurate and the glassware free from acid.

In using different samples of eosin (Grübler's yellowish, water soluble), a preparation is occasionally met with that is not satisfactory. The stain made with such an eosin stains the red blood corpuscles a blue that cannot be washed out with water. For this reason it is preferable to use an eosin that has previously been found satisfactory in making polychrome staining solutions.

METHODS OF USING THIS STAINING SOLUTION

Application to Smears for the Demonstration of Protozoa and Bacteria.—Smear preparations may be made on either slides or cover-glasses, and they may be fixed in a variety of ways; but fixation in equal parts of absolute alcohol and ether for from ten minutes to a number of hours gives, perhaps, the best results. Distilled water is placed in a staining dish, and to this 1 drop of the stain per cubic centimeter of the water is added. Cover-glass preparations are floated on the solution as soon as the dilution is made, and stained for from thirty to sixty minutes. Trypanosomes, for example, are well stained at the end of half an hour, while about one hour is required to stain *Spirochaeta pallida* heavily. The preparation is removed from the stain, and any excess of blue is washed out with distilled water. This may require from one to several minutes in order to bring out the pink color in red blood corpuscles. After washing, the preparation is dried in the air and mounted in acid-free balsam. Slide preparations are best stained by inverting them and allowing the very end of the slide to rest on the end of an oblong Petri dish without cover (a dish the length and width of a slide and about 2 cm. high). The slide is placed in the solution in this way so as to bring the preparation side as near to the surface of the stain as possible. The preparations after staining and washing are dried in the air, when they may be examined directly with oil, or they may be mounted in acid-free balsam.

Application to Sections of Tissue for the Demonstration of Protozoa, Bacteria, the Megakaryocytes of Bone Marrow, Etc.—It is more difficult to obtain Romanowsky staining in tissue preparations than in smears. The tissue is cut into pieces not more than 2 mm. thick and placed in 1 part of absolute alcohol and 2 parts of saturated aqueous solution of mercuric chlorid for at least twenty-four hours, or it is fixed in 10 per cent. dilution of liquor formaldehydi. If the latter is used as the fixative, shrinkage during the imbedding process should be reduced to a minimum. Sections not more than 3.5 microns are cut from paraffin blocks, and if mercuric chlorid-alcohol was used as a fixative, the mercury is removed with iodin. The staining is carried out just as in the case of smears, except that the preparations are allowed to stain over night. After staining, the preparations are washed with distilled water for one minute, and with a cloth or filter paper the excess of water is wiped from the slide or cover-glass about the preparation, which is then dehydrated in xylene containing 5 per cent. of absolute alcohol and 1 per cent. colophonium. The solution in a small dish is renewed several times until by agitation all the visible water is removed from the preparation, which is allowed to remain in the solution from three to six hours until the desired differentiation is obtained, after which it is passed through two changes of xylene and mounted in acid-free balsam. If the nuclei are not the proper red color and there is an excess of blue in the preparation, the slide is placed in the sunlight for several hours, as has been recommended by Mallory.

Application to Blood Films. A Polychrome Stain for Blood.—For the routine staining of preparations of blood, the method should be simple and quick and yet bring out all the structures present. For these reasons the stain described above is not applicable to blood films for the usual differential counting of the white cells, inasmuch as the preparation requires separate fixation and prolonged staining. If this stain is at hand, however, it will be found that an excellent blood stain that is permanent may readily be prepared from it. (The stain already prepared may be obtained from Bausch & Lomb Optical Co., Rochester, N. Y.)

A majority of the samples of commercial polychrome blood stains obtained, do not give the polychrome staining; the nuclei of cells are bluish when films are stained with them in the usual way. Such stains do not bring out the "azur" granules of the endothelial leukocytes. These deficiencies are due in part at least to a failure to adjust properly the reaction of the staining solution. To differentiate the cells that are found in the blood stream, a stain that gives uniform results should be used. The reaction of the polychrome blood stain here described is accurately determined and the staining properties of all samples examined up to the present are constant.

To prepare the Polychrome Stain for Blood, place in an acid free bottle 50 c.c. of the Polychrome Stain for Protozoa and add 250 c.c. of methyl alcohol (Merck Reagent or Kahlbaum acetone free), 0.34 gm. of eosin (Grübler's yellowish, water soluble) and 2 c.c. of half-normal hydrochloric acid (measured accurately from a buret).

To apply the blood stain, the alcoholic solution is placed on the slide or cover-glass in sufficient amount (two drops for a cover-glass and eight drops for a slide) to cover completely the unfixed film for one minute, when twice as much distilled water as stain is added and allowed to act for five minutes. The preparation is washed with distilled water, dried in the air and examined directly with the oil immersion, or it may be mounted in balsam. The red blood corpuscles stain an orange. The leukocytes are well differentiated. The nuclei of all the white cells are red. The cytoplasm of the lymphoblastic cells is a robin's egg blue and free from granules (unless the preparation is overstained); that of the endothelial leukocytes has a trace of blue and a number of reddish-staining granules, while the cytoplasmic part of the neutrophils has no blue and is thickly studded with the neutrophil granules.

Exhausted Orange Peel for Chronic Constipation.—At a recent meeting of the Societé de therapeutique, G. Rosenthal stated that exhausted orange peel had been used with success in the French army for the mechanical treatment of chronic constipation as a substitute for agar-agar. Fresh orange peel is boiled for half an hour in water. The decoction is decanted, and may be used for flavoring mixtures or liquid dentifrices. The marc is then again boiled for thirty minutes in a fresh portion of slightly sweetened water, drained and dried on a plate, when it is ready for use. In addition to the mechanical action of the swelled cellulose giving the necessary consistence to the contents of the alimentary tract, it also stimulates the flow of bile.—*Journal de pharmacie et de chimie,* 1915, xii, 234.

Therapeutics

ANGINA PECTORIS

The chief indications in the management of angina pectoris, aside from the treatment of the attacks themselves, are to remove every possible cause favoring the onset of the attacks and to treat the disease of which angina is frequently found to be only a manifestation. Soca for a long time has been convinced that the absorption of toxic products during metabolism is an etiologic factor of importance in the pathogenesis of all functional troubles of the heart and of the aorta. This conviction led him to question whether this might not also apply to the attacks of angina pectoris, and to the employment of what he calls the "detoxicating" treatment for their prevention. The results of this treatment answered his question in the affirmative and convinced him that intoxication is always present in angina pectoris. His position is that this theory is in no way contradictory to the accepted theories of the etiology of the disease, but that it supplements them.

During the last ten years Soca[1] has seen 123 anginal patients, eighty of whom have been followed for a sufficient time to warrant therapeutic conclusions. At the beginning of the treatment, in a few severe cases, bloodletting or wet cupping was used. Amyl nitrite was used in a few cases for the relief of a severe attack, but neither of these procedures comprises a part of the regular treatment. Nitroglycerin and the nitrites were not used at all, and no special treatment for hypertension was given except in syphilitics and patients with atheroma. In such cases potassium iodid was used.

Whenever the underlying disease causing the trouble could be discovered, it was of course treated. The other treatment consists of diet, diuretics and rest.

For the first day the patient who has a history of angina pectoris attacks is given nothing but water. On the second day milk is given in quantities varying from 1½ to 3 quarts. Nothing but milk is allowed for from one to three weeks, according to the severity of the case and the response to treatment. In the milder cases, at the end of a week, soups made of milk and various kinds of cereals are added and continued for one or two weeks. At the end of this time cooked vegetables without salt are added and continued for a month or two. Then eggs and a small amount of meat are allowed. Milk still remains the basis of the diet, and no salt is added to the food. This remains the permanent diet, except that it is discontinued for one week each month, during which time milk alone is taken. If attacks recur, the milk diet is resumed at once. Some diuretic was always given, such as theobromin salt.

Absolute rest was not found to be necessary in any but the severest cases. Moderate exercise, including walking, was allowed, but insistence was laid on the avoidance of hasty exertion.

At the end of the first week of this treatment, or before that time, pain had invariably been diminished or had stopped. Twenty per cent. of the cases showed no further amelioration. In the others (80 per cent.) there was decided amelioration, and in more than half of the cases there was relative or absolute cure, as shown by freedom from attacks even after exertion.

It is well known that sudden emotion and overexertion are among the most frequent immediate causes of attacks of angina. This is probably due to the fact that they cause a sudden increase of arterial tension. Huchard pointed out that any medication which reduced arterial tension usually relieved, to a greater or less extent, the sufferings of patients afflicted with angina. While Soca calls the treatment he suggests a "detoxicating" treatment, it is also one which tends permanently to lower the high blood pressure usually present. It is rational and quite in line with the best modern treatment of high blood pressure, which attempts to lower this pressure permanently or at least to keep it from increasing by hygienic and dietetic measures, aided by the use of as little vasodilating medication as possible.

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[1] Soca, F.: Note sur le traitement de l'angine de poitrine, Arch. d. mal. du cœur., August, 1915, p. 237.

NEURASTHENIA—SUPRARENAL INSUFFICIENCY

The suggestion that neurasthenia, like hysteria, needed explanation, and that many of the symptoms of this condition could be explained by a subsecretion of the suprarenals was made by Osborne,[1] in several discussions on the subject of internal secretions, and was distinctly described by the same author[2] in an article published in 1910, in which he says, "It is possible that neurasthenic conditions and conditions of chronic low blood pressure, without tangible circulatory excuse, may be due to an undersecretion of the suprarenals." Recently, Tom A. Williams[3] has described what he terms the "syndrome of adrenal insufficiency," which is really a form of nervous tire or nervous prostration, or, in more recent years, the fashionable "neurasthenia." Williams thinks that the term neurasthenia is only "a convenient cloak for failure to investigate a case sufficiently." In other words, there must be some tangible cause for the prolonged or persistent condition once called nervous prostration and now neurasthenia.

It must, of course, be allowed that physical tire may cause circulatory weakness and prostration, and that mental tire may cause sleeplessness, loss of appetite, and thus a marked insufficiency in the recuperative power of the body without perhaps any special disturbance of any organ or gland. On the other hand, persons who are always neurasthenic, always subnormal, without any special disease, should be subject to classification even more readily than is the neurotic individual. The typical neurotic generally has, if not always, disturbance of the thyroid gland. The typical neurasthenic probably generally has disturbance of the suprarenal gland on the side of insufficiency. The blood pressure in these neurasthenic patients is almost always low for the individuals, and their circulation is poor. Often the activities of the internal organs are impaired, although there may be no discoverable organic disease. Mental exertion, even the simplest, often causes so much weariness and exhaustion as to be prohibitive; that is, such exertion must be forbidden. A vasomotor paralysis, often present, allows chillings, flushings, cold or burning hands and feet, drowsiness when the patient is up, wakefulness on lying down and hence insomnia. The nutrition may be fair or even good, and the weight may be normal. There may be more or less tingling or numbness of the extremities.

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[1] Osborne, O. T.: The Therapeutic Application of the Organic Extracts, The Journal A. M. A., March 23, 1901, p. 796; Med. News, New York, July 12, 1902; ibid, April 4, 1903.

[2] Osborne, O. T.: Disturbances of the Internal Secretions Clinically Considered, The Journal A. M. A., Feb. 26, 1910, p. 670.

[3] Williams, Tom A.: The Syndrome of Adrenalin Insufficiency, The Journal A. M. A., Dec. 19, 1914, p. 2203.

There is not much doubt that the cause is disturbance of one or more internal secretions, but just which glands are at fault is difficult to determine. Testicular and ovarian disturbance, especially on the side of deficiency, are known to cause general depression, hysteria, hypochondriasis, melancholia and disturbances of the digestive secretions. A disturbance of the thyroid secretion may cause in one patient hysteria and in another patient depression; or both conditions may occur in the same patient at different periods. That very large mammary glands, in women who are not pregnant and who are not lactating, may disturb the system has not yet been proved. Many girls and women, however, who are not well and strong, whose flesh is flabby, who may either be overweight or underweight, and who have the mammary glands excessively large, may be disturbed by an internal secretion of which we as yet know little. Pituitary disturbance may affect the cerebral activity. The pineal gland seems to have an important secretion. Many of the symptoms of physical and mental tire, with low blood pressure, especially if accompanied by increased pigmentation anywhere on the skin, may be due to insufficiency of the suprarenals.

Williams comes to the conclusion that many patients who present the well-known symptoms termed "neurasthenia" with low blood pressure, with loss of mental elasticity, with both mental and physical depression, with the fear that they cannot now accomplish their usual good mental work, with the story that they have "lost their nerve," in the phraseology of the times, with the fearfulness of making wrong decisions, and with a vascillating and indecisive frame of mind, are many times suffering from an insufficiency of the suprarenals. He finds that the administration of the dried suprarenal gland, in tablets of from 2 to 4 grains, two or three times a day, has caused improvement in many cases.

Any sensible suggestion is worthy of trial in this troublesome neurasthenia, especially as such patients readily acquire the sanatorium habit and become more depressed. Physical and healthy mental exercise is good for these patients. Generally an increased protein diet does them good, as many of them have been, for one reason or another, reducing their meat, fish and egg intake.

It should be urged that for the supposed suprarenal insufficiency it is not sufficient to give the blood-pressure-raising substance of the suprarenals, but the whole gland must be fed. Just how much valuable activity is absorbed from the suprarenal when fed has not been determined. Cases are on record in which feeding of this gland has seemed to cure or cause an amelioration of the symptoms of Addison's disease. Williams in many instances has found the blood pressure raised by the administration of this glandular substance by the mouth.

As the posterior lobe of the pituitary gland has been found to furnish a stimulant to the suprarenals, it might be well to consider administering a small dose of this gland in conditions of subsecretion of the suprarenals, especially as this part of the pituitary furnishes a vasopressor substance.

As yet we have not sufficiently recognized the fact that all of the internal secreting glands may be subject to the same conditions of hypersecreting and undersecreting which are so well recognized as occurring in the thyroid gland. It is quite probable that many unexplained cases of hypertension are due to an increased suprarenal secretion, and it certainly seems more than likely that the condition of chronic hypotension is due to a subsecretion of the suprarenals.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

SEROBACTERINS (See N. N. R., 1915, p. 329).—The following dosage form has been accepted:

H. K. Mulford Co., Philadelphia.

Scarlatina Strepto-Serobacterin, Mulford (Therapeutic.).—(Sensitized Scarlatinal Streptococcic Vaccine).—Marketed in packages of four syringes, containing, respectively, 250 million, 500 million, 1,000 million and 2,000 million killed sensitized streptococci.

QUININE DIHYDROCHLORIDE.—Quininae Dihydrochloridum, $C_{20}H_{24}N_2O_2.2HCl$.—The dihydrochlorid of the alkaloid quinine.

Actions, Uses and Dosage.—The same as those of other salts of quinine. Since quinine dihydrochloride is a very soluble salt of quinine, its use has been proposed where concentrated solutions of quinine are wanted, as for subcutaneous injections and similar purposes.

Ampules Quinine Dihydrochloride, Mulford, 0.24 Gm.—Each ampule contains 0.24 Gm. (3¾ gr.) quinine dihydrochloride in 1 Cc. of sterile solution. Prepared by H. K. Mulford Co., Philadelphia.

Ampules Quinine Dihydrochloride, Mulford, 0.5 Gm.—Each ampule contains 0.5 Gm. (7¾ gr.) quinine dihydrochloride in 1 Cc. of sterile solution. Prepared by H. K. Mulford Co., Philadelphia.

Quinine dihydrochloride occurs as a white powder, having a very bitter taste. It should be kept in well closed containers, protected from light. It is soluble in about 0.6 parts of water and in about 10 parts of alcohol at 25 C. It is almost insoluble in chloroform and ether. Its aqueous solution is strongly acid to litmus.

Quinine dihydrochloride responds to the usual identity tests for quinine and chloride. It should be practically free from sulphate and from barium.

PURIFIED TRICRESOL, Mulford.—A mixture of isomeric cresols, corresponding closely to Cresol U. S. P.

Manufactured by H. K. Mulford Co., Philadelphia. No U. S. patents or trade-marks.

Purified tricresol, Mulford, is soluble in 50 parts of water at 25 C.; it is free from bases, such as pyridine, and from hydrocarbons. Its phenol coefficient, determined by the U. S. Hygienic Laboratory method, is not less than 2.5 (the exact value is stated on each package) and of a phenol toxicity, determined by the method of Hale, not greater than 150 per cent. (the exact value is stated on each package).

IODOSTICKS (Iodine 60 per cent. and Potassium Iodide 40 per cent.).—Wooden sticks 1½ inches long, tipped with a mixture of iodine 60 per cent. and potassium iodide 40 per cent., packed in amber glass containers. Each stick is to be used but once.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Antiseptic Supply Co., New York.

IODOAPPLICATORS AND IODOAPPLICATORS, SPECIAL (Iodine 60 per cent. and Potassium Iodide 40 per cent.).—Wooden sticks 6½ and 12 inches long, respectively, tipped with a mixture of iodine 60 per cent. and potassium iodide 40 per cent., packed in amber glass tubes. Each stick is to be used but once.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Antiseptic Supply Co., New York.

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SATURDAY, DECEMBER 18, 1915

FATS IN METABOLISM

Our increasing information in respect to the phenomenon known as the specific dynamic action of the foodstuffs in metabolism has repeatedly been discussed in The Journal. If the basal level of metabolism, that is, the transformation of energy in an individual at complete rest and in the absence of food, is carefully determined by the methods of either direct or indirect calorimetry now successfully in use in this country, remarkably constant values are obtained from hour to hour. The fundamental resting energy requirement in each case is thus shown to be surprisingly uniform; and when suitable allowances are made for inequalities of size, the basal metabolism per unit of the individual appears likewise to be quite comparable between different persons. The scientific basis for estimating the minimal energy requirement of the healthy, normal individual is thus established.

Ingestion of food is the occasion for an increase in the metabolism. The cause of this "specific dynamic action" of the foodstuffs has been a subject for investigation and theorizing for many years. Repeated attempts have been made to explain, on some general underlying basis, the known phenomena of this increased heat production attending the intake of foods. Hypotheses postulating the increased work of the digestive glands and the alimentary apparatus, the circulatory and the excretory organs, entailed by food intake, have all been found inadequate to account for the known facts. Again, it has been suggested that the products of digestion act as stimulants to the body cells, and thus induce chemical changes with a liberation of heat. Attempts have even been made to designate these metabolic stimuli as being definitely of an acid character. Thus it was hoped to account for the heightened basal metabolism in certain diseases on the ground of an undue production of acid products as a result of the nutritive disorder.

It is becoming more and more apparent that the potent factor in increasing heat production in the ways just cited lies in increasing the metabolites available for cell nutrition. Added evidence of this has lately been furnished by Murlin and Lusk[1] of Cornell University Medical College. Carbohydrates like glucose, and the amino-acid digestion products of proteins are readily absorbed; and when they are consumed, a rise in heat production follows promptly. Fats differ from the other foodstuffs in that the progress of their absorption is somewhat slower. The fat content of the blood shows a gradual rise after ingestion of fats, and may not reach its maximum until several hours after the intake of the meal. Murlin and Lusk have found that the heat production of the organism shows a similar gradual rise after a meal of fat—an increase which may be regarded as parallel to the progressive influx of fat globules into the blood stream from the thoracic duct. They note that the ingestion of fat does not change the quantity of heat produced from protein and glycogen, but that the increased metabolism is at the expense of the fat ingested. It is evidently not a single factor or mechanism like the alimentary process which is here concerned. If glucose is ingested at the time of the highest fat metabolism, the heat production undergoes a second increase by the same quota which glucose alone would have increased metabolism. The respiratory quotient shows that glucose and fat were being oxidized together. Furthermore, when glucose and the amino-acid glycocoll, typical of a nitrogenous digestion product, are given together so that their molecules enter the circulation at the time of the height of fat absorption, the increase in metabolism is very nearly equal to the sum of the increases which each of the three materials would have induced alone. In the interesting details revealed by their work, Murlin and Lusk see a vindication of the opinion of that master student of nutrition, Carl Voit, that the height of the heat production is determined by the quantity and quality of the materials brought to the cells by the blood.

THE MADNESS OF SPORT

A dictionary defines sport as a "particular game or play pursued for diversion, especially an athletic or outdoor game or amusement." It then proceeds to give another definition of the word as "a mockery or object of derision." Any one who contemplates some of the performances in this country which have lately been dignified with the name of sport may wonder in which of the foregoing categories these exhibitions deserve to be classed. The public press has spread broadcast the story of a recent automobile contest in which the winner exceeded an average speed of 100 miles per hour for more than three hours. The reports of the finish tell that "the driver, overcome by the roar of his machine, was unable to hear for several minutes and acted otherwise like a deranged man."

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[1] Murlin, J. R., and Lusk, Graham: Animal Calorimetry, Twelfth Paper, The Influence of the Ingestion of Fat, Jour. Biol. Chem., 1915, xxii, 15.

This type of performance also reminds one of the dangerous and thrilling midair stunts in which a few widely advertised aeroplane enthusiasts have engaged, sometimes at the sacrifice of their own lives.

Some of this modern sport mania seems to us to deserve the condemnation which we have not hesitated to apply to certain features of the competitive athletics practiced in American institutions of learning or by other groups of young men.[1] No one will gainsay the value and pleasure of outdoor exercise graduated to suit the needs of every individual throughout life. But the species of overdoing called for in the intense competition of the great contests of our schools and colleges can no longer be defended by platitudes regarding the alleged psychologic value of its competitive features. The time has come when statistics regarding latent athletic injuries must be reckoned with and the lives of our youths safeguarded by making a distinction between sane sport and insane participation in the intolerable strain of competitive games of the extreme type. The desire to win at any cost must be criticized, not only from the standpoint of unethical practices between opponents, but also with consideration of the insults — sometimes almost intolerable insults — which the strain of training and final competition may place on even normal organs such as the heart. Dr. Willson of Philadelphia sounded a warning which will be endorsed by many an unbiased observer of what is occurring on our athletic fields, when he said: "Trainers should be taught just what the collapse of today means in the future of the athlete. Some day the college authorities must of necessity conclude that no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion."[2]

Dr. Willson presents the issue squarely when he insists that the wisdom or unprofitableness of college and schoolboy competitive athletics must be determined by (1) the ultimate result of public competitive athletics on the physical health and lives of the participants, and (2) the possibility of determining the genuine physical integrity of the proposed participant or his lack of the same, especially with respect to his heart. These are criteria which the enthusiasts for the severest types of competitive sports must sooner or later face, unless they will maintain, like some of the advocates of war, that struggle develops some unique human virtues which overbalance any bodily harm.

The trainers of athletes are recruited from among individuals who have little or no appreciation of the physiologic principles involved in muscular performance. Their aim is comprised in the cry of "win at any cost," and their own prestige hinges on the success of their protégés in competitive or record-breaking contests. School and college authorities are singularly indifferent to the question of physiologic fitness and consequences in the case of students who are, in a sense, their wards. Any one who has given attention to the subject through unbiased channels can readily convince himself that little really useful information is ordinarily available among athletic associations and college groups regarding the physical condition of their members, except so far as it is exemplified in athletic performance. They need to be reminded in an emphatic and authoritative way, in the words of Willson, that "no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion." Has not the time arrived to call a halt on "insane indulgence" in sport?

And what shall be said of the reckless forms of sport which seem to bewitch by the terrible dangers that they court? Little is gained for the progress of motoring or the science of flying by the daredevil types of performance which are a challenge to fate. They seem to have outdone the major sports in which at least any danger involved is not the chief interest to the spectator. Let us cease to dignify the recent exhibitions with the designation of sport. One editorial writer has expressed it by stating that events which depend for thrill on the nearest possible approach to death by the actors in them represent the degeneracy which overtakes sport and makes madness of it.

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[1] Athletic Sports in Relation to Health, editorial, The Journal A. M. A., March 21, 1914, p. 936; A "Danger Scale" for Athletics, March 28, 1914, p. 1024; Athletic Sports Versus Competitive Athletics, April 4, 1914, p. 1094; The Hygiene of Athletic Sports—Rowing, April 11, 1914, p. 1172; Collegiate Athletic Sports, June 20, 1914, p. 1967; High School Athletics, Nov. 14, 1914, p. 1765; A Foreign View of Competitive Athletics, March 13, 1915, p. 910.

[2] Willson, R. N.: The Heart of the Athlete: Its Prospect and Protection, abstr., The Journal A. M. A., Oct. 9, 1915, p. 1304; Pennsylvania Med. Jour., November, 1915, p. 83.

GARMENT MAKING AND SOME DANGERS TO HEALTH

The solidarity in health matters that exists among all classes is made manifest by the results of an investigation of the garment making trades.[1] Attention to this phase of social betterment is more than merely philanthropic or charitable in the ordinary sense of the word; it also has a wide social significance. Improvements in the conditions under which such workers labor not only do good for those actually engaged in the occupations investigated, but also are of distinct benefit to the whole community in its definite limitation of the spread of disease.

Garment making has passed almost entirely out of the hands of the family and of the numerous small tailoring establishments which used to supply most of the demands in this line, to become the task of large concerns in which numbers of workers are necessarily employed often in very crowded quarters. The health of these workers, in addition to its importance as a matter of civic sanitation and the reduction of the municipal mortality and morbidity rates, is of special significance from the fact that large numbers of the community are brought indirectly into contact with these workers through the garments which they have handled rather intimately in the making. The suggestion that tuberculosis is undoubtedly the most serious disease prevalent among the garment workers is rather startling. In the revolution of the trade, garment making has in recent years passed largely out of the hands of women into those of men, so that the observation that consumption is over three times as frequent among the males as among the females in the trade adds to the significance of this research.

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[1] Bull. 71, U. S. P. H. S.

The serious prevalence of pulmonary consumption in the trade may be gathered from the fact that the affection is nearly ten times as common among male garment workers as among soldiers in the federal army. The garment industries favor the prevalence of pulmonary tuberculosis (*a*) by intensifying bad postural habits; (*b*) possibly by reason of the presence of suspended matter, or what is spoken of as woolen "fly" in the trade, in the air of workshops, and (*c*) by reason of the lower state of metabolism induced by the inactivity of a sedentary occupation and insufficient nutrition consequent on low wages. For these reasons, garment makers are prone to tuberculosis, and are especially liable to affections of the respiratory tract. A much larger proportion of them than is found in the ordinary population suffer from emphysema of the lungs, chronic bronchitis, and chronic catarrhal conditions of the nasopharynx.

As most of these affections have at least some infectious element in them, the recommendations of the Public Health Service for the lessening of the dangers to the community from the garment working trades are worthy of wide consideration. They suggest that "fly" should be eliminated from the air of the workshops by suction cleaning, and the coating of the floors with some dust-retaining oil. Dry sweeping should be rigidly suppressed. If good habits are insisted on at the beginning of work at the trade, better postures are assumed, and the danger from lung compression by stooping is avoided. The general health would be much better preserved, and resistive vitality distinctly heightened, by the enforcement of regulations against promiscuous spitting, as well as against the use of the common drinking cup and the common towel. In recent years there has been a marked improvement in these matters, but much remains yet to be done, and numerous evasions of the regulations have been noticed in the shops. The high prevalence of tuberculosis among garment workers, and their direct relation to the public, make the absolute enforcement of such regulations imperative. Finally, the care of the mouth and the teeth represents an extremely important element in prophylaxis, and above all in the preservation of health, so that the investigators rightly insist rather emphatically on including these among their recommendations. Such matters seemed more of personal than of public interest only a few years ago, but now their relation to public health becomes very clear.

Recent years have brought so much amelioration of the working conditions among this class that there seems every reason to think that only a little more interest is needed now to remove most of the abuses that are responsible for the ill health of the workers. With the definite knowledge presented by this investigation, it would be quite possible to make this trade at least no more dangerous than a good many others, and to eliminate most of the risks which now exist of respiratory affections being spread beyond the workroom.

LESSONS FROM RECENT CHOLERA OUTBREAKS

The statistics and experiences derived from the cholera outbreak in Manila somewhat more than a year ago furnish a number of new considerations for the guidance of those entrusted with the problems of public health.[1] Two important features stand out clearly in the light of the successful control of the situation in the Philippines. One of these is the demonstration that in effectively combating a cholera invasion, the use of laboratory facilities in the making of bacteriologic diagnosis on a large scale is absolutely essential. Without such assistance as is available in the well-equipped Insular Bureau of Science, the results which have been accomplished would have been impossible. From November 1 to November 10 alone approximately 20,000 bacteriologic examinations were made, and before the work of inspection was completed, the number of examinations must have exceeded 100,000. The administration of such a service is, by itself, an affair of no small magnitude; and the task assumes an even more formidable aspect when one recalls that social and political difficulties often need to be overcome in order to make possible an inspection of persons who usually present no outward manifestations of ill health. Carriers must be detected regardless of the consequences. To avoid a danger one must know where it lurks.

Lieut.-Col. Munson, who was the adviser of the Bureau of Health, but who has now returned to this country, has remarked that the work at Manila meant invasion of the accepted rights of the home and of the individual on a scale perhaps unprecedented for any community. The collection of the fecal specimens might fairly be regarded as repulsive to modesty. Add to this, he continues, the facts that the search was made among persons, to themselves and others apparently healthy, who could scarcely fall even within the class of suspects, and that those found to be carriers were subjected to all the inconveniences of isolation, separation from family, loss of earning capacity, etc., and it is apparent with what tact and caution the work had to be carried out and public opinion created in favor of it as an unpleasant but necessary measure.

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[1] The information cited in this connection is derived from a paper read by Lieut.-Col. E. L. Munson of the United States Army at the annual meeting of the Philippine Islands Medical Association, Philippine Jour. Sc., Sec. B., Trop. Med., 1915, x, 1.

The second lesson of the Manila outbreak of 1914 was the importance of the cholera carrier. In periods when the mortality is high, the proportion of persons who are carriers without presenting symptoms of the disease will be relatively small; but when the mortality is light, according to Munson the lack of virulence in the germ will probably permit it to be harbored in many cases without the production of symptoms, so that a considerable percentage of carriers may be expected. Outbreaks such as that of 1914 in Manila, accordingly, occur in which the carriers appear to have been not only the most numerous but also the most insidious and dangerous sources of infection. It was undoubtedly spread chiefly by personal contact. Public water supplies and articles of food—all of which were formerly charged with a major offense in the transmission of such diseases—were eliminated as channels of infection, and likewise the flies played an insignificant part at most in its spread. According to the experts in the field,[1] the lack of use of toilet paper, certain habits in the use of the toilet, infected fingers, and the habit of eating food with the hands from a common dish furnish opportunities for passing the infection from the carrier to another person.

A further lesson emphasized by the recent experiences is that the five-day period usually accepted for incubation and quarantine will not suffice in a very considerable number of instances. This, as Munson points out, sheds light on cholera situations not otherwise readily explained. An observed convict who died of true cholera after an eighteen-day period as a carrier "might have traveled half way around the world scattering his infection broadcast" and died of the disease in a place thousands of miles from any other source of infection. There is a warning in such cases, says Munson, that health officers all over the world would do well to heed.

An examination of many cholera patients and carriers by Schöbl[2] showed that vitality of cholera vibrios in the human body is not inconsiderable. In forty-three out of eighty patients, the stools were positive for from two to seven days; in twenty-two, from one to two weeks; in six, from two to three weeks; in one case, for forty-eight days. Treatment to free the intestine of the invading micro-organism seems to have been of little value. Trained experts are necessary to manage the serious situations that may be created. Munson's advice deserves to be emphasized: the prompt eradication of a general cholera infection includes the detection and isolation of carriers as a scientific prerequisite.

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[2] Schöbl, O.: Observations Concerning Cholera Carriers, Philippine Jour. Sc., Sec. B., Trop. Med., 1915, x, 11.

FOODS AND DRUGS IN SMALL PACKAGES

There has lately been considerable agitation over the subject of "package food." The questions involved in the sale of edible products in package form are in many ways similar in principle to those related to the distribution of common drugs and chemical preparations in special containers instead of the usual and older method of sale in bulk. There are products like canned goods among foods, or therapeutic serums among medicinal articles, which cannot be distributed satisfactorily in bulk because of inherent difficulties in their preparation and preservation. These substances must be kept sterile until used, and hence demand a special container. But aside from such obvious necessities, the problem of the relative advantages and disadvantages of package goods perhaps deserves to be carefully weighed in these days of increased cost of living. Some features of the arguments involved have recently been summarized by Street[1] of the Connecticut Agricultural Experiment Station. It is regarded as a favorable feature that the labeled small sealed package gives some assurance respecting the quality of the goods it contains, inasmuch as the manufacturer is usually eager to establish a reputation for them, and therefore finds it to his advantage to furnish a satisfactory product. This is doubtless correct in many cases, so that a particular brand of package goods comes to stand for some special merit. In certain instances, however, the real value or usefulness of the product is obscured by the advertising features of the special package. Attention is directed thereby to incidental properties of the contents, to some color, flavor or alleged quality which has nothing to do with food value, nutritive superiority or therapeutic merit. It is the package rather than the product which becomes the attraction to the purchaser, and almost invariably at a charge which must include extraneous costs not suspected by the purchaser. It is not unfair, therefore, to ask whether the same price expended on bulk goods by a discriminating purchaser would not, in many cases, secure better values.

It must be admitted that the sealed package usually makes for cleanliness and sanitary conditions, that it sometimes conserves flavors and other sorts of dietetic attractiveness, that it tends to "standardize" prices and protect the ignorant purchaser, and that it offers many conveniences for transportation and storage. We must nevertheless learn to count the cost of extraneous elegance and attractiveness. And when the needs of institutions rather than persons or families are taken into consideration, the disadvantages of many varieties of "loose" foods need to be seriously debated before the latter are condemned. "The consumer of limited income," says Street, "has no more economic right to buy crackers, for instance, in small packages than he has to buy champagne, caviar, pâté de foies gras, or a hundred other similar luxuries." Here is a point of view which suggests the desirability of establishing greater skill in marketing among our people as a whole.

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[1] Street, J. P.: Foods That Are Marketed in Small Packages, Mod. Hosp., 1915, v, 168.

If we object to the purchase of familiar drugs like hexamethylenamin or acetanilid under fancy trade names in expensive form, how shall we defend the comparable practices in the food industries? The question becomes particularly acute in institutional management, where superfluous paper, pasteboard, glass and tin, along with a liberal allowance of printers' ink, can scarcely make good the deficit in real nutriment or medicinal potency. Manufacturers of superior brands are beginning to appreciate this, and are meeting the objections by supplying their particular products in larger containers at more economical prices, aiming merely to protect the reputation of their goods by a special label. There is a marked distinction between buying a particular brand of, say, boric acid or saccharin, under conditions which identify the maker, and purchasing expensive small packages of the same items with mystical designations.

The net weight or volume package laws are intended to give a welcomed and adequate opportunity to every purchaser to ascertain the true content of every package which he pays for. It will require considerable education in the reading of labels to make him appreciate that what appears like a half pound of attractively cartoned crackers is in reality only a fraction thereof, or that a large box of breakfast food is liberally filled with an inner container. In any event, all the newer requirements for the labeling of foods and drugs in a truthful manner represent steps in the direction of progress. The clearer the truth is brought out, the greater will be the advance in the practices concerned.

Current Comment

THE EFFECT OF PURIN FOODS ON THE URIC ACID CONTENT OF THE BLOOD

Until quite recently, one of the most helpful indexes of the result of any dietary regimen or therapeutic measure involving metabolism was obtained by an analysis of the urine. Thus, the tolerance for carbohydrates was ascertained by examination of the secretion from the kidneys for sugar after the ingestion of varying quantities of this type of foodstuff. The relative ability of the kidneys to excrete the usual tissue waste products and inorganic salts was likewise ascertained by urinary analysis, and the efficiency of the renal functions judged on this basis. The advent of suitable methods for the analysis of very small quantities of blood—the so-called micro-analysis—has transferred the seat of observation to the circulating fluid in the vascular system. Blood analysis for clinical purposes is making rapid strides, not only in the direction of qualitative tests, such as those for evidences of syphilitic and other infections, but also along quantitative lines. Several useful "clinical" methods for sugar estimation in blood have been published; and nonprotein nitrogen, urea, creatinin, uric acid, fats and lipoids have been brought within the scope of feasible determination on small samples of blood. Enough is already known to demonstrate the value of many of the facts thus ascertained for the clinic of kidney diseases. The ingestion of purins, either free as they occur in meats, or in the form of the nucleoproteins of glandular tissues like liver, sweetbread, etc., is followed by a decided increase in the urinary output of uric acid. Little has been known regarding the immediate effect of the absorption of purins on the uric acid content of the blood. Denis[1] has recently found, from studies at the Massachusetts General Hospital, that in normal individuals no increase in the circulating uric acid is produced by the ingestion of even large quantities of purins. It has further been found that the intake of ordinary protein may be increased from an amount sufficient to give from 6 to 8 gm. of urea in the twenty-four hour urine to that sufficient to produce a daily urea excretion of from 30 to 50 gm. without producing an increase of more than 2 or 3 per cent. in the circulating urea. As Denis points out, it would thus seem that the normal kidney reacts toward an excess of uric acid in a way essentially similar to that in which it conducts itself toward an excess of urea, and is able to excrete the excess of uric acid presented to it when a diet high in purins is fed, thereby keeping the circulating uric acid at the same level as that obtained when only endogenous uric acid is to be excreted. When damage to the kidney has occurred, and even before this has progressed to the point at which nitrogen retention is apparent, as shown by the nonprotein nitrogen values, an accumulation of uric acid takes place in the blood after a short period of purin feeding. This is interesting not alone from the evidence that it brings of the importance of the renal efficiency for the level at which uric acid circulates in the blood, but also in its relation to diagnostic procedures. Denis suggests that when the determination of uric acid in the blood is undertaken as a diagnostic test, the insistence on a preliminary period during which no purin-containing foods are consumed is unnecessary except in cases in which kidney insufficiency exists, or perhaps in the case of persons who habitually consume extremely large quantities of purin-containing foods.

HEMOGLOBINOPHILIC BACTERIA

Although bacteriologists have long been familiar with a rather large group of bacilli which grow artificially only in a medium containing hemoglobin, the peculiarities of these hemoglobinophilic micro-organisms are not so generally known by those who do not specially cultivate this field of study. The most conspicuous example of the group is the bacillus definitely recognized by Pfeiffer in 1892 as the etiologic factor in influenza. Its discoverer proved the hemoglobinophilic character to be a property of bacteria hitherto unknown. The first cultures were made from pus derived from the bronchial secretions of influenza patients. It was the failure to secure subcultures on the usual nutrient mediums which directed attention to the part played by the accidentally introduced pus in the successful attempts and led to the observation of the unique rôle of the blood pigment in connection with these organisms. Davis[1] has recently called attention to the further interesting fact that certain of the hemoglobinophilic bacteria identical with or closely related to the influenza bacillus multiply more rapidly when grown on mediums in the presence of other bacteria, such as streptococci or staphylococci. Their virulence for animals is also increased. This means that they show to a marked degree the property of symbiosis. It is a well-known fact that influenzal infection may often aggravate other conditions, and severe mixed infections are not uncommon. The influenza bacillus, in particular, does not form spores, and is exceedingly sensitive to all sorts of bactericidal agencies. On culture mediums the bacilli die in a short time unless they are transplanted. Davis reminds us that the hemoglobinophilic bacteria are interesting in that they are pure parasites, for the very evident reason that only in animals can they find the hemoglobin, which so far as is at present known, is necessary for their existence. Inasmuch as they are delicate organisms, their length of life outside of the animal body is very short, not exceeding a few days at most. Davis also recalls that the exact rôle which hemoglobin plays in the metabolism of these micro-organisms is not known. Inasmuch as extremely minute quantities of the blood pigment in mediums suffice for growth it is unlikely that the hemoglobin is necessary because of any purely nutritive properties.

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[1] Denis, W.: The Effect of Ingested Purins on the Uric Acid Content of the Blood, Jour. Biol. Chem., 1915, xxiii, 147.

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[1] Davis, D. J.: Hemoglobinophilic Bacteria, Science, 1915, xlii, 532.

THE PUBLIC LAUNDRY

If our industrial procedures and household practices remained unchanged from one generation to another, it might become far easier than it has been to control disease and stamp out familiar infections. No sooner, however, has one factor been controlled by some scheme of sanitation than changing custom has shifted the incidence of the supposedly eradicated danger and raised a new problem of health control. Thus, when laundry work was largely confined to the home, the possibility of infection was limited to a smaller group, and the opportunity for exposure to contagion easily appreciated and provided for. Today the handling of soiled clothes is being transferred more and more to special plants in which materials from many homes and still more individuals are brought together where employees come into contact with it. The possibility of infection under such conditions must vary for specific diseases, and depends on the probable readiness with which the micro-organisms concerned are transferred by soiled linen, and further on the efficiency of the laundry processes as a mode of sterilization. It is doubtless true that some of the more important disease germs are transmitted from individual to individual without any intermediate conveying device; nevertheless there are many infections, such as typhoid fever, venereal diseases, etc., which are known to be transmitted through fomites. So long as typhoid fever can be charged to the cook who has handled the food, it is not difficult to conceive of a similar transmission through the laundry worker. The high temperature, soap, washing soda and other chemicals to which clothes in the laundry are subjected in the washing process are responsible for a sterilizing action. Bacteriologic examinations have repeatedly demonstrated that it is effective. Dr. Dederer,[1] who represents the Committee on Occupational Diseases of the woman's department of the National Civic Federation, frankly states that there is no danger to public health from "mixed washing" of clothing with contaminated articles. It is pointed out, however, that while the washing process practically sterilizes the clothes, the reinfection of clean linen is possible when it is sorted and counted in the same room with soiled linen. Clean linen, when exposed to infection through contact with soiled linen, may disseminate infection. The upshot of this is that soiled linen ought not to be received, sorted or marked in rooms in which clean linen is kept. Eating and drinking should be prohibited in rooms in which soiled linen is manipulated, and laundry workers should be instructed concerning the latent hygienic dangers which they may encounter in their work. Sanitary measures involving personal hygiene are essential for their own welfare as well as that of the public served. The problems involved have never received any serious attention from public authorities in this country; but the rapid growth of the laundry business is certain to awaken interest in them, as it has been aroused in the case of public restaurants, bakeries, food shops and other institutions which are assuming household functions.

THE NECESSITY FOR MORE INTENSIVE STUDY OF PRISONERS

Society itself is made a partner in crime by some of the methods aimed at the prevention of crime. That our present undiscriminating system of dealing with offenders against the law too often makes criminals is no news to those who have given it study; but reform is as yet sporadic and tentative. Two recent articles emphasize the need of study and classification of prisoners from the point of view of mentality and social adjustment. An abstract of one of these, an account of an examination by Drs. Ordahl and Singer of convicts at Joliet, appears elsewhere in this issue.[2] The other, Dr. E. R. Spaulding's elaborate study of 500 inmates of the Massachusetts Reformatory for Women,[3] was reviewed in the Current Medical Literature Department, October 23. In both of these, as in other similar studies, the large proportion of mental defectives found among the prisoners is striking. Evidently it is unjust to these subnormal persons to punish them as if they were normal and responsible, and just as evidently it is a risk to society to release them at the end of their terms of imprisonment as if they were normal and responsible. Spaulding rightly urges the necessity of adequate provision by the state for permanent custodial care of all committable mental defectives, whether or not they have court records. Spaulding's article and that of Ordahl and Singer both emphasize the need of separating the more hopeful and educable class of prisoners from the class of confirmed and incorrigible criminals. Both articles also lay stress on the value—indeed, the necessity—of the indeterminate sentence. Although this phase of the matter is not discussed in either article, the data in both likewise suggest the reason for the undeserved odium which has in some instances been thrown on the workings of the indeterminate sentence and other excellent measures. The trouble with methods requiring discrimination and wisdom in their application is that they presuppose the possession of exact knowledge with regard to the prisoner; and this exact knowledge too often is not available, for the prisoner has not been sufficiently studied. Ordahl and Singer emphasize the "scanty and very unsatisfactory" character of the information on the subject of convicts available for the use of the board of pardons. Thus the dangerous criminal may be released to the detriment of society, and the pliable but not as yet dangerous accidental offender may be retained to his own detriment. Knowledge is needed; and with increased knowledge the more advanced methods will become feasible.

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[1] Dederer, Ebba A.: Danger to Laundry Workers of Infection from the Handling of Soiled Linen, Am. Jour. Pub. Health, 1915, v, 875.

[2] An Examination of Prisoners at Joliet Penitentiary, Miscellany, THE JOURNAL A. M. A., this issue, p. 2189.

[3] Spaulding, E. R.: Our Criminal Problem from the Standpoint of Classification and Segregation, Boston Med. and Surg. Jour., 1915, clxxiii, No. 15; abstr., THE JOURNAL A. M. A., Oct. 23, 1915, p. 1487.

THE QUESTION OF BACILLEMIA IN TUBERCULOSIS

The pathologic condition now familiarly known as bacteremia, in which the micro-organisms of disease are not merely local in their distribution but are generalized by being carried about in the blood stream, is in any event a grave one. The capacity of bacteria to invade the circulation seems to be more common than was formerly believed to be the case. Thus the organisms of typhoid fever are now known to circulate freely in the blood during the first two weeks of the disease and often longer than this. Lobar pneumonia may be accompanied during its acute stages by a pneumococcus septicemia. Organisms like the streptococci and the anthrax bacilli give rise preeminently to the septicemic forms of infection. If they multiply rapidly in the blood, the situation immediately becomes serious. In other cases micro-organisms obtain temporary entrance into the blood current and either find lodgment in some tissue, as on the valves of the heart, or are destroyed by some immunizing agency and disappear from the circulation. An accurate knowledge of the customary deportment of each variety of micro-organism obviously affords an important basis for therapeutic or prophylactic procedures. The evidence regarding the presence of tubercle bacilli in the blood of tuberculous patients is exceedingly conflicting.[1] No one will deny that the micro-organisms occasionally enter the blood. The distribution of tuberculous lesions is of itself suggestive on this point. This, however, does not settle the question as to what extent and in what respect acute miliary tuberculosis is a generalized infection. Kessel[2] has lately made new attempts to grow tubercle bacilli directly from the blood, and to demonstrate their presence by direct microscopic examination and particularly by careful direct inoculation of susceptible animals with the blood from patients with advanced pulmonary tuberculosis — all with negative results. Kessel admits that this outcome in the forty-seven cases examined by him does not prove conclusively that tubercle bacilli are never present in the circulation; but they strongly suggest that a bacillemia such as is present in other infectious diseases is at least uncommon in pulmonary tuberculosis even in advanced stages of the disease. It may be that from time to time tubercle bacilli are washed into the circulation from à pulmonary focus; but it is shown by experimental evidence from the effect of direct intravenous inoculation that in such an event they rapidly disappear from the blood.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ILLINOIS

Smallpox at Alma.—It was reported from Alma, December 3, that thirty-two cases of smallpox have been diagnosed in the town.

Batavia in Quarantine.—The town of Batavia is practically quarantined because of a diphtheria epidemic. All churches and schools have been closed and all persons less than 19 years of age have been ordered to remain in their own homes whether they have the disease or not.

Medical Library Moved.—The medical department of LaSalle City Library has recently been moved to the Hygiene Institute, LaSalle, and is now known as the LaSalle-Peru Medical Library. The library has at present 703 bound volumes and about 100 unbound periodicals.

Quarantine Lifted.—All of Cook County with the exception of the Union Stock Yards and two infected areas in Lyons was ordered released from foot and mouth disease quarantine, December 10. In Lake County, Shields Township alone remains restricted; in McDowell County many townships remain free areas and all of Du Page County is declared free with the exception of the territory in Downers Grove Township within 3 miles radius of infected areas in Lyons township, Cook County.

Northern Central Physicians Elect.—At the forty-second annual meeting of the Northern Central Illinois Medical Association held in Peoria, December 8, Dr. James A. Marshall, Pontiac, was elected president; Dr. Frederick W. Wilcox, Minonk, first vice president; Dr. David S. Conley, Streator, second vice president, and Dr. George A. Dicus, Streator, was reelected secretary-treasurer. Two of the oldest medical men in the state, Drs. William O. Ensign, Rutland, and James Tweddale, Washburn, were present at the meeting.

Personal.—Dr. Victor A. Bles, a member of the staff of the Elgin State Hospital, is seriously ill as the result of a pulmonary hemorrhage. Dr. Bles has received notice of his appointment as clinical assistant in the department of neurology and psychiatry in the University of Illinois.——Dr. Frederick W. Werner has been elected chairman of the active medical staff of the Silver Cross Hospital, Joliet. Dr. Grant Houston has been elected vice chairman of the staff and Dr. Roy B. Leach, secretary.——Dr. Harry H. Whitten has been appointed local surgeon for the Aurora, Elgin and Chicago Railroad at Batavia.——Elgin physicians held a banquet in honor of Dr. Harriett B. Ward, December 3.——Dr. Henry L. Metcalf, Mount Carroll, who has been critically ill with septicemia in the Freeport General Hospital, is reported to be improving.——Dr. Orie F. Schullian has been elected secretary of the Woodruff Memorial Sanatorium, Quincy.——Mrs. Bertha Logan, Chicago, has been elected superintendent of the Rockford Municipal Sanatorium.

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[1] Berry, Jane L.: Tubercle Bacilli in the Blood, Jour. Infect. Dis., 1914, xiv, 162.

[2] Kessel, L.: Concerning the Presence of Tubercle Bacilli in the Blood of Tuberculous Patients, Am. Jour. Med. Sc., 1915, cl, 377.

Chicago

Leaves Large Estate.—The estate of Dr. Laura J. R. Wolcott, who died December 8, is appraised at $195,000.

Fresh Air Cars Taken Off.—The city council transportation committee, December 8, disapproved of the innovation of the so-called fresh air cars and no more of these cars will be operated, at least during the winter.

Red Cross Campaign.—The American Red Cross has inaugurated a campaign to secure 10,000 members in Chicago. At present the membership in the American Red Cross is 20,000 while the Japanese Red Cross has a membership of 2,000,000 and the German Red Cross of 1,000,000.

Personal.—Dr. Gottlieb A. Lurie, who has been on duty with the Rockefeller Commission in Serbia fighting typhus fever, has returned home.——Dr. Rollin T. Woodyatt of the Sprague Laboratory for Medical Research lectured December 8 in the amphitheater of the Cincinnati General Hospital on "Newer Aspects of Diabetes."

Health Commissioner Seeks to Extend Medical Inspection System.—Health Commissioner Robertson has asked for $250,000 to enable him to extend the health inspection service in the public schools. He believes that a physician and nurse should be on duty in each public school.

Heart Disease.—Figures compiled by the Chicago health department for the period from 1897 to 1914 show, in an interesting way, the actual and average percentage increase in deaths from heart disease in each ten and twenty year period from 20 to 80 years. Between 1897 and 1914 the deaths from heart disease for persons under 20 years increased 1 per cent.; from 20 to 30, 5 per cent.; from 30 to 40, 18.8 per cent.; from 40 to 50, 30.9 per cent.; from 50 to 60, 40.4 per cent.; from 60 to 80, 58.3 per cent.; over 80, 97.4 per cent., the averages of these percentages for all age periods being 49.4 per cent.

Charges Against Haiselden.—During the last three weeks, the newspapers have given considerable publicity to Dr. Harry J. Haiselden because of his action in the care of an infant born with anomalies of development. Formal charges were preferred against the physician before the Chicago Medical Society through which he holds Fellowship in the American Medical Association. The ethical relations committee before which the case came has submitted a report to the council of the society in which, according to newspaper report, the physician was found guilty of the charges and his expulsion from the society recommended. The committee is said to have based its recommendation: "Not on the fact that the Bollinger baby was allowed to die when the operation would have saved it, but because Dr. Haiselden permitted to be published over his name in a daily newspaper a serial story of the Bollinger baby's case, and because the same case, and his connection with it, have been exploited in moving picture shows." This report was received by the council and will come up for action in due course.

INDIANA

Free Dispensary for Evansville.—The mayor of Evansville, after conference with the committee representing the Vanderburg County Medical Society, stated that he would recommend the establishment of a free city dispensary in his next annual message.

Fort Wayne Physicians Elect.—At the annual meeting of the Fort Wayne Medical Society, December 7, Dr. Garrette Van Sweringen was elected president; Dr. Adam L. Schneider, vice president; Dr. Miles F. Porter, Jr., secretary, and Dr. Elmer E. Morgan, treasurer.

Rabies.—According to the report from the laboratory of the State Board of Health, for the year ended Sept. 30, 1915, there were 239 cases of rabies in the state, two of which were fatal. There have been 916 cases treated since treatment by the state was established. In 1912, 237 cases were treated.

Personal.—Dr. William W. Blair, Princeton, is reported to be critically ill.——Dr. Edgar W. Rine, Winchester, is reported to be critically ill with heart disease at his home.——Dr. T. Roy Cook, Bloomfield, is seriously ill with rheumatism and nephritis in the Linton Hospital.——Dr. Budd Van Sweringen, Fort Wayne, has been appointed chief surgeon of the Pennsylvania Lines west of Pittsburgh, to succeed the late Dr. Christian B. Stemen, Fort Wayne.——Dr. and Mrs. Emanuel P. Masgana, Linton, have returned to France, where Dr. Masgana will be connected with the French Red Cross.

KANSAS

Foot and Mouth Disease.—It is reported that a man at Ellsworth has contracted foot and mouth disease. The diagnosis, it is said, has been confirmed by the secretary of the State Board of Health.

Morris County Physicians Organize.—The Morris County Medical Society was organized at Council Grove, November 22. Dr. William A. McCullough, Delavan, was elected president; Dr. W. H. H. Smith, Alta Vista, vice president, and Dr. Albert Beam, Wilsey, secretary-treasurer.

New Building for University.—The dispensary and laboratory building for the University of Kansas at Rosedale was opened, November 22. The building is 46 by 86, with fireproof construction, two stories and basement in height and contains drug rooms, laboratories, examining rooms and general clinic rooms.

Personal.—Dr. Walter S. Sutton, Kansas City, has returned from service with the American Ambulance in Paris.——Dr. Charles E. Ross has been reappointed and Dr. Lloyd P. Warren appointed a member of the City Medical Advisory Board of Wichita.——Dr. Philip B. Matz, Leavenworth, has succeeded Dr. James T. Faulkner, Lansing, as physician at the Kansas State Prison.

Schools Closed by Disease.—The public schools of Troy have been closed as a precautionary measure against scarlet fever, and church services have been suspended for two weeks.——The county superintendent of Sedgwick County has ordered two schools in Districts No. 8 and 12 to be closed on account of diphtheria, and a third school has been temporarily suspended because of smallpox among its pupils.——The schools of Little River have been closed and all public gatherings have been interdicted on account of the presence of scarlet fever and diphtheria.——Two of the schools of Pratt have been closed for a week on account of the presence of diphtheria.

LOUISIANA

Decision Under Fraudulent Advertising Act.—Dr. Oscar Dowling, New Orleans, executive officer of the Louisiana State Board of Health, writes that on December 11 an important decision in favor of the board was rendered by Judge Ott under the Louisiana Fraudulent Advertising Act. Two weeks before, the board had preferred charges against C. J. Allen and W. M. Chapman, who were advertising "Herbs of Life," manufactured by the Herbs of Life Medicine Company, Springfield, Ill., and F. D. Haaze, who was exploiting the merits of "Shaker Tonic," "Shaker Oil" and "Shaker Balm Soap" manufactured by the Life Tone Medical Association of Memphis, Tenn. The first two pleaded guilty and were fined $100 and costs, the fine being remitted on their agreement to leave the state for good. The third defendant was tried December 11. He was found guilty and fined $325. He says the case will be appealed to the supreme court on the ground of unconstitutionality of the law.

MARYLAND

School Closed by Diphtheria.—The Williamsburg School has been closed for the second time this term on account of the appearance of several new cases of diphtheria.

Tuberculosis Week.—The past week was devoted to a warfare on tuberculosis in Baltimore, to impress on the people of the city the importance of taking an active part in the campaign against the disease. Each day was set aside for some particular educational demonstration, showing the ravages made by the disease. The program was confined to three days.

Chinese Physicians' Visit.—Two women physicians from China arrived in Baltimore recently and visited the Johns Hopkins Hospital, where they will study the work done by the institution and the lines on which it is managed. They are Dr. Adela E. Sheffer and Dr. Wynao S. Wango of Shanghai, China, who came to this country with seven other physicians to make a study of the hospitals in America.

Medical Survey.—The first medical survey to be started in Maryland was inaugurated in Frederick County, November 29, with an inspection of the Johnsville School. The survey is being made by Surgs. Talliaferro, George L. Collins and Ed H. Mullan of the United States Public Health Service, and Drs. Richard B. Norment and Joseph Brown of the State Board of Health.

Gift to the Johns Hopkins.—A valuable collection of periodicals, monographs, and other medical books, consisting of more than 4,000 volumes, was presented to the Johns Hopkins Hospital by Dr. Howard A. Kelly, Baltimore. The collection can be said to be the life study of Dr. Kelly for most of the books deal with his own special work in gynecology and obstetrics and are valued at about $25,000. It is planned in the near future to have a suitable building erected for the library.

Personal.—Dr. William H. Welch, professor of pathology of the Johns Hopkins Medical School, who has been in China during the summer with Dr. Simon Flexner of the Rockefeller Institute, devising a way to introduce modern medical methods in the empire, will sail December 18 from Yokohama, Japan, for this country. On the return of Dr. Welch to Baltimore, the General Education Board will hold a meeting to discuss the addition of a new department to the Johns Hopkins Medical School and Hospital.——Dr. Marshall B. West, health officer of Catonsville, who was operated on several weeks ago at the Maryland University Hospital for appendicitis, has returned to his home and is improving rapidly.——Dr. Charles F. Nolen, Baltimore, who was recently operated on at the Union Protestant Infirmary, has recovered and resumed practice.

NEVADA

Correction.—Dr. Martin A. Robison advises under date of December 7 that the item in The Journal of December 4, stating that he and Dr. Henry Bergstein had resigned from the Reno Board of Health is not authentic; that both these gentlemen are serving on the board and have been serving since their appointment.

NEW YORK

Half a Million More Needed.—The creation of a division for the prevention of tuberculosis in connection with the State Health Department, the expense of laboratory work and the payment of the full salary of $3,000 a year to sanitary engineers are the three principal reasons for the increase in the appropriation in health work sought by State Commissioner of Health Biggs.

New Officers.—At the annual meeting of the Queens-Nassau Medical Society held in Long Island City, November 30, Dr. Edward H. Pershing, Woodmere, was elected president; Dr. John J. Kindred, Long Island City, vice president; and Dr. James S. Cooley, Mineola, was reelected secretary-treasurer of the society for the twenty-seventh consecutive term.

New York Physicians to be Prosecuted.—The New York *Sun* of December 10 announces in a telegram from Albany that prosecution of 300 physicians for violation of the vital statistics law has been ordered by the State Department of Health. The offense in every case was the violation of the section requiring the registration of births within five days. Dr. Cressy L. Wilbur, director of the division of vital statistics, states that physicians will be given an opportunity to explain the delay, but that only substantial reasons will be allowed as excuse for violation of the law.

Sanatorium Notes.—A proposition for the construction of a tuberculosis hospital, to take the place of the institution recently burned at Elmira, has been taken up with the Elmira Tuberculosis Hospital Sanatorium Commission. The plan is to make a bond issue of $2,000 in every budget when the 1915 budget has been adopted and to continue this same amount in the budget each year until the $12,000 deemed necessary for the erection of the hospital has been paid.——A special committee has been appointed by the board of supervisors to serve for a month in an advisory capacity regarding the Steuben County Tuberculosis Hospital for which an appropriation of $30,000 was authorized at the recent election.

New York City

Neurologists Elect.—At the annual meeting of the Brooklyn Neurological Society, Dr. Siegfried Block was elected president; Dr. Charles P. Frischbier, vice president; and Dr. John F. W. Meagher, secretary-treasurer, and Dr. James F. Morrison, librarian.

Measles Among Belgian Refugees.—Three hundred Belgian refugees were landed here on December 8 and taken to Ellis Island for examination. Forty of the children were found suffering from measles and with their mothers were detained at the hospital on Ellis Island. All but 110 of the number have been held for further observation.

Personal.—Dr. George A. Wyeth was the delegate of the Bronx Board of Trade to the Rivers and Harbors Convention held in Washington, D. C., December 8.——Dr. Joseph J. O'Connell, health officer of the port of New York, Brooklyn, is reported to be seriously ill with heart disease at his official home, Quarantine Station, Staten Island.

Course of Instruction for Food Inspectors.—A course of lectures, conferences and demonstrations dealing with the various aspects of pure food work has been arranged by Mr. Lucius P. Brown, director of the health department's bureau of foods and drugs. The lectures are in the nature of a postgraduate course and are planned so as to perfect inspectors in the details of the various branches of their work.

Tuberculosis in New York.—A statement issued by the department of health in connection with the work of tuberculosis week places the number of persons afflicted with tuberculosis in this city at 50,000. Of the 37,000 known to the board of health only 3,200 are registered under the care of private physicians and 6,000 under the care of city institutions. It is estimated that 15,000 are treated at clinics.

Intern Examination.—A joint examining board will hold a competitive examination of candidates for internship in the New York, Roosevelt, St. Luke's and Knickerbocker hospitals on a day not yet selected. Application blanks and full information may be obtained from Dr. Charles L. Gibson, chairman of the Joint Hospital Examining Board, care New York Hospital, 8 West Sixteenth Street, New York City. Applications properly filled out must be in the hands of the committee on or before December 31.

Woman's Hospital Opens New Wing.—The Thompson Pathological Building which forms the west wing of the Woman's Hospital was formally opened on December 9 as a feature of the sixtieth anniversary of the hospital. This structure was erected at a cost of $150,000 and is the gift of Mrs. Frederick F. Thompson. An address was delivered by Dr. Henry Clarke Coe and Dr. Wilfred T. Grenfell of Labrador was one of the speakers. During the past year 2,500 patients have been treated in the hospital and 3,728 operations have been performed.

College of Physicians and Surgeons Formally Named.—The name "College of Physicians and Surgeons of Columbia University" has been adopted officially and the school formally declared to be the medical department of the university. It has been considered such for years but this formality has never been gone through. At this same meeting of the trustees the committee on conference was authorized to continue negotiations with the Presbyterian Hospital and to cooperate with other hospitals and institutions with the ultimate purpose of establishing a great medical center on the lines already planned.

Medical Society Topics.—Dr. Arthur B. Duel delivered an address before the New York Academy of Medicine, December 16, on "Orientation and Equilibration, A Study in the Sense of Position and Movement, Its Dependence on the Vestibular Apparatus and Its Importance in the Whole Field of Medicine."——The fourth lecture of the Harvey Society series given at the Academy of Medicine, December 18, by Prof. Florence W. Sabin of Johns Hopkins University, is on the subject "The Method of Growth of the Lymphatic System."——The first meeting of the New York Geriatric Society, which was organized in June last, was held December 15, at which the subject for discussion was "The Neglect of the Aged."

Surgical and Medical Clinics in New York City.—The Society for the Advancement of Clinical Study announces a continuation of its bureau of information relative to surgical and medical clinics to be held in New York City. A bulletin board is maintained for this purpose at the Academy of Medicine, 17 West Forty-Third Street, in charge of a competent attendant who is on duty from 9 to 12 a. m. and from 2 to 6 p. m. The clinics are posted on a special circular of information which is mailed to outsiders at a cost of 50 cents per week. The bulletin board contains the daily clinics as well as those stated at various hours at different hospitals. Facilities are thus afforded to visiting physicians to observe special operators or clinicians.

Another Building for Mount Sinai Hospital.—Plans have been prepared for a new building for the mount Sinai group. This is to be known as the Guggenheim Memorial, and the entire expense of its construction will be defrayed by the six Guggenheim brothers. The estimated cost of the new building is $500,000. It will follow the design of the general construction of the main building fronting on Fifth Avenue and will be a complete hospital in itself. It will also have a separate staff of doctors. In addition to this gift, Mount Sinai Hospital has received $50,000 from Murry Guggenheim and $5,000 from each of his brothers to carry on the work of completing and equipping the five other buildings now in the course of construction.

Queensborough Hospital for Contagious Diseases.—Hitherto cases of contagious diseases occurring in the Borough of Queens and requiring hospital care have been taken to Kingston Avenue Hospital in the Borough of Brooklyn, but it is now announced that the new Queensborough Hospital will be complete and ready to receive patients on Jan. 1, 1916. The hospital is located on a farm between Jamaica and Bayside. It is of mission type, three stories high and thoroughly equipped for the purposes for which it is to serve. The wards are divided into cubicles so that there will not be more than two beds in each cubicle, thus insuring almost perfect isolation. The hospital contains 20,879 square feet of floor space and 243,800 cubic feet of room and is so designed that a large number of cases can be cared for at a small expense.

"Patent Medicine" Interests Would Defend Themselves.—A report of the recent meeting of the New York Pharmaceutical Conference as published in the *N. A. R. D. Journal* mentions "an offer from an unnamed source of legal and financial aid for druggists of this city who are prosecuted by the health department authorities for alleged violations of this ordinance. . . ." The proposal for accepting this aid was placed before the representatives of the conference by Dr. William C. Anderson, the chairman of that body, who refused to make public the name or names of those from whom the offer came. The Pharmaceutical Society as a whole passed resolutions, which have been quite widely published, signifying their intention of upholding and cooperating with the regulations of the department of health with reference to "patent medicines."

Whooping Cough Clinic.—The November *Bulletin of the New York City Department of Health* gives a full report of the first year's work of the whooping cough clinic which it has been conducting. The total number of cases treated at this clinic during its first year was 1,397. It was intended at first to treat only patients in the clinic district but it became necessary to let down the barriers in face of the numbers clamoring for treatment. The method of treatment followed consists in giving three to four subcutaneous injections of vaccines, one every other day, after which for a period of three or four days, a mixture of antipyrin and cod-liver oil is used for a period of three or four days. The whooping cough usually disappears after the third or fourth injection. Those familiar with the work of this clinic find that it fills a long felt want irrespective of the therapeutics employed, and that at least two more such clinics should be established, one in the Bronx and one in East New York.

Use of Diphtheria Antitoxin.—For many years the department of health has been furnishing diphtheria antitoxin free of charge to the public, and a corps of physicians was maintained to inject the antitoxin on request. Two years ago the administration by the department's physicians was discontinued, but additional facilities were provided for the prompt and ready use of this remedy by private physicians. The statistics of the health department show that there was more antitoxin sold in 1914 than in 1913, but that there was a very material reduction in the amount distributed free in 1914, with a very appreciable increase in the number of cases of diphtheria reported. This falling off in the use of free antitoxin was chiefly confined to Manhattan and Brooklyn with an increase in the number of cases of diphtheria in both boroughs, and in a measure accounts for the increased incidence. The department of health calls attention to the great significance of these facts and emphasizes the importance of the universal use of antitoxin in diphtheria.

NORTH CAROLINA

Communicable Diseases.—An epidemic of scarlet fever in Marion has rendered it necessary to close the public schools, to suspend the Sunday schools and to warn children to stay off the streets and avoid public gatherings.

State School Celebrates Anniversary.—On November 4, the seventieth anniversary exercises of the State School for the Blind, Raleigh, were celebrated. Governor Craig presided, and addresses were made by Superintendent John F. Bledsoe of the Maryland School for the Blind, and others.

Memorial to Living Physician.—The people of Currituck County have raised a fund in honor of Dr. William T. Griggs of Poplar Branch. Of this fund, $150 has been used to purchase an operating table in the Elizabeth City Hospital, and the remainder has been given to the charity fund of the institution.

Hospital Notes.—The Hendersonville Hospital Association recently elected Dr. William R. Kirk chief of staff and Drs. William B. W. Howe, Jr., James S. Brown, Guy E. Dixon, Benjamin F. Cliff, Andrew B. Drafts, James F. Cranford and Eugene P. Mallett as associates. Dr. James F. Cranford was elected dean of the training school.

City to be Sued.—The State Board of Health has authorized that action be instituted in the courts to compel the city of Louisburg to install a sewage purification plant, as ordered by the State Board of Health some time ago. At present the sewage of Louisburg is discharged into a stream which later supplies other towns in the state with water, and these towns have been compelled to install purification plants to care for their town and to care for other towns still farther down the river.

Personal.—Dr. Harry Q. Alexander, Matthews, Mecklenburg County, was recently elected president of the North Carolina State Farmers' Union for the ninth successive term, and Dr. James M. Templeton, Cary, was elected vice president.——Dr. William W. Stancell, assistant physician to the State Hospital for the Insane, Raleigh, is taking postgraduate work in New York, and will move to Montana next year.——Dr. and Mrs. James L. Egerton, Hendersonville, have returned after a six weeks' trip to the Pacific Coast.——Dr. John H. Mease, Canton, who has been under treatment in a hospital in Baltimore, has returned and resumed practice.——Dr. Hubert B. Haywood, Jr., Raleigh, has been elected physician to the New York State Agricultural and Mechanical College, as the result of a competitive examination.

Medical Society News.—The entire membership of the Buncombe County Medical Society was entertained at dinner by Dr. Eugene B. Glenn, the president, at his home in Asheville, December 6.——The Lincoln and Catawba medical societies held a joint session at Lincolnton, December 6, and were entertained at dinner by the physicians of Lincolnton.——The Pasquetank-Camden-Dare County Medical Society held its annual meeting and election in Elizabeth City, December 1, and elected the following officers: president, Dr. Wm. A. Hoggard, Woodville; vice president, Dr. John B. Griggs, Elizabeth City; and secretary-treasurer, Dr. William A. Peters, Elizabeth City.——The New Hanover County Medical Society has enlarged its scope and now allows public health workers, dentists and pharmacists to become associate members.

PENNSYLVANIA

Personal.—Dr. Harry B. Rushton has been appointed meat and milk inspector of Reading.——Dr. Nelson E. Newbury, Scranton, was assaulted by the half-crazed son of a patient, and severely beaten.

Medical Club Election.—At the annual meeting of the Oil City Medical Club, December 2, Dr. Harry H. Lamb was elected president; Dr. Irwin H. Boyd, vice president; and Dr. Sylvester W. Sellow, secretary-treasurer.

Improvement to Hospital.—Grand View Hospital, Sellersville, plans enlargements, at its present location, between Sellersville, Menlo Park and Perkasie. Messrs. C. N. and B. F. Gressmann of Philadelphia are to be its almoners.

State Exhibit to Panama.—Governor Brumbaugh has authorized the loan of the State Department of Health social hygiene exhibit at the Panama-Pacific Exposition to the United States government for exhibition at the Panama National Exposition.

Guests of Honor.—Dr. Barton K. Thomas, Philadelphia, was the guest of honor at a dinner given to the physicians of Pottstown by Dr. T. Edmund Mills, December 1.——Dr. William L. Rodman, President of the American Medical

Association, was the guest of honor at a dinner given by Dr. John B. McAllister at the Harrisburg Club, December 3, and afterward delivered an address at the twentieth anniversary meeting of the Harrisburg Academy of Medicine.

Schools Closed on Account of Disease.—The borough schools of Robisonia have been closed on account of the presence of diphtheria.——The public schools and Sunday schools at Orwigsburg have been closed and children under 16 have been prohibited from attending public gatherings, moving picture shows, etc., on account of a measles epidemic. At present seventy-three cases have been reported.——Jessup and Marshwood have ordered all schools closed and have prohibited all religious and public meetings for the time being on account of the prevalence of smallpox.

Typhoid Infection Traced.—State Health Board officials, directed by Dr. Samuel Dixon, have been cooperating with the authorities of Abington Township in an effort to trace a number of cases of typhoid fever which have broken out in Abington and Moreland townships, north of Philadelphia. According to Dr. Dixon there are twenty-two cases and at the time of the first outbreak of typhoid some time ago, it was determined that the cases were distributed along routes served with milk from one dairy. Tests were made, not only of milk, but of the water supply, and of oysters, celery, and other raw vegetables. The department found everything blameless excepting the milk. Improvements have been made at the dairy in question, and a repetition of the outbreak is not at all probable.

Philadelphia

Health Bulletins.—Big posters, in red ink, to teach mothers how to buy food that will keep their children in good health, will be distributed in a few days by the Child Federation. The poster is the fifth bulletin issued by the federation.

Rescue Drug Addicts.—Drs. Horatio C. Wood, Jr., and John W. Ryan, members of a commission of physicians and business men of Philadelphia, recently formed for the purpose of aiding the habitual users of drugs, sent eleven drug addicts to hospitals, December 3. The expenses for the treatment are paid from a fund raised by the committee from contributions by business and professional men of the city.

Inspection of House of Correction.—The consulting board recently named by Director of Public Safety Dripps for the aid of persons in the house of correction is composed of Drs. James W. Anders, Ella B. Everett, J. Leslie David, Charles H. Frazier, Elijah H. Siter, Thomas H. Fenton, T. H. Weisenburg, Horace Philips and Frank Crozier Knowles. The committee began its work December 15, with a thorough inspection of the Holmesburg institution.

Testimonial Dinners.—The members of the Samaritan Hospital Medical Society gave a testimonial dinner, December 16, to Dr. George Morton Illman at the Mercantile Club, December 16.——Prof. Jacques Loeb delivered an address on "Adaptation" at the meeting of the Philadelphia County Medical Society, December 8, followed by a reception and supper. The meeting was arranged by the committee of the medical society on cooperating allied agencies and institutions.

Fatality Record.—Despite safety-first campaigns to reduce motor-car accidents, statistics compiled by the coroner show that the year drawing to a close will reach the high-water mark in deaths of this kind. Seventy-one persons have met death to date in motor accidents, an increase of fourteen over 1914. However, deaths from trolley accidents have shown a marked decrease, forty-three persons having been killed so far, against fifty-seven last year. This number is the smallest since 1906. Railroad deaths total to date about seventy-one, against the same number in 1914.

Personal.—Dr. Malcolm Grow has been appointed chief surgeon to the twenty-first flying column of the Russian Red Cross.——Dr. Charles B. Penrose has been appointed a member of the Fairmount Park Commission.——Dr. Wilmer Krusen is said to have been selected by the mayor-elect as director of health and charities.——Dr. C. F. Mitchell sailed for France, December 4, where he will serve on the staff of the American Ambulance Hospital.——Dr. Daniel J. McCarthy, member of the University of Pennsylvania unit at the American Ambulance Hospital, Paris, has returned from abroad.

Tuberculosis Week.—The observance of "Tuberculosis Week," which began December 6, was given a flying start in this city. A campaign of publicity to arouse this country for a fight against this deadly disease was the object of the crusade. At the local headquarters of the National Association for the Study and Prevention of Tuberculosis, 1701 Chestnut Street, hundreds of pamphlets showing the effect of tuberculosis on the human body were distributed. Statistics showing the relative growth of the disease in the various states were also displayed. This year's program includes a "medical examination day," which took place December 8, when the need for a physical examination for every one was urged.

Charities Bureau.—Having installed all machinery necessary for undertaking relief work among charitable institutions of the city, the Charities Bureau of the Chamber of Commerce have turned the first wheel in their campaign to supplant indiscriminate giving with scientific methods, the purpose of which is to give 90 cents out of every dollar directly to the cause or persons involved. The bureau planned to begin a thorough investigation of all hospitals and institutions doing charitable work. The list will cover virtually every hospital in the city. In spite of the fact that a number of them are supported through state aid, almost without exception, it was said at the Chamber of Commerce they receive private help, too. The examination by the Charities Bureau will take in the organization of these institutions, the administrative methods, the officers and directors. Finances will be scrutinized to find out whether the best results are being gained. This work will be done through personal visits and the findings placed before the committee, who will pass on the standard of work done and the degree of efficiency shown. Members of the Chamber of Commerce will be posted as to what the hospitals are doing in charitable work and a complete list of worthy institutions will be made in order to prevent solicitors of unworthy causes gaining a hearing.

WISCONSIN

Mix in Oshkosh.—Dr. Charles L. Mix, Chicago, was the guest of honor and delivered the address at a banquet and joint meeting of the Winnebago County Medical Society and Oshkosh Medical Club, November 24.

More Sterilizations Planned.—Operations on fifteen additional patients under the sterilization law will be made before Christmas holidays. According to a statement of the officials of the State Board of Control, the first ten operations are said to have been entirely successful.

Communicable Diseases.—On November 29 it was reported that there were twenty-five cases of smallpox at Plymouth.——An epidemic of diphtheria has been reported to be in Block Brook, and on the advice of the deputy state health officer, District School No. 4 has been closed. Seventeen of the pupils of this school were either ill or there was diphtheria in their families.——Antigo reports the presence of thirty-seven cases of smallpox.

Sanatorium Notes.—A petition has been presented to the Waukesha County Board setting forth the need of a tuberculosis sanatorium and asking for an appropriation for its erection and maintenance.——The city council of Milwaukee has voted to rebuild the Blue Mound Sanatorium for the treatment of incipient tuberculosis, Wauwatosa. The new institution will accommodate not less than 150 patients. Health Commissioner Ruhland also recommends enlarged dispensary service for early diagnosis of the disease.——Grant County has voted against the establishment of a tuberculosis sanatorium by a vote of thirty to twenty-three.

State Sanatorium Controversy.—Dr. Norman F. Hoffman, superintendent of the State Sanatorium, Wales, whose resignation has been demanded, appeared before the Wisconsin Board of Control at Madison, November 30, and stated that the charges of incompetency against him were unfounded. A committee of six Milwaukee physicians who made an investigation of the institution, November 26, reports no dissatisfaction of the management on the part of the patients or employees, that the records of the sanatorium show very favorable results so far as the treatment of patients is concerned, and that the expenses of conducting the institution have been reduced.

Rules Against Physician.—The attorney general on November 27 advised the district attorney at Antigo that a physician who attends a dependent sick person cannot lawfully charge the town, village or city in which the sick person resides for such service without the consent of the municipality. The case in point was that of two physicians who attended a sick woman in Langlade County. They performed an operation to save her life and the patient's condition was so urgent that the physicians did not have time to consult the town authorities. The town refused to pay the bill and the physicians threatened to bring suit to collect, but the attorney general rules that under the circumstances the plaintiffs have no lawful claim against the town or county.

Hospital News.—The new hospital building of the Milwaukee Infants' Home and Hospital is nearing completion. The building is fireproof, two stories and basement in height and will accommodate about fifty patients. This will more than double the capacity of the institution.——A hospital has been opened in Bloomer, which will be open to all local physicians.——A new Lutheran Hospital is to be erected at Plymouth to cost $40,000. Of this amount, subscriptions of $10,000 have already been received.——The county board of Waukesha County has recommended the erection and maintenance of an isolation hospital on the county farm grounds north of Waukesha.——Steps have been taken for the formation of a corporation to build a Lutheran Hospital in Superior.

Personal.—Dr. Moses J. White, who has been superintendent of the Milwaukee County Hospital for the Insane, Wauwatosa, for twenty-two years, has been succeeded by Dr. Albert F. Young, Milwaukee.——Dr. Frank J. Schultz, Milwaukee, has been reelected superintendent of the Milwaukee County Hospital.——Dr. William F. Beutler has been reelected superintendent of the Milwaukee County Asylum for the Chronic Insane, Wauwatosa.——Dr. John T. Corr, Racine, has been elected physician for the blind in the eastern district of Racine County, and Dr. William A. Fulton, Burlington, to fill a similar position in the western district.——Dr. Arthur J. Patek, Milwaukee, was operated on for appendicitis in Mt. Sinai Hospital, Milwaukee, November 12, and is doing well.——Dr. Clyde W. Morter, Milwaukee, is suffering from septicemia and is under treatment in Mt. Sinai Hospital.

CANADA

Laval's Offer Accepted.—A cable has been received from the war office by the Canadian minister of militia accepting the offer of a hospital from Laval University, Montreal. It will be established in England as a general military hospital.

Queen's University to Get Legacy.—The executors of the estate of the late Lord Strathcona have notified Queen's University, Kingston, that the $100,000 left to that university is now available and ready to be paid over to the beneficiaries.

Personal.—Dr. John M. Adams, formerly of Seattle, has arrived at Shornecliffe, Kent, to take up his duties wtih the Canadian Army Medical Corps attached to the Forty-Third Winnipeg Regiment, of which Sir William Osler's brother is lieutenant-colonel, and Ralph Conner, the author, is chaplain.——Col. George G. Nasmith, R.A.M.C., Toronto, who has been in charge of the Canadian Field Expedition since the outbreak of the war, has returned for a short rest and then, it is said, will recruit a large medical contingent to return with him to the war zone.

Outdoor Expansion at the Toronto General Hospital.—The board of governors of the Toronto General Hospital, acting on the advice of the superintendent, Dr. Charles K. Clarke, are establishing two new free clinics. The first will be for the treatment of contact cases of tuberculosis; this may be opened nightly. The second will be for social diseases. The third will be for occupational diseases, as now that much ammunition is being made in Toronto, there have been increased cases of lead poisoning and other occupational diseases. It is expected the establishment of the first two will deal a blow to quack doctors and worthless medicines.

Toronto University Hospital Kept Moving.—It is understood that the University of Toronto Base Hospital is now located in Macedonia, although some fear is entertained for the rather dangerous position of this hospital. Several cables from Toronto to the officer commanding recently have remained unanswered; and the latest word is from a letter from Dr. William J. O. Malloch. Writing from Saloniki, Dr. Malloch states that it is no wonder residents of Macedonia once called for the apostle St. Paul. They really needed the whole twelve. For a time the unit was divided, some going with some 500 wounded to Malta, but it is understood that the unit has again been reunited.

GENERAL

Correction.—In Table 1, p. 2142, this issue, the minus-plus sign should be a minus, and in all the tables in the article the minus sign indicates "no trypanosomes."

Porto Rico Physicians Meet.—The annual meeting of the Medical Association of Porto Rico was held in the Young Men's Christian Association rooms, San Juan, P. R., December 11 and 12, under the presidency of Dr. Pedro Gutierrez Igarravidez.

Biologists to Meet.—The Federation of American Societies for Experimental Biology, formed by the Physiological Society, The Society of Biological Chemists, The Pharmacological Society and The Society for Experimental Pathology, will hold its annual sessions in Boston at the Harvard Medical School, December 27 to 29, inclusive.

Salvarsan to be Generally Available at Usual Price.—We understand that the French and British governments have acceded to the request of the United States government and will allow a six months' supply of salvarsan and neosalvarsan, covering the requirements of the United States, to be shipped from Rotterdam. The British consul general at that port has been instructed to issue permits on application for such quantities. Farbwerke-Hoechst Co., the American agents, announce that as soon as shipments arrive they will be released to physicians and hospitals as heretofore, and that there will be no increase in price. It is also announced that the patentees are arranging to manufacture the products in this country, but it will take some months before a successful product can be turned out here.

Pan-American Scientific Congress.—The second Pan-American Scientific Congress will be held in Washington, D. C., Dec. 27, 1915, to Jan. 8, 1916. The congress interests educators, scientists and publicists and its work will be done in nine sections, namely, anthropology, astronomy, meteorology and seismology; conservation of natural resources; agriculture, irrigation and forestry; education; engineering; international law, public law and jurisprudence; mining and metallurgy; economic geology and applied chemistry; public health and medical science, and transportation, commerce, finance and taxation. There will also be forty-five subsections. The section on public health and medical science will be presided over by Maj. Gen. William C. Gorgas, Surgeon-General, U. S. Army. The organization headquarters will be the Pan-American Union and the headquarters during the congress will be the New Willard Hotel.

Arsenobenzol (Salvarsan) Made in This Country.—From a communication received from Dr. Jay F. Schamberg, director of the Department of Dermatological Research, we abstract the following:

The dermatological laboratories of the Philadelphia Polyclinic have been engaged for over three years in certain scientific investigations related to dermatology. Over $50,000 have been expended during this time, the financial support coming from a generous citizen of Philadelphia. It is not known, however, how long this support will continue. During the past year and a half the laboratory has devoted a considerable part of its activities to chemotherapeutic studies. The toxicity of various preparations of mercury have been investigated and efforts made to produce a mercurial compound of greater efficacy than those already in use. A number of new organic mercurial preparations were made in the laboratory and tested out on animals infected with experimental trypanosomiasis. This work not being immediately fruitful, the problem was temporarily laid aside and work was begun on arsenical compounds. Incidental to this work, salvarsan was reproduced and a number of allied arsenobenzol products made and tested out. In view of the shortage of salvarsan resulting from the war, it was decided to make and distribute salvarsan under its chemical name of arsenobenzol. [The name arsenobenzol, by right of priority, belongs to the compound $C_6H_5.As:As.C_6H_5$. While this term is also used as a synonym for salvarsan, arsenphenolamin hydrochlorid is more descriptive and a more scientific designation for the drug. The latter is the name adopted by the Council on Pharmacy and Chemistry, and is in New and Nonofficial Remedies. It would seem that arsenobenzol is too firmly established in chemical literature to be ignored, and, further, it is not a correct description of the compound known as salvarsan.—Ed.] The director of the laboratories had a conference with the New York representative of the Farbwerke Hoechst and informed him that in the interests of humanity and the public health, the laboratories had determined to supply arsenobenzol to physicians and hospitals having urgent need for the same. During the course of this conversation is was a feeling of both parties to the interview that no court of equity would issue an injunction against the manufacture and distribution of a drug that was saving life and conserving the public health at a time when such drug could not be supplied by the patentees. It is stated that the arsenobenzol made by the dermatological laboratories has now been employed on hundreds of cases with excellent therapeutic results, and with no report of any accidents or untoward complications. The drug is slightly less soluble than the German product and the solution requires to be filtered. It is prepared otherwise in the same manner as salvarsan and must be neutralized by the addition of sodium hydroxid solution. The toxicity tests on animals and the therapeutic tests in rats infected with experimental trypanosomiasis give substantially the same results as those obtained from the Ehrlich product. The dermatological research laboratories will distribute the drug at the antebellum figure of $3.00 per tube for ampoules containing 0.6 gm. and $2.50 per tube for ampoules containing 0.4 gm. In order that the drug may be supplied to as many hospital patients as possible, it has been decided to distribute the arsenobenzol to hospitals at the rate of $2.00 for the 0.6 ampoule and $1.50 for the 0.4 ampoule, with the understanding that such drug is to be used only on ward and dispensary patients. It was the desire of those connected with the laboratory further to reduce the price of the drug to hospitals, but legal advice to the effect that such reduction might ultimately injure the market of the patentees, has for the present restrained such action. The pledge is given that any profits that may accrue from the sale of this drug shall be exclusively devoted to the establishment of a fund for further scientific research and no part thereof shall inure to the benefit of any individual. The chemical work is carried out under the supervision of Dr. G. W. Raiziss and the pathologic work under Dr. John A. Kolmer.

WAR NOTES

Appreciation of Red Cross.—A letter has been received at American Red Cross headquarters from Count Talleyrand-Perigord who is assigned by the German Red Cross to look after the welfare of the Americans and cooperate with them in their relief work among the wounded at Gleiwitz and Kosel, in which he pays eloquent tribute to the skill and efficiency, devotion and self sacrifice of the personnel of the American Red Cross units.——The empress of Russia has conveyed to the American Red Cross Society sincere expressions of her gratitude for the gifts to the Russian Red Cross and the assistance the American Red Cross Society has given the sick and wounded.——Queen Eleanore of Bulgaria has cabled to the American Red Cross expressing her heartfelt gratitude for the succor furnished to the Bulgarian sick and wounded by the Red Cross.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended December 11, lists the following contributions.

Buffalo Medical and Surgical League, Buffalo, N. Y.		$ 5.00
Washington County Medical Society, Calais, Me.		25.00
Receipts for the week ending December 11		$ 30.00
Previously reported receipts		7,873.84
Total receipts		$7,903.84
Previously reported disbursements:		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 593.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

FOREIGN

Hospital Opened in Colon.—The Samaritan Hospital, a private institution with twenty-five beds, has been opened in the city of Colon, Panama. It is owned and operated under the direction of Drs. S. J. Taylor and Harry Eno. It is the first private hospital in the republic of Panama since the American occupation of the Canal Zone.

Foot and Mouth Disease.—In 1911 and 1912 Ireland had an epidemic of foot and mouth disease, and again in 1914 in a more severe form. The disease appeared in England in the fall of 1913, and in January, 1914, the first case was reported in Ireland. By June the loss from the disease had been estimated at $9,000,000. It was thought the disease might have been brought to Ireland by drovers from the lairages in England. It was also suspected that the disease might have been brought in by straw packing from the continent.

PARIS LETTER

Paris, Nov. 25, 1915.

The War

SCIENTIFIC INVENTIONS BEARING ON THE NATIONAL DEFENSE

The minister of public instruction in the new cabinet is a scientist, M. Painlevé, who is well known as a mathematician. Believing that the problems of national defense call for the aid of all the intellectual forces of the country, M. Painlevé has just created in the department of public instruction, for the duration of the war, a division of investigations bearing on the national defense. This division has the task of examining inventions and also of undertaking scientific researches which are called for by the war and navy departments.

NERVOUS SYMPTOMS IN WOUNDED PATIENTS

The Société de neurologie de Paris recently held two extraordinary sessions, under the presidency of Prof. Gilbert Ballet, to study the methods of clinical examination and the course to be pursued in cases in which exaggeration or simulation of certain nervous symptoms is suspected in wounded patients. The medical service had convoked the heads of all the military neurologic centers to take part in these sessions. Such a meeting had been much desired by French neurologists who for a year had to treat wounded patients with nervous symptoms. The opportunity to exchange scientific and practical opinions on the subject created much interest. At the end of the session, the society passed the following resolutions, which were transmitted to the medical service:

1. In each of the armies, neurologic and psychiatric centers, such as already exist in several of them, should be formed. In such centers all patients affected with nervous and mental conditions and all those suspected of simulation or exaggeration should be examined. The purpose should be, on the one hand, to recognize, before they are removed to the special centers of the interior, the patients affected with lasting organic lesions, and on the other hand to avoid the removal to the rear of patients suspected of simulation and exaggeration or affected with nonorganic conditions, which can be recognized, treated and cured very rapidly in the zones of the armies, as appears from results already obtained in existing centers (The Journal, Dec. 11, 1915, p. 2102).

2. Soldiers suspected of simulation or exaggeration or of voluntarily prolonging their nervous troubles should be sent to special services where they can be under competent medical oversight and severe military discipline at the same time. Experience has shown the value of such measures in certain neurologic centers where they have been applied. It would be desirable that such special services be attached to the military neurologic centers already existing, if the heads of these centers are able to operate them.

3. The opinions of the physicians of the neurologic centers with regard to a soldier dismissed by them should be taken into account wherever the soldier may go.

4. Under no circumstances, at present, should soldiers affected with psychoneuroses be sent for discharge to the committees that arrange discharges.

5. In view of the great number of diagnostic errors in cases of wounded men with nervous symptoms, it would be desirable that in each region, or group of regions, neurologic experts should regularly visit all hospitals and other places where patients are under treatment. These experts should make notes on each neurologic case for the information of the committees that arrange discharges and to enable the attending physicians to form an opinion of the propriety of sending the soldiers back to service or to one of the neurologic centers.

6. In view of the delicate scientific and practical problems which daily present themselves with regard to soldiers in neurologic hospitals, it would be desirable that the heads of the neurologic centers should have the opportunity to meet from time to time in order to coordinate their efforts to render the course of action uniform.

M. Justin Godart, undersecretary of the military medical service, informed the Société de neurologie de Paris that he was forwarding to the director-general of the medical service of the armies, with his approval, the resolutions passed by the society. Experience has shown, he said, the justification for forming neurologic psychiatric centers in each of the armies. So far as the second resolution is concerned, it would be simple to form, instead of special services, departments annexed to the neurologic centers operating under competent medical direction and with a more severe discipline. Resolutions 3, 4 and 5 have his unqualified approval.

As for Resolution 6, M. Godart is ready to approve the meetings requested provided they are not too frequent.

CASES OF DEAFNESS AND MUTISM FROM WAR ACCIDENTS

It is well known that the powerful explosives employed in the present war sometimes produce complete deafness and mutism unaccompanied by any apparent lesion. When the patient does not recover from his mutism spontaneously in a few weeks, the case is almost always incurable. Dr. Marage has just made a report to the Académie des sciences on this subject. He has devised a system of mechanical vibratory massage of the larynx and the sides of the neck. Thus the external and internal muscles of the larynx are acted on. At the end of a few days, the patients begin to talk, and at the end of three weeks they entirely recover their usual speech. This applies to those who have been deaf and mute for four or five months, and in whom all other methods of treatment have failed.

Dr. André Castex recently read before the Académie de médecine a paper on the various kinds of deafness produced by the explosion of large projectiles. Such cases are ordinarily due to the explosion of a shell which plows up the earth, throws a man several yards up into the air or buries him under a mass of earth. Sometimes the noise of near battle is sufficient to make a combatant deaf. These cases of war deafness, according to seventy-seven observations of Castex, may be divided into two principal classes: (1) rupture of the tympanum and (2) rupture of the labyrinth. 1. Rupture of the tympanum is produced especially when the projectile, ball or shrapnel strikes the temporal or mastoidean region or when a shell produces a slight concussion. 2. Rupture of the labyrinth is observed when a shell of large caliber which shakes the whole trench sends a man into the air. It often coincides with cerebral disturbance. Prognosis is very grave for the hearing. It has been necessary to discharge the greater number of soldiers affected with rupture of the labyrinth. Auditive reeducation by the natural voice and, still more, exercises in lip reading are the best means of compensating for this infirmity.

THE WAR AND STUDENTS AT THE FACULTÉ DE BEYROUTH

M. Barthe, a deputy, reported to the minister of public instruction that many foreign students had been compelled by the closing of the Faculté de médecine de Beyrouth to discontinue their studies there. The climate of Montpellier being the most similar to that of Beyrouth, M. Barthe asked if the students from Beyrouth could not continue their courses at the Faculté de médecine de Montpellier. The minister of public instruction replied that the students from Beyrouth might, with the consent of the department of foreign affairs, carry on their studies either at Montpellier or any other university of their selection.

RESUMPTION OF EXCHANGE OF SERIOUSLY WOUNDED PRISONERS

The next exchange of seriously wounded French and German prisoners will take place December 2. A train of wounded German prisoners will come from Lyons and one or two trains of wounded French prisoners from Constance. The number of patients to be sent back to their country is not large, because in the recent fighting the greater number of seriously wounded men were gathered in and cared for by their own armies and have not been made prisoners.

ACUTE NEPHRITIS OBSERVED IN THE TROOPS IN THE FIELD

At the same session of the Académie de médecine de Paris, Drs. J. Parisot and Ameuille of Paris called attention to the fact that observations on the troops in the field have shown an altogether abnormal number of cases of apparently spontaneous acute nephritis, which might be called cryptogenetic, for their origin is very obscure. These cases of nephritis have nothing in common with what has been called albuminuria of fatigue. They are true nephritis accompanied sometimes by anasarca, sometimes by serious uremic manifestations, too often terminated by death. Because of their frequency, their seriousness and their rapid course and also because of deceptive symptoms which they often manifest at the outset they deserve much attention; it is important that they should be treated early. Their seriousness, in fact, seems to increase in proportion as treatment is late. From these facts one practical conclusion appears: In spite of the difficulties in the way, physicians called on to give the first care to patients from the ranks should consider examination for albuminuria as important as for fever.

PHARMACISTS IN THE ARMIES

M. Derognat, a deputy, has called the attention of the minister of war to the fact that pharmacists in the army, having no military grade, are subject to all the demands made on a mere orderly, such as sweeping and scrubbing rooms. M. Derognat asked if it would not be possible to give the pharmacists, even those of the second class, the rank of pharmacist *aide-major* or at least auxiliary pharmacist with the grade of adjutant while keeping them in the group of male nurses with whom they are already classed. The minister replied that 304 pharmacists *aides-majors* of the second class (ranking as second lieutenants) have been appointed since May 7, 1915. Auxiliary pharmacists will be selected from the pharmacists of the first and second class as well as pharmaceutical students of three or even, under certain conditions, two years' school work; but these appointments will be made only as need for them arises.

Use of Condensed Radium Emanation in Glass Tubes

Dr. Debierre, professor of anatomy at the Faculté de médecine de Lille, and Dr. Regaud, agrégé professor of anatomy at the Faculté de médecine de Lyon, made a report to the Académie des sciences on the possibility of utilizing therapeutically, in place of radium, radium emanation collected and condensed in glass receptacles chilled by immersion in liquid air. Glass tubes containing radium emanation and sealed with a blow pipe constitute the most simple, economical, surest and most varied apparatus for biologic applications. The only inconvenience of the employment of concentrated emanation is due to the fact that it produces a certain loss of radio-active energy from the incessant destruction of the emanation in the mother radium solution. On the other hand, the procedure presents the following advantages: the assured security of the radium, which thus ceases to circulate among users; the variety of shapes for the apparatus in which it can be applied; finally the possibility of any physician being able to procure the active agent without acquiring the mother substance.

Death of Professor J. Ville

The death of Dr. Jules Ville, professor of medical chemistry at the Faculté de Montpellier, is announced.

Marriages

Thomas Henry Bates, M.D., Madison, Fla., to Miss Mamie Fairfax Dunstan of Houston, Texas, in New Orleans, November 25.

Oliver Ames Lothrop, M.D., Boston, to Miss Edna M. Sturk of Aylesford, N. S., at Cambridge, Mass., November 24.

Percy Edwin Dunlop Malcolm, M.D., to Miss Janne Wolff both of New York City, at Montclair, N. J., November 13.

Nelson Lee Roy Heller, M.D., Dunkirk, Ind., to Miss Pauline Jeanette Current of Red Key, Ind., October 22.

Louis Van Patten, M.D., St. Charles, Ill., to Mrs. Caroline Gillette of Aurora, Ill., at Elgin, Ill., November 25.

John Edson Bolender, M.D., Cadillac, Mich., to Miss Maud Kepple of Grand Rapids, Mich., November 25.

Josef Bensen Schrock, M.D., to Miss Lois Estelle Duffie, both of Scottsbluff, Neb., at Omaha, December 2.

Guy Otey Shirey, M.D., Fort Worth, Texas, to Miss Louise Ball of New Boston, Texas, November 3.

Harry Mollyneaux Brown, M.D., to Miss Reba Hildebrant, both of New Vienna, Ohio, November 30.

Antonio B. Jannarelli, M.D., to Mrs. Sophia Johrous Monteleone, both of New Orleans, October 26.

Frederick Smith Baird, M.D., to Miss Mary Jane Lawrence, both of Bay City, Mich., November 27.

Warfield Theobald Longcope, M.D., to Miss Janet Percy Dana, both of New York City, December 2.

Mary Merritt Crawford, M.D., Brooklyn, to Mr. Edward Schuster of New York City, November 30.

William H. Treible, M.D., to Miss Camilla J. Steig, both of York, Pa., in New York City, recently.

Arrie Bamberger, M.D., to Miss Amelia Miriam Hitzelberger, both of Chicago, November 25.

Charles E. Whitehead, M.D., to Miss Eleanor M. Flynn, both of Logan, Mont., December 1.

Ralph Montgomery Goss, M.D., to Miss Calenda King, both of Athens, Ga., November 24.

George David Wolf, M.D., to Miss Rose Bonime, both of New York City, November 25.

Clarence Lewis Walton, M.D., to Miss Clara Marek, both of Chicago, December 2.

Deaths

Ap Morgan Vance, M.D. University of Louisville, Ky., 1878; aged 61; a Fellow of the American Medical Association and president-elect of the Kentucky State Medical Association; president of the Jefferson County Medical Society; died at his home in Louisville, December 9. Dr. Vance was born in Nashville, Tenn., May 24, 1854; received his preliminary education in New Albany, Ind., and was a student in medicine of Dr. David W. Yandell, one of the most distinguished surgeons of Louisville. In addition to the society affiliations noted above, Dr. Vance was a member of the American Orthopedic Association, American Gynecological Society and Southern Surgical and Gynecological Association. He had served at various times as surgeon for the City Hospital, and Sts. Mary and Elizabeth Hospital and had been chief surgeon of the Masonic Widows' and Orphans' Home for thirty-five years. He was the only medical member of the special commission which built the new million-dollar Louisville City Hospital and was responsible for the general plans and scope of the building. Professionally Dr. Vance ranked as a pioneer in orthopedic surgery, and personally he was greatly esteemed and beloved.

Abram Alexander Smith, M.D. Bellevue Hospital Medical College, 1871; aged 68; a Fellow of the American Medical Association; a member of the New York Academy of Medicine and American Climatological Association; attending physician to Demilt Dispensary from 1873 to 1879; a member of the staff of the New York Women's Hospital from 1875 to 1879; successively lecturer on clinical medicine, lecturer on materia medica and therapeutics and professor of materia medica and therapeutics in his alma mater from 1875 to 1892; professor of principles and practice of medicine and clinical medicine in the University and Bellevue Hospital Medical College since 1898; for many years consulting physician to Columbus Hospital, the Hospital for Ruptured and Crippled and Minturn Hospital; died at his home in New York City, December 13, from heart disease.

William John Roe, M.D. Jefferson Medical College, 1895; aged 46; a Fellow of the American Medical Association; also a dentist; professor of surgical pathology and oral surgery in the Pennsylvania College of Dental Surgery, Philadelphia; first assistant demonstrator of anatomy and surgery in his alma mater; a member of the medical staff of the Philadelphia General Hospital; died in St. Mary's Hospital, Rochester, Minn., November 27, from tuberculosis of the kidney.

John R. Rathmell, M.D. Starling Medical College, Columbus, Ohio, 1883; aged 63; professor of principles and practice of medicine and diseases of children; secretary and later dean of the faculty of the Chattanooga Medical College; a member of the staff of Erlanger Hospital, Chattanooga; formerly president of the Chattanooga Medical Society, the Chattanooga Board of Health and the Tennessee State Board of Health; died at his home in Chattanooga, December 2.

Forrest Bedford Smith, M.D. University of Pennsylvania, Philadelphia, 1900; aged 47; a Fellow of the American Medical Association; local surgeon to the Southern Pacific System at Houston, Texas, and consulting surgeon to the Houston Infirmary; died in the Sunset Hospital, Houston, December 1, from acute gastritis for the relief of which operations had been performed without success.

Ezra B. Hiestand, M.D. Starling Medical College, Columbus, Ohio, 1863; Bellevue Hospital Medical College, 1872; aged 85; the oldest practitioner of Hardin County, Ohio, and a charter member of the Hardin County Medical Society; in honor of whose eightieth birthday anniversary a celebration was held in 1910; died at his home in Kenton, Ohio, November 28, from heart disease.

William Richter Longshore, M.D. Pennsylvania Medical College, Philadelphia, 1860; aged 77; a member of the Medical Society of the State of Pennsylvania; a veteran of the Civil War in which he served as surgeon of the Ninth Pennsylvania Volunteer Infantry; for many years surgeon of the Ninth Infantry, N. G., Pa.; died at his home in Hazelton, Pa., December 1, aged 77.

Eugene James Gallagher, M.D. Albany (N. Y.) Medical College, 1892; aged 47; a member of the Medical Society of the State of New York; district health inspector of Yonkers, N. Y.; formerly chief of the Kingston, N. Y., City Hospital and health officer of that city; died in the Polyclinic Hospital, New York City, December 3, from disease of the kidney.

Asa Pingree Reed, M.D. Tufts College Medical School, Boston, 1895; aged 59; a member of the Maine Medical Association; formerly of Naples, Maine, but for the last three years a member of the staff of the Douglass Sanitarium, Dorchester, Boston; also a druggist and editor of the *Physicians' Drug News;* was found dead in his office, December 2.

Jesse Porter Hendrick, M.D. University of Texas, Galveston, 1893; aged 50; a member of the State Medical Association of Texas and a well-known practitioner of Huntsville; who was operated on for appendicitis in a sanatorium in Houston, November 18, and was apparently doing well; died suddenly, November 22, from cerebral hemorrhage.

James Walter Baird, M.D. College of Physicians and Surgeons, Baltimore, 1874; aged 65; formerly a member of the Medical Society of Virginia; died at his home near Waverly, Surry County, Va., November 30, from the effects of a gunshot wound of the head believed to have been self-inflicted while suffering from depression due to ill health.

Joseph McDowell McKamey, M.D. University Medical College, Kansas City, Mo., 1910; aged 33; a member of the Kansas Medical Society; of Kingman, Kan.; whose skull was fractured in a collision between his automobile and a railway train at a grade crossing at Pretty Prairie, Kan.; died in a hospital in Kansas City, December 2.

George Washington Welty, M.D. Bellevue Hospital Medical College, 1870; aged 70; a member of the Medical Society of the State of New York; for many years a member of the Brooklyn Charities Board and director of St. Vincent's Home for Friendless Boys, Brooklyn; died at his home in that city, December 1, from heart disease.

Lansing Van Auken, M.D. Albany (N. Y.) Medical College, 1892; a member of the Medical Society of the State of New York; pastor of the First Presbyterian Church at Watervliet, N. Y., and inventor of a well-known shock absorber for automobiles; died at his home in Watervliet, November 27.

Walter I. Pennock, M.D. University of Pennsylvania, Philadelphia, 1888; aged 47; a Fellow of the American Medical Association and for twenty years a practitioner of Philadelphia; died at his home in that city, November 28, from a gunshot wound, self-inflicted, it is believed, with suicidal intent.

William M. Stratton, M.D. Northwestern University Medical School, Chicago, 1870; aged 71; formerly a member of the Minnesota State Medical Association and for more than forty years a practitioner of Granite Falls; died at his home in that place, November 9, from cerebral hemorrhage.

Merritt Walter Hall, M.D. Chicago College of Medicine and Surgery, 1910; aged 31; a Fellow of the American Medical Association; of Chicago; died at the home of his mother in that city, December 4, from the effects of poison believed to have been self-administered with suicidal intent.

Avery E. Moore (license, Arkansas, 1903), aged 59; deputy auditor of state of Arkansas from 1898 to 1905; and auditor of state from 1906 to 1910, when he resigned to become a member of the state tax commission; died at his home in Enders, Ark., November 22, from tuberculosis.

Jonas Müller, M.D. University and Bellevue Hospital Medical College, 1913; aged 25; president of the medical board of the Bedford Hospital and Dispensary, Brooklyn; died in the Jewish Hospital, Brooklyn, December 2, two weeks after a surgical operation on the nose.

Benjamin L. Smith, M.D. University of Maryland, Baltimore, 1859; aged 77; a member of the Medical and Chirurgical faculty of Maryland; twice a member and for five terms chief clerk of the House of Delegates, Maryland; died at his home in Madison, Md., November 23.

John A. Brill, M.D. Cincinnati College of Medicine and Surgery, 1884; aged 64; a member of the Illinois State Medical Society and a well-known practitioner of the northwest side of Chicago; died at his home in that city, December 4, from cerebral hemorrhage.

William H. Bogle, M.D. Jefferson Medical College, 1885; aged 58; for several years division surgeon for the Missouri Pacific Railway and local surgeon for the Santa Fe and Burlington systems at Atchison, Kan.; died at his home in that city, November 30.

John William Wickham, M.D. Vanderbilt University, Nashville, Tenn., 1885; aged 55; of Palmyra, Tenn.; who was shot November 29 in a quarrel at Hackberry, Tenn., by Charles Baggett; died from his wounds in a hospital at Nashville, November 30.

Calvin Starr, M.D. Western College of Homeopathic Medicine, Cleveland, 1851; aged 93; a practitioner of Iowa City, Iowa, from 1857 to 1877, and thereafter a resident of Nebraska City and Beatrice, Neb.; died at his home in the latter city, November 25.

Aaron B. McCallon, M.D. College of Physicians and Surgeons, Dallas, Texas, 1907; aged 37; of Cresson, Texas; a member of the State Medical Association of Texas; was shot and instantly killed in an affray on the main street of Cresson, September 24.

Elmer E. Horn, M.D. Medico-Chirurgical College of Philadelphia, 1889; aged 53; surgeon to the North Pennsylvania Hospital and Sanatorium; later a practitioner of Linden, Pa., died in the Williamsport (Pa.) Hospital, December 2, from carcinoma.

Ernest David Disbrow, M.D. Rush Medical College, 1880; aged 57; a member of the Illinois State Medical Society; formerly secretary of the Grand Rapids (Mich.) Academy of Medicine; died at his home in Chicago, December 4, from cerebral hemorrhage.

Nathaniel Ritter, M.D. Jefferson Medical College, 1861; aged 76; for fifty-four years a practitioner of Lehigh County and Allentown, Pa.; was instantly killed, November 21, near Amityville, Pa., by the overturning of an automobile in which he was riding.

Commodore Perry Devore, M.D. Eclectic Medical Institute, Cincinnati, 1871; aged 77; for many years a practitioner of Sutter, Calif., but for the last nine years a practitioner of Drain, Ore.; died at his home in that place, November 19, from heart disease.

Morgan Propst, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1884; aged 65; physician of Fillmore County, Neb., and a member of the Board of Health of Geneva, Neb.; died at his home in that city, October 9, from uremia.

John O. Foree, M.D. University of Louisville, Ky., 1888; aged 60; a member of the Tennessee State Medical Association; a well-known practitioner and druggist of Athens, Tenn.; died at his home in that place, November 26, from pneumonia.

Gregory Paul (examination, N. Y., 1888); aged 57; a native of Asia Minor and an alumnus and for many years professor of medicine in the University of Aintab, Turkey; died in the Post-Graduate Hospital, New York City, November 23.

James A. Porter, M.D. Detroit Medical College, 1869; aged 70; for many years a practitioner of Brooklyn, Mich., and a specialist on diseases of the eye and ear; was found dead, from heart disease, in his barn in Brooklyn, November 27.

Laughlin Sinclair, M.D. University of Michigan, Ann Arbor, 1864; Victoria College, Coburg, Ont., 1867; aged 76; dean of the medical profession of Bruce County, Ont.; died at his home in Walkerton, Ont., September 21, from uremia.

Henry Harrison Riegel, M.D. Jefferson Medical College, 1857; aged 79; continuously a practitioner of Pennsylvania for fifty-eight years; a Fellow of the American Medical Association; died at his home in Catasauqua, November 25.

John Antis, M.D. College of Physicians and Surgeons of the Western District of New York, Fairfield, 1837; aged 98; since 1845 a practitioner of Grundy County, Ill.; died at the home of his daughters in Mazon, Ill., November 25.

George B. Newell Clow, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1880; Rush Medical College, 1883; aged 59; a Fellow of the American Medical Association; of Oakland, Calif.; died in Palo Alto, Calif., November 23.

Samuel A. Woods, M.D. Jefferson Medical College, 1900; aged 39; a Fellow of the American Medical Association; a well-known practitioner of Sharon and coroner of Mercer County, Pa.; died at his home in Sharon, November 24.

Samuel Milton Littlefield, M.D. Rush Medical College, 1884; aged 55; a member of the Iowa State Medical Society and a practitioner of Andrew, Iowa; died in the Iowa Sanitarium, Maquoketa, November 30, from nephritis.

Beatty R. Spurr, M.D. Transylvania University, Lexington, Ky., 1848; aged 90; for more than thirty years a practitioner of Greendale, Ky., and later a resident of Stroud, Okla.; died at his home in that city, November 4.

Thomas Jefferson Upshaw, M.D. American Medical College, St. Louis, 1890; aged 71; a veteran of the Civil War; and for many years a practitioner of St. Louis; died at the home of his son in that city, November 22.

James Mack Sharet, M.D. University of Tennessee, Nashville, 1874; aged 44; a member of the Florida Medical Association; of Milton, Fla.; died in the Pensacola Hospital, November 11, from intussusception.

Albert Augustus Lindabury, M.D. Baltimore Medical College, 1886; Hahnemann Medical College, Philadelphia, 1890; aged 53; of Scranton, Pa.; died in the Scranton State Hospital, November 22, from diabetes.

Francis A. Mitchell, M.D. University of Louisville, Ky., 1883; aged 82; for many years a practitioner and druggist of New Albany, Ind.; died at his home in that city, November 25, from cerebral hemorrhage.

Adelard M. Brunelle, M.D. University of Minnesota, Minneapolis, 1886; aged 58; a member of the Minnesota State Medical Association; died at his home in Cloquet, Minn., November 25, from heart disease.

Wilkins T. Brandon, M.D. Vanderbilt University, Nashville, Tenn., 1880; aged 56; formerly a member of the State Medical Association of Texas; died at his home in Fulbright, Texas, October 19, from nephritis.

John Patrick Stanton, M.D. University and Bellevue Hospital Medical College, New York City, 1899; of Scranton, Pa.; was instantly killed in an automobile accident near Wilkes-Barre, Pa., November 24.

Charles F. O'Neill, M.D. Michigan College of Medicine and Surgery, Detroit, 1897; aged 44; of Middleton, Mich.; died in St. Mary's Hospital, Grand Rapids, Mich., November 19, from pulmonary embolism.

Merle Cornelius Newkirk, M.D. Johns Hopkins Medical School, Baltimore, 1913; aged 28; of Sherman, N. Y.; died at the home of his parents in Ellicottville, N. Y., November 23, from disease of the throat.

Clifford J. Oliveros, M.D. Baltimore University School of Medicine, 1890; aged 49; of Columbia, S. C.; a specialist on diseases of the eye, ear, nose and throat; died at his home in Columbia, November 17.

C. N. Frazier (registration, Oklahoma, 1908); a member of the Oklahoma State Medical Association; aged 37; died at his home in Hugo, Okla., September 3, from congestion of the liver.

Orson Gregory Dibble, M.D. New York University, New York City, 1869; aged 75; for fifteen years health officer of the town of Pompey, N. Y.; died at his home, November 24.

William Henry Morse, M.D. Bellevue Hospital Medical College, 1871; aged 65; died at his home in Bronx Borough, New York City, November 26, from cerebral hemorrhage.

J. Benson Hill (license, Michigan, twelve years of practice, 1900); aged 71; for twenty-seven years a practitioner of Ovid, Mich.; died at his home in that place, November 23.

Thomas Jefferson Sherlock, M.D. Eclectic Medical Institute, Cincinnati, 1893; aged 70; of Hart, Mich.; died in Butterworth Hospital, Grand Rapids, Mich., November 20.

Edward M. Royall, M.D. Medical College of the State of South Carolina, Charleston, 1849; aged 88; died at his home in Mt. Pleasant, S. C., about November 23.

William D. Chase, M.D. Hospital College of Medicine, Louisville, 1904; aged 40; was found dead in bed at his home in Milligan College, Tenn., November 21.

John A. Welch, M.D. Central College of Physicians and Surgeons, Indianapolis, 1883; aged 68; died at his home in Lena, Ind., November 18, from nephritis.

Henry Eugene Robinson, M.D. University of Colorado, Boulder, 1911; aged 30; of Ogden, Utah; died in Hooper, Utah, November 20, from tuberculosis.

Samuel J. Stone, M.D. Chicago College of Medicine and Surgery, 1914; aged 35; died suddenly in his office in Butte, Mont., October 3, from uremia.

David Yiengst Roebuck, M.D. University of Pennsylvania, Philadelphia, 1866; aged 71; died at his home in Dalton, Ohio, about November 20.

Peter H. Banta, M.D. Detroit College of Medicine, 1900; aged 41; died at his home in De Witt, Mich., November 26, from disease of the stomach.

Leopold Charles Shulke, M.D. St. Louis College of Physicians and Surgeons, 1905; aged 32; died at his home in Decatur, Ill., November 19.

Bezaleel Bell Andrews, M.D. Hahnemann Medical College, Chicago, 1878; aged 70; died at his home in Nemaha, Neb., about November 16.

A. W. Goodman, M.D. University of Nashville, Tenn., 1862; aged 75; died at his home in Elkton, Ky., November 19.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

OZOMULSION

Ozomulsion is one of several nostrums put out by the T. A. Slocum Company of New York City. Nearly ten years ago Mr. Samuel Hopkins Adams (*Collier's,* Jan. 13, 1906) had something to say about the Slocum nostrum factory and the man who was at that time proprietor of the concern, one A. Frank Richardson. To quote from part of Mr. Adams' article:

> "The Slocum Consumption Cure proper consists of a gay-hued substance known as 'Psychine.' Psychine is about 16 per cent. alcohol, and has a dash of strychnin to give the patient his money's worth. Its alluring color is derived from cochineal. It is 'an infallible and unfailing remedy for consumption.' Ozomulsion is also a sure cure, if the literature is to be believed. To cure one's self twice of the same disease savors of reckless extravagance, but as 'a perfect and permanent cure will be the inevitable consequence,' perhaps it's worth the money. It would not do to charge Dr. T. A. Slocum with fraud, because he is, I suppose, as dead as Lydia E. Pinkham; but Mr. A. Frank Richardson is very much alive, and I trust it will be no surprise to him to see here stated that his Ozomulsion makes claims that it cannot support, that his Psychine is considerably worse, that his special cure offer is a bit of shameful quackery, and that his whole Slocum Consumption Cure is a fake and a fraud so ludicrous that its continued existence is a brilliant commentary on human credulousness."

The nostrum, "Psychine" which, previous to the passage of the Food and Drugs Act, was labeled "An Infallible Remedy for Consumption" to be later modified to "Wonderful Remedy for Consumption" and still later to be changed to "Tonic Appetizer and Aid to Digestion" has, apparently, not occupied much space in the public prints during the last few years. Ozomulsion, however, has, apparently, been kept alive by advertising. In April, 1915, the United States Attorney for the Southern District of New York, acting on a report by the Secretary of Agriculture, filed two informations against the T. A. Slocum Company, alleging that the concern had shipped two consignments of Ozomulsion from the state of New York into the state of Tennessee in violation of the Food and Drugs Act. The product was declared misbranded in both informations on the ground that the therapeutic claims made on the carton were "false and fraudulent." Moreover, the government declared that these claims:

> ". . . were applied to said article knowingly and in reckless and wanton disregard of their truth or falsity, so as to represent falsely and fraudulently to the purchasers thereof, and create in the minds of purchasers thereof the impression and belief that it was in whole or in part composed of, or contained, ingredients or medicinal agents effective for permanently curing tuberculosis, consumption, phthisis, whooping cough, pneumonia, and all kinds of lung diseases, St. Vitus's dance, epilepsy, night sweats, and malaria, when, in truth and in fact, said article was not in whole or in part composed of and did not contain ingredients or medicinal agents effective for curing tuberculosis, consumption, phthisis, whooping cough, pneumonia, and all kinds of lung diseases, St. Vitus's dance, epilepsy, night sweats, and malaria."

The product was declared misbranded further because of the claims made that Ozomulsion would cure pneumonia and prevent the development of consumption "when in truth and in fact, said article was not in whole or in part composed of, and did not contain, ingredients or medicinal agents effective for curing pneumonia or for preventing the development of consumption following pneumonia, or at any other time."

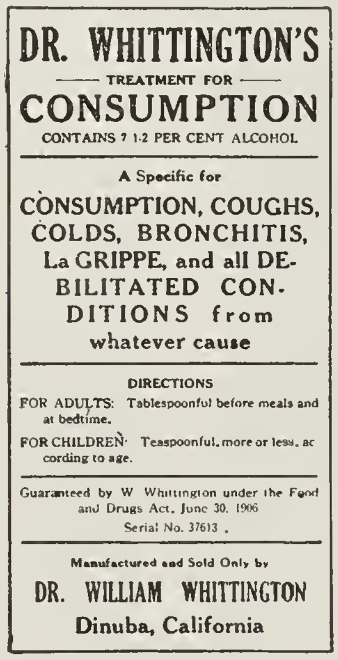
The analysis made by the federal chemists was summed up in the statement "sample appears to be an emulsion of cod liver oil and glycerin with the addition of phosphorous compounds of calcium and sodium." The chemists also call attention to the fact that their tests indicated that the cod liver oil used in this emulsion "had not been ozonized." This claim about "ozonizing" the oil used in the nostrum has long been one of the talking points; in fact the old trade-package declared that Ozomulsion was a combination of ozone, cod liver oil and other ingredients "ozonized by electricity (Slocum's French method) for the purpose of replacing by ozone the oxygen consumed by the system in digesting cod liver oil."

The T. A. Slocum Company pleaded guilty to the government's charges and was fined $80. This can hardly be considered an excessive punishment for a concern engaged in the business of defrauding the sick in general and consumptives in particular. The details of this case will be found in *Notice of Judgment 3979,* issued Oct. 21, 1915.

DR. WHITTINGTON'S TREATMENT FOR CONSUMPTION

"Dr. Whittington's Treatment for Consumption" is, according to the label, "manufactured and sold only by Dr. William Whittington, Dinuba, Cal." According to our records, Dr. William Whittington was graduated by the Missouri Medical College of St. Louis, Mo., in 1880 and was licensed to practice in California in 1891. The preparation, which admittedly contains 7.5 per cent. alcohol, is labeled:

> "A Specific for Consumption, Coughs, Colds, Bronchitis, La Grippe and All Debilitated Conditions from whatever cause."



DR. WHITTINGTON'S

TREATMENT FOR

CONSUMPTION

CONTAINS 7 1-2 PER CENT ALCOHOL

A Specific for

CONSUMPTION, COUGHS, COLDS, BRONCHITIS, La GRIPPE, and all DEBILITATED CONDITIONS from whatever cause

DIRECTIONS

FOR ADULTS: Tablespoonful before meals and at bedtime.

FOR CHILDREN: Teaspoonful, more or less, according to age.

Guaranteed by W. Whittington under the Food and Drugs Act, June 30, 1906

Serial No. 37613.

Manufactured and Sold Only by

DR. WILLIAM WHITTINGTON

Dinuba, California

Reduced photographic facsimile of the label on Whittington's "consumption cure." It obviously violates the federal Food and Drugs Act.

The bottle contains about twelve ounces of a brown, sirupy liquid and sells for $5.00. In reply to an inquiry sent to Whittington by a supposedly consumptive layman, there came a letter signed "W. Whittington," reading in part as follows:

> ". . . I have a treatment that does cure consumption. The cost of the treatment is $20.00 for each month's treatment. You can get it one month at a time or more as you like. If you wish to try it you better take one month's treatment at first to see what it will do for you. But if you take it for one month I know you will send back for more. For I know it will do you good. For this is the only treatment that does really cure consumption. As to how long you will need to take it depends on your condition. It takes from three to six months to cure. If you have not had it long three months may cure you. If you are very bad it will take longer . . ."—[Capitals ours.—Ed.]

Requests have come in at different times for information regarding this nostrum. A bottle of Whittington's "Specific" was examined in the Chemical Laboratory of the American Medical Association. The condensed report of the chemist follows:

> "The liquid had an odor of raspberry and prunes and also somewhat vinous characteristics, with a tannin-like taste. The reaction toward litmus was acid. The specific gravity at 15.6 C. was 1.0963. The weight of ash from 100 c.c. was 0.73 grams. Qualitative tests indicated the presence of alcohol, magnesium, tannin and other vegetable acids, acetate, sugar, glycerin, and traces of calcium, potassium and sodium. Tests for the following yielded negative results: heavy metals, haloids, sulphates, alkaloids, emodin-bearing drugs, benboate, cinnamate, salicylate and glycyrrhiza. From this analysis it appears that 'Dr. Whittington's Treatment for Consumption' is a flavored syrup, devoid of potent ingredients other than alcohol."

Selling flavored syrup as a "cure" and "specific" for consumption is a disreputable enough business under any circumstances, but what shall be thought of a physician who will carry on such a trade? Whittington's case is of more than ordinary interest to the medical profession because the man is not only a member of that profession, but a member of the Medical Society of the State of California.

ROGERS' CONSUMPTIVE CURE AND COUGH LOZENGES

"Rogers' Consumptive Cure and Cough Lozenges" and "Rogers' Inhalant" were two products sold by the M. J. Rogers Medical Company of Lewiston, Maine. According to a government report the former product bore on the labels such claims as:

> "Rogers' Consumptive Cure and Cough Lozenges. Are good for Lung Troubles of all kinds. . ."
>
> "For Whooping Cough they are a ready relief."
>
> "For Coughs, new and of long standing, they are unsurpassed."
>
> "They can be confidently relied upon as an *infallible cure* for all pulmonary troubles of every description."
>
> ". . . warranted to effect entire and permanent cures in every case curable at all. . ."

The latter preparation bore such claims as:

> "Rogers' Inhalant Is the Greatest Discovery of Modern Medical Science, for the positive cure of Catarrh, Asthma, Hay Fever, Rose Cold, Cold in Head, Influenza, Headache, Pneumonia, Bronchitis, Diphtheria, Hoarseness, Loss of Voice, Bleeding of the Lungs, Pleurisy, and all diseases leading to Consumption."

The government officials filed an information against the M. J. Rogers Medical Company alleging that these two products, which had been shipped in interstate commerce, were misbranded because of the false and fraudulent claims for curative effect that had been made for them. The government chemists, who analyzed both the lozenges and inhalant, reported that the former "consists of sugar lozenges containing a small amount of gum and a trace of oil of rosemary" and that the latter was "an alcoholic solution of volatile oil, chiefly rosemary." The false and fraudulent therapeutic claims made, only a few of which we have quoted, were declared by the federal officials to have been applied to the articles "knowingly and in reckless and wanton disregard of their truth or falsity." This concern did not plead guilty but entered a plea of *nolo contendere* which was equivalent to admitting that they were not prepared to substantiate the claims they had made. The M. J. Rogers Medical Company was fined $15, the case being described in *Notice of Judgment 3986,* issued Oct. 21, 1915.

Correspondence

The "Autolysin" Treatment for Cancer

To the Editor:—In the Nov. 6, 1915, issue of The Journal there was printed a special article by Dr. Richard Weil regarding the autolysin treatment of cancer. In this article Dr. Weil attempts to analyze the situation respecting autolysin, the method of its introduction in the General Memorial Hospital and the nature of the patients who were treated in this institution, and states what his own conclusions are regarding its merits. It has been difficult for me to believe that Dr. Weil would so wilfully misrepresent the entire situation.

Dr. Weil was a member of my department in the medical school for many years, so that I am well acquainted with him. I cannot believe, however, in this instance that he is acting solely from good motives in making the statements that he has printed. I know, personally, that his present statements are not at all in accord with the views which he expressed to me at the time the work was in progress at the hospital.

It is impossible for me to make an adequate reply to his statement without analyzing it in detail. Such a statement has been prepared and is evidently in its length and its character unsuitable for publication in The Journal. It will, however, be printed elsewhere.

The misrepresentations which Dr. Weil has made occur not only in the form of direct categorical statements but also in the inferences which a reader unacquainted with the matter would necessarily draw from the article. These misrepresentations include such matters as the circumstances surrounding the introduction of the remedy into the hospital, the character of the patients treated in the institution and the results obtained, as well as his own relation to the experiments. He has, furthermore, misrepresented my own ideas and statements with respect to the effects produced by the remedy and the limitations surrounding its use. He has likewise made statements from which the only inference that can be drawn is that the remedy is withheld from the general use of the medical profession and that no patients can obtain this treatment except by paying very large fees. Such inferences are unjust.

A considerable amount of space is devoted to pictures and reading matter concerning a patient who received one injection of autolysin at this office and later went to the Memorial Hospital. It would appear from what Dr. Weil has said that the circumstances which he relates concerning this patient are circumstances for which I am personally responsible. I can only state in this connection that I have printed two articles in a medical journal stating my own position with regard to the autolysin treatment, and that I disclaim all responsibility for newspaper or magazine articles which have appeared in the past or may appear in the future respecting this matter.

The final conclusion which Dr. Weil draws is that from a long observation he believes the method is useless. I think it is only fair to point out that Dr. Weil's long observation consists in never having administered a single dose of autolysin and in having given very superficial examination to a few patients in an advanced condition of inoperable cancer during the early developmental period of the treatment. Final conclusions in my judgment cannot be based on such data.

Honest criticism of this method of treatment, based on adequate experience, is to be welcomed. Untruth and misrepresentation do not contribute to the progress of medical affairs in this instance to any greater degree than they have in the past. My own experience justifies me in the belief that the autolysin method of treating inoperable cancer has decided value in ameliorating the distressing conditions in a considerable percentage of cases.

S. P. Beebe, M.D., New York.

Removal of Thyroid in Diabetes

To the Editor:—Encouraged by the experience of having several cases of glucosuria associated with exophthalmic goiter clear up when the hyperthyroidism was corrected, two cases of diabetes in young subjects with no goiter symptoms were treated by removing the greater portion of the thyroid gland. The results were as follows: One was restored to complete carbohydrate tolerance, the other to a tolerance of 9 ounces of carbohydrates per day. As only a few months have passed since these cases were so treated, end-results are yet to come; but until such time, together with a record of more cases, please publish this to establish my priority should the idea prove of value.

J. Christopher O'Day, M.D., Portland, Ore.

"Sewage" and "Sewerage"

To the Editor:—In your effective educational work would it not be proper to clarify an alliterative entanglement? The two nouns "sewage" and "sewerage" offer difficulties to many, as does the impossible "preventative." Sewage flows within the sewerage; the former is the liquid, the sewerage being the system of pipes which carries it off. The only sewage system is the intestinal canal, but a sewerage system is always the mains, conduits and other pipes in the ground. Sewage disposal is any method of depositing or getting rid of the excreta, whether by privy, by the use of sewers or a sewage treatment plant. If the sewers are dug up out of the ground and thrown away, that would constitute sewerage disposal. Very frequently one sees the incorrect expressions "sewerage treatment" and "sewerage purification." Sewage is the liquid discharge—sewerage always the pipe, the connected sewers.

Harold B. Wood, M.D.,
Health Officer and Secretary, Department of Health, Topeka, Kan.

Music as a Therapeutic Agent

To the Editor:—I desire information concerning the use of music by the medical profession. Some time ago Dr. Kane reported his use of music as an aid in the operating room, and also in the wards of the hospital. His report was followed by a series of humorous comments, which did not take the effort at all seriously. As far as I know, the hospitals for the insane are practically the only ones that make extensive use of music as a therapeutic agent, but I should like to receive further first-hand information. Just a little thought ought to convince any one that music could be used on logical grounds much more frequently than it is at present.

Theodore Zbinden, M.D., Toledo, Ohio.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DROPPING OF PULSE BEATS

To the Editor:—Please explain the cause or causes for the dropping of pulse beats at the wrist every third or fifth beat. In many of these cases auscultation reveals only a lack of full contraction of the left ventricle, with no disturbance of rhythm in other respects. Does it indicate degeneration of the musculature of the heart or merely a nervous manifestation? Is digitalis the best treatment?

G. A. Hill, M.D., Philadelphia.

Answer.—By far the most common cause (in about 90 per cent. of cases) of the dropping of pulse beats at the wrist is the occurrence of premature contractions or extrasystoles. Normally the heart beat is induced in the sinus node (Keith-Flack), situated in the wall of the right auricle, and spreads over the heart from auricles to ventricles in an orderly sequence and at definitely timed intervals. This sinus node is often designated as the pace maker of the heart. In the case of extrasystoles an (ectopic) impulse arises early in diastole in some other portion of the heart which is more irritable than the sinus node. This abnormal impulse causes the heart to beat too soon, or before the normal excitation from the pace maker is due. Hence the volume of blood discharged by the ventricles is less than normal, and often is not of sufficient volume to produce a pulse wave at the wrist. At other times the contraction of the ventricle may not overcome the pressure in the aorta, and in this event there is no pulse wave, and auscultation reveals only the first sound of the heart.

In a small group of cases of extrasystole there is no evidence of cardiac disease. In another group there is disease in another part of the body which could easily be accompanied by a pathologic condition of the heart. Some of the most common of these are bronchitis, pulmonary emphysema, pulmonary tuberculosis, toxemia, exophthalmic goiter and gastric ulcer. In the majority of cases, however, there is distinct cardiac involvement, as in myocarditis, valvular disease, acute endocarditis, arteriosclerosis or angina pectoris.

Another cause for the dropping of pulse beats at the wrist is the condition of gross irregularity of the heart known as auricular fibrillation. Here the auricle does not beat in response to the pace maker, but is in a state of fibrillation. Only a few of these auricular contractile waves pass through the auriculoventricular bundle and cause ventricular contraction; but these are very irregularly timed, and may follow each other so soon as not to cause ventricular contraction of sufficient volume to produce a pulse wave at the wrist or even to raise the aortic valves. In all of these cases there is more or less myocardial insufficiency, especially of the auricles.

Finally, partial heart block may occasion the dropping of ventricular beats. In this condition the auricles beat normally in response to impulses originating in the sinus node, but there is impairment in the conduction of the impulse through the auriculoventricular bundle. Each succeeding impulse is delayed more at the bundle until an impulse fails to get through, and a ventricular contraction is missed. The repetition of this process results in periodic failure or ventricular contraction and the consequent dropping of pulse beats at the wrist.

It is impossible to generalize on the treatment of these conditions. This must depend largely on the concomitant disease. When there is evidence of myocardial insufficiency or loss of cardiac tone, digitalis may be of value.

Cardiac irregularities and their treatment were discussed recently in an editorial on "The Rhythm of the Heart" (The Journal, Oct. 21, 1915, p. 1462). An excellent discussion of this subject will be found in Thomas Lewis' "Clinical Disorders of the Heart Beat," Edition 2, Shaw & Sons, London.

MIST. HELONIN COMP. (SCHLOTTERBECK'S)

To the Editor:—Please give me any information you have about Compound Mixture of Helonin (Schlotterbeck & Foss, Portland, Me.).

E. F. Howard, M.D., Vicksburg, Miss.

Answer.—So far as we know, the only available information regarding the composition of Schlotterbeck's Mist. Helonin Comp. is the statement in a circular that the "active ingredients are Helonin, Senecin, Avenin," and the declaration on the label that it contains 45 per cent. alcohol. That is, apparently we are to assume that the mixture contains unspecified amounts of some kind of derivatives (claimed to be "resinoids") of false unicorn (*Helonias dioica*), liferoot (*Senecio aureus*) and oats (*Avena sativa*). Oats are practically devoid of resin; but this fact and the failure of the manufacturers to state the quantities are unimportant in view of the further fact that false unicorn, liferoot and oats are generally recognized as worthless drugs. Essentially, Mist. Helonin Comp. appears to be a "bracer" nostrum. The alcohol content is that of strong whisky. The mixture is highly flavored and would undoubtedly be relished by those to whom alcoholic drinks appeal, while the practically inert drugs contained in it would not in the least interfere with its use as a cordial. It is impossible to condemn too strongly the recommendations that it be given to young girls and pregnant women. The recommendation that in dysmenorrhea teaspoonful doses should be given "every fifteen or twenty minutes until relief is obtained" means, of course, until the patient is stupefied or drunk. On the basis of the information supplied by the manufacturers, Mist. Helonin Comp. may be classified as a vicious and a worthless nostrum—unless we regard the alcohol as of value.

COAGULEN

To the Editor:—Will you kindly refer me to literature on the product coagulen? Have there been any articles published about the use of this preparation in pulmonary hemorrhage? If so, what?

John J. Lloyd, M.D., Catawba Sanatorium, Va.

Answer.—The subject appears to be still in an experimental stage. The only experimental work done on animals thus far seems to be that reported by Fonio, one of the discoverers of coagulen. He found that the coagulability of the blood was increased for only an hour after intravenous injection of the substance.

The other papers are reports of clinical experience, and the only ones that deal with the treatment of hemoptysis with coagulen are those of Juliusburger, Hotz, and Riedl. Each of these authors reports on one case only of hemorrhage of the lungs treated by intravenous injections of coagulen. The case of Riedl was that of a hemophilic who had severe pulmonary hemorrhages. In all three cases the hemorrhages, which were occurring nearly every day, were checked after its use and did not recur within six weeks after the injection. Of course, little significance can be attached to clinical cases observed singly, especially when, as in the present case, the probability of any connection between the remedy and the results attributed to it is discounted by animal experiment.

These three clinicians noted no bad general effects following the intravenous injection of coagulen, nor have any cases of thrombosis or embolism been reported. Fonio himself, however, has noted a kind of collapse effect following the use of coagulen on animals. It is this fact which has deterred Albrecht from making use of coagulen intravenously. He found that it had little effect on arterial or venous hemorrhages because the coagula produced by the coagulen are washed away by the oncoming blood.

A description of coagulen appeared in THE JOURNAL, Sept. 25, 1915, p. 1111.

Below is a list of the more accessible papers and reports on coagulen that have appeared during the last two years:

Fonio, A.: Cor.-Bl. f. schweiz. Aerzte, 1913, Nos. 13, 14, 15.
Obermüller, H.: München. med. Wchnschr., 1913, No. 51, p. 2832.
Kausch, W.: Deutsch. med. Wchnschr., 1914, No. 15, p. 754.
Fonio, A.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 642.
Juliusburger, E.: Deutsch. med. Wchnschr., 1914, xl, 1668.
Barth, E.: Deutsch. med. Wchnschr., 1914, xl, 1573.
Riedl, H.: Wien. klin. Wchnschr., 1915, xxviii, 7.
Mutschenbacher, T. von: Budapesti Orvosi Ujsag, 1914, No. 25, p. 331.
Mutschenbacher, T. von: Deutsch. med. Wchnschr., 1914, xl, 1669.
Vogt, E.: Deutsch. med. Wchnschr., 1914, No. 26, p. 1315.
Tarnowsky, G. de: Surg., Gynec. and Obst., May, 1914, p. 641.
Hotz, G.: Deutsch. med. Wchnschr., 1914, No. 29, p. 1475.
Albrecht, H.: Zentralbl. f. Gynäk., 1914, xxxviii, 1185.

INCOMPATIBILITY OF QUININ WITH ASPIRIN AND OTHER ORGANIC ACIDS

To the Editor:—In the *Bulletin of Pharmacy* for November is an article relative to the incompatibility of aspirin and quinin, and the report of a death supposed to have been caused by this combination. What is your opinion on this question?

A. P. STANDARD, M.D., Macomb, Ill.

To the Editor:—My attention has recently been called to the possibilities of the formation of a poisonous compound, when aspirin and quinin are administered together, or near each other. I have been informed that there have been a few fatalities, and a number of nearly fatal cases resulting from this combination. If such is possible, I would be glad to have more information in regard to the matter, and believe there are others who would be very glad to learn this through THE JOURNAL, rather than by the personal experience of having a patient die from such a combination. H. F. T., Iowa.

ANSWER.—It has been known for a number of years that, by long-continued heating with glacial acetic acid or by fusion of the alkaloidal salts, some of the cinchona alkaloids may be converted into isomeric products which possess extremely poisonous properties. Experiments have also shown that, by acting as catalyzers, slightly dissociated acids, such as acetylsalicylic (aspirin), citric, malic, acetic or tartaric acid, under the influence of heat may convert quinin into its poisonous isomer, quinotoxin, and cinchonin into cinchotoxin. At the temperatures of from 98 to 102 C. (208.4 to 215.6 F.) the conversion is practically quantitative; at 37 C. (98.6 F.—normal body temperature) the reaction goes on much more slowly, amounting to about 2 per cent. in forty-eight hours. The danger of poisoning through conversion of quinin into quinotoxin in the body cannot be great, but it is well to keep the possibility in mind. The formation of a dangerous amount of the poisonous product would probably be greatly favored if the mixture—quinin and aspirin, for instance—had been made up for some time. Suspensions of the alkaloid in flavored syrups, with organic acids, etc., might be regarded with suspicion; likewise elixirs such as iron, quinin and strychnin, which usually contain citrates or tartrates. The foregoing applies especially to the alkaloid and to such salts as quinin tannate. Since conversion into the toxic isomer does not take place appreciably with an excess of strong mineral acid, there could be but little danger from the administration of the mineral acid alkaloidal salts, such as quinin sulphate.

The subject has not been studied sufficiently to make it possible to decide, in each case of supposed quinin poisoning, whether the toxic symptoms were due to overdose, to idiosyncrasy or to formation of quinotoxin or cinchotoxin in mixtures administered.

HARRISON NARCOTIC LAW AND THE DELIVERY OF DRUGS

To the Editor:—Would it be a violation of the Harrison law for a druggist to fill a prescription that I give him for a patient of mine and send it to the patient by mail, R. F. D.? Every farmer in this county gets his mail by rural route, and frequently it is a great convenience to send medicine by mail. It saves them a trip to town.

R. D. Z.

ANSWER.—The Harrison Narcotic Law makes no provisions regarding the manner in which the drug shall be delivered to the patient by the druggist. After the druggist has filled the prescription, he may deliver it to the patient in person, by messenger, by mail or by express. The object of the law is to secure a written record of every transaction involving the drugs covered by the law.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 11, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, Jan. 11, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

NEW HAMPSHIRE: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NEW MEXICO: Santa Fé, Jan. 10, 1916. Sec., Dr. W. E. Kaser, East Las Vegas.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 18-20, 1916. Sec., Dr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

New Jersey June Report

Dr. H. G. Norton, secretary of the New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, June 15-16, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 40, of whom 35 passed and 5 failed. Forty-six candidates were licensed through indorsement. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1913)	84.3
Howard University	(1914)	75, 75.3
College of Phys. and Surgs., Baltimore..(1890) 78.7;	(1911)	79.3
Johns Hopkins University	(1914)	80.2
University of Maryland	(1914)	75.2
Albany Medical College	(1914)	78.8
Columbia University, Coll. of Phys. and Surgs.	(1915)	80.4
Long Island College Hospital..........(1881) 77.1;	(1912)	78.7
New York Homeo. Med. Coll. and Flower Hosp.	(1913)	78.7; (1915) 79.4.
University and Bellevue Hospital Medical College	(1915)	83, 84.4
Hahnemann Medical College and Hosp., Philadelphia	(1915)	78.1
Jefferson Medical College......(1914) 75.9, 77.4, 81;	(1915)	77.1, 77.5, 78.3, 81.7, 82, 83.
Medico-Chirurgical College of Philadelphia	(1915)	83.6
Univ. of Pennsylvania....(1914) 82, 83.7, 84.1;	(1915)	80.3, 83.7, 84.3
Woman's Medical Coll. of Pennsylvania..(1914) 88.2;	(1915)	82
University of Wurzburg	(1870)	77.3

FAILED

College	Year Grad.	Per Cent.
Howard University	(1907)	67.7
Fordham University	(1913)	72.8
University of Naples.......(1893) 59.8; (1895) 64.5;	(1912)	73.6

LICENSED THROUGH INDORSEMENT

College	Year Grad.	Total No. Licensed
Columbian University	(1902)	1
Howard University	(1907)	1
Baltimore Medical College	(1903) (1911)	2
College of Phys. and Surgs., Baltimore	(1911) (1912)	2
University of Maryland	(1912)	1
Boston University	(1908)	1
Dartmouth Medical School	(1913)	1
Albany Medical College	(1913)	1
Columbia University, Coll. of Physicians and Surgeons	(1904) (1910) (1913, 2) (1914)	5
Cornell University	(1913)	1
Fordham University	(1909)	1
Long Island College Hospital	(1898) (1899) (1913) (1914)	4
New York Homeo. Medical College and Flower Hosp.	(1901) (1914, 2)	3
University and Bellevue Hospital Medical College	(1914)	4
University of Buffalo	(1908)	1
Starling-Ohio Medical College	(1908)	1
Hahnemann Medical College and Hospital, Phila.	(1899)	1

Jefferson Medical College	(1913) (1914)	2
Medico-Chirurgical Coll. of Phila	(1903) (1905) (1913, 2)	4
University of Pennsylvania	(1900) (1909) (1911, 2)	4
University of Vermont	(1912, 2) (1913)	3
University of Naples	(1893)	1
University of Rome	(1910)	1

Iowa June Report

Dr. G. H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, June 10-12, 1915. The total number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 57, of whom 56 passed and 1 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Alabama	(1909)	90.5
Chicago College of Med. and Surg.	(1915)	83.5, 86.5, 88.6, 91, 96.6
Northwestern University	(1901) 91.1; (1911) 88; (1915)	90.5, 92
Rush Med. Coll.	(1905) 89; (1907) 92.2; (1910) 91.9; (1911)	91.9
University of Illinois	(1915)	90.6, 92.5, 94
Indiana University	(1911)	81.7
Keokuk Medical College, Coll. Phys. and Surgs.	(1900)	83.2
State University of Iowa, College of Medicine	(1915)	82.5, 86.6, 86.7, 86.7, 87.2, 88, 91.6, 91.7, 91.7, 92.1, 92.2, 92.2, 92.5, 92.5, 93, 93, 93, 93.5, 94.9, 95.4, 95.8, 96.6, 96.7.
State University of Iowa, College of Homeo. Med.	(1915)	90, 92
Hospital College of Medicine, Louisville	(1906)	78.6
Johns Hopkins University	(1915)	90.2
Harvard University	(1915)	86.6, 89.2
Tufts College Medical School	(1912)	90.4
St. Louis College of Physicians and Surgeons	(1906)	77
St. Louis University	(1915)	88.9, 90.9
John A. Creighton Medical School	(1915)	86
Jefferson Medical College	(1914)	93.5
College of Physicians and Surgeons, Memphis	(1910)	91
Queens University	(1914)	91

FAILED

College	Year Grad.	Per Cent.
Meharry Medical College	(1909)	66.9

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago	(1893)	Nevada
Hahnemann Medical College and Hospital, Chicago	(1912)	Nebraska
Northwestern University	(1905)	Kansas
Kansas Medical College	(1911)	Kansas
University of Louisville	(1908)	Nebraska
College of Physicians and Surgeons, Baltimore	(1895)	Penna.
Grand Rapids Medical College	(1907)	Nebraska
St. Louis College of Physicians and Surgeons	(1907)	Missouri
St. Louis University	(1914)	Missouri
University Medical College, Kansas City	(1904)	Kansas
John A. Creighton Medical College	(1910, 2) (1911)	Nebraska
Starling Ohio Medical College	(1908)	Ohio
Wisconsin College of Physicians and Surgeons	(1909)	Wisconsin

Tennessee June Report

Dr. A. B. DeLoach, secretary of the Tennessee State Board of Medical Examiners, reports the written examination held at Knoxville, Memphis and Nashville, June 25-26, 1915. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 105, of whom 101 passed, including 12 nongraduates, and 4 failed, including 2 nongraduates. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	76
Atlanta Medical College	(1915)	83
Southern College of Medicine and Surgery	(1913)	75.2
Bennett Medical College	(1915)	80.6
Chicago Hospital College of Medicine	(1915)	80.6, 82
Reliance Medical College	(1911)	75
Rush Medical College	(1914)	90.7
Hospital College of Medicine, Louisville	(1900)	79.2
University of Louisville	(1912) 87.1; (1915)	86
Tulane University of Louisiana	(1908)	79.9
Mississippi Medical College	(1911)	76.4
American Medical College	(1910)	77.2
Barnes Medical College	(1904)	80.5
Eclectic Medical University, Kansas City	(1915)	87.6
Homeopathic Medical College of Missouri	(1903)	79.5
St. Louis College of Physicians and Surgeons	(1915)	75, 76.6
Columbia University, College of Phys. and Surgs.	(1912)	88
Eclectic Medical College, Cincinnati	(1898) 75; (1910)	81.2
Miami Medical College	(1898)	75
University of Pennsylvania	(1912)	92.2
Lincoln Memorial University	(1913) 78; (1914) 75, 78, 78.5, 79, 79; (1915)	80, 83.5, 85, 92.
Memphis Hospital Medical College	(1903) 81.5; (1913)	75
Meharry Medical College	(1911) 76.2; (1914) 75, 81.5, 82, 83.2; (1915)	75, 76.5, 78, 79, 79.6, 80.6, 81, 82.2, 83.4, 83.7, 84, 84, 84.5
University of Nashville	(1907)	83.8
University of Tennessee	(1914) 83, 83.5; (1915)	80, 85.1, 85.1
Univ. of West Tennessee	(1914) 75, 75, 80, 82.7, 85; (1915)	82.2
Vanderbilt University	(1910) 79; (1912) 83.9; (1913) 89.2 (1914) 86; (1915)	77.1, 81, 81.2, 82, 82, 82.1, 82.6, 83, 83, 83.5, 84.2, 84.5, 84.8, 85, 85, 86.1, 86.9, 87.7, 89.3.
Nongraduates		75, 75, 75, 75, 75, 75.6, 75.7, 80, 80.6, 83.4, 83.5, 84.9

FAILED

College	Year Grad.	Per Cent.
Lincoln Memorial University	(1914)	59
University of Tennessee	(1912)	*
Nongraduates		57, 63

* Withdrew from the examination.

Wisconsin June-July Report

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Milwaukee, June 29-30—July 1, 1915. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 68, of whom 61 passed and 7 failed, including 1 osteopath. Twenty-eight candidates, including 2 osteopaths, were licensed through reciprocity. One candidate was granted a reregistration license. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1915)	75, 79
Chicago College of Med. and Surg.	(1915)	75, 77, 80, 82, 82, 87
Rush Medical College	(1915)	86, 88
University of Illinois	(1914) 85, 86, 86; (1915)	79, 80, 84. 88
St. Louis University	(1915)	89
University of Pennsylvania	(1913) 86; (1914)	84
Marquette University	(1915)	75, 78, 79, 79, 79, 79, 79, 79, 79, 80, 80, 80, 81, 81, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 86, 89, 89, 89.

FAILED

College	Year Grad.	Per Cent.
Chicago College of Med. and Surg.	(1914) 60, 66; (1915)	72, 72
Marquette University	(1913)	66
Montreal School of Med. and Surg.	(1912)	71

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.	(1907) (1913)	Illinois
College of P. and S., Chicago	(1903) Illinois; (1910)	Iowa
Hahnemann Medical Coll. and Hosp., Chicago	(1913)	Illinois
Northwestern University	(1910) (1912, 2) (1913) Illinois; (1914, 2)	Missouri
Rush Medical College	(1893)	Illinois
University of Illinois	(1911) (1914)	Illinois
University of Michigan Medical School	(1905)	Michigan
University of Minnesota	(1905) (1913)	Minnesota
Central Medical Coll., St. Joseph	(1898)	Idaho
Ensworth Medical College	(1908)	Wyoming
Pulte Medical College	(1888)	Michigan
Western Reserve University	(1912)	Ohio
University of Pennsylvania	(1907)	Penna.
College of P. and S., Memphis	(1911)	Tennessee
University of Texas	(1898)	Texas
Milwaukee Medical College	(1912)	Illinois
University of Christiania	(1912)	Minnesota

West Virginia July Report

Dr. S. L. Jepson, commissioner of health of the Public Health Council of West Virginia, reports the oral, practical and written examination held at Parkersburg, July 7-9, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 80. The total number of candidates examined was 46, of whom 43 passed and 3 failed. One candidate was granted a reregistration license. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	84.2
College of Physicians and Surgeons, Los Angeles	(1914)	83.6
Atlanta Medical College	(1915)	85.4
Bennett Medical College	(1915)	80.1
Chicago College of Medicine and Surgery	(1915)	81.2, 81.8, 83, 84.6, 85.2, 86.4, 89.1.
University of Louisville	(1914) 81.7, 89.3; (1915)	86.6
College of Phys. and Surgs., Baltimore	(1915)	82.3, 82.6, 83.7, 85.5, 85.8, 86.1, 87.3, 88.5, 90.1, 91.8.
Johns Hopkins University	(1915)	87.5
Maryland Medical College	(1912)	80
University of Maryland	(1915)	86.4, 87.4
Boston University	(1915)	86.9
Ohio State Univ., College of Medicine	(1915)	88, 92.5, 92.8
Jefferson Medical College	(1915)	87.2
Medico-Chirurgical College of Phila	(1914)	89.5
University of Pennsylvania	(1914)	85.6
University of Pittsburgh	(1914)	88.7
Woman's Medical College of Penn	(1913)	84.9
Meharry Medical College	(1915)	83.3, 88.3
Medical College of Virginia	(1914) 82.8; (1915)	87.5, 89.3
University of Virginia	(1911)	89.3

FAILED

College	Year Grad.	Per Cent.
Bennett Medical College	(1915)	72.5
Medical College of Virginia	(1915)	78.6, 78.7

Miscellany

America and the World's Supply of Cinchona Bark

That the cinchona tree is indigenous to South America is well known. It is not so well known that within the lifetime of persons yet living the American continent has ceased to be a considerable factor in the world's supply of cinchona. This fact is brought home to us today by the present high price of quinin (editorial, The Journal, Dec. 4, 1915, p. 2010).

There are many species of cinchona, a number of which yield varying amounts of alkaloids, while others are of little or no value. Commercial cinchona bark today, however, consists chiefly of red cinchona, yielded by *Cinchona succirubra*, and yellow cinchona or Calisaya bark, yielded by *C. calisaya* and *C. ledgeriana*. These two barks are described in the U. S. Pharmacopeia.

All the species of cinchona are natives of the Andean regions of South America between latitude 19 south and 10 north. They have never been found native elsewhere, though some parts of Mexico are said to be well adapted to their growth (Markam, C. R.: Peruvian Bark). For a long time the bark was collected only from the region around Loxa or Loja, Ecuador, whence came the famous bark that cured the Countess of Chinchon. Later, forests were discovered elsewhere and worked out with ruthless waste. Prospectors, it seems, sought new cinchona regions as they would have searched for gold, and having found a forest, exhausted it without thought for the morrow. The *cascarilleros* (bark collectors) gathered the bark either by stripping the tree as it stood, or by felling it and then stripping it; new trees were never planted to take the place of those destroyed. In 1735, Ulloa reported to the Spanish government that these wasteful practices would undoubtedly exterminate the forests about Loja in time. He suggested that the Corregidor of Loja should appoint an overseer of the forests whose duty it should be to see that a cinchona tree was planted in place of each one cut down. This salutary rule, however, was not enforced; and sixty years later Humboldt reported that 25,000 trees were felled in a single year. Sir Clements Markham, who saw the forests in the middle of the last century, believed that they were not likely to become actually exterminated unless the method of stripping the standing tree was followed exclusively. This left the tree to be destroyed by rot and insects. If it were felled very near the ground, sprouts would be sent up to take its place. The more probable danger, Markham thought, was that of periods of scarcity during the time while young forests were growing up. Nevertheless, Wellcome ("The Cinchona Forests of South America," *Popular Science Monthly*, August 1880, p. 507), who visited the cinchona regions after Markham's time (in 1879), was very pessimistic as to their future. It is said that when the South American countries, especially Bolivia, desired to undertake the cultivation of cinchona, they sent abroad to secure seeds from the foreign plantations that were by that time flourishing (National Standard Dispensatory, article on cinchona, p. 448).

It seems probable that the high prices of quinin during the Civil War were due largely to actual scarcity of cinchona bark, and possibly in some degree to interference by the South American governments with the bark export trade. At all events, the world would probably have been suffering long since from a quinin famine if it had not been for the cultivation of cinchona outside of South America. Various men of different nationalities had suggested or attempted its domestication, but the achievement was difficult, for, apart from the natural obstacles in the way, the jealous South Americans hindered the exportation of seeds and plants as much as possible. The thrifty Dutch, though not actually the first to attempt the transportation of specimens, were apparently the first to succeed in taking them safely to the Old World. In 1853 the Dutch government commissioned the botanist Hasskarl to collect cinchona plants and seeds for use in starting plantations in Java. In 1866 the Dutch obtained from Charles Ledger, an Englishman long resident in South America, half of his collection of seeds of the valuable species since called after him *Cinchona ledgeriana*. Collections for the cinchona plantations in India were made by Clements Markham in 1860, while half of Ledger's collection was purchased in 1866 by an Indian planter. Both in India and in Java the cultivation of cinchona has proved a success, and the richness of the bark in alkaloids has been increased under cultivation and by selection of stock. The U. S. pharmacopeial requirement is for not less than 5 per cent. of total alkaloids, but good bark may yield a much higher percentage. The effort of growers in late years has been to raise the quinin content rather than that of total alkaloids (Dispensatory of the U. S. A., article on cinchona rubra, p. 344).

India is said to consume all or practically all the cinchona raised in that country (Roeder, George: Tropenpflanzen, 1909, xiii, 473; quoted in Digest of Comments on the Pharmacopeia). The bulk of the world's supply of cinchona now appears to come from Java (Kraemer, Henry: Scientific and Applied Pharmacognosy, 1915, p. 738), though a comparatively small amount is still imported from South America, and some is now produced in Ceylon and Africa. The South American plantations are said to have proved unsuccessful commercially, largely because the expense of transportation (on the backs of men over the mountains) makes competition with eastern cinchona impossible (National Standard Dispensatory, article on cinchona, p. 448). The cinchona planter of Java inclines to take advantage of the market, which he now practically controls, and the rise in the price of quinin, which, as mentioned earlier, began before the present war, may be due in some degree to this circumstance.

An Examination of Prisoners at Joliet Penitentiary

A preliminary report of a psychologic and psychiatric study of prisoners at Joliet Penitentiary, made by Drs. H. Douglas Singer and George Ordahl, appears in the *Institution Quarterly*. Under present conditions, all convicts at the penitentiary are treated alike and associate with each other at haphazard. It was realized that, if the institution were to fulfil its true purpose, that of protecting society, those persons capable of improvement should be singled out, kept segregated from the hopelessly antisocial convicts, and educated for a return to normal social life. While this purpose cannot be completely realized without universal application of the indeterminate sentence, it was felt that something could be accomplished under the present system.

It was impossible, in the time available, to examine all of the inmates of the penitentiary. Fifty male prisoners were therefore chosen, in a manner intended to secure four representations of different types, for study by Drs. Singer and Ordahl. Fifty-one of the fifty-two female prisoners were studied by Mrs. George Ordahl.

The actual ages of the male prisoners ranged from 16 to 74; the average was 30. The mental ages by the Binet-Simon tests ranged from 6 to 16; the average mental age of the entire number was 11.2. Only seventeen prisoners tested above 12 years; fourteen were found to be feebleminded (below 10 years). The actual ages of the female prisoners ranged from 19 to 60; the average was 34. The mental ages by the Binet-Simon test ranged from 7 to 15; the average was 11.8. Fifteen of the female prisoners responded to the tests above the age of 12; five were feebleminded, or below 10 years.

The investigators also grouped the prisoners in accordance with their fitness to become members of society as: (1) criminals by accident, of adult and subnormal intelligence; (2) borderline cases; (3) antisocial persons, of adult or subnormal intelligence, and (4) insane persons. 1. The group of criminals by accident (those capable, if normal in intelligence, of being educated for return to a useful and self-supporting life in society) included 16 normally intelligent and 15 feebleminded males, and 16 normally intelligent and 5 feebleminded females. 2. The borderline group (persons apparently capable of improvement in spite of the presence of certain ominous traits) consisted of 6 males and 27 females. 3. The group of persons regarded as absolutely unfit by Nature for life in society or commingling with the more hopeful prisoners included 13 males and 1 female. 4. While the insane group is necessarily small, one case was studied in which crime was judged to be the result of definite delusions still present and active after detention for one year.

The report emphasizes certain points which require remedy: 1. The information concerning convicts available for the use of the board of pardons is so scanty and unsatisfactory that some prisoners are released when entirely unready for freedom and thus are given an opportunity to committe fresh crime, while other prisoners deserving of probation and liable to be harmed by prison conditions are detained. 2. The selection of occupation for convicts seems to be based more on the needs of the prison departments than on the requirements of the individual to be trained. 3. Recidivism, while most frequent among antisocial persons, is not limited to them. It is especially emphasized that antisocial persons should be recognized, segregated to prevent their influence on persons capable of improvement, and, if their sentence permits of their detention, should not be permitted to leave.

Book Notices

Principles of General Physiology. By William Maddock Bayliss, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. Cloth. Price, $6 net. Pp. 850, with 259 illustrations. New York: Longmans, Green & Co., 1915.

According to the author, this book is not an applied physiology, but rather an abstract physiology, presenting facts not found except in original papers or monographs, many of them not biologic, the knowledge of which is of fundamental importance in understanding the mechanism of living protoplasm.

The book is both general and elementary, in that it discusses the importance of the following phenomena in an elementary and general way, each of the subjects given comprising a chapter in the book: protoplasm; energetics; surface action; colloidal state; permeability of membranes and the properties of the surface of cells; osmotic pressure; electrolytes and their action; water, its properties and functions; catalysis and enzymes; oxidation and reduction; tonus; electrical changes in tissues; excitation and inhibition; contractile tissues; receptor organs and action of light. This type of subject-matter receives only scant treatment or passing reference in most books. The remaining chapters deal with subjects more commonly and extensively treated in the usual texts, such as nutrition; secretion; digestion; reflex action; nervous system, peripheral and central; respiration and the circulation of the blood. The book ends with a chapter on hormones, drugs and toxins in which small, entirely inadequate paragraph references are made to the highly important glands of internal secretion. Each chapter ends with a summary followed by references to important literature. Besides the usual illustrations, there are scattered appropriately throughout the text portraits of the men whose striking discoveries have been of such fundamental importance in advancing physiology and its allied sciences, as Claude Bernard, Descartes, Emil Fischer, Graham, van't Hoff, Leeuwenhoek, Priestley, Ludwig, Ostwald, Ehrlich, Lavoisier, Pfeffer, Helmholtz, Pawlow and Harvey. This feature will please all who love the biologic sciences and who, therefore, take a personal interest in the men associated with their history and development.

The book might be recommended most highly for no other reason than that there is no book in the English language which contains a similar extensive and scholarly discussion of those processes, mentioned by title above, references to which are being made more and more at the present day, because their combined manifestation in a physical and chemical system constitutes, perhaps, life and living phenomena. Should the text appear at times to be a loose compilation of data, every biologist will, nevertheless, be grateful to the author for the facts and the splendid bibliography made instantly accessible to him for his own further study and particular problems. The aim of the book was high and the task was difficult; the result is so gratifying that any deficiencies appear negligible when the work is viewed as a whole.

Diseases of the Nose and Throat. By Algernon Coolidge, A.B., M.D., Professor of Laryngology in Harvard Medical School. Cloth. Price, $1.50 net. Pp. 360, with illustrations. Philadelphia: W. B. Saunders Company, 1915.

This is a small volume into which the author has attempted to compress the established facts and authenticated theories regarding the methods of examination, and the anatomy and physiology, of the nose, external and internal, and the pharynx and larynx, together with the etiology, pathology, symptoms, signs, diagnosis and treatment of the long list of diseases to which these parts are liable. He also includes chapters on diseases of the mouth and tongue, on diphtheria, scarlet fever, measles, etc., and on bronchoscopy and esophagoscopy. He appears to have attempted a little too much for the space occupied. The book is intended as a manual for students and practitioners, and its brevity is one of its chief virtues. As the author remarks, there are many things that can be learned only by clinical experience, but also much that is overlooked if this practical work is not accompanied by a reasonable amount of didactic study. On this ground the book is of special value for undergraduates, because they have so little time in which to master the enormous volume of medical science with which they are expected to be familiar when turned out as full-fledged practitioners. It would be much better if, aside from the fundamental sciences, the whole subject of medicine were taught from brief textbooks which should contain the essential facts. This method should be combined with personal education of all the senses, and didactic and clinical instruction by competent teachers. On this account we can specially commend this work to undergraduates, for it contains as much information on these subjects as they will be able to grasp and assimilate.

Chemical Constitution and Physiological Action. By Prof. Dr. Leopold Spiegel. Translated with Additions from the German by C. Luedeking, Ph.D., and A. C. Boylston, A.M. Cloth. Price, $1.25 net. Pp. 155. New York: D. Van Nostrand Company, 1915.

Those who do not yet appreciate that our knowledge of the effects of chemical agents on animal organisms is no longer, as it was primitively, largely a matter of mere haphazard discovery, will find in this little volume much fascinating instruction. Our knowledge, not only of the influence of the nucleus of structure of an organic compound on its physiologic action, but also of the influence of constitution, that is, the nature and number of the constituent radicals and the grouping of these radicals, is increasing. There is also a collection of data which furnishes us with an insight into the relation between the physiologic action of an inorganic compound and its component ions. This knowledge, considered in connection with what is known about the composition and dynamics of cell substance and also, at times, in connection with certain physicochemical phenomena, enables us to predict with fair assurance the pharmacologic action of many compounds of which we know the structure. From this account of the subject-matter of this work, it may readily be surmised that such knowledge has been utilized by experimental therapeutists and seized on by inventors of chemical therapeutic agents, but it also seems obvious that, before therapy can have become thoroughly rationalized, such knowledge must also become a part of the equipment of a prescribing physician. While a treatise on this phase of medical science is hardly a novelty, this volume is welcomed, because the scope and manner of treatment of the subject-matter makes it of especial service as an introduction to the subject for those who have not yet become conversant with it, or for those whose acquaintance with it is not comprehensive. It is all easily intelligible to any one with the average present-day medical student's knowledge of chemistry.

Medicolegal

Convenant Against Use of Property for "Business" Not Violated by Physicians

(Iselin et al. vs. Flynn (N. Y.), 154 N. Y. Supp. 133)

The Supreme Court of New York, Special Term, New York County, says that when certain lots were sold each deed contained a covenant that whenever the lot should be built on there should be erected a first-class dwelling house of specified materials and dimensions, and that there should not be established or carried on certain enumerated uses, "or any kind of manufactory, trade or business whatsoever, . . . and that the building and buildings erected on said lots shall be restricted to private dwellings." A number of physicians eminent in their profession took up residence in the street, and it was claimed that they in fact conducted business which had consequential effects on the neighborhood. But it was not necessary to enter on an ethical discussion of the difference between a livelihood gained by the practice of a profession and that by a business vocation. The law is practical. It is not concerned with abstractions, but with the actual affairs of men, and it recognizes the distinction between the practice of a profession and the conduct of a mercantile business. One is purely personal, depending on the skill or art of the individual. The other may consist in ability to organize and manage a shop or exchange where commodities are bought or sold. Neither the spirit nor the letter of the restrictive covenant in this case intended or expressed prohibition of the practice of a profession, nor can sophistry pervert the real intent and plain meaning of the word "business" to include "profession."

Osteopaths Not Authorized to Practice Medicine

(State vs. Dodd (Mont.), 149 Pac. R. 481)

The Supreme Court of Montana affirms an order denying the defendant a new trial after his conviction of practicing medicine without having first obtained a certificate from the State Board of Medical Examiners. The court says that the principal contention made was that the statute regulating the practice of medicine in Montana is unconstitutional. Section 1591 provides that every person practicing medicine or surgery without such certificate shall be guilty of a misdemeanor, defines "practicing medicine or surgery," and contains this proviso: "Nothing in this section shall be construed to restrain or restrict any legally licensed osteopath practitioner . . . under the laws of this state." It was insisted that the effect of this section, with the proviso quoted, is to deny to every person, except osteopaths, the right to practice medicine or surgery in Montana without a certificate from the State Board of Medical Examiners, and that, in excepting licensed osteopaths from the operation of its provisions, those persons thus favored are free to engage in the practice of medicine or surgery without having to submit to the ordeal of an examination and without having the certificate required of every other one who seeks to engage in the like practice. But, in assuming that Section 1591 permits an osteopath to practice medicine without a certificate from the State Board of Medical Examiners, counsel for the defendant erred, and with the fall of this, his fundamental premise, went his entire argument. When the proviso was inserted in what is now Section 1591, the legislature understood that the practice of osteopathy (a) did not comprehend the practice of medicine or surgery, and (b) that it was already regulated and controlled by appropriate statutes enacted pursuant to the police power of the state. The only effect, then, of this legislation, has been to classify all those engaged in the healing art into two classes: (1) Physicians and surgeons, or those engaged in the practice of medicine or surgery; and (2) osteopaths, or those devoted to the practice by osteopathy. In the absence of anything appearing to the contrary on the face of the statute, the classification made by the legislature will be presumed reasonable. Nor was there any suggestion in this case that such a classification as was undertaken above is unreasonable. The proviso in Section 1591 is a harmless piece of legislation. It did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the State Board of Medical Examiners required of every one who seeks to engage in such practice. Neither has the legislature, by enacting Section 1605 of the Revised Statutes, recognized osteopathy as including, or included within, the practice of medicine. That section does not authorize an osteopath to "treat, cure, alleviate any disease of the mind or body by any treatment," as counsel for the defendant contended in his brief. The language of the section cannot be tortured to convey such meaning. Within the entire scope of his practice, the osteopath is confined to treatment by the use of the hands or mechanical appliances.

Liability of Relatives for Medical Services and Hospital Care

(Tryon vs. Town of Moyer et al. (Minn.), 153 N. W. R. 307)

The Supreme Court of Minnesota reverses orders sustaining the demurrers of Defendant Ernest Dornfeld to the complaint of the plaintiff in this case and to the complaint of the Benson Hospital Association in a case decided with this one. The court says that this was an action for the reasonable value of medical and surgical services rendered by the plaintiff to one Rosie Dornfeld, a granddaughter of Ernest Dornfeld, and the other case was for services and care rendered to her by the association in its hospital. It was stated that Rosie Dornfeld had been seriously injured, and that she and her parents were public charges on the town of Moyer, but that her grandfather was able, financially, to respond for the expenses of her care and attendance, but refused to pay therefor. The question presented by the record was whether one who has furnished to a dependent relative medical care and treatment or hospital care and services in an emergency case, where there is an urgent requirement for both physician's services and hospital care, imperative and admitting of no delay, can recover from a relative, on whom rests the statutory duty to support such dependent relative, compensation for the reasonable value of such services, even though such services were rendered without the knowledge of the relative sought to be charged. The court holds that he may. The Minnesota statute provides that every poor person who for any reason is unable to earn a livelihood, shall be supported by his children, parents, brothers and sisters, grandchildren or grandparents; and relatives having sufficient ability shall be called on for such support in the order above named, etc. The duty is created by the statute, and does not depend on contract. It is a duty which devolves primarily on the relatives; it cannot be evaded or shifted on others. Cases may arise in which notice to the relative may be required, but the court was not dealing with such a case. It sufficiently appeared from the complaint that Rosie Dornfeld was very seriously injured; that she required the promptest attention; that it was imperatively necessary to operate immediately in order to save the child's life. It appeared that everything was done for the child that could have been done by Defendant Dornfeld himself, and that the services rendered were reasonably proper and necessary. Under these circumstances, it could not be successfully contended that the duty rested on the plaintiffs to give notice to the defendant Dornfeld before doing that which it was imperatively necessary should be done in order to save the child's life. There was a legal duty on the part of the Defendant Dornfeld to support and care for his granddaughter. An emergency arose. The necessity for medical, surgical and hospital services was immediate, urgent and imperative. The plaintiffs having performed the services, it followed that the defendant Dornfeld was primarily liable to pay for the reasonable value of such services, at least until such time as he himself could act in the premises. The complaint in both cases stated a cause of action against the defendant Dornfeld.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

PHILADELPHIA PEDIATRIC SOCIETY, SECTION ON PEDIATRICS OF THE NEW YORK ACADEMY OF MEDICINE, AND THE NEW ENGLAND PEDIATRIC SOCIETY

Joint Meeting, held at Philadelphia, Nov. 9, 1915

Dr. William N. Bradley, Philadelphia, in the Chair

Lobar Pneumonia: The Correlation of Its Symptoms and Physical Signs with the Findings of the Roentgen Ray

Dr. Howard H. Mason, New York: During the past two years, at least one roentgenogram has been taken in each case of lobar pneumonia on the children's service at the Presbyterian Hospital. In those cases showing a shadow, but in which bronchial voice and breathing were not heard, roentgenograms were made at varying intervals. The purpose of these examinations was to ascertain whether or not the consolidation as evidenced by this shadow passes through any regular development, and if so, whether the different stages of its progress can be correlated with the development of certain physical signs. Thirty-seven cases of lobar pneumonia were studied. Each case showed a definite shadow. The shadow was always so placed that it touched the pleura at some point. The early shadows were triangular, with their bases on the pleura and their apices separated from the region of the root by normal lung. In their later development the shadows extended in size and became uniform from the periphery to the root of the lung. When the shadow involved this entire stretch, bronchial voice and breathing were present, but not otherwise. It is believed that the inference is justified that the dimensions of the shadows correspond to the extension of consolidation.

Tuberculosis in Infancy

Dr. Charles Hunter Dunn, Boston: The importance of tuberculosis as a cause of death in the first two years of life is shown by the fact that in a series of sixty-two successive necropsies, tuberculosis was found in twenty-five, was considered the direct cause in twenty-three cases and the contributing cause in the other two. Extremely divergent views are held concerning the source of infection and its portal of entry into the body. One set of writers believes that milk infected with the bovine type of bacillus is the most common cause of the disease in infancy, and the intestinal tract or the tonsils the most common portal of entry. Other writers believe the human type of bacillus to be the most common cause, and the lungs the portal of entry. The two most important forms of evidence bearing on this question are (1) that derived from bacteriologic study of bacilli obtained from infants by culture or animal inoculation, and (2) that derived from a careful study of the lesions found postmortem. Postmortem findings show a greater frequency of involvement of the peribronchial and mediastinal lymph nodes than of the mesenteric. Advocates of milk infection try to explain this on the theory that the bovine bacillus can pass through the intestinal mucous membrane and through the mesenteric lymph nodes without causing a lesion, locating in the lymph nodes of the chest as the point of minimum resistance. This theory I believe to be untenable. The contradictory evidence on the source of infection and portal of entry can be explained only on the ground of a variation according to locality. Such variation is probably largely dependent on the character of milk supplies and the frequency of tuberculous disease in cattle in various parts of the world. I believe that infants can be infected either with human bacilli, usually entering through the lungs, or with bovine bacilli, usually entering through the intestine. The most generally accepted view is that tuberculous infection shows the primary lesion in the lymph nodes. In my studies at the Infants' Hospital, a primary incision was actually found at the portal of entry in twenty-two of the twenty-five postmortems. I have inclined, therefore, to believe Ghon that it is more probable that when a primary lesion is not found at the portal of entry it is overlooked. The primary lesion was found in the lung in twenty cases, and in the intestine in two. Adding to the twenty cases, the three in which the only chronic lesions were found in bronchial lymph nodes, we have a ratio of twenty-three cases of infection through the lung to two cases of infection through the intestine. Tuberculous ulceration of the intestinal mucous membrane was found in seven cases beside the two in which the lesion was considered primary. I believe it to be a probable conclusion that these tuberculous ulcerations of the intestines are secondary to swallowed tuberculous material coughed up from the softening of the primary lesion. These seven cases with secondary tuberculous ulceration of the intestine were identical with the seven cases in which the mesenteric lymph nodes were involved in addition to the bronchial lymph nodes. I believe my findings to be against the view of the ability of the tubercle bacillus to pass through the intestinal mucosa without leaving traces of its progress in the form of a definite lesion. In the series the diagnosis of tuberculosis was made in twenty-three out of twenty-five cases, but these were all seen in the last stages of the disease. Three important points besides tuberculous meningitis or tuberculous peritonitis on which the diagnosis of tuberculosis in infancy is based are (1) physical signs suggesting tuberculosis in the chest; (2) tuberculin reaction, and (3) Roentgen-ray examination of the chest.

MEDICAL SOCIETY OF VIRGINIA

Annual Meeting, held at Richmond, Oct. 26-29, 1915

Custodial Care of the Feebleminded

Dr. L. T. Royster, Norfolk: "Responsibility" is a relative term; it depends on the mental rather than on the chronologic age. A liberal percentage of these classes are not responsible. A method has been found to test them; this is the Binet test. They have a lowered resistance to immoral influences. Physical causes may be back of it: hookworm, etc. A large percentage of prostitutes are not over 12 years of age mentally. Two per cent. of schoolchildren really belong in the feebleminded class. Defectives almost always breed true. There are three main lines on which to work: (1) prevention of propagation; (2) state control to care for the defectives; (3) relief of indigent parents. We must detect this early to apply treatment.

Diagnostic Value of Psychanalysis in Nervous Diseases

Dr. J. Allison Hodges, Richmond: Diagnosis by dreams is of interest to doctors if there is any truth in it. Dreams are stories of wishes. Mental life is conscious and subconscious or unconscious. The difficulty is in the interpretation; many interpretations are farcical. For the average physician it is impracticable. How much of the benefit is due to suggestion from the doctor? If we spend more time getting into the inner thoughts of the patient, we shall not have to rely on dreams.

DISCUSSION

Dr. A. L. Tynes, Staunton: We have been laying too much stress on the pathology of anatomy; we should put more on the pathology of physiology. I do not believe that the analysis of dreams is necessary to accurate results. Careful history taking is very important. In the more complex neuroses we are treading on dangerous ground; we should refer these patients to the neurologist.

Dr. Tom A. Williams, Washington, D. C.: We should attack the underlying cause, not the hysterical paralysis, for example. Relieving this does not cure the patient; the cause remains. Psychanalysis is as old as philosophy; it means determining the trend of the patient's thoughts.

DISEASES OF THE BILIARY TRACT

Etiology and Pathology

Dr. S. B. Moon, Richmond: One attack predisposes to another. It becomes a habit. The germs enter through the mucosa and set up a focal necrosis. Most of the common bacteria of suppuration are concerned; the colon bacteria is perhaps the most frequent. The bile is altered in character. Gallstones are infrequently formed anywhere except in the gallbladder. Their formation is slow, occupying from two to five months. Cholesterin is always present, and may be the sole ingredient. Crystalloid and colloid substances are always in the bile; a disturbance of equilibrium between these two results in precipitation of one or the other. Enzymes may be the disturbing factor set free in the bile. Streptococci are not concerned in gallstones. Gallstones are a fruitful cause of cancer of the gallbladder.

Symptoms and Diagnosis

Dr. Hugh H. Trout, Roanoke: The past history should be studied carefully. History of previous attacks assists. In our series of 196 cases they were most frequent between 30 and 40 years; the youngest patient was 4 and the oldest 76. The most constant symptom was indigestion, which occurred in 112 cases. It is fortunate that most diseases that produce pain in this region are surgical, a dull aching at first. Pain radiating to the right shoulder in our series was of little value. Sharp pain of short duration, from two to five hours, but dull ache persists. Spasm of the right rectus muscle persists only during the acute attack. Elevation of temperature was most uncertain. Blood count was of great value, in diagnosis and prognosis. Agglutination time should always be noted. Waiting for jaundice is most uncertain.

Medical Treatment

Dr. Hugh McGuire, Alexandria: At first food should be limited to milk and cereal, and alcohol prohibited. The patient has a repugnance to fats. Proper laxatives are most important, and drastic purgatives only still further irritate the mucous membrane. Broken doses of calomel should be tried. Zinc oxid, starch and camphor are useful. In gastric catarrh, lavage should be used. Treatment for relief of acute symptoms must be used before the exact condition can be found out. The suppurative form is amenable only to surgery. In the prophylaxis of cholecystitis, hexamethylenamin should be administered throughout typhoid. Olive oil is of no benefit. Hot compresses should be used, and the patient starved for the first twenty-four hours.

Surgical Treatment

Dr. Lomax Gwathmey, Norfolk: I am glad to see that surgeons and medical men are close together on this question. If the case is seen early, operate; if the inflammation is waning, wait.

Discussion on Diseases of the Biliary Tract

Dr. Hugh Taylor, Richmond: One type of bile tract infection is an attenuated infection. The ampulla opens on the mucous membrane of the duodenum by so small an opening that we can scarcely see it, yet it drains a big tract. The key to the situation is not the removal of the stones, but the drainage of this vast tract.

One Hundred Cases of Heart Disease in the Negro

Dr. Charles R. Grandy, Norfolk: I was struck with the relative infrequency of rheumatism as a cause in the aortic cases and the large proportion of aortic cases, 56 as against 36 per cent. of mitral cases. Only five aortic cases had rheumatism as the cause. Hard work on the docks is an infrequent cause of heart disease, the natural cardiac strength of the negro enabling him to continue work at very hard labor. A preacher, aged 65, had a systolic blood pressure of 280, with diastolic of 180, and not symptoms enough to make him return to the dispensary. One negro with a pressure of 210 still pushes a truck on the docks. Normal blood pressure in adults is from 110 to 140, without regard to age; I have found persons over 80 with a pressure of 130. I would not make a diagnosis of aortic regurgitation without a high pulse pressure.

DISCUSSION

Dr. Douglas Vanderhoof, Richmond: Rheumatic or streptococcic cases are extremely amenable to treatment if seen early. Removal of the tonsils must always be considered in these cases.

Dr. J. W. Preston, Roanoke: The polygraph and the Wassermann test are of great value in the study of heart cases. The heart carries the load till it cannot any longer; then we get an arrhythmia. We know that as long as the heart is doing well it is better not to try to bring down the blood pressure. We can save a patient's life often, by treatment when failure begins.

Dr. P. S. Roy, Washington, D. C.: I would call attention to some points in diagnosis. If the patient has great shortness of breath, spits blood, and has a red face, we feel that we have a mitral lesion. These patients do not often spit blood in the aortic cases, and have dyspnea late if at all. If they have regular beat, and over 120, we know the remedy is digitalis; if it does not respond to 40 drops, results will be obtained from 80 drops. The blood pressure before and after exercise should be taken. If the heart is doing well, it should go up 10 or 15 points; if the heart is not doing well, it will go down. Dropsy or enlargement of the liver, hydrothorax, etc., is more liable to occur in mitral than in aortic disease.

Dr. A. L. Tynes, Staunton: Fibrillation of pulse is a symptom of grave prognostic significance. McKensie reports a series of cases, but not as large as White's. He found that not a single patient in whom this was observed was living after two years.

Dr. W. E. Anderson, Farmville: We are attaching too much importance to blood pressure measurement. The heart stands as much use as any organ, and I think as much abuse as well.

Dr. P. S. Roy: Without the presence of extrasystole, the alternating pulse is the last cry of a dying heart.

Posthospital Treatment

Dr. Stuart McGuire, Richmond: The surgical operation never cures a patient, it only puts him in the way to get well. It often takes months and even years for the patient to get back to his normal. The question at once presents itself whether the surgeon or the family doctor should be responsible for him during this time. The best results are obtained by intelligent cooperation between the patient, the family doctor and the surgeon. The patient is sometimes so impressed by the hospital regimen that he is inclined to look back to the surgeon, rather than forward to the physician. Questions as to clothing, diet, whether or not to wear corsets, abdominal binders, baths, douches, the resumption of sexual relations, etc., tax the physician's knowledge and common sense. In the first place, all the facts of the operation and the subsequent convalescence should be written to the physician by the surgeon. I put the directions in writing so as not to tax the intelligence or understanding of the patient. Ten or twelve forms may be kept on hand that will cover most cases in which operations are performed in the general hospital, and revised for occasional cases. One or more of these forms should be sent to the physician for the patient's instruction.

Mucous Colitis

Dr. John W. Preston, Roanoke: There are two erroneous impressions about this malady, that it is rare, and that the treatment is rebellious. As to frequency, two thirds of all young adults are afflicted some time. Twenty-three patients with it have been under my care in the last five years. The sympathetic and the vagus constitute the autonomic nervous system. The vagus produces a spasmodic action in the intestine, and the sympathetic the reverse. This gives an idea of the value of belladonna and epinephrin.

THE STATE VERSUS TUBERCULOSIS

Dispensaries in the Fight Against Tuberculosis

Dr. Louis Hamman, Baltimore: It is impossible for me to contemplate a method of combating tuberculosis that does not give a prominent place to the dispensary. The first task of the dispensary is getting patients, but this is the easiest. The nurse is most important in getting the confidence of families. They must have more considerate treatment than in the usual dispensary. The second important thing is early diagnosis. Early cases must be recognized. Experience is necessary to reach success. Third is the plan of treatment. The importance of this is great to the patient. I do not feel that it is the function of the dispensary to treat great numbers. The nurse is just as important in giving instruction as is the doctor. So many things follow tuberculosis that a social service department is always necessary to solve the economic difficulties. If the staff is large enough it may make clinical study of the cases presented, and so the dispensary may serve as a center where new facts may be ascertained. The schools are deficient in the instruction about the treatment and diagnosis of tuberculosis. We have eighteen municipal nurses in Baltimore.

The Visiting Nurse in the Fight Against Tuberculosis

Dr. David R. Lyman, Gaylord Farm Sanatorium, Conn.: If I were restricted to any one of the four agencies in treating tuberculosis, namely, sanatoriums, dispensaries, advanced hospitals and the visiting nurse, I would unhesitatingly take the visiting nurse, because the others would follow as the night the day. All four are needed. New York nurses have found an average of five cases for every one registered. The nurse gets to know the people, and if she is visiting one family she is very likely to hear it if another family on that street has some one with a chronic cough. In ten years, 1,122 discharged patients earned $1,339,000. I find that patients do better at their old occupations and do better indoors than out. In common with other states, with your nurseries, your laundries and your kitchens in the hands of a race whose death rate from tuberculosis is treble your own, where should your campaign logically begin?

Discussion on the State Versus Tuberculosis

Dr. Stephen Harnsberger, Catletts: Tuberculosis is found largely among the poor, and the wage earners. So it should be largely a state or a governmental matter. Environment is of primary concern in the fight against tuberculosis. Eradication is largely a matter of abolishing poverty.

Dr. John J. Lloyd, Catawba Sanatorium, Va.: We have a sanatorium of 168 beds which I believe will be sufficient to care for the incipient cases for several years to come, and $192,000 earned by discharged patients is a good percentage on the amount invested by the state. Too many come with the idea that they will be well in one, two or three months. The patient is too apt to think that if he visits the doctor once a week, he can do as he pleases the rest of the time. The nurse who has had tuberculosis makes the best nurse. The negro problem is the biggest and the hardest one to handle.

Dr. W. A. Plecker, Richmond: The worst—the number of deaths from this disease—has not been told. They are erroneously reported. The colored people realize that it is not a good thing to have it known that they have tuberculosis. I think probably there were 4,000 deaths. If in our power, we are going to make the death rate from tuberculosis *seem* higher by getting more accurate figures.

Dr. P. S. Schenck, Norfolk: We listen to these addresses by specialists, and we are filled with enthusiasm; we go home, and we do nothing. We should go at fundamentals, namely, money and authority—authority to take the tuberculous patient out of his family, and place him where he would no longer be a menace. There are only five states in which the death rate from tuberculosis is higher than in Virginia.

Dr. R. W. Brown, Roanoke: I have been impressed with the fact that while early diagnosis is important, yet the majority of patients who come to me as preliminary examiner for Catawba Sanatorium are too far advanced to enter the sanatorium. I have lost some of the best patients in my clientele by making a diagnosis of early tuberculosis. Another fact is that we must have some place where the advanced patients can get treatment.

National Board of Examiners

Dr. L. A. LaGarde, Washington, D. C.: I am here tonight at the bidding of Dr. Gorgas, in a matter in which he is much interested. Everything is tending toward military preparedness, these days, so that if a crisis comes we shall not break down as we did in the medical department in 1898. The army has no difficulty in getting anything it asks of Congress at present, but what we are asking for now Congress cannot give. We want men to assist us in time of war. We want to prepare the medical men before the crisis. In foreign countries now there is not a medical man who is not in some way or other connected with the army medical corps. The 0.7 per cent. which we have is not a drop in the bucket if a crisis should arise. We have among other organizations the Red Cross. We have of course also the National Guard Medical Corps. But that would not be enough. We formed the Medical Reserve Corps some time ago, but it is not yet to our satisfaction. Dr. Rodman is the father of a movement to establish a central board for examination of physicians, so that they may practice their profession in any state, territory or possession of the United States. Dr. Gorgas says he will take the licentiate of this board without further examination. We can give training through summer camps and through correspondence. Many associations have adopted resolutions favoring cooperation in this matter. (Note: A resolution favorable to this was passed.)

Sanatoriums in the Fight Against Tuberculosis

Dr. Lawrason Brown, Saranac Lake, N. Y.: In the early eighties, the sanatorium idea reached America; Trudeau and Bowditch founded the institutions. Today we know that some patients pass through no incipient stage but leap from the doubtful to the advanced stage. I believe that tuberculosis is curable, but I hold that permanent arrest is the most frequent termination in the majority. The remainder of the life of the sanatorium patient must be a "sanatorium extension course." He must apply and change the knowledge until knowledge is replaced by wisdom, which is assimilated knowledge. The sanatorium must be given credit for starting the crusade. Later the public began to demand that an early diagnosis be made. A great factor in enlightenment is the influence of patients who have been educated at sanatoriums. Hard work, questionable food and rest at night in a room that cannot be ventilated means defeat for many. Every worker has heard of the "unteachable consumptive." He struggles to support his family, and grows worse; bitterness comes and carelessness; the tubercle bacillus is planted in his children; here the "night sanatorium" may be the means of saving. Thirteen states have passed laws authorizing the erection of county tuberculosis hospitals.

Control of the Poor Consumptive

Dr. Charles L. Minor, Asheville, N. C.: I speak of the poorer class of workmen and workwomen, and of our hosts of negroes whose dirtiness and ignorance is rivaled by our foreign immigrants, their tenements characterized by dirt, darkness, dampness and lack of fresh air, the dirty children playing on the dirtier floor on which the sick members expectorate indiscriminately. Do you think you or your children could stay well under such conditions, forced to eat the horribly cooked food the tired, ignorant, overworked wife prepares? Could you educate your children into healthy and useful citizens in such surroundings—sickness, no hygiene, poor food, bad examples and bad companions all around them? Leave this poor man where he is and he will surely die; but he will also drag down his family and often his neighbors; remove him to a place where he can get proper care till he dies, disinfect his tenement, watch over his children, and you will nip in the bud a focus of infection whose evil possibilities are hard to overestimate. You are forced to the only satisfactory solution of this problem, to give your health department police power to remove him from his home, and place him in a specially constructed hospital. Here rendered harmless to his friends and his community by skilful care and thorough sputum disposal, visited at intervals by his family, he can pass his last days in comfort, no longer a menace. Liberty is conditioned on its not bringing harm to other citizens. When our legislators recognize the importance of this, they will evolve laws to meet the situation. If 3,500 Virginians die yearly from tuberculosis, each furnishing a focus of infection, the number is certainly large enough to justify the expense. I would say most emphatically that it is utterly impossible to care for these poor invalids in their homes. Those who know the habits of our poor, and especially of our negro poor, will have no illusions on the subject. The buildings may be inexpensive; the administration must be moderate.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

(*Concluded from page 2117*)

The Etiology of Pellagra, with Especial Consideration of the Phenomena of Sensitization to Maize and Sugar Cane Products

Dr. Roy Blosser, Atlanta, Ga.: I do not blame granulated sugar or carbohydrates as a class with having anything to do with the production of pellagra. I claim that certain products of sugar cane contain an active poison and that all that is necessary for the development of the disease is consumption of a sufficient quantity of these poisons. I no more believe that the consumption of meat and proteins can prevent pellagra than that it can prevent the development of alcoholism in the regular drinker, though the moderate consumption of proteins is advantageous in the treatment of pellagra. My claims as to the production of pellagra by partially refined sugar cane are based on the effect of the experimental administration of these products to dogs; also to the results obtained in the treatment of from 100 to 150 cases of pellagra, seventy-two of which have been under observation more than a year, with no relapses. The treatment has been strict abstinence from cane sugar and maize products. Pellagra is a disease of improper diet; it constantly presents marked gastro-intestinal symptoms which antedate by many months or years the condition recognized as pellagra. Change in diet is admitted to be necessary in treatment. In some cases the extreme, not moderate, consumption of maize is the main factor in its production. There is a close resemblance between the effect of sugar cane and alcohol, the difference being one of degree. Individuals consuming continually large quantities of sugar cane products become sensitized to them. In advanced and chronic forms of pellagra, sugar cane products cause burning of the tongue, esophagus and stomach, palpitation of the heart and nervousness. Notwithstanding the unpleasant symptoms, the habitué craves the stimulation of the sweets. One who has become sensitized to maize will react to sugar cane and vice versa. The reaction is more marked in warm weather than in cold. Recent investigators have explained this reaction as a form of anaphylaxis.

The Problem of Spoiled Corn

Mr. E. J. Watson, Commissioner of Agriculture, Columbia, S. C.: The Southern States have been made the great dumping ground for impure corn products. Last year in South Carolina, 108 out of 240 shipments of corn meal were made of spoiled corn unfit for a hog, much less for human beings. This corn was from other states. Dangerous meal cannot be detected by inspection, as is shown by the samples exhibited. Over 40 per cent. of the corn meal shipped into the state in 1914 was unfit for any purpose, and it was either confiscated and destroyed, or when it was just above the minimum standard of safety we have permitted it to be shipped back. What effect meal from spoiled corn has had on the health conditions I do not know. The spoiling of the corn is due to the miserable system of shocking corn in the fields. The foundation of the whole trouble is the moisture which comes on account of the upturning of the ear in the shocks, which allows the development of poisonous fungi. Meal from spoiled corn is not the only injurious fungi.

Etiology of Pellagra

Dr. George C. Mizell, Atlanta, Ga.: A working hypothesis of the etiology of pellagra which appears to harmonize all disputed points is this: The one essential primary cause of pellagra is the consumption of excessive amounts of fat of the cottonseed oil group, and the storing of these oils, and their oxidation products in the body. The condition which facilitates the storing of these fatty compounds we will term the secondary cause of pellagra. The secondary cause is any systemic intoxication. [After developing his hypothesis and giving his observations in a number of institutional and other cases, Dr. Mizell reached the following conclusions:] In every region in which pellagra exists, oils of the cottonseed oil group are consumed: Where these oils are excluded from the diet of the individual or the institution, pellagra ceases to exist. The cottonseed group of oils is the only common constituent of the food of pellagrins of this country; it is of undetermined wholesomeness, and it is the only food that corresponds to the incidence of pellagra in the United States. The common constituent of these oils which differs from constituents of known wholesome oils is linolein; therefore it follows that linolein is the cause of pellagra. There are many conditions such as climate, local infectious diseases, constitutional diseases, conditions of skin, conditions of the gastro-intestinal tract and habits of individuals in selecting food, each, separately and collectively, which play a part in the incidence and progress of the disease; but the essential cause is consumption of excessive quantities of linolein.

DISCUSSION ON ETIOLOGY OF PELLAGRA

Dr. H. F. Harris, Atlanta, Ga.: The idea that oils are associated with pellagra is very old, like everything else connected with the subject. There are really no actual facts as introduced that would go to show there is any truth in the idea. In the southern part of the country, where pellagra does not exist, they eat olive oil, but it is in the northern part that it occurs. They have practically no other food except maize. It would seem to me the people who live largely on oils would suffer if there were any truth in this hypothesis, for example, the Eskimo and the people of southern Italy, who eat a great deal of oily substances. One point in regard to the statement made by Commissioner Watson: That rotten corn is harmless is a curious doctrine. It is well known that maize, in its early stage, becomes highly acid, but at a later time the bacteria convert the albuminous portions until we get a product that is not poisonous.

Dr. Mosby, Durham, N. C.: Dr. Mizell is advancing a very ingenious theory. I have known it for some years and have never been able to accept it. There is one thing I would like him to explain on his theory: We see a mother who has pellagra, and she prepares the food for the rest of the family, and the rest of the family take pellagra. If it is a boarding house keeper, we do not see so much of this pellagra. I am convinced that pellagra is an infectious disease.

Dr. Adam Hayne, Columbia, S. C.: The doctrine that spoiled maize is the cause of pellagra in South Carolina has been absolutely refuted on the floor here by the commissioner of agriculture. He stated that there was no spoiled corn raised in South Carolina, that none was allowed to come into the state, and that it was turned back. Yet the fact remains that there have been 1,083 deaths in this state from that disease since January 1 of this year. Now, if we are going to tell the people of this state that it is due to corn and corn products, we are going to tell them something that we cannot prove by the facts.

Dr. Roy Blosser, Atlanta, Ga.: Dr. Mizell does not claim that corn does not cause pellagra. I think he claims it does, and advances his theory as another cause. Some Italians do not eat corn, but some of them do; and it is up to some one to explain what causes pellagra when they do not eat any maize, and when maize is not imported into the country.

Dr. Cosby Swanson, Atlanta, Ga.: If cottonseed oil is the cause of pellagra, why is it that we do not see more cases of pellagra in persons between 12 and 18 years of age? In patients suffering from pellagra there is less fat deposited in the skin, the sweat and sebaceous glands are not so active; the skin is usually dry and hard, because of their inactivity.

Dr. George C. Mizell, Atlanta, Ga.: There is not one fact in statistics that does not substantiate this hypothesis. Dr. Harris said, "As an evidence that this theory is not true, in Italy and in France where much olive oil is used, pellagra does not occur." Olive oil is a nondrying oil. Cottonseed oil is a drying oil. The Eskimos do not have pellagra because they do not eat this sort of oil, but blubber oil, which is entirely different. Dr. Harris stated, in his bulletin, "It has been definitely shown beyond any doubt that there is a poisonous substance in cottonseed, and that it has nothing whatever to do with the oil." I have data to show that it has not been proved.

Dr. Goldberger says, "Pellagra is due to something that we are eating or are not eating." He says, "They are eating a cheap class of food, cheap carbohydrates, meats and fats (sow belly)." You cannot produce one patient with pellagra who eats fat derived from sow belly alone, in connection with other cheap nonfatty foods.

Dr. Siler wanted to know why negroes in one locality have pellagra to a greater extent than in another. The negress may cook for the white people in the city. She feeds her family from the white people's table; they get the same products that the white people are eating. Let the negro alone and he will buy sow belly and use the grease for cooking, thus excluding drying fats. Again, local conditions may be a secondary factor in different localities.

Dr. J. F. Siler, Washington, D. C.: Why is it that in people between the ages of 20 and 45, so many more cases occur among women than among men, in white people particularly? We have a tremendous number of cases among the females.

Dr. George C. Mizell, Atlanta, Ga.: It is due to the fact that mothers and other women of this age have more unstable health; 65 per cent. of my gastro-intestinal cases are in mothers who have gastro-intestinal autointoxication and female disturbances, which are often the secondary causes in pellagra.

In regard to Dr. Swanson's question, children between 12 and 18 do not often have pellagra because that is the period of adolescence. During that period they have a much more active sebaceous secretion which enables them to take care of large amounts of incompletely oxidized fatty waste products. The skin does not dry so easily.

Etiology of Pellagra in Children: A Study of Two Hundred Cases in Orphanages

Dr. H. W. Rice, Columbia, S. C.: Of 200 cases of pellagra in children in orphanages, 182 occurred in a local institution in four epidemics. [Data are given with reference to corn, and other dietary considerations, together with statistics regarding age, sex, coincident disease, immunity, etc., and the study is summarized as follows:] The facts in a large percentage of our cases of pellagra in this orphanage strongly discredit a causative relation of corn. The incidence of pellagra is much higher in children under 12 years of age. The discoverable differences in the diet of the smaller and larger children seem inadequate to account for this age distribution. Children are more than three times as liable to develop pellagra during the first year's residence in the orphanage as in any subsequent year. There appears to be some relation between the amount of animal foods consumed and the spread of pellagra in orphanages. The predisposing factors, age, sex, hereditary weakness, poor nutrition and coincident diseases, apparently were operative in this series of cases.

DISCUSSION

Dr. J. F. Siler, Washington, D. C.: In connection with a study of another orphanage in this state which we made during the course of two years, it might be interesting to refer to two or three points that Dr. Rice has brought out in his paper. This institution had about 250 orphans, the ages ranging from 5 or 6 to about 18. The majority were females, and it was interesting to find, just as Dr. Rice found, that about 75 per cent. of the children developed pellagra in the first year of residence. Two children, aged 5 and 6 years, were sent to the orphanage from Lancaster, Pa. It is improbable that the disease existed prior to their admission. Within six weeks after admission both of these children had pellagra. The diet, you can call it incomplete, poorly balanced, or anything you may choose, was not a good one. They had in this institution about forty cows, and the dairy supply of milk in 1914 was about 50 gallons per day. A great deal of the milk was made up into butter and there was much buttermilk. They had peas and beans frequently, and slaughtered their own beef twice a week, so that they sometimes had enough beef to last for four days during the week. In the fall and winter they had a great deal of fresh pork, but the diet was not, in our opinion, a satisfactory one, and we recommended that they add milk and eggs and more fresh meat.

I do not think beans and peas have anything essentially to do with the prevention of pellagra. I do think, however, that beans and peas should enter extensively into the dietary of the people, and so far as we could determine in our field observations in this country and elsewhere, they do form a very conspicuous feature of the dietary where pellagra is endemic. I was somewhat surprised in the fall of 1914 to see the papers of the South filled with the slogan, "To cure pellagra, eat beans; to prevent pellagra, plant beans and peas." I note that the slogan this year (1915) is, "Buy a cow." To this recommendation I most heartily subscribe. Our dietary investigations lead me to doubt very seriously that beans and peas contain the hypothetic pellagra-preventing vitamins in any great amounts.

Dr. W. J. MacNeal, Washington, D. C.: A thing of great importance is the age distribution of pellagra. This is probably a matter of physical resistance of individuals at different ages. It means simply the resistance to disease of all sorts, and follows that curve. Of course it is not absolutely so, but there is that tendency to resistance of disease of all sorts. During the period from 15 to 19 the death rate is low and the natural vitality greater than in other periods. The recovery of these patients while continuing on the same diet is important. These children come here, they take this deficient diet, which we may criticize as much as we will, without saying in exactly what respect it is deficient. They show typical erythema, and subsequently recover and live three or four years without recurrence.

Dr. Joseph Goldberger, Washington, D. C.: The immunity to which Dr. Rice calls attention, which apparently developed after one or two years of residence at the orphanage, can be explained by the fact that after a year or two of institutional residence, the child reaches the age which admits it to the group having the better diet. The fact that the difference in the diet of the younger and of the older children did not seem adequate to Dr. Rice to explain the difference in the incidence of pellagra in the two groups should have no weight. The important thing to remember is that a difference was discernible. In the present state of our knowledge we have no way of telling whether a particular diet is adequate or inadequate. The only way we can judge of that is by its physiologic effects: that is, by trying it for a long enough time.

Dr. George C. Mizell, Atlanta, Ga.: If diet is the cause of pellagra, there must have taken place in the diet of the American people some radical change. Fifteen or twenty years ago people were just as particular in the selection of their diet as they are today. Take into consideration the fact that in 1908 only 10 per cent. of the people were eating cottonseed oil products. In 1910, 48 per cent. of the people were eating cottonseed oil products. The consumption of cottonseed oil products jumped to 50,000,000 gallons in 1908.

Dr. H. W. Rice, Columbia, S. C.: My personal opinion is that children should be fed more milk and not so much meat, but they should have more of both than the children of this orphanage have had. Coincident disease as well as dissipation in adults no doubt plays a part in the etiology. As to Dr. Goldberger's point, that there was shown to be a difference in the diet in the older and younger children, I said that the slight difference did not seem adequate to account for the relative difference in the incidence of the disease in the respective groups. Of course it can be only a matter of opinion in the present state of our knowledge of the subject.

Comparison of Chemical Changes in Central Nervous Systems of Pellagrins and Animals Subjected to an Exclusive Vegetable Diet

Mathilde L. Koch and Carl Voegtlin, Spartanburg, S. C.: If pellagra is due to a dietary abnormality, as has been suggested by many students of the disease, it should be possible to reproduce in animals by dietary means some, if not all, of the pathologic changes which are observed in pellagra. The present paper represents an abstract of one phase of this investigation, and can be summed up as follows: The diet which seems to give rise to pellagra is made up largely of vegetable foods, being rich in carbohydrates. This diet, if fed continuously to healthy monkeys, rats, mice and other animals, leads to symptoms and chemical and histologic changes in the organs very similar to those found in pellagra. Although the explanation as to how this diet leads to pellagra is still lacking, the observations made on our animals furnish valuable support to the dietary theory of this disease. These observations are particularly important when brought into connection with the extensive unsuccessful attempts to transmit the disease to animals by means of inoculation of material from pellagrins. Both the diet used in these feeding experiments and that consumed by persons developing pellagra seem to be lacking in certain chemical substances contained in relatively large amounts in such animal foods as milk, eggs and meat.

DISCUSSION

Dr. J. F. Siler, Washington, D. C.: It is extremely interesting that pellagra concurs with such remarkable rarity in nursing children. We know from the literature of the subject that beriberi, a deficiency disease, is common in nursing infants. If pellagra were a deficiency disease, it seems to me that its age distribution, so far as nursing infants are concerned, would be similar to that in beriberi. As a matter of fact, it is hardly possible to have a more remarkable dissimilarity.

Dr. Roy Blosser, Atlanta, Ga.: I am sorry that Dr. Voegtlin did not emphasize the pathologic conditions in the spinal cord. The essential changes in pellagra of the spinal cord are in the upper part of the cord, and distinguish them from the changes in other diseases, notably tabes. I think corn syrup in the diet was mentioned. That term, I think, ought to be eliminated, because corn syrup is a mixture and it has a very high percentage of glucose, which, so far as we know, is chemically pure. That is the only place where the corn gets in, so I think it would be much better if that term were eliminated; but I do not know what term could be substituted in its place.

Carl Voegtlin, Spartanburg, S. C.: In regard to the comment of Dr. Blosser, it seems unnecessary to call attention to the great similarity of the photomicrographs of the spinal cord in our experimental animals with those obtained from pellagrins. Anybody who has seen the work of Tuezek will be struck by the great resemblance of his illustrations with those presented today. The corn syrup used at the Pellagra Hospital is not chemically pure glucose; it is made from corn starch.

Differential Diagnosis of Skin Manifestations of Pellagra

Dr. Cosby Swanson, Atlanta, Ga.: The differential diagnosis must be made on clinical grounds alone. We have neither definite etiologic knowledge nor laboratory diagnostic methods. The skin manifestations present congestion, thickening and pigmentation, and atrophic thinning. The eruption may begin as macules which fuse, forming patches of livid red erythema. The tissues are generally swollen. In a short time the redness fades and the surface becomes covered with scales. In some cases vesicles, bullae and ecchymotic lesions complicate the process. The surface may become raw. The skin may resume a normal appearance, but after several recurrences it atrophies. A symmetric distribution of the lesions is characteristic. Itching and burning often precede the eruption. At the beginning it may resemble a sunburn. Skin diseases resembling pellagra are acrodynia, erythema solare, erythema caloricum, erythema ab igne, erythema pernio, erythema multiforme, eczema, trade dermatitis, dermatitis venenata, lupus, syphilis and erysipelas. Acrodynia somewhat resembles pellagra, but runs a shorter course, rarely ever recurs, and is rare. Sunburn resembles the early rash of pellagra, but the area is usually less acutely inflamed. There is less redness, and it gradually fades instead of becoming darker as in pellagra, and is followed by less exfoliation. Erythema multiforme is prone to recur, is usually seen in spring and autumn, and is accompanied by nervous and gastro-intestinal symptoms. It differs from pellagra in that the eruption is found on the flexor oftener than on the extensor surfaces, and seldom on the face, rarely involves the entire surface, does not exfoliate, and is not followed by pigmentation. Its duration is short.

Erythema and eczema may be mistaken for pellagra eruptions. It generally begins as macules or erythematous spots with swelling accompanied by excessive burning and itching. Desquamation begins in a few days, and often continues for several weeks and may become chronic. Exposure to heat, cold, wind and other irritants often causes an outbreak. It differs from pellagra in that it occurs at all seasons, is not symmetric, is usually seen on the flexor surfaces as well as on the extensor, the edema is more marked, and it is accompanied with more itching and burning. The differentiation from dermatitis venenata can usually be made by the history, duration and location of the eruption.

Lupus erythematosus disseminatus can usually be distinguished by the location, shape, time of occurrence, color, course, duration and other symptoms of pellagra. Syphilitic eruptions can usually be differentiated by the history of a primary lesion, the secondary rash on the body, character of eruption, positive Wassermann and other symptoms of syphilis.

Pellagra

Dr. H. W. Dudgeon, Director, Khanka Lunatic Asylum, Cairo, Egypt: I can only reiterate my belief in the maize theory of pellagra which is extremely prevalent in Egypt. I have examined physically many thousands of residents of Egypt (mostly Egyptians) from all districts and from all classes of society, during the last fourteen years, and it has been impressed most strongly on me how entirely this disease is confined to the villagers of the poor class; it is almost unknown among those who live in the towns, and it is also most uncommon in the districts (Upper Egypt) where millet is grown. The Egyptian villager's diet has maize as the main ingredient, and wherever maize is the staple form of diet, there you find pellagra. In fact, it is so rife among the villagers that I doubt if it can have been endemic to this country for a great number of years, and with this idea and the similarity of many of the symptoms to some accounts I was able to obtain of chronic atropin poisoning, I sent a certain number of specimens of maize to England for analysis, with the attempt to see if the alkaloid atropin or its allied group of alkaloids were present. No atropin was found, but the leaves of certain specimens did contain an alkaloid and one of them did not. The alkaloid was too small in amount for identification, but it was sufficient to prove that it was not one of the more commonly known alkaloids, and the leaves of the specimen happened to be that of the oldest species of maize cultivated in Egypt. My opinion is that pellagra is a multiple neuritis, and may be due to an alkaloid administered in minute doses, possibly by the seeds absorbing the poison from the leaves, and that it is accidental and due to maize faultily stored; it is evidently not normally found in maize seeds, nor do I think all kinds of maize leaves contain it.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

December, X, No. 6, pp. 397-488

1 *Duodenal Ulcer in Infancy an Infectious Disease. L. Gerdine and H. F. Helmholz, Chicago.
2 Comfortable Arrangement for Separate Collection of Urine and Feces of Male Infants. A. M. Courtney and H. L. Fales, New York.
3 Oxalic Acid Excretion in Urine of Children. J. P. Sedgwick, Minneapolis.
4 Phthalein Test in Orthostatic Albuminuria. T. C. Hempelmann, St. Louis.
5 Influence of Clothing on Surface Temperature of Infants. W. B. McClure and L. W. Sauer, Chicago.
6 *Ammoniacal Diaper in Infants and Young Children. J. Zahorsky, St. Louis.
7 Acute Myelitis Following Varicella; Report of Case. D. C. W. Smith, Baltimore.

1. **Duodenal Ulcer.**—In ten out of fourteen ulcers examined by the authors, diplococci were found in the ulcer base, in such numbers and in such a position that they presumably are of etiologic significance. Furthermore, in one of the cases a *Streptococcus viridans* was isolated from the duodenal ulcer, which on injection into rabbits and dogs localized in the pyloric end of the stomach and duodenum and there produced hemorrhages and ulcerations. This case was the only one in which the authors were able to obtain the organisms in pure culture, and the only one in which the necropsy was performed shortly after death. In two other cases a few streptococci were seen in the bouillon cultures, but the cultures were so overgrown with colon bacilli that it was impossible to isolate the streptococci. In one case only the colon bacillus was grown.

6. **Ammoniacal Diaper.**—The ammoniacal diaper is frequently encountered by the practitioner. Usually, the odor of ammonia is faint, especially in young infants. Only occasionally does the concentration become sufficiently intense to produce the characteristic irritation of the skin. The lesions consist of inflamed areas on the inner side of the thighs, the genitals, the buttocks and lower abdomen. The skin lesions nearly always appear in the morning when the infant has lain for a long period during the night. Infants who do not wet the diaper are not subject to this trouble. In fact, enuresis and ammoniuria go together. The ammoniacal diaper is a frequent precursor of pyelocystitis in female infants. The onset is usually abrupt and the course is irregular and indefinite. The irritating urine may be present for one day only; then it may last for weeks. Zahorsky has collected notes of seventy-eight cases, in all of which the patients showed some skin lesions, and the ammonia was sufficiently intense to warrant more than a passing notice. Of these seventy-eight cases, fifty-four, or about three fourths, occurred in children over 10 months of age. The severest lesions occurred in boys. The disorder seems to be almost limited to artificially fed infants. Zahorsky has searched long for the cause of this disorder and he is now convinced that the ammonia is derived from the ammonium compounds in the urine, and is liberated by an alkali present in the diaper—soap, lye, lime or stool.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

November, III, No. 5, pp. 247-310

8 Schistosomiasis Japonica. A. C. Reed, Changsha, China.
9 Plague Preventive Measures; Their Development and Present Status. R. Blue, Washington, D. C.
10 Experiences in Treatment of Plague in New Orleans. W. H. Seemann, New Orleans.
11 Control of Yellow Fever in Immune Community without Use of Fumigation. G. M. Converse, U. S. P. H. S.
12 Method of Concentrating Malaria Plasmodia for Diagnostic and Other Purposes. C. C. Bass and F. M. Johns, New Orleans.

Boston Medical and Surgical Journal

November 25, CLXXIII, No. 22, pp. 795-830

13 What General Practitioner Should Know About Incipient Pulmonary Tuberculosis. V. Y. Bowditch, Boston.
14 Medical Aspects of Empyema and Pulmonary Abscess. F. T. Lord, Boston.
15 Recognition of Pleural Disorders by Roentgen Rays, with Special Reference to Empyema. P. Brown, Boston.
16 Pneumodynamics of Empyema. F. J. Cotton, Boston.
17 *Treatment of Chronic Empyema. F. B. Lund, Boston.
18 *Lung Abscess and Bronchiectasis from Surgical Point of View; Certain End-Results of Acute and Chronic Empyema. W. Whittemore, Boston.

December 2, No. 23, pp. 831-866

19 Dangers of Ether as Anesthetic. W. W. Keen, Philadelphia.
20 *Pregnancy and Diabetes Mellitus. E. P. Joslin, Boston.
21 Surgical Specialties in Hospitals. P. Thorndike, Boston.
22 *Etiology and Treatment of Heart Disease. P. D. White, Boston.

17. **Treatment of Chronic Empyema.**—Lund says that in localized chronic empyema, decortication has usually given most brilliant results and been successful the first time. Decortication is not a cure-all or specific. It must be thoroughly and intelligently used, and must be preceded and followed by all the tricks and dodges which experience can suggest to secure lung expansion, except those methods which imply suction apparatus and provide an inadequate drainage opening. It may have to be supplemented in certain obstinate cases by rib resection. On the whole, however, and properly used, it must be regarded as an invaluable method in cases in which the later simple methods fail to cure, and the ultra radical methods are sure to kill patients.

18. **Surgery of Lung Abscess and Bronchiectasis.**—Although the operation for acute empyema may be a simple one, yet, Whittemore says, the results have been far from satisfactory. After an acute case becomes chronic, the outlook for the patient becoming a useful member of the community is questionable. Surgery has little, if anything, to offer cases of bronchiectasis at present. The surgery of lung abscess is most encouraging, and a greater number of cases are constantly being successfully operated on.

20. **Pregnancy and Diabetes Mellitus.**—Out of the seven cases of moderate or severe diabetes associated with pregnancy cited by Joslin, four patients are dead, one by suicide, one with uremic manifestations ascribed to neglect, a third died in coma, pregnancy having developed after diabetes had existed for a year, but treatment was neglected, the patient later being under the care of a clairvoyant, and the fourth in which the patient successfully went through her first pregnancy in 1897 with a healthy child, but again was confined and the child lost in 1905, the patient dying two months later of pulmonary tuberculosis. Of the three remaining patients, one is in exceptionally good health, free from sugar and has a normal child six months after delivery; another is in a tolerable condition, having been pregnant three times but with only one child now living; and the remaining patient is alive, although severely ill with diabetes six years after confinement. All of the seven patients with moderate quantities of sugar in the urine are well.

Joslin says that the secret of success in the treatment of pregnant women with sugar in the urine is: 1. To have the patients under constant supervision throughout the course of the pregnancy and for some months after confinement. 2. Treatment should follow exactly the same methods which are employed in the treatment of the usual case of diabetes. 3. Even when sugar appears to a slight extent in pregnant women, it should be carefully watched and controlled by diet. 4. The advantages of a cesarean section should be borne in mind. 5. Whereas ether anesthesia may work well, it is probably not so safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be employed. 6. Finally, many statements occurring in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. If pregnant diabetic cases are suitably managed, they will likely abort less frequently. It cannot yet be accepted as proved that pregnancy aggravates a diabetes. It is quite possible that the reason for a patient with diabetes becoming worse during pregnancy is simply due to the ingestion of an unusual quantity of food. Nursing is not contraindicated following confinement, for the diversion which it affords the patient may offset the extra demands thrown on the metabolism.

22. **Treatment of Heart Disease.**—White summarizes his study of 200 cases as follows: The male sex is more subject to auricular fibrillation, auricular flutter, heart block and alternation of the pulse than the female sex. The older the patient with heart disease the more subject is he to serious abnormalities of the heart beat. Auricular fibrillation and alternation of the pulse occur at the same ages, most frequently in the fifth and sixth decades. Rheumatic hearts usually show normal mechanism or auricular fibrillation, much less commonly pulsus alternans. A considerable percentage (36 per cent.) of syphilitic hearts showed alternating pulse; few were fibrillating. A patient with cardiac insufficiency in the course of cardiorenal disease is apt to show pulsus alternans, either constant or more frequently only after ventricular premature beats. Cardiosclerosis often results in the production of fibrillation and alternation. Hyperthyroidism of long standing is sometimes attended by auricular fibrillation. Alcohol, tobacco, tea and coffee appear to play no direct part in the production of serious disorders of the heart beat. Two thirds of the patients with auricular fibrillation, one half of those with alternation of the pulse, and one-third of those with normal mechanism in the series analyzed by White, showed physical signs of cardiac insufficiency. Digitalis was used in 88 per cent. of these decompensated cases, almost always in the form of pills of standardized leaves. Intravenous medication was used in urgent cases only. Morphin was given beneficially in nearly one half of the patients with physical signs of insufficiency, often one dose sufficing to give the patient the first comfortable night in weeks. Venesection was found useful in a few urgent cases. The change in diet to five small meals daily was often much appreciated by the patient.

California State Journal of Medicine, San Francisco

November, XIII, No. 11, pp. 415-454

23 Modern Diagnosis of Hematuria. M. Krotoszyner, San Francisco.
24 Clinical Records. E. S. Kilgore, San Francisco.
25 Conditions in Lower Back Involving Sacrolumbar and Sacro-Iliac Articulations. C. L. Lowman, Los Angeles.
26 Diagnosis of Ureteral Calculi, and Technic for Use of Wax-Tipped Catheter in Male. F. Hinman, San Francisco.
27 *Finding of Arsenic in Cerebrospinal Fluid Following Intravenous Administrations of Neosalvarsan. J. H. Barbat, San Francisco.
28 Blood Transfusion Simplified. A. V. Doran, Vallejo.
29 Paper-Bag Holder for Reception of Soiled Surgical Dressings. H. M. Sherman, San Francisco.
30 Panama-Pacific Dental Congress. L. Van Orden, San Francisco.

27. **Arsenic in Cerebrospinal Fluid.**—In the case which Barbat reports, the patient was given a full dose of neosalvarsan and 43 c.c. of the cerebrospinal fluid was immediately withdrawn. This fluid was not examined for arsenic, but showed a strong Lange reaction for paresis. Four days afterward he received another dose of neosalvarsan, and 30 c.c. of the cerebrospinal fluid immediately removed, which was found to contain 1/100,000 metallic arsenic.

Journal of Experimental Medicine, Lancaster, Pa.

December, XXII, No. 6, pp. 675-847

31 *Relation of Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice. Importance in Production of Hemolytic Jaundice of Path of Hemoglobin to Liver. J. H. Austin and O. H. P. Pepper, Philadelphia.
32 *Id. Influence of Diet on Anemia Following Splenectomy. R. M. Pearce, J. H. Austin and O. H. P. Pepper, Philadelphia.
33 Studies on Circulation in Man. Development of Collateral Circulation in Right Hand After Ligation of Innominate Artery for Subclavian Aneurysm. G. N. Stewart, Cleveland.
34 Acceleration of Esterase Action. J. W. Jobling, A. A. Eggstein and W. Petersen, Nashville, Tenn.
35 Relation of Serum Esterase to Liver Destruction. J. W. Jobling, A. A. Eggstein and W. Petersen, Nashville, Tenn.
36 Origin of Tumors in Mice. Tumor Incidence and Tumor Age in Hybrids. A. E. C. Lathrop and L. Loeb, St. Louis.
37 *Influence on Spleen and Thyroid of Complete Removal of External Function of Pancreas. J. E. Sweet and J.-W. Ellis, Philadelphia.
38 *Influence on Tadpoles of Feeding Desiccated Thyroid in Variable Amounts and of Variable Iodin Contents. C. H. Lenhart, Cleveland.
39 *Experimental Pneumonia (Friedländer Type). W. R. Sisson and I. C. Walker, Boston.
40 Experimental Study of Blood Glycolysis. Effects of Thyroid and Suprarenal Extracts and Phlorhizin on Glycolysis in Vitro. G. M. Mackenzie, New York.
41 *Diet and Tumor Growth. W. H. Woglom, New York.
42 *Antityphoid Vaccination. H. J. Nichols, San Francisco.
43 Relationship of Chronic Protein Intoxication in Animals to Anaphylaxis. W. T. Longcope, New York.
44 *Effect of Roentgen Rays on Rate of Growth of Spontaneous Tumors in Mice. J. B. Murphy and J. J. Morton, New York.
45 Biologic Classification of Pneumococci. O. T. Avery, New York.
46 Spontaneous and Experimental Leukemia of Fowl. H. C. Schmeisser, Baltimore.

31. **Relation of Spleen to Blood Destruction.**—The experiments reported on by Austin and Pepper indicate that when hemoglobin is set free in the portal circulation a larger amount is held by the liver and converted rapidly into bile pigment than is the case when it is set free in the general circulation, and that, under the former condition, overloading of the liver with bile pigment more readily occurs and jaundice is more apt to develop. The authors conclude that this mechanical influence must, therefore, be a factor in the lessened tendency after splenectomy to the jaundice which follows blood destruction due to hemolytic agents for whether the spleen be an active factor in destroying the erythrocytes, or whether it plays merely a passive part as a place for the deposition of the disintegrating cells, there can be no question that in this organ, when it is present, a large number of cells undergo their final disintegration after the action of hemolytic poisons, and that the hemoglobin there liberated passes by the portal system directly to the liver. When the spleen is removed, this disintegration occurs in other organs, notably, in the lymph nodes and bone marrow, and the hemoglobin from these organs passes not into the portal but into the general circulation, from which it reaches the liver more gradually and in a more dilute form.

32. **Influence of Diet on Anemia Following Splenectomy.**—The author's experiments showed that the anemia which develops after splenectomy is most marked in animals on a mixed table scrap diet of meat, bread, cereals and vegetables, which is essentially a cooked diet. Control studies in which a unilateral nephrectomy precedes splenectomy demonstrate that the anemia is not due to operation, hemorrhage, or accidents of convalescence, but develops only in the absence of the spleen. The results of studies of the influence of food containing a large amount of iron in presumably easily utilizable form, as in raw beef spleen, do not support the view that the anemia is due to lack of iron in the food. Observation on the influence of a diet of raw meat as contrasted with cooked meat, shows a more severe anemia in animals on the cooked diet and suggests the possibility that heat alters some substance which, in the absence of the spleen, the body cannot utilize. A final conclusion in regard to this point must, however, await the results of more detailed studies now in progress.

37. **Removal of External Function of Pancreas.**—Quite by accident Sweet and Ellis noted in two cases that the complete removal of the function of the pancreas concerned in digestion is followed by marked changes in the spleen and in the thyroid apparatus. Second, the spleen shows an extreme simple atrophy. Third, the thyroid apparatus exhibits a constant change shown by the macroscopic transparency of the gland, by the microscopic increase in the amount of colloid, by the chemical increase of the iodin content of the gland, and by the functional test of the delayed appearance of tetany after the complete removal of the thyroid apparatus.

38. **Influence of Desiccated Thyroid on Tadpoles.**—The activity and potency of the physiologically active substance of the thyroid, Lenhart states, is measurable in terms of its percentage iodin content. He points out that the reaction of tadpoles to thyroid feeding is so sensitive that the procedure might well serve as a biologic test for the activity of thyroid tissue, superior even to chemical methods.

39. **Experimental Pneumonia.**—The studies described by Sisson and Walker are based on findings in thirty-nine cats. The culture used was recovered from the lung exudate of a patient who died thirty-one and one-half hours after the onset of the first symptoms. The organism had the characteristics of *Bacillus mucosus capsulatus*. Judging both from the clinical course and from the pathologic findings, this form of pulmonary infection differs from the usual

pneumococcus types of pneumonia and closely resembles the so-called Friedländer's bacillus or *Bacillus pneumoniae* in man. In all instances in which a lobar pneumonia was found after the injection of the bacillus, a similar organism was recovered from the lung, and in no case was this associated with other organisms. In 87 per cent. of the animals showing a lobar pneumonia positive blood cultures were obtained. The pathologic findings, judging from the early stages of the disease, are subject to considerable variation. In some instances the process may suggest a pseudolobar or confluent lobular distribution. In the majority of cases, however, the process gave a more homogeneous appearance, suggesting a diffuse and uniform distribution. Foci of hemorrhage were not uncommon in both. In all instances the consolidated lung presents a greater infiltration of tissue than is usually seen in other types of experimental pneumonia. The histologic findings are also subject to considerable variation. In most instances the infundibular and alveolar spaces are completely filled with an exudate made up chiefly of polymorphonuclear cells. Associated with these are the capsulated bacilli, large vacuolated mononuclear phagocytic cells, and red blood cells and occasionally small amounts of fibrin.

41. **Diet and Tumor Growth.**—Woglom found that lactose does not increase the receptivity of mice and rats for the transplantable carcinomas of their species.

42. **Antityphoid Vaccination.**—Evidence is presented by Nichols on the following subjects: (1) the infectious power of a living, sensitized vaccine; (2) the absence of immunity in vaccinated rabbits to direct gallbladder infections; (3) the relative pathogenicity, virulence, and toxicity of the strain used in the army vaccine; (4) local vaccine reactions after typhoid and after immunization, and (5) skin reactions as an index of immunity.

44. **Rate of Growth of Tumors in Mice.**—According to Murphy and Morton Roentgen ray administered directly to the cancer outside of the body is insufficient to prevent the growth of a graft returned to the original host. On the other hand, the same small dose of Roentgen ray given to the animal with the cancer removed was sufficient to render 50 per cent. of the mice so treated immune to returned untreated grafts of their own tumors and greatly retard the growth in the other 50 per cent.

Surgery, Gynecology and Obstetrics, Chicago

December, XXI, No. 6, pp. 669-786

47 End-Results of Seventy Cases of Renal Tuberculosis Treated by Nephrectomy. E. G. Crabtree and H. Cabot, Boston.
48 *Nephrectomy During Pregnancy; Report of Cases. L. E. Schmidt, Chicago.
49 Case of Dietl's Crisis in Anomalous Right Kidney Associated with Left Pelvic Kidney. R. C. Bryan, Richmond, Va.
50 Correction of Depressed Fractures of Nose by Transplant of Cartilage. E. H. Beckman, Rochester, Minn.
51 Some Interesting Experiences in Thyroid Surgery. A. McGlannan, Baltimore.
52 *Rôle of Oxyuris Vermicularis in Etiology of Appendicitis and Allied Pathologic Conditions. K. Suzuki, Japan.
53 Methods Employed for Determining Hydrogen-Ion Concentration in Body Fluids. W. J. Crozier, W. B. Rogers and B. I. Harrison, Cleveland.
54 *End-Results in Two Hundred and Forty-Two Cases of Simple Fracture of Femoral Shaft. P. Martin, Rochester, Minn.
55 Vaginal Supravaginal Hysterectomy for Procidentia and Large Cystorectocele Associated with Chronic Fibrosis Uteri. H. N. Vineberg, New York.
56 Myoma of Stomach; Report of Case Successfully Removed. J. E. James, Jr., and S. W. Sappington, Philadelphia.
57 Spontaneous Rupture of Spleen. J. E. Cannaday, Charleston, W. Va.
58 Appendix. C. C. Waller, Lyndonville, Vt., and L. G. Cole, New York.
59 Apoplexy. C. M. Remsen, Atlanta, Ga.
60 Chordoma; Report of Malignant Case from Sacrococcygeal Region. H. Albert, Iowa City, Iowa.
61 *New Operation for Umbilical Hernia. F. G. DuBose, Selma, Ala.
62 Intratracheal Ether Anesthesia; New Apparatus and Intratracheal Tube. S. Robinson, Rochester, Minn.
63 *Operation for Cure of Hernia Between Abdominal Recti. W. E. Fairfield, Green Bay, Wis.
64 Bullet Removed from Brain After Six Years. E. Mammen, Bloomington, Ill.
65 Modified McBurney Incision for Treatment of Appendicitis and Pelvic Disease. A. H. Harrigan, New York.
66 Use and Abuse of Lane Plates. J. Frank, Chicago.

48. **Nephrectomy During Pregnancy.**—From the literature as well as from personal observation, Schmidt has come to the conclusion that a woman with one healthy kidney—and that implies that no infection remains whether it be tuberculosis or a pyogenic infection—does not carry much greater risk, nor does the fetus, than the more fortunate woman who has two kidneys, and that consent to marriage and pregnancy cannot be withheld. There are questions such as how soon after nephrectomy may one, without danger, become pregnant. Schmidt is of the belief that if a period of several years of complete absence of kidney disease elapses it is safe. There is a greater need for exact observation of these cases, so that in case of the recurrence of any (nephrictic) symptoms, induced abortion or labor can be carried out in order to prevent chronic kidney changes which might result in making an invalid of a woman having only one kidney.

52. **Rôle of Oxyuris in Etiology of Appendicitis.**—Suzuki examined 500 post mortem cases, among which were 44 oxyuris cases. The oxyures were found twenty-nine times (66 per cent.) in the cecum and appendix, six times (14 per cent.) in the cecum alone, and nine times (20 per cent.) in the appendix alone. Suzuki was able to ascertain that a true inflammation is provoked by the parasites when the latter have penetrated the wall of the appendix in large numbers, and that the traumatically destroyed fissure in the tissue is for a protracted period of time in connection with the lumen, thus offering the infecting agent a portal of entry. This type of the disease offers distinct histologic data, for which reason Suzuki has designated it "appendicitis oxyurica." But this type of the disease is only rarely met, and among 103 surgically extirpated appendices Suzuki met but one case. A noninflammatory, but pain-producing morbid condition of the appendix is sometimes caused by the oxyuris in which cases traumatic destruction of the tissue accompanied by hemorrhage can always be demonstrated.

54. **Fracture of Femoral Shaft; End-Results.**—Martin found that 90 per cent. of all cases of simple fracture of the shaft of the femur in children are followed by complete recovery. The average period of treatment of children in bed and with crutches, splints and bandages is two to three months. Between the ages of 15 and 25 years there is about 50 per cent. of complete recoveries, while after 25 years the permanent disability is proportionate to the age of the patient. Men above 40 years rarely regain strength and activity. In adults in the absence of shortening there may be a lasting weakness of the leg and thigh. Permanent disability is as a rule associated with shortening, and is to an extent proportionate to the degree of shortening. The average time in bed and with crutches, splints, and bandages in adults is eight months. In adults at time of discharge (eight to ten weeks) there is stiffness of the knee in 100 per cent. of cases. Among adult laboring men, 90 per cent. never become able to perform their regular occupations. Among adult males not of the laboring class, the great majority are able to perform their regular occupations. The unsatisfactory results following the weight extension treatment of simple fracture of the femoral shaft in adults suggest that this method is either inadequate in itself or unskilfully applied. Efforts for obtaining better results in adults should be directed to: (a) the employment of more weight in procuring extension, in the effort to entirely overcome the deformity; (b) early resort to open operation if extension seems inefficient; (c) the systematic use of massage and passive motion continued for months; (d) a longer use of crutches than is now customary; (e) education of the patient.

61. **New Operation for Umbilical Hernia.**—The surgical principles involved in Dubose's operation provide for the attachment of the umbilical ligaments at a point in the suture lines so that the pull exerted by them does not favor gaping. The neck of the sac is isolated, opened, and its contents freed and returned into the abdomen; it is then amputated, and the peritoneal edges everted and approximated by a running mattress or purse-string suture. A transverse incision is made at the upper, and a parallel incision at the lower margin of the umbilical ring, thus

mobilizing two lateral fascial flaps to be united by interrupted sutures. Running in the long axis of each flap is the third tendinous intersection of the rectus abdominis muscle. The edges of the upper and lower lines of incision are brought together by interrupted sutures, thus forming a double aponeurotic wall, with lines of approximation at right angles. Two figure-of-eight silkworm-gut sutures are introduced, going deeply enough to catch the underlying fascial flap, and brought out through the skin an inch from the margin of the incision. When these are tied they relieve the strain in all directions on the aponeurotic lines of union and close the dead space in the subcutaneous fat. On the posterior surface of the lateral aponeurotic flaps is the attachment of the umbilical ligaments. When the inner ends of these flaps are sutured together the hernial opening in the umbilical ring is closed and the attachment of the round ligament of the liver above and of the urachus and the obliterated umbilical arteries below are restored anatomically. All traction exerted by these ligaments pulls on the upper and lower ends of the line of approximation of the two lateral flaps, thus having a tendency to close and not to pull apart the sutured edges of these two flaps.

63. **Operation of Hernia Between Abdominal Recti.**—The operation proposed by Fairfield depends essentially on the conversion of the two fascial spaces containing the recti into one space, obliterating thereby the natural separation of the two muscles, and interposing both muscles over the hernial point.

Wisconsin Medical Journal, Milwaukee

November, XIV, No. 6, pp. 221-261

67 Changing Conceptions of Cardiac Disease. E. L. Tuohy, Duluth, Minn.
68 Sudden Changes of Refraction in Diabetes. C. Zimmermann, Milwaukee.
69 Diagnosis and Treatment of Pulmonary Tuberculosis. N. E. McBeath, Livingston.
70 Puerperal Sepsis. G. A. Carhart, Milwaukee.
71 Recent Medical Legislation. P. F. Rogers, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

October, III, No. 10, pp. 157-348

1 *Ileus Duplex; Inflammatory Enterocolic Ileus. W. S. Handley.
2 *Clinical Aspects of Visceroptosis. A. J. Walton.
3 *Case of Paget's Disease (Osteitis Deformans). G. Jefferson.
4 Cases of Gas Poisoning Among British Troops in Flanders. J. R. Bradford and T. R. Elliott.
5 Hemothorax. J. R. Bradford and T. R. Elliott.
6 *Treatment of Septic Wounds in War by Magnesium Sulphate Solution. A. E. Morison and W. J. Tulloch.
7 Treatment of Traumatic Aneurysms Resulting from Bullet Wounds. R. Morison.
8 Traumatic and Arteriovenous Aneurysm. G. G. Turner.
9 Surgical Diseases of Colon. R. Morison.
10 Unilateral Renal Hemorrhage Due to Obstructive Calcifying Papillitis. C. A. Pannett.
11 Hydatid Disease of Peritoneal Cavity. S. White and J. H. Cobb.

1. **Ileus Duplex.**—Ileus duplex, according to Handley, who has supplied the name, is a condition in which, as the result of a pelvic peritonitis there is obstruction of the intestine at two points: (a) In the ileum, at a point about 3 feet above the ileocecal valve; (b) in the sigmoid colon, at the junction of its iliac and pelvic portions. These are the points at which the ileum and colon, respectively, cross the brim of the true pelvis to enter the pelvic cavity. The segments of paralyzed intestine are two in number: First, the portion of ileum contained in the pelvis, that is to say, about the lower 3 feet, excluding the last 2 inches; and second, the portion of the large bowel contained in the true pelvis, namely, the lowest portion of the pelvic colon and the upper portion of the rectum. The condition, though curable by appropriate treatment, in the early stage often passes unrecognized under the pseudonym of general peritonitis.

2. **Visceroptosis.**—Sixty-seven cases have been analyzed by Walton. They have been divided into the following groups according to the disease they simulate: (1) Cases resembling appendicitis; (2) cases resembling gastric ulcer; (3) cases resembling gallstones; (4) cases resembling gastric carcinoma. Twenty-nine cases were diagnosed as appendicitis. Of the twenty-nine cases, thirteen have resembled acute and sixteen chronic appendicitis; but this group does not include cases of true chronic or acute appendicitis in which visceroptosis was also present. There were twenty-seven cases resembling gastric ulcer, but five of them must be considered apart from the others. These five patients showed well-marked evidence of visceroptosis, but in addition had either a gastric or duodenal ulcer. The remaining twenty-two showed visceroptosis alone. They were of the type frequently operated on in the belief that a gastric ulcer was present. At operation, there was no trace of an ulcer in the stomach or duodenum. The operative procedures consisted in dividing any excessive bands or adhesions, and if the appendix was bound down by the Jackson's membrane, it was removed. In one patient only, in whom the stomach appeared to be hypertrophied, and in whom there was an excessive pyloric spasm, the pylorus was occluded and a posterior gastro-enterostomy performed. In two patients the right kidney was exceedingly movable, and nephrorrhaphy was carried out.

The results of operative treatment could not be considered satisfactory as a whole. Nearly all the patients showed marked relief for two to six months, but after that time the symptoms gradually returned. There were six patients whose symptoms resembled those given by gallstones. At operation there were found the same general visceroptosis, the presence of bands and membranes and the evidence of local spasm in the stomach wall. In two of the patients the kidney was found to be so mobile that it was considered wise to fix it through another incision in the loin. Apart from this, the operative procedures consisted of division of the adventitious bands and adhesions and, if necessary, removal of the appendix. Later an abdominal belt was ordered. There were five cases resembling carcinoma of the stomach. All five cases presented a short history. At operation, there was no evidence of carcinoma or other organic gastric lesion. Each case, however, showed certain characteristics of the condition of visceroptosis. The results of operation were again not wholly satisfactory.

3. **Paget's Disease.**—Jefferson suggests that Paget's disease is in all probability not an inflammation, but an upset of the internal secretions (especially thyroparathyroid) which control the calcium exchange of the body. The early stages of the disease are characterized by a general decalcification, bringing the affection into line with osteomyelitis fibrosa and to a limited extent with osteomalacia. At the same time an irregular bony proliferation occurs, sufficient in amount to overshadow in the urinary and intestinal excretion the absorbed bone salts. The disease may progress along different lines, presenting itself as an osteomyelitis fibrosa, or having excessive lime deposits, the average case being the mean between the two. Although a general disease, certain bones are more severely affected than others. The disease may be impossible to diagnose while a single bone is affected, though the Roentgen rays will often reveal disease in the early stages in other bones in which it had not been thought to exist. Later, bone salts are deposited in large amounts, this stage being associated with calcium magnesium and phosphorus retention, as has been proved by experiment. During the stage of softening, which may be prolonged and gradual, deformities are produced in all the bones, including the skull. The several varieties of bone change which have been described by various observers of this disease, may be explained by the morphologic differences which the bones present at different stages of the malady, and the different types—the fibrous or the osseous tissue predominating—which it may assume. Benefit may be looked for from the oral administration of extracts of internal secretory glands, though once deformities have occurred they will persist even if the disease is arrested.

6. **Treatment of Wounds by Magnesium Sulphate Solution.**—A saturated solution of magnesium sulphate has given

Morison the best results, both clinically and experimentally. Forty ounces of magnesium sulphate dissolved in 10 ounces of glycerin and 30 ounces of boiling water, and sterilized in an autoclave, makes the solution ready for use. The application is painless, is easily carried out, and the dressings, even in the most septic cases, need only to be changed twice a day. In recent injuries the wound is freely opened up, the bullet, portion of shell, clothing or other foreign body is removed, and the whole wounded surface is swabbed with pure phenol. In the case of fractures, the ends of the bone are treated in the same way, and loose but attached fragments are not removed. The wound is gently packed for twenty-four hours with gauze wrung out of phenol lotion (1 in 20), and antiseptic wool applied as an outer dressing. At the end of this time the wound is dressed; the gauze plug is removed, the wound is syringed out with magnesium sulphate solution, and loosely packed with sterile gauze wrung not too hard out of the same solution, and the whole area of the wound is then covered with a double layer of gauze or lint saturated with solution, over which a piece of jaconet, then cottonwool, is placed, the whole being fixed loosely by a bandage. In the case of wounds of later date, in which sepsis and suppuration are fully established, the treatment by phenol is omitted and magnesium sulphate solution is commenced at once.

Dressings, even in the worst cases, are only changed every twelve hours, thus saving the patient much discomfort and trouble. Morison states that the effect on the wound is striking. In two or three days pus has almost disappeared, sloughs begin to separate, and the whole surface of the wound presents a bright-red color. The granulations never become flabby or edematous, but instead a firm, vascular healing wound is seen. The growth of epithelium from the edges of the wound proceeds vigorously, and the treatment may be continued with advantage until the entire wound is healed. Constitutional symptoms seldom occur, probably owing to the fact that absorption is prevented by the density of the granulations; there is, therefore, no general disturbance of health, there is an absence of lymphatic and glandular infection, and secondary abscesses are almost unknown. The effect in the majority of compound fractures is quickly manifest. Pus rapidly disappears, and the amount of necrosis in comminuted cases appears, as would be expected when infection is diminished, to be materially less.

British Medical Journal, London

November 6, II, No. 2862, pp. 665-696

12 *Nervous Affections of Sixth and Seventh Decades of Life. J. M. Clarke.
13 Wound Infections and Their Treatment. (To be Continued.) A. E. Wright.
14 Operative Treatment of Gunshot Injuries of Nerves. F. Eve and R. S. Woods.

12. See *Lancet*, December 11, Abstract No. 16.

Lancet, London

November 20, II, No. 4812, pp. 1121-1172

15 Bright's Disease in Some of Its Clinical Aspects. S. West.
16 Some Aspects of Cerebrospinal Fever Problem. H. W. Crowe.
17 *Intermittent Fever of Obscure Origin, Occurring Among British Soldiers in France. G. H. Hunt and A. C. Rankin.
18 Bacterial Antagonism, with Particular Reference to Meningococcus. L. Colebrook.
19 Blackwater Fever. R. W. Burkitt.

17. **Trench Fever.**—In twenty-three of the thirty cases studied by Hunt and Rankin, the onset was sudden, in seven more gradual. In the former case the disease began with headache, dizziness and shivering; in the latter with headache and general malaise. The chief symptoms were headache and pain in the back and legs. Headache occurred in every case. It was rarely severe, and in two cases only was it intense; it was usually frontal. Pain in the lumbar region was present in twenty-seven cases; pain in the legs in twenty-six; in no case was it severe. Pain and stiffness in the neck was rare. Abdominal pain occurred in four patients radiating round from the back, and was probably of muscular origin. Dizziness was complained of in the majority of cases, and was an early symptom, but sometimes it persisted for several days. Two patients fainted at the beginning of the illness. Vomiting was rare (four patients only), and was never persistent; in every case it was associated with and probably due to obstinate constipation. Constipation was present in seven patients; diarrhea only occurred once, and then lasted one day. Dryness of the throat was complained of by two patients, but in neither case was there any redness of the fauces.

The most striking feature in the condition of the patients was the absence of any objective signs. There was little constitutional disturbance, and only three patients looked really ill. The temperature was at first raised, then fell to normal, and this fall was followed by one or more relapses. With each relapse there was a recurrence or an aggravation of the symptoms. The pulse rate was not raised out of proportion to the fever. The tongue was sometimes clean, but more often was slightly furred; in three patients it was thickly coated. There was generally some tenderness over the back and legs, but it was always slight; in four patients there was a little tenderness of the abdominal muscles. The heart and lungs showed no abnormal signs, and bronchitis was always absent. The spleen and liver were not enlarged. The urine was free from albumin. In one patient herpes labialis was present. The investigations undertaken with the object of attempting to establish something definite in regard to the etiology of this fever have been disappointing. It is certain that the disease is not contagious in any high degree, for, although no precautions for isolation were taken, no patients in the same ward developed the disease. One orderly in the ward, however, had a typical attack with one relapse.

Bulletin de l'Académie de Médecine, Paris

October 26, LXXIV, No. 43, pp. 465-483

20 Operative Treatment for Abdominal Wounds. E. Quénu.
21 Mixed Vaccines against Typhoid and Paratyphoid Used in Northern African Colonies. E. Sergent and L. Nègres.
22 Roentgen Localization of Projectile in Tissues. (Procédé radioscopique pour déterminer la situation d'un projectile dans les tissus en direction et en profondeur.) P. Pierre.
23 *Rigidity of Wounded Limb as Sign of Impending Gangrene. Prat.
24 *Vaccine Therapy by the Mouth against Typhoid. F. Trémolières. P. Loew and Maillart.
25 Thick Rubber Bands for Improvised Orthopedic Appliances. (Sur l'emploi de caoutchouc dit "lance-pierres" dans la fabrication de quelques appareils orthopédiques de fortune.) Laquerrière and Bourdinière.

November 2, No. 44, pp. 485-508

26 *Epidemic Cerebrospinal Meningitis; Sixty Cases. Capitan.
27 Extraction of Bullets from Bladder by Natural Passages. F. Legueu. See Paris Letter, p. 2101.
28 Assimilation of Fats in Typhoid. (Utilisation digestive des graisses dans la fièvre typhoide.) R. Mercier and others.
29 Improvised Semi-Rigid Extension Device for Fractures. (Une attelle plombocaoutchoutée extensible pour le traitement des fractures.) Rosenblith.
30 *Further Research on Vaccination against Paratyphoid. J. Lignières (Buenos Aires).

23. **Rigidity as Sign of Impending Gangrene.**—Prat reports four cases of severe wounds in which the limb became rigid in a few hours and gangrene soon followed. His experience indicates that this rigidity is practically cadaveric rigidity, from chemical changes in the muscle tissue, with incipient but extensive gangrene. Prompt amputation saved three of the men, while the others died under conservative operation.

24. **Inefficacy of Oral Vaccination Against Typhoid.**—The research reported with tests for agglutinins, precipitins, deviation of complement and opsonic index all testified anew to the utter inefficiency of antityphoid vaccines taken by the mouth.

26. **Epidemic Meningitis.**—Capitan reports that thirty-four of the forty-five men with meningococcus meningitis recovered under serotherapy, and three of the five with mixed infection. Convalescence was always very long and slow, weakness and anemia persisting for weeks, even when there had been no complications. Treatment was by lumbar puncture, withdrawing as much fluid as possible, usually 20 or

30 c.c. or more, and injecting from 30 to 60 c.c. of the therapeutic serum, repeating this daily, for several days, sometimes skipping a day, and sometimes resuming treatment after an interval. In this latter case 1 or 2 c.c. of the serum were injected into a muscle four hours before the intraspinal injection, and no symptoms of anaphylaxis developed in any instance. As a further adjuvant, a mixture was given of 4 parts calcium chlorid, 2 parts extract of cinchona and 0.1 part spartein sulphate. This supplied a heart stimulant, while combating any tendency to serum sickness.

30. **Vaccination Against Paratyphoid in Man and Animals.**—Lignières calls attention to the progressive attenuation of virulence in strains of paratyphoid bacilli cultivated in the laboratory. They finally become quite harmless, losing their pathogenic properties, and he warns that vaccines made from such laboratory strains seldom have any prophylactic or curative power. The best vaccines are those made with microbes derived recently from spontaneous and grave cases of paratyphoid infection. He calls it "salmonellosis," referring to the research he published in 1900 in which he apparently demonstrated that certain forms of hemorrhagic septicemia in domestic animals were the work of two species of paratyphoid bacilli to which he gave the name salmonella and pasteurella. The former is of the hog cholera, the latter of the fowl cholera type. His experience with salmonella derived from recent grave spontaneous cases showed that vaccines could be made sufficiently powerful to immunize sheep and pigs by the mouth against fatal infection. He has not been so successful with oral immunization of cattle to date.

Paris Médical

October 9, V, No. 22, pp. 373-388

31 Improvised Apparatus for Mechanical Treatment of Paralysis in the Wounded. A. Léri.
32 Tangential Wounds of the Forearm and Treatment of Their Consequences. Mauclaire and Navarre.
33 Wheel Support for Stretchers. (Un nouveau train de roues porte-brancard pour blessés.) R. Duthoit.
34 *Voluntary Mutilations of Soldiers and Medical Ethics. P. Chavigny.
35 Acute Articular Rheumatism in the Men in the Trenches. (Rhumatisme "des tranchées.") P. Guerrieri and M. Lelong.

34. **Voluntary Mutilations to Escape Military Service.**—In some recent sensational cases in France the supreme court decided that the medical experts had been mistaken in assuming that certain mutilations had been done by the individuals in question for malingering purposes. In two cases in particular the supreme court reversed without appeal the judgment imposing the death penalty for voluntary mutilation, rebuking the experts on whose testimony the men had been condemned. Chavigny here discusses the ethical questions that arise when one suspects malingering of this type. Several times the majority of the men reaching the ambulance after an engagement were wounded in the hand, and voluntary mutilation seemed the only explanation until it was realized that the men whose legs were not injured reached the hospital quicker, naturally, than those that had to be carried. In some other cases of men accused of voluntary mutilations, roentgenoscopy finally revealed a scrap of shell in the tissues. In any event, the physician should testify only as to the conditions of the wound, the direction, distance, etc., but he can never know positively whether the wound was inflicted by the man himself or an awkward comrade or some coconspirator or some enemy at close range. This can be determined only by the testimony of witnesses. It is useless, unjustified and imprudent for the physician to draw conclusions in such cases. The authorities recognize this, a decree last May emphasizing that the testimony of the medical expert alone is not sufficient for a verdict of voluntary mutilation.

Chavigny knows of some instances in which voluntary mutilation was realized by the man's holding his hand up out of the trench, so that the enemy might shoot it; in other cases the man claimed to have shot his left hand or right foot while cleaning his gun. In still others the men wrapped the part in a wet cloth before putting the bullet through it, thus preventing powder marks.

Presse Médicale, Paris

November 4, XXIII, No. 53, pp. 433-440

36 The Cardiac Neuroses in the Stress of the Campaign. (Guerre et névroses cardiaques.) A. Martinet.
37 Immobilization and Extension Permitting Change of Dressings. (De quelques appareils plâtrés armés permettant les pansements.) J. Abadie.

November 8, No. 54, pp. 441-448

38 *Massive Albuminuria as Sign of Meningeal Hemorrhage. G. Guillain.
39 *Leverage as Aid in Reducing Dislocations. (De la réduction des luxations au levier.) Cochez.
40 Simplified Technic for Electric Treatment of Several Patients at Once. (Dispositif simplifié pour l'électrisation de nombreux blessés.) H. Bordier.

November 11, No. 55, pp. 449-456

41 *Typhoid Fever and Antityphoid Vaccination. L. Rimbaud.
42 *Hemotherapy of Typhus. Escluse.
43 Thiosinamin in After-Treatment of Wounded Nerves. P. Cazamian.

38. **Albuminuria as Sign of Meningeal Hemorrhage.**—Guillain replies to Macris' communication, summarized in these columns Sept. 11, 1915, p. 986. He explains that the albuminuria to which he refers is of sudden onset, reaching 2, 10 or 20 gm. per liter in one or two days after the meningeal hemorrhage, and then rapidly subsiding until in a few days the urine may be nearly or quite free from albumin. He has noticed it only in a few cases and found records of only a few cases in the literature. But when this massive albuminuria is encountered in a dubious case, it has much semeiologic importance.

39. **Leverage in Reduction of Dislocations.**—Cochez uses a crutch with long crossbar at right angles near the foot for applying gradual automatic traction, the crutch rest serving as the lever. This contrivance is proving extremely useful in reduction of recent and old dislocations of the shoulder, elbow, hip joint and knee, as he describes in detail with five illustrations. It does away with the necessity for counter traction, while the reduction proceeds with mathematic regularity under constant control with the dynamometer. Traction equivalent to 60 or 80 kg. (176 pounds) can thus be exerted without jerk or shock.

41. **Vaccination Against Typhoid.**—Rimbaud deplores that the present technic for vaccination against typhoid does not protect against paratyphoid. This has continued its ravages, while typhoid has been nearly stamped out in the French army in the region where he is stationed. There were 222 cases of typhoid in the nonvaccinated, and typhoid bacilli were cultivated from the blood in 50.9 per cent., but paratyphoid bacilli were found only in 10.3 per cent., while the latter bacilli were found in 35 per cent. of the 434 vaccinated who developed a typhoidal condition. True typhoid bacilli were found in 19 per cent. of the 21 vaccinated but once; in 11.6 per cent. of the 146 vaccinated three times, and only in 6.8 per cent. of the 145 fourfold vaccinated.

42. **Hemotherapy in Typhus.**—Escluse made intravenous injections of blood taken from convalescents eight or ten days after defervescence, and reports that the severe typhus showed a prompt change for the better in the three patients given this treatment. The technic was similar to that for ordinary transfusion of blood, only that a little sodium citrate was mixed with the blood. The cases selected for this treatment were extremely grave, the prognosis unfavorable. The experiences related demonstrated that after the organic reaction is exhausted by the severity of the typhus intoxication, the hemotherapy is unavailing. There is not much chance of success after the tenth day. The maximum amounts injected were 30 c.c. of blood fractioned in three doses during the twenty-four hours, a total of six injections in the course of three days in one case and three injections in four days in the other.

Archiv für Gynaekologie, Berlin

CIV, No. 3, pp. 393-579. Last indexed August 28, p. 833

44 *Causes Influencing Presentation at Delivery. (Die Ursachen der Kindeslagen.) F. Schatz.
45 *Functioning of the Tubular and Glomerular Systems in the Kidney during Pregnancy. (Untersuchungen über die Nierenfunktion bei gesunden und kranken Schwangeren und Wöchnerinnen.) P. Werner.

46 *Symphysiotomy or Cesarean Section. (Symphysiotomie oder Kaiserschnitt.) P. Hüssy.
47 Medicolegal Aspects of Perforation of the Living Child. (Perforation und Strafgesetzreform.) H. Lieske.

44. **Causes that Influence the Position of the Fetus.**—This long article is the second which Schatz has published on this subject. It reports the results of extensive clinical research which explain the mechanism of the changes of position of the fetus, the influence of the position of the uterus, and other factors. The findings on repeated examination of pregnant women near term, reclining or erect, are given in 140 tables. The influence of the sex and size of the fetus, of the time of day, of the contractions of the uterus, influence of preceding deliveries, and the way in which the fetus changes its position and presentation are all discussed in detail. The efforts of the fetus to stretch its limbs seem to be the main cause of its changes of position. He found that the fetuses displayed as marked characters as in extra-uterine life. Some were nervously alert and responded promptly and vigorously to altered conditions, while others were torpid and sluggish and seemed to be governed only by the law of gravity, thus getting into the breech presentation attitude and keeping it.

45. **Tests of Kidney Functioning During Pregnancy and the Puerperium.**—Werner gives the conclusions from repeated testing of the work of the kidneys in 28 women with puerperal eclampsia, including 23 primiparas. The eclampsia was not of the fulminating type and none of the women died. Ten other women examined had pregnancy kidney, quite severe in 3, and terminating in eclampsia. In 5 other cases nephritis developed in the course of a pregnancy. Nine other women presented pregnancy glucosuria, but tests of kidney functioning showed nothing abnormal. Seven other women had pyelitis, but the kidney functioning seemed normal as the tubular system in the sound mate was able to do all the needed work. When both kidneys were affected, the tests showed manifest functional impairment. The tests were applied also to 15 women who had been delivered under a general anesthetic (Billroth mixture) on account of myomectomy, cesarean section or laparotomy for other cause. Eight other women had valvular defects. In addition to this clinical material, the tests were applied to 20 healthy women pregnant for the first time and approaching term, 15 primiparas, 8 multigravidas, and 8 multiparas. The tests were the usual lactose, iodin and phenolsulphonephthalein technics. Necropsy in 4 cases confirmed the findings of the tests.

The conclusions drawn from this extensive material are that in healthy pregnant and parturient women the functional capacity of the kidneys is good but not quite up to standard, although the tubuli seem to functionate periodically a little more than under normal conditions. After operative deliveries under general anesthesia, both the glomeruli and the tubules show slight but transient impairment of function. Compensated valvular defects showed a good response to the iodin and phenolsulphonephthalein tests, but the lactose test revealed some damage of the kidneys. With pregnancy glucosuria, the glomerulus functioning was evidently impaired, while the tubuli behaved normally. Four of the 6 pregnant women with pronounced goiter responded to the lactose test with glucosuria, indicating weakness of the glomerulus system while the tubule function seemed intact. Both systems showed severe impairment in the cases of nephritis, but the tubular functioning soon recuperated after delivery while the glomerular functioning showed scarcely any influence from this.

The lactose and iodid tests are thus important aids in distinguishing between actual nephritis and mere nephropathy, and they aid in the prognosis with the latter, as the form with vascular disturbances manifests a marked tendency to become chronic after the termination of the pregnancy. The kidneys in eclampsia responded to the tests the same as the "pregnancy kidney," namely, the response to the lactose test was as in normal conditions, but the response to the iodid test ranged between wide extremes, the elimination of the iodid being complete in thirty hours in two cases, in forty-five hours in ten, and not until after the sixtieth hour in two.

46. **Symphysiotomy or Cesarean Section.**—Hüssy has delivered eight women by Frank's subcutaneous method of symphysiotomy and is convinced that it must be regarded as progress. It takes the place of perforation of the living child with a true conjugate down to 7 cm. and spontaneous delivery not entirely out of the question. It allows waiting as long as the fetal heart sounds are normal. It does not compete with extraperitoneal cesarean section, as the latter is indicated when there is manifest infection or spontaneous delivery is out of the question. Subcutaneous symphysiotomy is not especially dangerous, although thrombosis seems particularly imminent with it and the damage to the soft parts may have serious consequences.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 6, XLV, No. 45, pp. 1409-1440

48 *Treatment of Sterility in Women. (Behandlung der weiblichen Unfruchtbarkeit.) E. von Fellenberg.
49 Experiences in a German Base Hospital. G. Hotz.

48. **Treatment of Sterility in Women.**—Fellenberg is convinced that the internal secretions have an important share in preventing conception in some cases. Inhibition of the functioning of the sound ovary from a cystic ovary was apparently responsible for the sterility in one of his cases, as the long childless couple had a child born within one year after the cystic ovary had been removed. Such inhibition used to be ascribed to nervous influences, but now we explain them by internal secretions, and this permits the hope of effectual treatment of sterility from this cause. The genital organs in particular are under the control of the ductless glands, and the secondary sexual characters include not only those of the external genitals and the breasts, but also the changes in the birth tract. An infantile condition of the genital organs is generally associated with a chlorotic anemic habitus. It is possible that only single segments of the genital organs may fail to develop normally. It is also possible that the changes occurring at puberty may exhaust the organism for a time or permanently, and that the ovaries then are unable to functionate normally. By giving ovarian extract, the missing stimulus may be supplied and conditions gradually right themselves, permitting conception in time. Bab in 1909 strongly commended this treatment, supplemented with lecithin to enable the mother to supply the fetus' need of lecithin. He applied measures also to increase the supply of blood in the genital organs. The ovarian treatment apparently exerts a local action on the ovaries themselves, as evidenced by more regular menstruation. It might also influence growth processes in the uterus and tubes, and thus improve the hypoplastic infantile conditions. A tonic action on the general health can usually be relied on. Bab advises discontinuing the ovarian treatment after conception has occurred.

Fellenberg has found treatment of sterility along these lines effectual in a number of cases. In one particularly instructive instance pulmonary embolism and pleurisy had followed the first childbirth and there had been lassitude and headaches during the seven years since with no conception. The entire system had evidently been exhausted and the genital functions in particular. Under ovarian medication and courses of spa treatment, with hot vaginal douches and sitz baths, the general health improved and the genital functions became normal. The woman now has four children.

Thyroid treatment may be indicated in certain cases of sterility. Among the signs of thyroid insufficiency are the abnormally rapid coagulation of the blood, relatively small neutrophil and high lymphocyte count; such women are inclined to be nervously irritable, with a tendency to spastic constipation and sick headache. Sehrt goes so far as to declare that an infantile uterus always suggests thyroid insufficiency. With hypofunctioning on the part of the thyroid conception may occur, but abortion follows almost at once. Fellenberg has given thyroid treatment for habitual abortion, and it has been successful in a number of instances. The blood count must be supervised with special care during the thyroid treatment, examining the blood picture anew every two weeks at least. In the cases in this category, women long sterile became pregnant, the tendency to spastic constipation subsided, and the general health improved, while the blood picture returned to normal. Weil has also noted progressive improvement in the functioning of the genital organs under thyroid treatment. Gross and Tandler have reported that the thyroid was found abnormally small in persons who had been castrated. Others have called attention to the elective dilatation of the vessels in the thyroid and the lower pressure in them under the influence of ovarian treatment. There is thus much evidence on hand testifying to the reciprocal influencing of the thyroid and the genital organs, and this fact can be utilized to stimulate defective functioning of the latter.

Deutsche medizinische Wochenschrift, Berlin

October 14, XLI, No. 42, pp. 1237-1264

50 War and the Public Health. (Krieg und Gesundheitsfürsorge.) A. Gottstein. Concluded in No. 43.
51 Principles and Technic for Constructing Artificial Limbs, with Special Regard to the Supporting Points and Suspension. J. Dollinger. Concluded in No. 43.
52 Simultaneous Vaccination against Typhoid and Cholera. L. v. Liebermann and D. Acel.
53 *Technic for Neurolysis. A. Stoffel.
54 *Heliotherapy at the Field or Base Hospitals. (Sonnenbehandlung im Felde.) C. Deutschländer.
55 The Fight against Venereal Disease among the Troops. (Bekämpfung der Geschlechtskrankheiten bei der Truppe.) L. Halberstaedter.
56 Chemical Diagnosis of Acute Benzol Poisoning by Joachimoglu's Technic. E. Schmitz.
57 *Occurrence of Conception in Relation to Ovulation. (Wann ist der Beischlaf befruchtend?) P. W. Siegel.
58 Research on Artificial Parthenogenesis is the Road to Discovery of Means to Promote Regeneration of Tissues. (Ueber stimulierende Einwirkungen auf Zell- und Geweberegeneration.) M. Popoff.

53. **Neurolysis.**—Stoffel mentions among other technical points that regeneration of a nerve proceeds much more actively and promptly when the nerve is completely relaxed. He decries any attempt to resect cicatricial tissue involving a nerve until after each of the nerve fibers has been separated from the mass and isolated into sound tissue above and below. By this means the intact strands of true nerve tissue can be loosened from the scar tissue and saved unimpaired. The scar tissue once excised, the nerve fibers, or what is left of them, are collected together into a single strand again and something to serve as a sheath is wrapped around them. He prefers for this calf arteries or calf peritoneum, hardened in formaldehyd. Seven cases are described in detail to illustrate the advantages of exploring the cicatricial tissue in this way to recognize and save every scrap of true nerve fiber tissue.

54. **Heliotherapy for the Wounded.**—The beds were placed in an abandoned greenhouse, and Deutschländer reports that severe wounds healed unusually quickly under the heliotherapy thus rendered possible, as he describes in detail.

57. **Date of Conception in Relation to Menstruation.**—Siegel charts the data obtained by comparing the date of a soldier's brief furlough with the pregnancy of his wife. His chart is based on 100 cases. The data confirm the assumption of a close time connection between the bursting of a follicle and conception.

Münchener medizinische Wochenschrift, Munich

November 2, LXII, No. 44, pp. 1489-1524

59 *Mechanism of Sudden Death with Angina Pectoris. (Zur Erklärung des plötzlichen Todes bei Angina pectoris.) H. E. Hering.
60 Artificial Limbs for the Wounded. (Aufgaben und Wege fur den Hand- und Armersatz der Kriegsbeschädigten.) O. Witzel; (Ueber Prothesen bei Amputationen des Armes.) Biesalski; (Prothesen aus Weissblech.) v. Baeyer; (Kautschukschaum zur Herstellung künstlicher Glieder.) C. S. Engel.
61 Fatal Air Embolism during Insufflation of Kaolin. (Tödliche Luftembolie durch Bolusinsufflation mit Nassauers Siccator.) A. Hamm.
62 Autogenous Vaccine Therapy of Furunculosis. (Zur Impfbehandlung der Furunkulose.) H. L. Heusner.
63 *Treatment of Recent Gonorrhea by Prolonged Very Hot General Bath. (Die Fiebertherapie der Gonorrhoe.) O. Weiss.
64 Impairment of Vision in Active Military Service. (Ueber Blendungserscheinungen im Felde.) M. Zade.
65 Roentgen Stereophotography for Estimating Anatomic Distances. (Ueber die Anwendung der Stereophotogrammetrie des Röntgenbildes in der feldärztlichen Tätigkeit.) A. Hasselwander.
66 Localization of Foreign Bodies. (Vereinfachung zur Tiefenbestimmung von Fremdkörpern.) T. Christen.
67 Sexual Abstinence. (Bemerkungen über die von der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten unternommene Sammelforschung in betreff der sexuellen Abstinenz.) L. Löwenfeld.

59. **Ventricular Fibrillation Main Factor in Sudden Death in Angina Pectoris.**—Obstruction of the coronary arteries, in connection with other factors, is liable to induce ventricular fibrillation. The predisposing factors are the size of the artery, the functioning of the area it nourishes, general anesthesia, hemorrhages, and trauma in the vicinity. The direct exciting factors may be listed in order of importance as the local ischemia, local action of toxins, carbon dioxid in particular, and, finally, the heterotopic impulse, that is, the abnormal impulse to uncoordinated contractions of the fibers of the ventricle walls. The abnormally located impulse for the wave of contraction is the immediate precursor of the fibrillation, for we know that this is the consequence of the highest degree of heterotopic impulse production *(heterotope Reizbildung)*. The direct actual proof that the sudden death in angina pectoris is the result of ventricular fibrillation can be supplied only by electrocardiography. And as death occurs instantaneously, it may never be possible to apply this method of examination unless chance intervenes. But if this testimony could be once produced, it would demonstrate that the individual does not die from paralysis of the heart but from the direct opposite, the excessive production of impulses. This knowledge would give us the clue to prevention and treatment, as we would seek to ward off everything that might favor heterotopic impulse production. Even if we knew only that angina pectoris is a symptom of heart disease, the extreme suddenness of death, without anatomic findings, could be explained only by fibrillation of the ventricles. But we already have data which show that angina pectoris occurs only when there is temporary ischemia of the heart, and we know by experiments on animals that this ischemia is liable to precipitate fibrillation of the ventricles, and also that the ischemia predisposes the heart to fibrillation. Hence even the pathogenesis of angina pectoris sustains the assumption that death is the result of ventricular fibrillation *(Herzkammerflimmern)*.

63. **Artificially Induced Fever Temperature in Treatment of Gonorrhea.**—As the gonococci are killed so easily by temperatures of only 42 C. (107.6 F.), attempts have often been made to sterilize the urethra by application of heat. But the constant influx of blood keeps the temperature below the required degree of heat, and all such attempts have proved futile to date. Weiss solves the problem in another way, by keeping the patient in a hot bath until the entire body is heated to the required fever temperature. In eleven cases of recent gonorrhea he had the men take a hot bath forty or fifty-five minutes long, with the temperature of the water gradually increased from 40 to 43.5 C. (104 to 110.5 F.). In one case the body temperature was raised to 42.6 C. (108.5 F.) in a forty-minute bath, and the gonococci disappeared entirely at once. In the other cases the body temperature did not go so high, but the vitality of the gonococci was evidently reduced and under a few local injections they soon all disappeared.

Hospitalstidende, Copenhagen

November 10, LVIII, No. 45, pp. 1151-1174

68 *Hereditary Hemorrhagic Telangiectasia (Osler). E. Gjessing. Concluded in No. 46.

68. **Hereditary Hemorrhagic Telangiectasia.**—Gjessing gives an illustrated description of a case of this typical affection, as described by Osler, in a man of 51 and of a second and third case in his son and his daughter. This makes the nineteenth family on record in which this affection has occurred in two or more generations, and he gives a summary oversight of the nineteen families. In his cases the tardy angiomas were familial; they developed like an eruption; they were located exclusively in the face and

adjoining mucosa, and some of them—mostly those in the nose—bled spontaneously, or after trauma. Sometimes the hemorrhages were quite profuse, but there were no signs of hemophilia.

Hygiea, Stockholm

LXXVII, No. 19, pp. 1005-1084

69 *Diagnostic Importance of Occult Hemorrhage in Gastro-Intestinal Tract. (Om smygande blödningar inom matsmältningskanalen.) L. Wolff.

69. **Occult Gastro-Intestinal Hemorrhage.**—Wolff gives the detailed history of the study of occult gastro-intestinal hemorrhage to date, and emphasizes the diagnostic importance of positive findings provided no meat has been eaten for the few days preceding. He emphasizes further the marked tendency to heal of a solitary gastric ulcer, which renders persisting occult hemorrhage so significant. He also comments on the necessity for strict regulation of the diet after operations on the digestive tract. He regards testing for occult hemorrhage as an indispensable routine procedure in all dubious cases, at least in all dubious stomach cases. In his own recent practice the positive and also the negative findings in a number of cases gave the clue to the real source of the trouble, confirmed by the later course of the cases. The value of the test was shown particularly in a case of severe anemia with hemoglobin below 50, but no symptoms on the part of the digestive tract except occult hemorrhage. In another case there was intense cardialgia and gastric ulcer was assumed, but no benefit followed treatment on this basis and no occult hemorrhage could be detected. On this negative finding, treatment for syphilis was instituted and prompt recovery followed. In another case anemia and nervous symptoms on the part of the stomach were assumed at first to be a recurrence of a gastric ulcer which had been successfully treated ten years before. The constantly negative tests for occult hemorrhage apparently excluded gastro-intestinal trouble, and under general tonic measures health was soon regained. In a case of chronic hyperacidity with pains, vomiting and emaciation, the absence of occult bleeding excluded cancer, and no trace of malignant disease was found at necropsy. In gastric ulcer cases the improvement under treatment could be followed in the subsidence of the occult hemorrhages. Occult hemorrhage also revealed in some cases the presence of malignant disease in the stomach before there was any tumor or debility, and in many dubious cases turned the scale one way or the other, and always reliably, according to Wolff's experience to date.

Norsk Magazin for Lægevidenskaben, Christiania

November, LXXVI, No. 11, pp. 1305-1472

70 *Three Cases Illustrating Connection between Diabetes Insipidus and Functioning of the Hypophysis Cerebri. K. Motzfeldt.

71 *Action of Hypophysis Extracts on Diuresis, Blood Pressure and Nitrogen Metabolism in Fifteen Relatively Healthy Subjects. (Studier over hypofyseekstrakters virkninger,—særlig paa diurese, blodtryk og N-Omsætning, hos relativt friske mennesker.) K. Motzfeldt.

72 *Orthostatic Albuminuria and Its Relation to Nephritis. P. F. Holst.

70. **Diabetes Insipidus and the Hypophysis Cerebri.**—Motzfeldt's article is an able summary of the literature on this subject to date, with detailed reports of three cases of diabetes insipidus. In none of them could anything abnormal be discovered in the hypophysis, but a number of symptoms pointed to insufficiency of the posterior lobe of the pituitary body. Marked benefit followed treatment with an extract of this lobe. From five to seven beef pituitary glands had to be eaten at a time, Motzfeldt says, to obtain an effect even approximating that of one-fourth of a syringeful of the commercial extract.

He knows of no case on record in which pituitary treatment was applied so systematically and so perseveringly as in one case here described. No other measures had any effect except that opium slightly reduced the diuresis, probably by the diminished thirst. This patient is a trained nurse of 42. The diabetes insipidus developed in 1913, with diuresis of from 8 to 10 liters. She increased 20 pounds in weight, and menstruation ceased, with increasing lassitude. The intake and output of fluids, the specific gravity, the proportional elimination of chlorids and of nitrogen and the total amount of the latter eliminated are recorded day by day during three months under treatment with an extract of the posterior lobe of the pituitary body. The benefit from it was manifest; less urine was voided and the patient felt better. Treatment was then continued with pituitary substance obtained fresh from the slaughter-house each day. The beef glands were sliced and cooked or eaten raw or dried. She thus took from two to seven each day and finally took seven every second evening on retiring. Under this treatment she sleeps quietly all night, is not tormented by thirst, has lost 2 pounds, and feels perfectly well, while menstruation has returned. One of the tables shows the effect of hypophysis treatment on the concentration of the urine. It was given every two hours, and the urine was examined at corresponding intervals. The density ran up at once from 1,004 to 1,014 and reached 1,017 after the fifth subcutaneous injection of 0.5 c.c. of the extract.

The extract of the anterior lobe did not seem to influence the diuresis, and neither extract seemed to affect the elimination of nitrogen. In the second case, the patient a woman of 23, the diabetes insipidus developed after chicken pox at the age of 10, and had persisted for thirteen years. The general aspect suggested Lorain's "hypophyseal dystrophy." The third patient was also a woman, now 39. Cerebrospinal symptoms of syphilis during the last four years suggest that the diabetes insipidus, installed for the last six months, may owe its origin to some gummatous process in or encroaching on the posterior lobe of the pituitary body. The visual field was normal in all the cases, and roentgenoscopy of the base of the skull revealed nothing abnormal. Motzfeldt suggests that cases of primary polydipsia should also be examined for pituitary insufficiency.

71. **Influence of Hypophysis Extracts on Metabolism.**—In the fifteen relatively healthy persons tested, an extract of the posterior lobe reduced the output of urine and increased its concentration, but the elimination of nitrogen did not seem to be affected.

72. **Postural Albuminuria in Relation to Nephritis.**—Holst examined postmortem the kidneys of a youth of 16 who had had typical orthostatic albuminuria during the last five or six years but had beeen otherwise normal until he contracted galloping tuberculosis of the lungs. Not a trace of inflammation could be discovered in the kidneys, notwithstanding the years of pronounced postural albuminuria. He cites further a number of clinical cases all confirming the same, namely, that this postural albuminuria may in some cases be of purely functional nature. Hence it is irrational and may be positively injurious to treat a person with postural albuminuria as if he had actual kidney disease. He reports from his hospital service ten cases in which the orthostatic albuminuria was a chronic condition but no tube-casts were ever found in the urine. Several of these patients had been sent to the hospital for assumed nephritis and had been treated for this. In five other cases there was pronounced orthostatic albuminuria but at the same time the presence of tube-casts, high blood pressure and increased area of dulness over the heart indicated nephritis. In the first group there seems to be no tendency to actual nephritis, but such patients generally need tonics and general building up to aid them in outgrowing the tendency to postural albuminuria. Of the fifty persons with postural albuminuria he has encountered, two have died of tuberculosis.

Ugeskrift for Læger, Copenhagen

October 28, LXXVII, No. 43, pp. 1673-1706

73 Acute Heart Block; Three Cases. C. Lungsgaard.

74 Habitual Bradycardia and Epileptiform Attacks. A. Faber.

November 4, No. 44, pp. 1707-1736

75 Albuminuria Developing during Course of Acute Otitis Media; Thirty Cases. (Om Albuminuri under Forløbet af den akute Mellemøresuppuration.) R. Lund.

76 Chicken Lice as a Stationary Parasite of Man. (Hønsemiden—Dermanyssus gallinae—som Parasit hos Mennesket.) B. Pontoppidan.

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TROPICAL SANITATION IN ITS RELATION TO GENERAL SANITATION *

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As this evening I am speaking to health officers, I shall dwell more particularly on matters which have forced themselves on my attention during a lifetime spent in most active health work. From long experience, certain convictions have been gradually forced upon me as basic in all health work. These basic facts have not been generally recognized, as far as my experience goes. To make my argument clear, I shall run briefly over my own experience in this field.

The great awakening in tropical sanitation which has taken place in the last twenty years began with the Spanish-American War. For the last three or four hundred years it has been known by Europeans that military expeditions involving any large bodies of white troops could not be undertaken in the tropics on account of the great loss from disease. In the many cases in which such campaigns had been undertaken, they had failed on account of the loss of life caused by, and the disability due to, tropical diseases. These tropical diseases in the Western hemisphere were chiefly yellow fever and malarial fever.

It is astounding to the military sanitarian of the present day to read of the losses caused by yellow fever to military expeditions in the West Indies. One can hardly believe the loss reported as possible. The English Army in the Windward Islands in 1794 under Sir Charles Grey, out of a total strength of 12,000 men, lost 6,000. The French Army in Santo Domingo in 1798, out of a total strength of 25,000, lost over 22,000 from yellow fever. Again in 1802 the French Army in Santo Domingo, out of a total strength of 40,000, lost 20,000. Where it prevailed it was equally fatal to civil populations. Yellow fever has many times ravaged the United States, and still more severely affected Spain. In 1798 Philadelphia, out of a population of 20,000 inhabitants who remained in the city, lost 4,000. New York City, out of a population of 50,000 in 1798, lost 2,500. New Orleans, out of a population of 100,000, lost, in 1853, 8,000 of its citizens. Spain in 1800 lost 60,000 people from yellow fever, and again in 1804, 50,000. Barcelona in 1821, of a population of 70,000, lost 16,000. Gibraltar in 1804, with a population of 10,000, lost 6,000.

These figures give some idea of the disease in its bad form. Yellow fever, like syphilis, was an American disease and was not known to Europeans before the discovery of America by Columbus. The severity of yellow fever is such that it has prevented successful colonization by Europeans in countries where it can become endemic.

About the beginning of the nineteenth century it looked as if yellow fever was about to spread over the whole known world. If the manner in which yellow fever became epidemic in Spain is any measure of the manner in which it would affect China and India, some idea of these conditions can be imagined. About the middle of the nineteenth century the area affected by yellow fever began to decline, and it has since then continued to contract till at the present time it has almost become extinct.

All during the nineteenth century the United States was so frequently ravaged by epidemics of yellow fever, and so great loss of life and loss of wealth had been thereby brought about, that the people were willing to go to great expense or submit to drastic measures for the purpose of getting protection from the disease. It was very evident to sanitarians who had given any study to the matter that the epidemics which affected the United States were imported from the endemic focus, which had existed at Havana, Cuba, for the preceding 150 years. The United States was, therefore, very anxious to get rid of Havana as an endemic focus.

When we came into possession of this city in 1898, as a result of the Spanish-American War, every endeavor was made by the authorities to eradicate yellow fever. The whole attention and force of the government were centered on the effort to clean up the city. Yellow fever was then believed to be the best example of a disease caused by filth. In 1900, two years after our occupation, Havana was one of the cleanest cities in the world. But yellow fever was worse than it had been for several years. I, at this time, was health officer of the city under the military governor. The authorities were at their wits' ends and knew not what to try. The Cubans were very much inclined to poke fun at us and at our extraordinary ideas on the subject of sanitation.

I one day overheard a conversation on this subject between a Cuban man and his wife. A large tenement-house had been emptied of its inhabitants for the purpose of cleaning and disinfecting. The families were sitting around on their household goods in all degrees of discontent and irritation. Both husband and wife criticized the eccentric Americans very freely. The wife began to advance some extenuating circumstances — that after all the cranky Americans would leave their house clean and free from bugs. The husband took the ground that the Americans had a

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* Address delivered at the Fifteenth Annual Conference of Health Officers of New York State at Rochester, Sept. 6, 1915.

right to be as cranky and clean as they wished as long as they applied it to themselves, but when they attempted to force their crankiness and their cleanliness on free-born Cubans things had gone entirely too far.

The Havanese population as a whole were very patient under our rigid sanitary measures. I shall always remember with kindness and affection their good natured attitude toward the sanitary department during the four years I spent in their midst as health officer of the city.

A distinguished physician of Havana, Dr. Carlos Finlay, had been maintaining for the previous twenty years that yellow fever was conveyed from man to man by a certain species of mosquito, the stegomyia. From the known facts with regard to yellow fever and from the life history of this species of mosquito, Dr. Finlay had reached this conclusion by a most logical and interesting argument. Dr. Finlay has died in Havana within the last month at the ripe old age of 82. He is one of the great men in medicine who lived long enough to see his work recognized.

The army board, consisting of Reed, Lazear, Carroll and Agramonte, took up in 1900 the investigation of the question of the transmission of yellow fever by the mosquito. They carried to conclusion one of the most mathematical demonstrations ever accomplished in medicine. They placed men out in the country near Havana, so guarded that it was impossible for them to contract yellow fever from their surroundings. They then took the female stegomvia mosquito, allowed her to sting men sick with yellow fever, and then bite the men in this camp. The men bitten developed yellow fever. They then took material soiled by yellow fever patients in every possible manner; had men sleep in rooms filled with this material for weeks at a time. No one contracted yellow fever in this way. They took the blood of yellow fever patients and injected it into well men. They developed yellow fever. They took the blood of a yellow fever patient and passed it through a filter that would stop any particle large enough to be seen by a microscope of the highest power. This filtered blood, when injected into the circulation of a well man, still gave yellow fever. They heated the blood of a yellow fever patient and then injected it into the circulation of a well man. The man did not develop yellow fever. They took the blood of a yellow fever patient who had developed yellow fever as the result of the hypodermic injection of blood from a preceding yellow fever case. This blood caused yellow fever in the man into whose circulation it had been injected. This board, as the result of their labors, published the following very important conclusions:

Yellow fever is conveyed from man to man by the bite of the female stegomyia mosquito, and, in Nature, is probably conveyed in no other way. The disease is not conveyed by fomites of any kind. The disease is transferred by a parasite circulating in the blood and not by a toxin. This parasite is too small to be seen by the highest powered microscope then in use, and is killed by being heated. The parasite lives in the blood of the patient only during the first three days of the disease, and, therefore, the mosquito can be infected only during that time. It takes from twelve to twenty days for the parasite to go through its development in the mosquito and pass from the stomach to the salivary glands of the insect. Therefore, the mosquito is harmless for the first twelve days after biting the man sick of yellow fever.

The sanitary department of Havana took these important announcements of this board, and worked out the measures whereby they might be made of practicable effect in our fight against yellow fever. We established a quarantine whereby all infected ships or persons coming into the harbor of Havana were cared for, and a system of inspection whereby all such persons coming in by land were looked after. Our inspectors also saw daily at Panama every individual liable to yellow fever. A yellow fever patient was so screened and cared for that the stegomyia could not bite him. The attempt was made to kill by fumigating all mosquitoes that might have become infected from each case. And, finally, the attempt was made to destroy all mosquito larvae breeding anywhere within the city limits.

In the long run we found the destruction of the larvae to be a measure of more importance than all the other measures put together.

We commenced our antimosquito work at Havana in February, 1901. The last case of yellow fever in the city occurred in September of the same year. Havana had been the great endemic focus of yellow fever for all the Northern hemisphere during the preceding 150 years. Since the extinction of yellow fever in Havana, fourteen years ago, this disease has practically disappeared from the Northern hemisphere.

In 1898 Sir Ronald Ross of the English army had demonstrated that malaria was conveyed from man to man by another species of mosquito, the anopheles. He and other workers had established much the same condition as to the transfer of malaria as I have just described with regard to yellow fever. It was evident to the sanitary authorities, therefore, that a very slight extension of the work against yellow fever ought to cover work against malaria. This has turned out to be the case. Malaria rapidly decreased with the inauguration of the antimosquito work, and has since become practically extinct.

In 1904 our government undertook the construction of the Panama Canal. On account of the success of the work at Havana, I was placed in charge of sanitation at Panama. I succeeded in getting a good many of the men who had acquired experience in the work at Havana to come to Panama. These men were of inestimable value not only in the active organization of the work, but also in stemming the tide of fear, discouragement and hopelessness which existed on the isthmus during the first two years of our work there. Many of you here can understand what a moral support it is to a health officer to have twenty-five or thirty loyal men behind him. These men had been through similar work at Havana and knew that we were bound to succeed if we could only hold on long enough and convince our superiors that we were on the right track. But for a period in 1905, when yellow fever was at its height, we found ourselves working among a panic-stricken population who believed that we were cranks and fools. Our superiors on the isthmus at this time had become affected by the prevailing panic and were reporting to the authorities at Washington that our work had failed and were asking that we be relieved, and that men more practical and sane replace us.

This report would have ended sanitary work at Panama along the lines of modern tropical sanitation had it been acted upon.

For two years succeeding this time we were given the loyal support of our superiors, and by the middle of 1907 the work was accomplished. The request for our dismissal was made by the commission in June, 1905. In September, 1905, the last case of yellow fever occurred in the city of Panama, and only one case has occurred in the Republic of Panama since that time. All health conditions rapidly improved, and soon the isthmus, as to health, would compare favorably with many parts of the United States.

The eradication of yellow fever and the control of certain other diseases was undoubtedly due to the special sanitary measures taken against these diseases. But these special measures could have had no effect on the general health conditions. For the last fifteen years I have given a great deal of thought to this matter. What did we do at Havana and Panama to cause the great general improvement in health conditions which took place shortly after our arrival at both places, and has since continued?

At Panama shortly after our arrival we increased the wages of the common laborers from 11 cents an hour to 20 cents an hour. This was nearly four times the wages of the laborers in the surrounding countries. He knew that every fourth man would die each year of diseases prevalent on the isthmus, and it took strong inducements to get him to come at all.

If we paid the citizen of a foreign country four times the wages he got at home, we naturally had to increase largely the pay of American citizens whom we wished to get to come to the isthmus. This caused a steady increase in wages all along the line. During 1904 and 1905 this increase of wages was going on all the time. Every time a prominent official died of yellow fever it would cause a stampede in the force. We would have to offer inducements to get the old men to come back and to get new men to come in the places of those who would not come back for any inducements. If yellow fever had continued, we would still be raising wages on the isthmus. This large increase in wages caused a great general improvement in all living conditions — more room to live in, better food and better clothing. I am satisfied that to this improvement in social conditions, caused by our high wages, we owe principally our extraordinary improvement in general health conditions. It is a health officer's duty to urge forward those measures in his community which will control individual diseases; but my long experience has taught me that it is still more his duty to take that broader view of life which goes to the root of bad hygiene, and do what he can to elevate the general social conditions of his community. This, my experience has taught me, can best be accomplished by increasing wages. Such measures tend at the same time to alleviate the poverty, misery and suffering which are occurring among the poorest classes everywhere in modern communities. At Panama we increased wages by edict of the government. But our government got this money by taxing the people of the United States. It would have been of little benefit to our laborers if we had increased their wages by 10 cents an hour and then taxed them by 10 cents an hour in order to raise this money.

Such would be the result in the United States if we attempted to increase wages here by edict of the government as we did in Panama. Such increase would be of no benefit to the laborer.

Natural, just and proper wages are just what each man produces, not a cent more or a cent less. We can look back in the history of our own country and see that this condition of affairs was approximated in the early settlement of the country. A man coming to this country would take up land for which he paid nothing, and his wages were all he produced on that land. After a while all the land is taken up and the next man who comes has to work for some one else. Later a great many more men come, and these men bid against each other for work, and thus force down wages. This has gone on in the United States, and in all other civilized countries, till at the present time all producers get much less than natural wages, that is, what they produce.

Can this unfortunate and undesirable condition of wages be rectified?

Suppose an area of land as great in extent, and as fertile in production as the present Mississippi Valley, should tomorrow rise from the bottom of the Atlantic Ocean off the coast of Long Island. Suppose the United States should own this island and offer it to its citizens under our present homestead laws. Thousands of the citizens of New York would flock there and take up this land. These wages would be natural wages. Each man would get all that he produced: this would be very much in excess of the wages now given in New York. All the poverty, sickness and degradation caused at present by low wages would be rapidly ameliorated. The man who was so fortunate as to be appointed health officer for this island would in a few years be able to publish the most astounding health reports.

It is entirely possible for us to raise from the bottom of the sea just such an island as I have described. In every town and county in New York a large part of the lands are unused or only partially used. If this large body of unused land could be brought into use, the effect on the health conditions of New York would be exactly the same as would be produced by raising the island I have described.

Can these unused lands be brought into use? If these unused lands were taxed to such an extent that the owners would have to use them to the fullest extent in order that they might pay the taxes, is there any doubt as to what the result would be? All unused lands would soon be utilized to their fullest extent. The only way of making any profit from them would be to so use them. It would be a very losing venture not to use them to their fullest extent.

I have been fortunate enough to labor as health officer in a field in which very great health results have been produced; but they would be small as compared with the health results which will be produced by securing for mankind natural wages. It stirs my enthusiasm to think of what glorious opportunities are before the young health officer just commencing life. I have spent my sanitary life killing tropical mosquitoes, and I hope have thereby benefited my fellowman. I would give a good deal to spend another sanitary life in the ranks of the coming generation of health officers doing my share in the fight that is on us, the fight for the greatest of all sanitary measures, natural wages.

Health, Social Service and Government.—The higher ethical standards and the broad humanitarianism which have developed among large masses of the people, in these recent years, demand that the health and socal service activities of the government shall be absolutely divorced from politics.—Governor Charles S. Whitman of New York.

THE HANDWRITING ON THE WALL *

TORALD SOLLMANN, M.D.
CLEVELAND

In the recent convention of the National Wholesale Druggists' Association, Mr. H. A. Hover of Denver, chairman of one of the committees, referred to the subject of "proprietary" and "patent" medicines in the following words: [1]

> I apprehend that sooner or later we will all be up against not only radical state legislation, but national legislation as well, and we might as well forestall drastic action and lend a guiding hand as to the character that legislation shall take on. We did it properly and successfully in connection with the legislation on narcotics, and we might as well see the handwriting on the wall in this case.
>
> This is an important question, which involves over 50 per cent. of our business, and we do agree that there are certain abuses incident to the manufacture and distribution of proprietaries which have grown up and which involve a lot of remedies that we cannot consistently defend, and we might as well lend our aid and start to clarify the situation.

It is gratifying that the handwriting should be perceived by important commercial bodies — for the "patent medicine" business is, unfortunately, largely a commercial question.

This awakening of the drug trade to the "patent medicine" evil is a most welcome accession to the forces that are working for the protection of the people. In the past, it is true, individual voices have been heard in protest; but for many years the drug trade, wholesale and retail, has winked at these evils. Too often it has even encouraged them. The "patent medicine" business could never have reached its present vast proportions had it not been backed by the silent, and very often by the voiced recommendation of the drug trade. These proportions are, indeed, enormous. Mr. Hover presents statistics showing that proprietary and "patent" medicines constitute over half of the total sales of the wholesale druggist — a little more than all the standard drugs, sundries, appliances and the multitude of things that go to make up the stock of the ordinary drug store. The Commission on Proprietary Medicines of the American Pharmaceutical Association, in a report presented this year,[2] estimates that the number of "proprietary medicines" on sale in the United States is from 40,000 to 50,000, exclusive of any "own make" preparations with only local reputation.

While the drug trade has been a partner in the growth of this business, and must take its share of responsibility for the abuses, it should not be blamed unduly. Many of the evils arose insidiously and were practiced thoughtlessly. It is more profitable and more just to rejoice that the conscience of the trade is now awakening, and to extend every aid in the power of our profession to make this awakening effective. In particular, we should give credit to the American Pharmaceutical Association for bringing the issue squarely before the pharmacists. It remains to be seen whether the association and the pharmacists will follow up this first step: whether they are ready to lay the ax to the root of the evil, whether they intend merely to prune a few of the overluxuriant branches, or whether, finally, they will prefer to shut their eyes and minds to the logic of events, and let things drift.

Their problem is not an easy or simple one. At the first view, it might seem that they had a final remedy in their power: They need only refuse to handle "patent medicines," and these would practically go out of existence. So drastic an action, however, would not be supported by present public opinion. The very fact that these medicines have so large a sale shows that the public wishes to use them, and that the public must first be educated to their evils, before it will wholeheartedly countenance their suppression. In the long run, more can be accomplished by fighting against the specific evils of the "patent medicines," than by attempting to suppress "patent medicines" as a class.

The drug trade is wisely choosing this path, if its attitude is fairly reflected in the report of the American Pharmaceutical Association commission already referred to. This starts with a study of the various detailed problems involved. On the basis of this study, the commission has drawn up a set of provisional rules as minimum requirements for an honest "patent medicine." All of these are in the right direction. A frank critic, however, must concede that they scratch only the surface of the evil, and promise only a slight palliation, and not a cure. The real cause of the evil is only very lightly, one might even say rather tenderly, touched on by the commission; but a further report is promised; and it is to be hoped that this will deal with the fundamental matters more frankly. Yet the present report contains interesting material, and deserves careful reading in the original. Its main features, however, may be abstracted and discussed.

The commission first points out some of the weak points in the stock arguments against "patent medicines."

1. There is a contradiction in the claim, on the one hand, that "patent medicines" are nothing but everyday prescriptions — on the other hand, that they are dangerous and worthless. Their defenders are prompt to inquire "why a given mixture should be considered a valuable and efficient remedy when dispensed by or on the order of a physician, and dangerous and worthless when put up in a carton with a printed label and wrapper."

The contradiction is of course easily answered; in fact, the commission furnishes the answer under 4, below.

2. So far as pharmacists are concerned, it is pointed out that the condemnation of widely advertised "patent medicines" looks insincere when they recommend their "own make" preparations of similar character. They do, indeed, defend the latter as being "nonsecret." In fact, however, their composition is not often divulged to the purchaser. It might be added that "own make" preparations really conflict with the tendency of medical practice acts, and will eventually have to disappear when these acts are consistently framed and applied. For "own make" preparations would have practically no sale unless they were personally recommended by the vender; and the personal recommendation of drugs is nothing more or less than prescribing.

3. While disclaiming against proprietary medicines as a class, pharmacists have not hesitated to stock and sell them, and often to recommend them, individually. Physicians who own drug stores have not been any more consistent.

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* From the Pharmacologic Laboratory, Western Reserve University, School of Medicine.

[1] Forty-First Annual Meeting of the National Wholesale Druggists' Association, stenographic report, in Oil, Paint and Drug Reporter, Oct. 7, 1915, p. 37.

[2] Report of the Commission on Proprietary Medicines of the American Pharmaceutical Association, Jour. Am. Pharm. Assn., October, 1915, p. 1148.

4. Only minor emphasis has been placed on what the commission rightly considers the greatest evil of the "patent medicine" industry, namely, "the falsity and extravagance with which its products have been exploited." Every one must agree with the commission, that "this is the basic evil of the 'patent medicine' business and the point where it is most vulnerable, and an attack upon this evil needs no argument for its justification."

The commission goes on to say, "Numerous 'patent medicines' are mixtures which have some merit if properly applied in cases for which they are adapted; the evil is not in the remedies themselves but in the method of their exploitation."

This also is true as a theoretical proposition. The question that the drug trade itself must attempt to answer is precisely this: *Can "patent medicines" be properly exploited?* If so, how?

The commission next takes up the distinction between "proprietary" and "patent" medicines. This distinction, it rightly concludes, depends essentially on whether or not the drug is advertised to the lay public, directly or indirectly. A medicine that is so advertised is a "patent" medicine; while one that is advertised only to physicians is a "proprietary" medicine. The commission points out that if advertising to the laity were prohibited absolutely, the use of proprietary medicines, except under the direction of qualified physicians, would be reduced practically to zero.

The commission considers that the problems of proprietary drugs are being properly and sufficiently cared for by the Council on Pharmacy and Chemistry, and that there is no call for the pharmaceutical profession to invade this field.

The commission then goes into an extensive consideration of the various questions involved in the "patent medicine" problem. On the basis of this, it formulates a set of tentative declarations of minimum requirements which "patent medicines" should meet in order to render them safe in the hands of the general public. It is emphasized that these are only provisional and subject to modification. These rules are so important that it seems worth while to reproduce them, together with some critical and constructive comments.

MINIMUM REQUIREMENTS

1. *Prescription Fakes, Concealment of Proprietary Character.*—The preparation must not be named or advertised in such a way as to conceal its proprietary character and lead the purchaser to believe that it is a simple chemical or vegetable drug ordinarily purchasable in small quantities instead of a proprietary mixture or substance.

This is a protection against a common form of fraud. The rule may be endorsed as it stands.

2. *Methods of Marketing.*—The preparation must be one which is regularly offered to the public through the usual trade channels, i. e., through regular wholesale and retail dealers in ready-made medicines, and thus subject to inspection by the authorities charged with the enforcement of state food and drug laws.

This would facilitate official supervision, especially of intrastate trade, by restricting the sale of medicines to licensed dealers.

This will become of material benefit to the public, however, only if these dealers are made legally responsible for their merchandise, for instance, for any misrepresentation, damage caused by the medicine, etc. Mere "inspection" will not furnish much protection.

With this proviso, the rule may be indorsed.

3. *Alcohol Content.*—If the preparation contains alcohol, it must be sufficiently medicated to prevent its use as an intoxicating beverage, and in addition to this requirement, the proportion of alcohol present must not be greater than is properly necessary to hold in solution in permanently active condition the essential constituents of the preparation, and to protect the preparation against freezing, fermentation, or other deleterious change.

This aims to prevent the use of "patent medicines" as intoxicants. As stated in another part of the report, "it seems fair to assume that when the alcohol percentage of a mixture is far in excess of pharmaceutical requirements, it is for the express purpose of making a preparation that will serve as a substitute for beverage liquors."

The rule, however, does not go far enough really to protect the public. The present internal revenue regulations cover practically the same field; but they have undoubtedly failed to abolish the abuses. This is easily understood, for it is impossible to lay down any hard and fast line as to when an alcoholic medicine is "sufficiently medicated to prevent its use as an intoxicant." No one doubts that medicines containing merely vegetable extractives, such as many bitters, tonics, female remedies, etc., are often taken as intoxicants, even when the consumer does not realize this. If they produce the effects of alcohol, they are intoxicants, even when they are not used to the extent of paralyzing the victim.

There is but one way of doing away with the abuse of alcohol under the guise of "patent medicines," and that is to prohibit absolutely its sale to the public in this form, for the manufacturer, since he does not know the consumer, cannot guarantee that his alcoholic preparations will not be abused intentionally, or that it will not create an alcohol habit.

The rule in its present form sounds well; but to accomplish its professed intent, it should read, "No preparation may contain alcohol."

4. *Content of Habit-Forming Narcotic Drugs.*—If the preparation is one which is capable of being used internally, whether recommended for internal use or not, it must not contain cocain, nor shall it contain opium or any of its alkaloids or their derivatives, in greater proportions than those specified in Section 6 of the federal law commonly known as the Harrison Act, and it shall also contain other active drugs in such proportion that the use of the preparation will not be likely to create a drug-habit, nor satisfy such a habit when previously existing.

This provision is well meant, especially the last clause, that any preparation containing a habit-forming drug must also contain other active drugs in such proportion as to make its use for satisfying the drug habit impossible. However, the same insuperable difficulty exists here as in the case of alcohol, namely, that it is impossible to draw a definite line. The way to abuse is still open, the occasion still present, just as it is in the Harrison Narcotic Law. Are not the frightful dangers of the opium habit greater than the possible benefits of the direct sale of opiates to the public — however much one may try to guard against these dangers? Is it really indispensable to the welfare of the public that disguised opiates should be on sale? What ailments are there that are really benefited by amateur treatment with opiates, and that could not be benefited as much or more in less objectionable ways?

5. *Remedies for Children's Use.*—If intended for administration to infants or children, the preparation must not contain cocain, or opium or its alkaloids, or their derivatives in any proportion whatever.

This merits unqualified indorsement. The only criticism is its restriction to infants and children. It should read: "The preparation must not contain cocain, opium, etc., . . . in any proportion whatever."

It may also be pointed out that Rule 5 would furnish little protection to children, so long as the sale of opiates, etc., is permitted by Rule 4. The same cough syrups, etc., are used for all ages.

6. *Activity of the Preparation, Cautions Against Misuse.*—The preparation must be of such character that it will not be liable to endanger life or health when used in accordance with the accompanying instructions, and if the preparation is one which is liable to occasion injury when improperly used or when used to excess, the accompanying literature must bear instructions tending to guard against such improper or excessive use.

This provision is intended to diminish the danger from toxic constituents. It may be indorsed, with the important addition, "All preparations which may occasion harmful effects, even when used improperly, must be plainly and conspicuously labeled POISON."

7. *Immoral or Illegal Purposes.*—The preparation must not be intended for use as an abortifacient or for use for any other immoral or illegal purpose, nor must it be advertised or recommended either directly or indirectly as an abortifacient or for any immoral or illegal purposes.

The advisability of this rule is self-evident.

8. *Incurable and Contagious Diseases.*—The preparation must not be advertised or recommended as a cure for diseases or conditions which are generally recognized as incurable by the simple administration of drugs, or for the cure of contagious or acute diseases the treatment of which properly requires the supervision of a qualified medical attendant.

This is the only rule to which the National Wholesale Druggists' Association took exception. It is stated in the stenographic report that the reasons for their adverse action will be transmitted to the commission; and it will be very interesting to have these published. On its face, the rule seems perfectly fair, and to the public interest. Theoretically, it is of course conceivable that some one might discover a drug cure for an incurable disease, and market this as a "patent medicine." Practically, the contingency is too remote for serious consideration. If such a discovery were actually made, the inventor should be required to prove that he has found a cure; and if he succeeded in doing so, the disease would no longer be incurable, and his medicine would therefore not come under the provisions of this rule. Experience has shown, however, that the requirements for this "proof" should be extremely stringent. The rule deserves indorsement as it stands.

9. *Conformity to the Federal Food and Drugs Act.*—Neither the label on the package nor any of the accompanying literature shall bear or contain any statement in conflict with the misbranding provisions of the Federal Food and Drugs Act.

This is self-evident.

10. *Advertising Not Accompanying the Package.*—Advertising not accompanying the package shall conform substantially to the statements on the label, carton, or in the accompanying circulars as to the origin, composition or character of the preparation, or concerning its curative or remedial value.

This rule is needed to check irresponsible advertising in the newspapers, circulars, etc., which are not readily reached by the present machinery of the law. The rule deserves indorsement; but the chances are that it would not be enforced, unless a rather elaborate machinery of supervision were provided.

THE SECRET FORMULA

Taking the rules as a whole, as they stand, there can be no doubt but that their enforcement would correct some of the flagrant "patent medicine" evils. As has been indicated, they could be modified so as greatly to increase their efficiency. Even then, however, they are merely so many plasters to the sore; and as with all kinds of superficial treatment, when we succeed in healing the sore in one place, it is apt to break out in another, until the disease itself is attacked. It is questionable, therefore, whether we are not simply wasting time by experimenting with legal plasters, instead of attacking the fundamental fault. What, then, is the spring of the "patent medicine" evil? Why is it that the makers of "patent medicines" have been able to deride all past efforts to correct their abuses? Why has it been possible for them to make exaggerated and false claims, such as could not be made in any other line of business? Why have they been able to sell poisons; to foster alcohol and drug-habits, to create imaginary disorders and to prevent the treatment of real diseases; to injure individuals and the community in health, happiness and purse? Why have they been beyond the efficient reach of law and of public opinion?

If the commission seeks a true answer to this question, it will find it in a single word, and in nothing else: *secrecy*. Until this is corrected, all rules and laws are more or less futile. So long as the composition of "patent medicines" is secret, it is impossible to make them subject to any efficient law. So long as the composition is secret, the manufacturer has every technical advantage — he is working in the light, the public in the dark. You may, it is true, try to meet his older tricks, one by one; you may succeed in making him name his poisons, narcotics or alcohol; you may even prohibit them — provided they are such as you can succeed in isolating from his complex mixture. You may legislate against his selling harmful preparations or making untrue claims, but to apply the law, you must prove your contention. Here secrecy is a strong, often perfect protection; for to prove the harm or disprove the claims of a complex mixture of unknown composition is a task of such magnitude as to frighten the average prosecutor out of the attempt. It would tax the resources of a large scientific and legal institute to bring a dozen of the plainest offenders to task, each year — the thousands of other offenders meanwhile basking in immunity. And then, the offender having paid his fine out of a day's or week's profit, need only spend five minutes in making up a new secret formula — and where is the profit to the public?

On the other hand, assume the composition published, and the task of the inspectors becomes, relatively, a pattern of simplicity. The composition can be checked, chemically, with infinitely greater ease, when the supposed ingredients are published. The claims can be checked much more simply when one can utilize the large amount of data that science has accumulated. The "patent medicine" business can be made to travel, as any honest business, on its merits, instead of its imagination.

The secret formula, then, is the key to the "patent medicine" evil. The commission does not appear to have perceived this clearly; at least, it has not made up its mind. It states that it is "by far the most delicate and difficult" phase of the subject — doubtless so, because it is the crux of the situation — and wisely wishes to make sure of its ground before announcing a conclusion. The conclusion will be awaited with great interest, for by it the report of the commission will stand or fall; by it the thinking public will decide whether or not the commission places the public welfare above all other considerations.

There are at present three plans of dealing with the formula question: The first, to permit the manufacturer to keep the ingredients secret, as at present, except for certain specifically stated poisons. Second, the confidential registration of the formula with some government commission; this is the plan in force, or proposed, in England, Canada and New York City. Third, the publication of the formula on the label. By the latter is commonly meant the statement of the active ingredients and their quantities, without requiring the details of the working formula, flavors, menstruum, etc.

The arguments which are made by the opponents of the published formula are, that this would amount to confiscation of the property; that it would do no good to the consumer; and that the formula is no one's business except the owner's.

The real opposition, of course, arises from the apprehension that publishing the formula would hurt the "patent medicine" business. It is urged that the "patent medicine" manufacturers have spent large sums of money on advertising and creating a sale for their products; that, were their formula published, a host of imitators would arise who would claim to produce the same article; and who, having been spared the expense of advertising, could produce it at a lower price and thus drive the original manufacturers off the market. At first view, the argument appears quite reasonable; but on closer examination it is found to have some very weak features. In the first place, there are probably few druggists who do not consider themselves competent to imitate any "patent medicine" that is sold, even though its composition is supposed to be secret; at least, there are very, very few druggists indeed who do not think that they can produce something just as good, if not better. The cry against substitution, which we have heard for all these years, shows that secrecy has not protected against imitation.

It is most doubtful that the imitation would be any greater with the published formula than without it. It has never been demonstrated that the few "patent medicines" that do publish their formulas, such as castoria and the Ayer's preparations, are being imitated to any greater extent than the others. If the manufacturers are really serious in desiring protection against imitation, they could obtain this by patenting their formula — provided this is really original and meritorious — but there, perhaps, is the rub.

While it is not probable that the fears as to imitation need be taken very seriously, it is possible that publication of the formula would hurt the "patent medicine" business in quite another way: It would make it difficult, if not impossible, to advance the many extravagant claims of marvelous cures on which the "patent medicine" business is largely based. It would also undoubtedly greatly lessen the fictitious efficiency of the preparations in actual use. It might no longer be possible to remove or put on fat by the use of a little alum, washing soda or starch. The published formula would furnish a criterion of originality and efficiency, which many "patent medicines" could not withstand. Those that are neither original nor efficient would undoubtedly be hurt in their sale. It is doubtful, however, whether many outside of the "patent medicine" interests would shed tears over this danger. If a business is hurt by enforcing honesty, it is to the public interest that it should be hurt. In short, the publication of the formula would do but little harm, if any, unless there is the intention to defraud.

On the other hand, the published formula would be of some help to the honestly intentioned "patent medicine" manufacturers. In the first place, it would be the most efficient way of meeting the present feeling of the educated public against "patent medicines." As is pointed out by the American Pharmaceutical Association commission, a given "patent medicine" may be of more or less, sometimes considerable, use in suitable cases. The fundamental objection to "patent medicines" as a class is that it is impossible to judge whether any of them are suitable to any patient, when their composition is not known. The patient often asks his physician whether it is safe for him to continue a "patent medicine" that he has used with apparent benefit, or to try one that has been recommended to him. In such cases, a physician would usually have no objection to humoring the wishes of the patient, provided he could be certain that no harm would result. With the composition secret, it is impossible for him to be certain of the harmlessness. He must, therefore, unqualifiedly prohibit the use.

The second argument in defense is that the publication would do no good to the buyer, because he would not understand the formula anyway. This entirely underestimates the intelligence of the public. Some do understand, and others seek advice. There are very few who would try to remove their fat with a little alum at an extravagant cost if they knew that it was alum. It is rather suggestive that several state laws require the publication of the formula of stock remedies. It can scarcely be contended that the farmer knows something about what "salts" is when giving it to a horse, but has never heard of it when he takes it himself!

The publication will also be of some service to the public in protecting it against a change in formula whenever the price of ingredients advances, or when other reasons prompt the manufacturer. I do not know how often such changes are made, but there is a widespread belief that they are not uncommon. The purchaser is certainly entitled to know when the thing that he buys under a given name is different from what he had formerly bought under the name.

A final argument, and to my mind the most important, is the protection of the public against drugs which may under some circumstances be perfectly harmless, but which may become very harmful under other conditions. One need only remember the dire results that would follow the application of calomel to the eye of a patient who is taking iodid — a frequent constituent of "patent medicines" — without the knowledge of his physician. Perhaps even more common are the instances of oversusceptibility to the effects of drugs. In these cases the patients and their physicians are generally aware that this or that drug should not be used. There are no statistics to show how much damage is done by the consumption of "patent medicines" whose constituents are quite harmless for the average individual, but against which certain people react abnormally, and which would be avoided if the consumer knew the constituents. On the other hand, the patient may not know their susceptibility, and finally consult a physician concerning an unusual, obscure and intractable train of symptoms whose cause and cure would be clear the moment that the physician knew the drugs that had been taken.

It may be argued, thirdly, that the formula is the property of the manufacturer, that the medicine is likewise his property, and that he can sell it under his own conditions. If he chooses to keep the formula secret, and the purchaser does not like this, he need not purchase and no harm will be done. If he does purchase, the transaction is strictly between him and the manufacturer, and the business of no one else. The fallacy of this "individual liberty" argument has often been pointed out. Logically, it would permit and legalize any sort of fraud. It is now universally conceded that where the public has not the means of judging for itself, the state can and should step in to afford it protection. A law requiring publication of the formula would still leave the formula the property of the manufacturer, and would not at all compel him to disclose it. Only, if he wishes to keep the formula to himself, the state will also oblige him to keep the medicine to himself.

The proposal to register the formula confidentially with a government body is a sort of middle ground that is supposed to guard the interests of the manufacturer, and protect the public against the grossest forms of fraud and the most marked dangers. As a matter of fact, it can do neither satisfactorily. It would not effectively protect the manufacturers, because the government commission — itself consisting of several individuals — would often need to call in outside advice to pass on the various claims, etc., made for each medicine, if it were to do its task at all conscientiously. One can easily see what chances there would be for the leakage of information. Once information had leaked, the much dreaded damage would have been done. Who would assess and pay the damages to the manufacturer?

It would not effectively protect the consumer, because a composition that might be harmless for most individuals might be harmful for him; a manufacturer might make claims which the government body might hold to be justifiable in the majority of cases, but which would not be at all justifiable in individual cases. The medicine might contain ingredients which are ordinarily not dangerous, but which become dangerous under certain conditions which the government body could scarcely foresee. The cost of the medicine might be so extravagant that the individual consumer might consider it as fraudulent; the government body would have great difficulty in drawing a line.

Let us not forget that a question is never settled until it is settled right; and that a settlement that is satisfactory to neither party is certainly *not* right.

After the American Pharmaceutical Association commission has formulated its final rules, it will still be confronted by the problem of making these effective. It may urge their enactment into laws; but until that can be accomplished, it must rely largely on the moral pressure that it can exert. Perhaps the "patent medicine" manufacturers will themselves see the light and aid in the reform. Or will they put themselves in the position of Belshazzar and his court and wait until sentence has been pronounced?

> They drank wine and praised the gods of gold, and of silver, of brass, of iron, of wood, and of stone.
>
> In the same hour came forth fingers of a man's hand, and wrote over against the candlestick upon the plaister of the wall of the king's palace; and the king saw the part of the hand that wrote.
>
> Then the king's countenance was changed, and his thoughts troubled him, so that the joints of his loins were loosed; and his knees smote one against another.—Daniel, v, 4-6.

CARBOHYDRATE INDIGESTION

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Carbohydrate indigestion is not, strictly speaking, a disease, but a functional disturbance which may occur by itself, or as a complication of disease of the alimentary tract or of other parts of the body. Scattered references to faulty digestion of carbohydrates are to be found, under the headings "Gastric Ulcer," "Meteorism," etc., in the current textbooks on diseases of the stomach and intestines, but the subject is, so far as I am aware, nowhere treated as a comprehensive whole. Yet the condition is very common and responds readily to a proper regulation of the diet.

The discussion will be limited to carbohydrate indigestion in adults, since the condition as it affects infants forms a subject by itself.

There are distinct limits to the tolerance for carbohydrates, proteins and fats. These limits vary widely in different persons, and in the same person at different times. When the amount in the diet of one of these forms of food exceeds the limit of tolerance, then either disturbance of digestion, or of absorption, or both, is the result.

Indigestion of various kinds is perhaps more often due to a diet unsuited to the individual than to any other cause. The symptoms of carbohydrate indigestion are the result of fermentation, with the formation of various gases, carbon dioxid (CO_2) and methane, (CH_4) etc., and volatile fatty acids. For fermentation to take place three factors are necessary: (1) the presence of suitable micro-organisms; (2) a proper medium for them to work on, and (3) more or less stagnation of the contents of the stomach or intestine, in order that the organisms may have sufficient time for action. A great variety of organisms may give rise to gaseous fermentation, among which the yeasts and various bacteria are the most important. Kuhn and Strauss[1] have shown that hydrochloric acid does not inhibit the development of yeast cells. Gaseous fermentation is found in the stomach, according to Riegel,[2] especially in cases of dilatation, with normal or increased amounts of hydrochloric acid, though it may occur in the absence of hydrochloric acid. In the case of the intestines the colon is the chief seat of gas production, on account of the abundance of micro-organisms and the stagnation of the contents.

The exact causes of carbohydrate indigestion remain obscure. In the stomach, hyperacidity might be a factor by interfering with the action of the salivary diastatic ferment. In the large intestine the presence of undigested or partially digested starch is probably the most important factor, for sugars are invariably absorbed higher up in the canal. The micro-organisms are probably always present and only await a suitable opportunity for their activity.

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[1] Kuhn and Strauss: Quoted by Riegel in Diseases of the Stomach, Nothnagel's Practice, Am. Ed., 1903, p. 123.

[2] Riegel: Diseases of the Stomach, in Nothnagel's Practice, Am. Ed., p. 403.

The faulty digestion of starch in the intestine might be due to an insufficiency of the diastatic ferments, or, as A. Schmidt[3] suggests, to a defective digestion of the cellulose which forms the outer envelope of the starch cells, and must be removed to allow the digestive ferments access to the starch within.

SYMPTOMS

The symptoms of intestinal fermentation are chiefly those due to distention with gas. The patients in the milder cases complain only of a sense of fulness or discomfort coming on several hours after meals, and of flatulence. The higher degrees of tympanites are accompanied by colicky abdominal pain, which may be severe, and is relieved by the passage of gas. The seat of the pain varies according to the part of the intestine affected; it may be general, or located in the right iliac region, or the left side of the abdomen. Pain is more likely to occur if there are adhesions which are pulled on, as in the case of distention of the cecum with adhesions from chronic appendicitis. Sometimes the acid products of fermentation irritate the bowel to such an extent that diarrhea results, the so-called "fermentative dyspepsia," of Adolph Schmidt. The movements are then frequent, acid and foamy from the admixture of gas bubbles.

Gastric fermentation gives rise to distention of the stomach, which is relieved by belching. "Heart-burn" is another common symptom in this condition, and one that is relieved by diminishing the amount of carbohydrates in the food. Whether, however, the carbohydrate indigestion is secondary to the hyperacidity, or causes it by the irritating products of fermentation, remains an open question.

DIAGNOSIS

Since abdominal distention is the principal symptom of carbohydrate indigestion, it becomes necessary to consider all the causes of tympanites. These are four, namely, (1) increased gas production; (2) mechanical obstruction of the intestine; (3) the so-called paralytic ileus, or obstruction due to paralysis of the intestine, and (4) deficient absorption of gas from the intestines. Mechanical obstruction can only give rise to doubt in cases of chronic and partial obstruction; here a careful inquiry for previous inflammatory abdominal disease, and examination of the abdomen for tumor, visible peristalsis, and intestinal rigidity (*Darmsteifung*) will usually solve the question, though roentgenoscopy may be necessary before a final decision is reached. In paralytic ileus the symptoms are those of acute intestinal obstruction, usually associated with acute general peritonitis or following an abdominal operation. It is obvious that such a condition does not in the least resemble distention due to fermentation.

Tympanites from decreased absorption of gas is a rare condition, met chiefly in the aged, and presumably due to arteriosclerosis of the mesenteric vessels. The diagnosis can be made, with some reserve, in arteriosclerotic subjects with distention for which no other cause can be assigned.

After the exclusion of other sources of tympanites, that due to increased gas production remains. It is by far the commonest cause of distention. It may be the result of fermentation of either carbohydrates or proteins, but the carbohydrate fermentation is much the more frequent of the two. Therefore it will be allowable in a given case to limit the carbohydrates in the diet, and base the diagnosis on the results of treatment. A more certain opinion, however, can be reached by the examination of the feces. The reaction is perhaps the best single guide, an acid stool pointing to the carbohydrates, and alkalinity to the proteins, as the element at fault. The presence, under the microscope, of undigested starch granules, as shown by the iodin test, is additional evidence of carbohydrate indigestion, while a foul odor points with certainty to the putrefaction of proteins. The presence in the urine of large amounts of indican, or phenol, or both, also indicates increased protein decomposition. The fermentation test of Schmidt[4] is useful, though seldom indispensable. It consists in measuring, by means of a simple apparatus, the gas produced by a definite amount of feces when incubated for twenty-four hours in a thermostat, the reaction being taken before and after incubation. If the reaction becomes more acid, the fermentation involves the carbohydrates, if more alkaline, the proteins.

The fermentative diarrhea of Schmidt is easily recognized by the examination of the stools, which are mushy, acid, mixed with bubbles of gas, and contain undigested starch. Though the movements are increased in number, it is not, strictly speaking, a diarrhea, for the water content is not increased.

When belching is the principal symptom it is necessary to determine whether the gas is swallowed, or formed within the stomach. Cribbing, or the swallowing of air, is to be suspected when there is a history of a very large amount of gas brought up within a short space of time. On watching the patient, swallowing movements may be noted at frequent intervals, and the belching will be prevented by the wearing of a piece of cork between the teeth. If the gas is formed within the stomach, it may be due to simple carbohydrate indigestion or be secondary to obstruction of the pylorus or atonic dilatation of the stomach. The latter conditions may be distinguished by the use of the stomach pump, and of the Roentgen ray. Belching in a fat person is always suspicious of carbohydrate indigestion, for serious disease of the stomach almost always leads to loss of weight.

TREATMENT

The treatment of carbohydrate indigestion is mainly dietetic. It consists in a marked reduction of the total carbohydrate intake, with exclusion of certain articles which are known to undergo fermentation readily. Such are potato, sweet potato, cabbage, beans (except string beans), and chestnuts. The harmfulness of potato in this connection is possibly explained by the work of Lang,[5] who found, in the course of experiments with pancreatic diastase, that potato, though easily changed to achroödextrin, is very slow to undergo the further change into sugar. In obstinate cases, particularly in the fermentative diarrhea of Schmidt, it may be necessary to resort for a while to a strict protein-fat diet, consisting of eggs, meat, fish, bouillon, butter, and tea or coffee with milk or cream. According to Schmidt, a small amount of cane sugar and fruit jellies may be taken in addition to the above. After a few days of such a diet, carbohydrates may be added cautiously, one at a time; sugar, cream of wheat, toast or zwieback, macaroni, and rice, in the order named. Potato is best left out of the diet for a long time. In cases without diarrhea, vegetables of low carbohydrate content, such as carrots, turnips, squash, egg-plant and string beans, are well tolerated from the first. They should be sieved and served with butter.

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[3] Schmidt, A.: Klinik der Darmkrankheiten, p. 199.

[4] Schmidt, A.: Klinik der Darmkrankheiten, p. 100.

[5] Lang, S.: Ztschr. f. exper. Path. u. Therap., 1910, viii, cited in v. Fürth, Problem. d. phys. u. path. Chem., ii, 216.

If obesity is present, a reduction in the total caloric value of the food should be combined with the limitation of carbohydrates. The relief of indigestion is often a welcome by-product of an obesity cure.

The results of the dietetic treatment of carbohydrate indigestion are most gratifying, dyspepsia of long standing disappearing in a few days. In fact, if relief is not obtained, it is probable that the diagnosis is wrong and some other condition is present.

The drug treatment of fermentation will accomplish little by itself. When combined with regulation of the diet it sometimes seems to be of benefit, but as a rule it is superfluous. The drugs most likely to give relief are the various salicylate preparations and beta-naphthol. Belching can be facilitated by the administration of the ethereal oils, such as peppermint, or menthol in half-grain doses. Diastatic preparations are occasionally of service.

The following cases, all of which occurred in private practice, may serve to illustrate the foregoing statements.

Case 1.—M. M., an unmarried woman, aged 67, was first seen Oct. 1, 1914. Her past history was not remarkable except for a tendency to nervous prostration. She had suffered from indigestion all her life, usually in attacks lasting from two to six weeks. The chief symptom had been distention with gas, coming on two or three hours after eating, and causing a good deal of distress, sometimes enough to keep her awake at night. When very uncomfortable she resorted to enemas to remove the gas. The physical examination was negative except for gurgling on palpation over the intestines. The feces were neutral in reaction, and were negative microscopically except for an excessive number of yeast spores. The treatment consisted in a protein-fat diet, with a small amount of carbohydrate in the shape of sieved green peas and apple sauce. A powder containing beta-naphthol, soda and bismuth was given after meals. The result was prompt relief. Three weeks later she reported that there had been very little gas, though she had left off the medicine some time before. Fruits once a day, nuts and ice-cream were then added to the diet. At her next visit, November 6, she was feeling very well. She was told she could eat rice, and after December 3, all vegetables except potato. She reported by letter July 7, 1915. In the spring she had two short periods of indigestion lasting two days or less; since then she has been free from symptoms except an occasional feeling of abdominal discomfort.

Case 2.—Mrs. D. K., aged 43, was seen Jan. 14, 1915. Her past history was negative. For the past eleven years she had had frequent pains in the left iliac region associated with distention. There was a constant dull pain there, with acute exacerbations in which the pain radiated upward toward the left costal margin. Examination showed a moderately obese woman, weighing 160 pounds; the viscera were negative except that the sigmoid was palpable. The feces were slightly acid in reaction, and showed a few undigested starch granules. On a diet low in carbohydrates she was soon relieved, and on February 3 reported that she had had pain only once in the last fortnight. During the following week she had no pain. On inquiry, June 26, 1915, she stated that she had been free from pain on a slightly restricted diet, except for a few occasions when she had taken more carbohydrate than usual.

Case 3.—Mrs. R., aged 56, had been getting stouter for two years owing to lack of exercise following the death of her pet dog. There was a good deal of heart-burn and gas in the stomach. Under a simple antiobesity diet these symptoms promptly disappeared.

Case 4.—This patient was a very fat cook who complained of incessant belching. The appetite was good but she was afraid to eat on account of the distress afterwards. Complete relief followed restriction of the carbohydrates and of the total food intake.

Case 5.—C. C., a college professor, aged 48, complained of distention from gas after meals, especially if he used his eyes directly after dinner. Examination showed slight obesity, and the abdomen somewhat distended. The stool was slightly acid, and contained many gas bubbles, and undigested starch granules. The treatment consisted of a mild reduction cure with low carbohydrates. A week later he reported that since changing his diet he had not been at all annoyed with indigestion. Carbohydrates were gradually added to the diet without a return of the symptoms. On inquiry six months later he said that he had remained well though on an ordinary diet.

Case 6.—This case illustrates the so-called fermentative dyspepsia of A. Schmidt. Mr. S., aged 53, had been under treatment for the past few years for vague neurasthenic symptoms and for chronic prostatitis. He complained of diarrhea of three months' duration. The stools were two or three a day in number, and were mushy, not watery. Examination showed a rather stout man, with nothing remarkable except the character of the stools; these were brown, soft, not formed, full of gas bubbles. Microscopic examination showed numerous undigested starch granules. He was put on a protein-fat diet consisting of eggs, meat and butter, with a small amount of carbohydrate in the shape of gluten-biscuit and tomatoes. No drugs were prescribed. A week later he reported considerable improvement, the bowels moving only once or twice daily, the stool partly formed. He was told to add three slices of toast to his diet, and to take a teaspoonful of a diastatic ferment preparation after meals. During the following week the movements dropped to one a day, and became formed and of normal appearance. Carbohydrates were restored gradually to the diet list and no relapse took place.

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ACTIVE IMMUNIZATION WITH DIPHTHERIA TOXIN-ANTITOXIN

AND WITH TOXIN-ANTITOXIN COMBINED WITH DIPHTHERIA BACILLI — SECOND PAPER: LATE RESULTS *

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The property of diphtheria toxin-antitoxin mixtures to produce immunity in animals has been known for a number of years. Successful results have been obtained in the immunization of horses (Park, 1902), goats, guinea-pigs, etc. Theobald Smith suggested the immunization of children by this method, but no one undertook it until 1912, when von Behring made the attempt.

In May, 1913, von Behring[1] reported the results obtained in human beings with mixtures of diphtheria

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[1] Von Behring, E.: Ueber ein neues Diphtherieschutzmittel, Deutsch. med. Wchnschr., 1913, xxxix, 873.

toxin-antitoxin. The combined substances were either neutral or slightly toxic to the guinea-pig, but the definite proportions of toxin and antitoxin were not stated. The early reports of von Behring and his co-workers[2] were so favorable that we determined to make a similar attempt at the Willard Parker Hospital. The scarlet fever pavilion offered us exceptional opportunities to determine the efficiency of this prophylactic treatment against diphtheria.

Mixtures of diphtheria toxin and antitoxin were accordingly prepared in such proportions that they were either overneutralized (50 per cent. of the L + dose of toxin to each unit of antitoxin), just neutral (from 66 to 70 per cent. of the L + dose of toxin to each unit of antitoxin), or slightly toxic to the guinea-pig (from 80 to 90 per cent. of the L + dose of toxin to each unit of antitoxin).

Several series of patients were injected with these mixtures during the past two and one half years. Our first communication[3] in September, 1914, gave the results which we had obtained within from four to six weeks after the injections of toxin-antitoxin. From the available results at that time we concluded that the cases injected could be divided into two sharply differentiated groups:

1. Those who had a natural antitoxic immunity produced a very decided increase in the amount of antitoxin after injections of toxin-antitoxin. The response was very prompt and followed even after a single injection. These individuals were, however, naturally immune even before the injections, and needed no further immunizing injections.

2. Those who had no natural antitoxic immunity and were therefore probably susceptible to diphtheria gave entirely different results. An early response (within from four to six weeks after the injections) to the active immunization was noted in only 25 to 30 per cent. of the injected individuals. The examination of the blood serum of these patients for antitoxin showed the presence of from one-tenth unit to 10 units per cubic centimeter. Among those who did not definitely respond, however, a number gave a fainter Schick reaction[4] than the control test made before the injections of toxin-antitoxin. This showed that at least a trace of antitoxin had developed in the cells and had accumulated in the blood. This was not sufficient, however, to suppress the Schick reaction. When we retested these individuals from six to eighteen months later, a large proportion now gave a negative Schick reaction and were thus found to have finally become immune.

This late development of antitoxin is interesting in connection with observations which we had made with the Schick test in patients who had had diphtheria some weeks previously. Among these we noted that fully two thirds still gave a positive reaction, thus indicating in these a failure to develop an antitoxic immunity within the period noted after one attack of the disease. These figures correspond closely with the ones showing the early results of active immunization with toxin-antitoxin. An interesting observation, however, was made in this connection when our chronic tube cases were tested who had had diphtheria eight months or more previously. Nearly all gave a negative Schick reaction. This may have been due to a late development of antitoxin or to the fact that the cells only slowly yielded up to the blood the antitoxin formed in small amount soon after the infection. A few of these patients may have been subject to recurrent infections with the diphtheria bacillus. There was, however, no proof of this. In a group of four cases, for instance, in which a positive Schick reaction had been shown after an attack of laryngeal diphtheria, the gradual development of a permanent antitoxic immunity could finally be traced during the succeeding twelve months. In another patient, who had developed an immunity soon after the disease, a persistent negative Schick reaction was obtained during the entire period of observation.

These suggestive findings led to the conclusion that, while the immediate results of attempts at active immunization with toxin-antitoxin were disappointing, later ones obtained by retesting the immunized individuals without further injections might give a much better showing. We therefore determined to follow up and retest, from four to eighteen months after discharge from the hospital, as many of the injected children as possible. This tardy development of immunity in man is not unexpected, for it is a well-known fact that immunization of certain animals, like guinea-pigs, with diphtheria toxin alone or with the toxin-antitoxin mixture, is a slow process. It almost seems that in some persons there is not only the absence of antitoxin but also some substance which destroys the first traces of antitoxin entering the lymph and blood so that some time elapses before an excess of antitoxin becomes apparent in the circulating blood. The considerable success already noted of the tests of persons, some months after the toxin-antitoxin injections, led us to continue the work, and also to vary somewhat the methods employed with the hope of getting even better final results. As is well known, diphtheria has shown during the past decade little decrease in morbidity; the mortality of the disease, however, has been greatly lowered by the early administration of antitoxin. The problem, therefore, of an efficient method of active immunization in schools, asylums, hospitals and in the homes remains of great importance. By means of the Schick test we can detect the susceptible individuals, and control in a simple and yet accurate way the results of the active immunization.

The individuals who were retested with the Schick reaction to determine a late development of an antitoxic immunity can be divided into three groups. The early results in Groups 1 and 2 may be summarized in Table 1.

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[2] Following is a list of these reports:
Hahn, B.: Ueber Antikörperbildung bei Diphtherie, Experimentelles, und Klinisches, Verhandl. d. Deutsch. Kong. f. Inn. Med., Wiesbaden, 1913, xxx, 460.
Schreiber, E.: Zur Prophylaxe und Therapie der Diphtherie, Deutsch. med. Wchnschr., 1913, xxxix, 928.
Zangmeister, W.: Dritte Mittheilung über von Behring's neues Diphtherieschutzmittel, Die Anwendung des neuen Diphtherieschutzmittels in der Marburger Frauenklinik, von Behring. Anhang, Deutsch. med. Wchnschr., 1913, xxix, 977.
Kleinschmidt and Viereck: Vierte Mittheilung über Behring's Diphtherievakzin, Deutsch. med. Wchnschr., 1913, xxxix 1977.
Kissling, K.: Fünfte Mittheilung über von Behring's Diphtherievakzin, Deutsch. med. Wchnschr., 1913, xxxix, 2500.
Hahn, B., and Sommer, F.: Praktische Erfahrungen mit dem Behringschen Schutzmittel gegen Diphtherie, Deutsch. med. Wchnschr., 1914, xl, 13.
Bauer, J.: Ueber die Prophylaxe der Diphtherie nach von Behring, Deutsch. med. Wchnschr., 1914, xl, 582.
Von Behring and Hagemann: Ueber das Diphtherie-Schutzmittel "T A." Von Behring: Aufgaben und Leistungen meines neuen Diphtherieschutzmittels. Hagemann: Ueber von Behrings neues Diphtherie-Schutzmittel, Berl. klin. Wchnschr., 1914, lix, 917.

[3] Park, William H.; Zingher, Abraham, and Serota, Harry M.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, The Journal A. M. A., Sept. 5, 1914, p. 859.

[4] Schick, B.: Spezifische Therapie der Diphtherie, Centralbl. f. Bacteriol., 1. Abt., 1913, lvii, Ref., Beiheft, 16; Die Diphtherietoxin Hautreaktion des Menschen als Vorprobe der prophylaktischen Diphtherieheilseruminjection, München. med. Wchnschr., 1913, lx, 2608. Park, W. H.: Zingher, Abraham, and Serota, Harry M.: The Schick Reaction and Its Practical Applications, Arch. Pediat., 1914, xxxi, 481. Park, W. H., and Zingher, Abraham: Practical Applications Obtained from the Schick Reaction, Proc. New York Path. Soc., October, 1914.

In Group 1, sixty-eight patients were actively immunized. No Schick reactions were made at the time, but for the sake of uniformity the results are stated in terms of positive or negative reactions. The patients in this group were bled before and after immunization and the results determined by the examination of the serum for its antitoxin content.

TABLE 1.—EARLY RESULTS IN GROUPS 1 AND 2

Persons Injected	Reactions	About Four Weeks Later	Number Developing Diphtheria
Group 1........................68	44 —	44 —	0
	24 +	6 —	0
		18 +	5
Group 2 90	90 +	20 —	0
			0
		70 + or ±	17

In this table, — = no reaction to toxin, and indicates presence of antitoxin; + = marked reaction to toxin, and indicates very little or no antitoxin; ± = moderate reaction to toxin, and indicates slight amount of antitoxin.

Of the sixty-eight patients in Group 1, forty-four had natural antitoxin, and all gave a decided increase in antitoxin content after the injections; none developed diphtheria. Of the remaining twenty-four patients who had no perceptible natural antitoxin, six gave rise to antitoxin production, while eighteen failed to respond. Of the six no one, and of the eighteen five developed clinical diphtheria.

Since the crucial value of the treatment lay in its efficiency to protect the susceptible individuals, we selected for immunization in Group 2 a larger series of cases which had no natural immunity, as shown by blood examination for antitoxin and by a positive Schick reaction. Of the ninety injected patients, twenty responded to the injection of toxin-antitoxin with the production of sufficient antitoxin to protect against diphtheria; seventy failed to respond, though some gave a fainter Schick reaction than they had shown before the immunization. Among the twenty, no cases of diphtheria developed; of the seventy who produced very little or no antitoxin, seventeen developed clinical diphtheria twelve days and more after the first injection.

TABLE 2.—EARLY AND LATE SCHICK TESTS IN GROUP 2

Number Retested	Within Four Weeks	One to 1½ Years Later
16 +	5 —	5 —
	11 +	6 —
		4 ∓
		1 ±

In this and the following tables, — indicates negative Schick reaction, ∓ faint, ± moderate, and + fully developed Schick reaction.

From Group 2, sixteen cases were subsequently retested from one to one and one-half years after the injections of toxin-antitoxin (Table 2).

Five of the sixteen who had shown an early and decided production of antitoxin again gave a negative Schick reaction. Of the eleven who had failed to respond at first to the immunizing injections, six now gave a negative, four a very faint and only one a positive Schick reaction.

Group 3 consisted of 158 patients (Table 3) who had originally given a positive Schick reaction. These patients were immunized with a mixture of toxin-antitoxin and a vaccine made of killed diphtheria bacilli. Three or four subcutaneous injections were given at intervals of from three to four days, each injection consisting of 1 c.c. toxin-antitoxin (85 per cent. L + dose of toxin to each unit of antitoxin), and 1,000,000,000 bacteria. One c.c. of the mixture injected subcutaneously into a guinea-pig produced a slight local induration and paralysis in ten days.

Local and general reactions were noted in about half of the injected individuals. They were, as a rule, more frequent and more marked in the older children and in adults than in the young children. These reactions are due in part to the slight excess of free toxin, and in part to the protein substance of the diphtheria bacilli; the more toxic mixtures will give, however, more severe reactions.

Local reactions consisted of pain, redness, some induration and local tenderness at the site of injection. The lymph glands in the axilla were not involved. General reactions consisted of a temperature between 100 and 102 F. and slight malaise. The local signs appeared within twenty-four hours, lasted for another twenty-four hours, and then gradually disappeared. The temperature continued, as a rule, only for one day; in some, for two days. In no case have any serious effects appeared.

TABLE 3.—EARLY RESULTS IN GROUP 3 (158 CASES) WITH NO ANTITOXIN (+ SCHICK) BEFORE IMMUNIZATION

Number Injected	Within Four Weeks	Number Developing Diphtheria
158 +	56 —	0
	9 ∓	0
	83 ±	0
	10 +	4

Of the 158 injected patients, fifty-six, or 35.5 per cent., produced enough antitoxin within four weeks to give a negative, and 9, or 6 per cent., a very faint Schick reaction. Of those who were partly or totally refractory, eighty-three, or 52 per cent., gave a moderately positive, and ten, or 6.5 per cent., a strongly positive Schick reaction. Of the ten, four developed clinical diphtheria.

To note any late development of immunity, we retested, from two to five months after the injections, fifty cases of this group (Table 4).

Ten of the patients who had given a definite early production of antitoxin continued to show a negative Schick reaction. Of the thirty-six patients who had produced only a trace of antitoxin, sufficient only to inhibit slightly the Schick reaction, twenty-six now gave a negative, four a very faint and six a moderately positive reaction. The remaining four who showed no antitoxin production at first, now gave a negative Schick reaction.

TABLE 4.—EARLY AND LATE SCHICK TESTS IN GROUP 3

Number Injected	Within Four Weeks	Two to Five Months Later
50 +	10 —	10 —
	36 ±	26 —
		4 ∓
		6 ±
	4 +	4 —

Grouping together the early and late successful results in this series of cases, we find that forty out of fifty susceptible individuals had developed an antitoxic immunity after the injections of toxin-antitoxin plus vaccine. The remaining ten gave a reaction which was moderately positive in six and faintly positive in four cases. These cases probably had also developed some bactericidal immunity from the bacilli injected.

In addition to these, we also immunized with toxin-antitoxin a series of sixteen normal children (Group 4) who had given a positive Schick reaction. These children were injected about a year ago, and retested with the Schick reaction four and eight months after the immunization (Table 5).

TABLE 5.—EARLY AND LATE SCHICK TESTS IN GROUP 4 (NORMAL CHILDREN)

Number Injected	Within Four Weeks	Four Months Later	Eight Months Later
	4 —	4 —	4 —
		5 —	5 —
16 +	10 +		
		5 +	4 —
			1 +
	2 ∓	2 —	2 —

Within four weeks after the injections, only four, or 25 per cent., gave a negative Schick test. Four and eight months later, these four still gave a negative reaction, thus indicating a probable lasting immunity. Ten children who produced no antitoxin at first now showed the following interesting results: At the end of four months, five gave a negative and five a positive Schick reaction. At the end of eight months, nine showed a negative Schick reaction and only one was still positive. Two of the sixteen children who had given a partial early response were found immune at the end of four and eight months.

Sixteen months later, eight of the actively immunized children were retested: Seven of those, who had become immune at the end of eight months, were found to be still protected, while the one who proved resistant again gave a positive Schick reaction.

In the same institution, we also retested after sixteen months a number of normal children who had not been injected with toxin-antitoxin. Table 6 gives the results of all the retests.

The table shows that of fourteen negatively reacting children between the ages of 5 and 15 years, when retested after sixteen months, two gave a positive, but twelve still showed a negative reaction. Of eighteen originally positive Schick cases, three were now negative while fifteen were still positive. It is interesting to compare with these eighteen the group of eight children who had been actively immunized with toxin-antitoxin; their retests showed that a much larger proportion had become immune than could be accounted for by the time factor alone.

TABLE 6.—RESULTS OF ALL RETESTS

Date	Not Immunized		Immunized
June, 1914	14 —	18 +	8 +*
October, 1915	12 —	3 —	7 —
	1 +	15 +	1 +
	1 ±		

* Toxin-antitoxin.

From the retests in the naturally immune children in this series and in a larger one at present under observation by us, the rather important fact may be deduced that a great majority of children of school age, who show a negative Schick reaction, probably remain protected for years, and even for life. Such persistent immunity, as shown with the test, could be successfully utilized in schoolchildren. During an outbreak of diphtheria among children previously tested, it would be necessary to immunize with antitoxin only the susceptible children. Class work could then continue without interruption.

Our results in active immunization up to the present time have led us to the conclusion that, while the toxin-antitoxin injections cannot be depended on to prevent diphtheria in the presence of immediate danger of infection because of the slow development of immunity in a majority of the cases, yet the injection is of value in rendering a community or school population immune to the danger of infection from future exposure up to a period of possibly several years.

The Research Laboratory will supply those connected with institutions, who are interested in the subject of active immunization against diphtheria, and are willing to furnish us a report of the cases, diphtheria toxin for the Schick test and a mixture of diphtheria toxin-antitoxin for immunization.

The reports should include:

1. The character of the Schick reaction before the injections and at the following intervals after the last injection: three weeks, six weeks, three months, six months, one year and two years. Pseudoreactions are to be carefully controlled.

2. The number of injections made. The dose recommended is 1 c.c., injected three times at intervals of seven days. The injections are made subcutaneously in the arm over the insertion of the deltoid. The dose is the same for individuals from 1 year to adult life. Infants below the age of 12 months receive 0.5 c.c. with each injection.

3. The character of the local and general reactions, if any, after each injection.

4. A description of the clinical cases of diphtheria which develop among the injected individuals during the course of immunization or afterward. Culture reports for the Klebs-Loeffler bacillus, etc.

5. Where possible, a quantitative estimation of the amount of antitoxin developed as a result of immunization.

The following groups of individuals are recommended for active immunization (only positive Schick cases to be injected):

(*a*) Children in schools and orphan asylums.

(*b*) Mothers and infants in lying-in places.

(*c*) Physicians, nurses and ward workers in contagious disease hospitals.

(*d*) Patients in general and contagious disease hospitals.

CONCLUSIONS

1. Individuals who, before treatment, give a negative Schick reaction are immune probably for life and, therefore, it is not necessary to inject them, when exposed, either with antitoxin or toxin-antitoxin.

2. Those who give a positive Schick reaction and are exposed to diphtheria and in immediate danger should receive either antitoxin alone or, if a longer protection is desired, both antitoxin and toxin-antitoxin.

3. For the general prophylaxis against diphtheria in schools and communities, excluding immediate contacts, a mixture of toxin-antitoxin alone (from 85 to 90 per cent. of the L + dose of toxin to each unit of antitoxin) or toxin-antitoxin plus vaccine of killed diphtheria bacilli is recommended. The dose is 1 c.c. of toxin-antitoxin and 1,000,000,000 bacteria injected

subcutaneously and repeated three times at intervals of six or seven days. Sufficient time has not as yet elapsed to judge the value of adding the injections of the bacilli to the toxin-antitoxin.

4. The early and the late results of active immunization should be determined with the Schick test. Early results are those obtained by the application of the test within four weeks, and late results from four months to two years after the immunizing injections.

EFFECT OF MODERATE DOSES OF SOME OPIUM DERIVATIVES ON GASTRO-INTESTINAL TRACT OF MAN *

PRELIMINARY REPORT ON ROENTGEN STUDIES

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This work was undertaken as the result of the observations of one of us (Pancoast[1]) on the gastro-intestinal motility of a patient who had a hypodermic of morphin several hours before the Roentgen studies were made. There was found not only an hour-glass constriction of the stomach, but also a striking retardation of the motility of the small intestine. Control studies on this patient at a later date, and when freed from the influence of morphin, revealed no such abnormalities.

The earliest investigations in which the Roentgen rays were utilized in the study of the action of opium and its derivatives on the gastro-intestinal tract were those in which animals, especially dogs and cats, were utilized. These studies frequently revealed, not only a retention of the bismuth meal in the esophagus for a period of one-half hour, but also a retention, even for hours, in the fundus and not the pylorus of the stomach, owing to a constriction in the region of the pyloric antrum. Intestinal motility was less influenced than gastric, and that of the large intestine less than the small (Magnus[2]). Later studies were made on the action of magnesium sulphate and colocynth with succeeding observations on the effect of morphin and opium administered shortly after the above-mentioned cathartics. Magnesium sulphate caused a delay in gastric motility, but an acceleration of motility of the small intestine and colon, while morphin was found to check this activity only by means of further delaying the passage of the meal from the stomach to the bowel. Colocynth produced first an increased gastric motility and then a delay. The motility and secretion of the small intestine and the motility of the large was increased. Morphin and opium checked the diarrhea by checking the activity in the small and large bowel, the tincture of opium being especially active in lessening the watery exudation (Padberg[3]).

The work of Müller and Saxl,[4] in which the capacity of the stomach of dogs was estimated, not by the roentgenogram, but by a gastric fistula and the introduction of varying amounts of water, showed that the capacity was almost doubled in narcotized animals, morphin being especially effectual, then chloroform, then chloral hydrate and finally local anesthetics, as anesthesin. Atropin produced a moderate relaxation, while epinephrin was ineffectual.

More recently a few studies have been made of the influence of the opiates on the human gastro-intestinal tract as revealed by the roentgenogram. Morphin was given by mouth and subcutaneously in varying doses. In some instances, small doses increased peristalsis in the pyloric region, while moderate doses caused a constriction of the pyloric sphincter and occasionally an hour-glass constriction. With large doses, the results were even more pronounced. Very similar results were derived from the tincture of opium (van den Velden[5]).

In nervous diseases of the "vagal neurosis" type, small doses were ineffectual. Moderate doses, especially in young, nervous females, caused a prolongation of the emptying time of the stomach. The emptying time of the small intestine was prolonged in all cases (Arnsperger[6]). Stierlin and Schapiro,[7] after similar studies, emphasize the influence of moderate doses of morphin on the retardation of the emptying time of the stomach in young people, in contrast to that of adults, the latter frequently being uninfluenced. In two cases of hypermotility, the emptying time was more rapid after morphin. In over half of their series, the motility of the small intestine was retarded while the large intestine was but slightly influenced. In chronic diarrheic enteritis, opium was found to retard the hypermotility of the small intestine.

Quite recently, the roentgenogram has been used in the study of gastro-intestinal motility following the administration of various purgatives, the more important observations being those of Meyer-Betz and Gebhardt,[8] who used senna, jalap, calomel and salines, and Katsch,[9] who gave atropin, pilocarpin and epinephrin.

We realize that our work so far is very incomplete, and this is offered only as a preliminary report on a subject we hope to follow and cover more conclusively during the next year. It is based on careful examinations of twelve persons, including the one previously reported, to whom morphin was given, and one drug habitué who was permitted to resume the use of heroin for one day. It has been possible to study these cases only when time would permit during the infrequent less busy intervals of full clinical and Roentgen laboratory hours. Moreover, the cost of such research is a factor that has to be carefully considered. Our studies have required 157 fluoroscopic examinations and the making of 170 roentgenograms.

With the exception of the heroin case, a control series of examinations was made to check up each drug series at exactly the same intervals. The corresponding plates were then studied side by side, together with the fluoroscopic notes. We fully realize that

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[1] Pancoast, Henry K.: Possible Effect of Morphin on Intestinal Motility, Am. Jour. Roentgenol., December, 1914.

[2] Magnus: Die Stopfende Wirkung des Morphin, Arch. f. d. ges. Physiol. (Pflüger's), 1907; München. med. Wchnschr., 1907, No. 29.

[3] Padberg, J. H.: Der Einfluss des Magnesium-sulfats auf die Verdauungsbewegungen, Arch. f. d. ges. Physiol. (Pflüger's), 1909, No. 129, p. 476; Der Einfluss des Koloquinten-Dekokts Verdauungsbewegungen, ibid., 1910, No. 134, p. 627; Ueber die Stopfwirkung von Morphin und Opium bei Koloquin-Durchfallen, ibid., 1911, No. 139.

[4] Müller, A., and Saxl: Der Einfluss von Arzneimitteln auf Tonus und Kapazitat des Magen, Verhandl. d. deutsch. Kong. f. inn. Med., Wiesbaden, 1910, No. 27, p. 364.

[5] Van den Velden, R.: Verhandl. d. deutsch. Kong. f. inn. Med., Wiesbaden, 1910, No. 27.

[6] Arnsperger: The Effect of Morphin on the Motor Function of the Gastro-Intestinal Canal of Man, Verhandl. d. deutsch. Kong. f. inn. Med., Wiesbaden, 1910, No. 27.

[7] Stierlin and Schapiro: Die Wirkung von Morphium, Opium, Pantopon auf die Bewegungen des Verdauungstrakus beim Menschen und beim Tierschen, München. med. Wchnschr., 1912, No. 50, p. 2714.

[8] Meyer-Betz and Gebhardt, T.: Röntgenuntersuchungen über den Einfluss der Abfurmittel auf die Darmbewegungen des gesunden Menschen, München. med. Wchnschr., 1912, No. 33, p. 1794; ibid., 1912, No. 34, p. 1861.

[9] Katsch: Physiologisch-pharmacologisches über Darmbewegungen und Darmform-Röntgenkongress, Berlin, 1913.

many cases would vary to a certain extent in two or even more control examinations, and also if more than one drug series were studied, and it is only by dealing with a large number of cases and selecting points of resemblance or widely different effects for tabulation that dependable data of any value can be obtained.

RESULTS OF STUDY

An abstract of the results of study in each case follows:

Case 1. — *Clinical Condition of Patient.* — Aortic regurgitation.

Medication.—Digitalis and gentian, withdrawn during days of examination.

Condition of Gastro-Intestinal Tract by Control Examination.—Normal except slight colon stasis.

Method of Administration of Morphin.—Hypodermic injections, one-quarter grain with first meal and one-quarter grain seven hours later.

Effect on Stomach.—Apparently none.

Effect on Small Intestine.—A slight but definite delay in motility as indicated by the relative position of the column in the lower ileum.

Effect on the Large Bowel.—(*a*) At the end of eight hours a definite but moderate relative slowing of the opaque column, and probably more than could be accounted for by the lessened motility in the small bowel. (*b*) At the end of twenty-one hours and later, there was no difference from the control.

Case 2.—*Clinical Condition of Patient.*—Gastric neurosis.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Stomach negative; very slight delay in the terminal ileum due to incompetency; extreme colon stasis.

Method of Administration of Morphin.—Single dose hypodermic injection, one-quarter grain with first meal (six hours before examination).

Effect on Stomach.—Motility slightly increased throughout the time of examination; peristalsis slightly but definitely more vigorous; emptying time definitely shortened.

Effect on the Small Intestine.—At first a slight relative delay, indicated by the position of the column in the lower ileum. Later as the second meal reached the intestine, there was a very decided delay in the jejunum.

Effect on the Large Bowel.—At the end of ten hours there was practically no difference from the control. At the end of forty-five hours, stasis was slightly accentuated.

Case 3.—*Clinical Condition of Patient.*—Pyorrhea alveolaris and facial neuralgia.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Stomach negative; slight ileal stasis; moderate colonic stasis.

Method of Administration of Morphin.—Continued administration twenty-four hours, hypodermic injections, one-quarter grain, with first meal; one-quarter grain ten and one-half hours later, and one-quarter grain at the end of twenty-four hours.

Effect on Stomach.—Motility, peristalsis and emptying time not appreciably affected.

Effect on Small Intestine.—The first dose caused no delay but on the other hand the column kept ahead of the control; the second dose caused a slightly lessened motility in the upper small bowel which became less marked as the effect wore off.

Effect on the Large Bowel.—No delay from the first dose, the column keeping ahead of the control; the repeated doses caused a decided delay over the control.

Case 4.—*Clinical Condition of Patient.*—Infectious polyarthritis and oral sepsis.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Negative except an extreme colonic stasis. Inability to empty the large bowel after the control examination rendered it impossible to use this case further.

Case 5.—*Clinical Condition of Patient.*—Possible pituitary neoplasm.

Medication.—Cannabis indica, stopped during examination.

Condition of Gastro-Intestinal Tract by Control Examination.—Stomach showed varying motility, at times hypermotility, but without hyperperistalsis. Emptying time was delayed beyond six hours. Otherwise negative.

First Series: *Method of Administration of Morphin.*—Single hypodermic injection, one-quarter grain with meal.

Effect on Stomach.—Motility and peristalsis were not studied. No residue in six hours, whereas there was a decided one in the control examination.

Effect on Small Intestine.—None, unless a slight increase in motility.

Effect on Large Bowel.—Very slight relative delay in the head of the column.

Second Series (the following day, after enema): *Method of Administration of Morphin.*—Hypodermic injections, one-quarter grain one and one-half hours before meal and one-quarter grain two and one-half hours after meal.

Effect on Stomach.—The same hypermotility as during the control, but peristalsis was markedly increased. Emptying time prolonged considerably beyond control. The hypermotility caused a decided overcrowding of the duodenum.

Effect on Small Intestine.—A decided delay in the duodenum, with a large cap shadow which remained large after the stomach was about empty. There was also delayed emptying of the third portion, and a slight stasis throughout the small bowel.

Effect on Large Bowel.—Very slight relative delay over the control, more marked early when the drug was active.

Case 6.—*Clinical Condition of Patient.*—Chronic pulmonary abscess.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Negative except slight colonic stasis.

Method of Administration of Morphin.—Repeated doses by mouth, one-quarter grain one and three-quarters hours before meal, one-sixth grain the same time after meal, and one-sixth grain eight hours after meal for colonic effect.

Effect on Stomach.—Motility: A decided tendency to pyloric spasm, especially early. Peristalsis: Marked hyperperistalsis, especially early and far more vigorous than during control. One decided antiperistaltic wave. Emptying time: Delayed about two hours, probably because of spasm.

Effect on Small Intestine.—Slight stasis in the upper portion and a decided relative ileal stasis.

Effect on Large Bowel.—A decided relative delay in the head of the column while the drug was active, but little if any delay later.

Case 7.—*Clinical Condition of Patient.*—Heart case.

Medication.—Digitalis, discontinued during examination.

Condition of Gastro-Intestinal Tract by Control Examination.—Stomach showed delay in emptying beyond eight hours. Slight colonic stasis.

Method of Administration of Morphin.—Closely repeated doses by mouth, one-quarter grain one and three-quarter hours before meal, one-sixth grain one and one-quarter hours after, and one-sixth grain three hours after.

Effect on Stomach.—Motility about the same as control; peristalsis more vigorous in the pyloric portion and continued so, with deep segmenting waves; emptying time decidedly prolonged by the repeated doses, although motility was ample after the first dose, indicating spasm.

Effect on Small Intestine.—In upper portion, a delay only after the third dose. A slight delay as noted by the column in the lower ileum, for which the stomach was partly responsible.

Effect on Large Bowel.—Very little delay, as the drug was given early.

Case 8.—This case deserves special mention because of its unusual interest from the clinical standpoint and because many of the unusual phenomena noted were similar to those observed in connection with the morphin case previously reported.[1]

Clinical Notes on Case.—Drug habitué, addicted to the use of heroin especially, and also cocain. Had been off heroin for two and one-half months. Was admitted because of the drug habit and his general condition resulting therefrom. No medication.

Condition of Gastro-Intestinal Tract by Control Examination.—No examination was made.

Method of Administration of Drug.—Six doses of heroin hydrochlorid, one-sixth grain, given the day before the examination by mouth every third hour. Following this a diarrhea started at night.

Notes Made at the Examination.—The first fluoroscopic examination was made directly after the administration of the opaque meal, without other food. The stomach showed a complete hour-glass constriction at about its middle portion, and the appearance was similar to that observed in the previously reported morphin case.[1] This relaxed gradually but not completely, and as it relaxed, there was a tendency to hypermotility without any visible peristalsis (as observed also in the morphin case), and the entire duodenum became overfilled without the passage of any opaque material further. The noteworthy features were the early hour-glass constriction followed by gradual relaxation, hypermotility without peristalsis, and the distention and apparent atony of the duodenum.

Two hours later, the upper portion of the stomach still contained considerable opaque food, and it again showed a complete hour-glass constriction, with a small amount of contents in the region of the pylorus. The upper small intestine was well filled and showed lack of motility.

Four hours after the meal there was still a residue above the hour-glass constriction, and a small amount in the pyloric region. The upper small intestine showed even greater paresis. At the end of six and one-half hours the appearance was much the same, and at the end of eight hours there still remained some residue above the constriction, and the opaque column was progressing very slowly through the small intestine. The residue from the start of the examination had been almost entirely above the hour-glass constriction, and the lower half of the stomach seemed to empty readily and rapidly. There was no evidence of pyloric spasm as noted in so many of our morphin cases.

A sixth fluoroscopic examination, made twenty-four hours after the meal, showed almost all of the opaque material distributed throughout the coils of small intestine. The colon was distended with gas but contained very little bismuth.

Résumé: *Effect on Stomach.*—Hour-glass constriction at middle, relaxing somewhat when the stomach was filled, and contracting again as it emptied. Motility: Marked hypermotility in the lower half, with retention in the upper half. Peristalsis not noticeable. Emptying time delayed over eight hours, but almost entirely in the upper pole.

Effect on the Small Intestine.—Primarily, overfilling of the duodenum and then a prolonged paresis of the entire small bowel, continued over twenty-four hours.

Effect on the Large Bowel.—This was not studied, as very little opaque material had reached it in twenty-four hours, and the patient's condition did not warrant further study.

Case 9.—*Clinical Condition of Patient.*—Early acromegaly.

Medication.—Liquid petrolatum, 30 c.c., twice daily, and mixture of sodium bromid, tincture of hyoscyamus and camphor three times a day. By mistake this was not discontinued during the control examination, and was therefore continued during the morphin studies.

Condition of Gastro-Intestinal Tract by Control Examination.—Negative.

Method of Administration of Morphin.—Closely repeated doses by mouth as in Case 7: One-quarter grain one and one-half hours before meal, one-sixth grain one and one-half hours after, and one-sixth grain three hours after meal.

Effect on Stomach.—Motility: The amount which passed through the pylorus was not commensurate with the peristalsis. There was an intermittent pyloric spasm which was very marked at times, while at other times the pylorus seemed to relax to a normal degree. Peristalsis: Intermittent hyperperistalsis, which continued throughout the examination. Emptying time: No relative difference at first, but the repeated doses caused from two to three hours' delay.

Effect on Small Intestine.—Only a slight though definite effect at first, but a considerable relative delay through a large area after the repeated doses.

Effect on Large Bowel.—Delay at first evidently due to small intestine stasis. No delay at twenty-four hours. (Patient taking oil.)

Case 10.—*Clinical Condition of Patient.*—Idiopathic epilepsy.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Stomach negative; hypermotility, small intestine; slight colonic stasis.

Method of Administration of Morphin.—Closely repeated doses by mouth with concentration of effect earlier than preceding case, one-quarter grain four hours before meal, one-sixth grain one-half hour before, and one-sixth grain two hours after meal.

Effect on Stomach.—Motility: Decided hypermotility early, but this rapidly subsided until there was evidence of pyloric spasm later. Peristalsis apparently not affected until late, when it seemed to increase as pyloric spasm became manifest. Emptying time prolonged several hours as the later effect of pyloric spasm.

Effect on Small Intestine.—Motility still rather rapid, but lessened as compared to control. The duodenum was sluggish in propulsion.

Effect on Large Bowel.—Increase in colonic stasis, as indicated by position of head of column.

Case 11.—*Clinical Condition of Patient.*—Chronic bronchitis; infectious polyarthritis.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Decided colonic stasis.

Method of Administration of Morphin.—Hypodermic injections given entirely before meal and carried to the physiologic action of contraction of the pupil, one-sixth grain ten hours before, one-sixth grain seven hours, one-sixth grain four hours, and one-sixth grain one hour before the meal. The only case in which any contraction of the pupil was noted.

Effect on Stomach.—Motility: Tendency toward intermittent pyloric spasm, which was rather overcome by increased peristalsis and gradually subsided as the effect of the drug wore off. Peristalsis irregularly violent at first but gradually subsided as the effect wore off. One antiperistaltic wave seen early. Emptying time not delayed, keeping pace fairly well with the control throughout.

Effect on Small Intestine.—No delay whatever at any time.

Effect on Large Bowel.—No delay whatever.

Case 12 (female).—*Clinical Condition of Patient.*—Ménière's disease.

Medication.—Sodium bromid and nux vomica, discontinued during examination.

Condition of Gastro-Intestinal Tract by Control Examination.—Nothing abnormal in connection with stomach, but patient vomited early in each series. Colon examination not made.

Method of Administration of Morphin.—Single dose hypodermic injection, one-quarter grain, half an hour before meal.

Effect on Stomach.—Motility: Decided early and persistent intermittent pyloric spasm. Peristalsis greatly increased, deeper but not more frequent waves. Frequent antiperistalsis. Emptying time increased about two hours, owing to continued pyloric spasm.

Effect on Small Intestine.—Considerable relative delay throughout the examination of eight hours.

Effect on Large Bowel.—Not studied.

Case 13.—*Clinical Condition of Patient.*—Rheumatoid arthritis.

Medication.—None.

Condition of Gastro-Intestinal Tract by Control Examination.—Probably some perigastric adhesions not affecting function.

Method of Administration of Morphin.—Single dose hypodermic injection, one-quarter grain, forty-five minutes before meal.

Effect on Stomach.—Motility: No effect at first, but pyloric spasm became evident soon, but gradually subsided as effect of drug wore off. Peristalsis more vigorous than during control period, but not excessive. Later it became very inactive. Emptying time delayed over four hours, owing to early spasm and later inactivity.

Effect on Small Intestine.—Decided stasis in upper small bowel, including duodenum, but without distention.

Effect on Large Bowel.—None.

COMMENT

It should be borne in mind that the Roentgen examination is a method of studying only a single phase of drug effects on the gastro-intestinal tract. It shows better than can be demonstrated by any other method how the various portions of the digestive canal act in the propulsion of opaque food contents when under drug influence as compared to their action during normal or control periods.

We realize that even as a preliminary report our work is lacking in several important respects, and first of all in the small number of cases we have been able to study. Secondly, after conclusive proof of certain definite effects due to morphin, we had expected to compare these results with those due to some of the other preparations of opium, but we found the effects of the former so unlike in different individuals that it was difficult to form a basis for comparisons. Our experience has shown us that the only accurate way of making relative estimates would be to carry out a series of investigations with morphin and other preparations on the same cases. Thirdly, we had hoped to add to our list of eleven morphin cases at least one showing the unusual idiosyncrasies to moderate doses of the drug manifest by obstinate vomiting, but none were available for the purpose. In no one of the eleven of this series was repeated even the unusual phenomena observed in the case previously reported,[1] although the heroin case (Case 8) showed very similar effects.

What little we have done has shown that there is an enormous amount of valuable work yet to be accomplished in connection with the study of drug action by the Roentgen examination. There are innumerable therapeutic agents yet to be studied in this way, and the comparatively little work that has been done along this line needs further confirmation. English literature is noticeably lacking in this field of Roentgen investigation.

The most surprising result of our observations has been the lack of any degree of uniformity in the effects produced in different individuals. This was as noticeable in connection with the stomach as it was in the intestinal tract. While we have been able to duplicate the phenomena observed by other writers, we have found them to be far from uniform. Van den Velden[5] states that small doses of morphin (0.5 cg.) increased peristalsis in the pyloric region. Our smallest dose was never less than three times this. He found that moderate doses (1 cg.) caused in addition a marked constriction in the region of the pyloric sphincter which we never observed, and could cause a complete hour-glass constriction, dividing the fundus from the pyloric region. This was observed in none of the eleven cases in our series, many of which had much larger doses, but was seen in the case previously reported,[1] and in our heroin case. Large doses (2 cg.) increased the effects and caused opening of the cardia and vomiting, which was not observed by us.

In two of the eleven cases the morphin in a one-quarter grain dose seemed to exert no noticeable effect whatever on the stomach or its motility. The most striking effect was an increase in the emptying time, usually from two to four hours, and observed in seven of the cases. In one (Case 11) it was not delayed although pyloric spasm was evident, and in another (Case 2) it was shortened. There was decided evidence of pyloric spasm in seven cases, while motility was increased in two instances, in one of which, however, pyloric spasm was manifest late. Peristalsis was increased in intensity, the waves being deeper and occasionally more rapid in all nine cases in which there was shown any appreciable effect from the morphin. This proved, therefore, to be the most uniform finding. Antiperistalsis was noted in three cases. Peristalsis was usually increased only in the pyloric portion, but occasionally a hyperperistaltic wave was observed along the entire organ. The increase was usually seen to be associated with pyloric spasm. In some individuals small doses produced no appreciable effect, while in some the phenomena were as marked as were those observed in other cases following very much larger doses.

Whether or not the increase in emptying time was due to hypersecretion which precipitated pyloric spasm, as has been mentioned by some writers, or whether it was even associated with a hypersecretion any greater than might be expected in prolonged retention, we are unable to state.

Arnsperger,[6] van den Velden[5] and others call attention to the fact that because food remains longer than usual or normal in a stomach that is under the influence of morphin, the use of opium is undesirable in gastric conditions in which the emptying time is increased, as perigastritis, adhesions, ulcers, carcinoma or reflex pyloric spasm from outside causes. No doubt this might be the case occasionally and the continued use would be so almost invariably, but we cannot see how any direct harm could result in these conditions in most instances from the occasional use of the drug when needed. Moreover, how much additional effect morphin would have in prolonging the emptying time in such conditions, and especially those in which pyloric spasm is a cause of delay, as ulcer, is a field for further study. On the other hand, because morphin delays the emptying time we would not consider its routine use indicated in conditions in which hypermotility is present, as achylia gastrica, and especially because of its effect on the small bowel.

Practically all authors agree that morphin lessens motility in the small intestine. Unlike the stomach, delayed motility in the small bowel seems to result from a lack of propulsion instead of spasm. It may be manifest only as an apparent relative delay of the column in the lower ileum, which we have regarded as an index of a slightly lessened motility higher up along the tract. In many of our cases, and especially in the one previously reported[1] and in the heroin case of this series, the lessening of the motility was so marked as to be noticeable throughout a large part of the small bowel. This was most noticeable in the jejunum, but sometimes in the duodenum as well, or in other words, in the portions where the most rapid movement is normal. Stierlin and Schapiro[7] raised the question of spasm of the ileocecal valve being a cause of delay there, but so far as we could note there was no unusual crowding of contents in the terminal ileum.

Arnsperger[6] states that the small intestine showed slowing in all cases examined. We found this to be fairly constant, having been observed in ten out of the eleven cases of the morphin series. In the one exception, the case which received the largest dosage, and the only one in which contraction of the pupil was noted, no effect whatever was shown by the small bowel. In one of the ten positive cases, which was examined twice, a single dose produced no appreciable effect, but at the second examination when the dose was doubled, there was a noticeable delay. In another of the ten cases a hypermotility was lessened. In nine of the ten cases showing delay, there was evidence of this in the upper portion of the bowel.

Experience has shown that our method was not the ideal one for studying the effect on the large bowel, although our results were very much the same as those of others. As a rule this part of the tract was studied at the end of the examination, after the active influence of the drug had subsided partially or entirely. A more accurate method would be to administer the drug at about the time the cecum was filled and the terminal ileum nearly empty — from six to eight hours after the meal in the average case. This was the procedure followed by Arnsperger.[6] His results were very variable, however, with different doses and with different individuals given the same doses. Stierlin and Schapiro[7] found that morphin had no effect of any consequence on the large bowel.

In all of our cases the large bowel was studied in connection with the tract higher up. Our conclusions were based mainly on the relative position of the head of the opaque column as compared to the control. The colon was studied in ten cases, and a noticeable delay in the head of the column was observed in six, and no apparent effect in three, two of which received small early doses and the other case which received the largest dose of any. In one of the ten, delay was doubtful.

So far as we were able to judge, it made little difference whether the morphin was administered by mouth or subcutaneously. The only accurate way to determine the relative effect of varying dosage would be to examine the same individuals repeatedly with increasing doses, as small or single doses in one individual may produce the same or a more marked effect than large or repeated doses in others. Of the two sexes, females seemed to be more susceptible.

CONCLUSIONS

The Roentgen examination is a valuable method of studying certain phases of drug effects on the gastro-intestinal tract, especially motility, and the knowledge it furnishes can be gained better by this method than by any other.

Our observations were made in a series of eleven cases given morphin and one heroin habitué. While we have been able to duplicate the phenomena observed by others, with one exception, there was a decided lack of uniformity in the effects produced in different individuals, in connection with both stomach and bowel.

There is no distinct uniformity in connection with dosage. Small doses in some may produce more marked effects than much larger doses in others. Females appear to be more susceptible.

In the stomach a rather high spasmodic hour-glass contraction is observed rarely, but we have not seen this near the pylorus as described by others. In some instances the stomach may show no appreciable change from normal. In most cases there is more or less pyloric spasm, increased peristalsis and a decided prolongation of the emptying time.

In the small intestine, morphin causes decreased motility almost uniformly, apparently as a result of a lack of propulsion and not of spasm. When marked, it is most noticeable in the upper small bowel.

The effect on the large bowel is very variable and probably of little consequence.

Oral administration produces practically the same effect as subcutaneous injections.

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THE ENDOWMENT OF CHILDHOOD FROM THE OBSTETRIC STANDPOINT *

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The present era in the practice of medicine, like the preceding periods, is one of transition, and the goal, the conservation of health and the prolongation of life, is hampered by ignorance, mysticism, superstition and exploitation. The beacons of scientific investigation, clinical observation and experience, however, are steadily revealing the mysteries of Nature, and are thereby enriching our knowledge in the alleviation, prevention and cure of disease. Down through the ages each period has contributed more or less to this progress, and we are not unmindful of the rich heritage we enjoy in the possession of the accumulated knowledge and treasures of our predecessors which form the granite ground-work of the art and science of medicine.

Each era has been distinguished for some epoch-making contribution. Ours is particularly noted for the development of an aseptic technic which has revolutionized the practice of surgery and obstetrics. We were present at the christening, if not the birth, of that science, bacteriology, which has placed preventive medicine and sanitation on a rational and enduring basis. A half century ago the practice of surgery was mostly of an emergency character, caring for fractures, dislocations, gunshot wounds, etc., while today three fourths of the operations are elective and cover a wide field of application. "No cavity is now too deep and no organ too important or vital to deter from direct interrogation. By vision and tact, the gravity, density and magnitude of any, of every part, may be revealed to the sensorium and adjudicated by the unerring edict of positive knowledge."[1]

The more important advancements in obstetrics as the result of these recent developments are the awakening interest in prenatal care and the prevention of infant mortality, the practical abandonment of craniotomy on the living child, and the broadened indications for cesarean section.

In my previous address[2] on "The Endowment of Motherhood," I made a plea for better obstetrics in general practice, and expressed the belief that the solution lies in more intensive training of the students in practical obstetrics and educating the public to the necessity of efficient care of woman in the most important epoch in her life.

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* President's address, read at the meeting of the Washington Obstetrical and Gynecological Society, Oct. 8, 1915.

1. Miller, DeLaskie: Tr. Ninth Internat. Med. Cong., ii, 302.

2. Moran, John F.: The Endowment of Motherhood, The Journal A. M. A., Jan. 9, 1915, p. 122.

Of course, accrued benefit to the unborn child was implied in this advanced obstetric teaching and practice, but I wish now to direct attention more specifically to what has already been accomplished regarding its welfare and the prospective possibilities of the future.

The importance of the subject does not arise from the frequency with which its problems are presented but from the grave emergencies created by them — emergencies which demand early recognition and prompt decision by the physician in that they involve the lives of the mother and child, as well as points of professional honor and conscience.

The longer I practice obstetrics, the more deeply I am impressed with the difficulty which often presents itself of deciding when to interfere and what particular method of intervention to elect. In no other field of medicine is a well-balanced judgment and skill more requisite for success; and not infrequently, even then, the result is fortuitous.

"When it is realized that practically 38 per cent. of the deaths under 1 year of age are due to causes mainly dependent upon the health and condition of the mother during pregnancy and confinement; that within the registration area of the United States of 154,373 infants under 1 year of age, who died in the year of 1910, 14,964, or nearly 10 per cent., lived less than one day; that 36,351, or practically 23.5 per cent., lived less than one week, it will be seen that the infant mortality problem cannot be solved adequately by any measures which leave out of their scope some attention to the care of the expectant mothers." Since the foregoing sentence was written, the mortality statistics for 1911, issued by the Bureau of the Census, show a more distressing situation than was revealed by the figures of 1910. With an increased death registration area (now covering 63 per cent. of the total population), there was a decrease in deaths of children under 1 year to 149,322 as against 154,373 in 1910. But those who lived less than one day increased not only relatively but also absolutely, that is, from 14,946 in 1910 to 40,883, or 27.4 per cent., in 1911. These figures show that the efforts made to save babies through pure milk and more intelligent care have produced results, while lack of organized effort to reach prenatal conditions for a very considerable period or over any extended area has further emphasized its need.[3]

TABLE 1.—CAUSES OF DEATH FOLLOWING CONFINEMENT

Cause	No.	Per Cent.
Prematurity	250	40
Inanition	99	15.8
Accidents of labor	34	5.4
Atelectasis	30	4.8
Asphyxia, pallida	21	3.3
Asphyxia, accidental	11	1.7
Patulous foramen ovale	11	1.7
Congenital syphilis	22	3.5
Hemorrhage of the new-born	26	4.1
Enteritis	40	6.4
Pneumonia	19	3
Toxemia	12	1.9
Convulsions	12	1.9
Malformations	9	1.3
Miscellaneous	27	4.3
	623	

These figures of the death toll of early infancy are appalling, and show that besides the unavoidable mortality incident to childbirth, many infants are born hopelessly handicapped for life's struggle, while many more perish through ignorance and neglect.

The illuminating papers of Williams,[4] and Holt and Babbitt,[5] on institutional infant mortality incident to childbirth and the two weeks following, show on careful analysis of 10,000 consecutive cases by each reporter how a very large percentage of the mortality could have been averted by intelligent supervision of pregnancy and competent care during labor.

TABLE 2.—STILLBIRTHS (INCLUDING ABORTIONS)

Cause	No.	Per Cent.
Unknown	342	47.4
Congenital syphilis	84	11.7
Accidents of labor (difficult and prolonged, 50; prolapsed cord, 64; cord around neck, 5; knotted cord, 4)	123	17.1
Toxemia and eclampsia	34	4.7
Asphyxia	35	4.7
Accidents (violence)	28	3.9
Monsters	6	.8
Placenta praevia	30	4.1
Accidental hemorrhage	23	3.2
Miscellaneous	11	1.5

In this connection I wish to invite attention to a summary of a review of 10,533 confinements which occurred in the obstetric service of Columbia Hospital from July 1, 1876, to June 30, 1915. They were divided as follows: stillbirths (including abortions), 716; living births, 9,817.

The hospital is open to the profession. All classes are received. More than 60 per cent. are admitted in labor, and over 70 per cent. of the confined are colored. The free patients are discharged on the eighteenth day, though in case of illness the time is extended to meet the requirements.

It will be observed from the tables that the "unknown" forms the largest contingent of fetal deaths — nearly 50 per cent. of the stillbirths and 24 per cent. of the total infant mortality. This is because diagnosis was usually based on clinical data and often incomplete history, and frequently because a satisfactory explanation was wanting. Routine Wassermann, other laboratory tests and necropsies would surely have proved many of this group to have been due to syphilis. Bearing on this point, the following data furnished me by Mr. Peter, the pharmacist, is of much

TABLE 3.—GENERAL MORTALITY

Cause	No.	Per Cent.
Unknown	342	24
Prematurity	250	18.5
Accidents of labor	157	11.7
Syphilis	106	7.9
Inanition	99	7.9
Asphyxia, pallida	56	4.1
Asphyxia, accidental	11	.8
Patulous foramen ovale	11	.8
Toxemia and eclampsia	46	3.4
Enteritis	40	2.9
Placenta praevia	30	2
Accident (violent)	28	2
Hemorrhage of the new-born	26	1.9
Atelectasis	30	2
Accidental hemorrhage	23	1.7
Pneumonia	19	1.4
Malformation and monsters	15	1
Convulsions	12	0.8
Miscellaneous	38	2.8

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[3] Baby Saving Campaigns, p. 381, Infant Mortality Series, No. 1, Publication 3, Children's Bureau, U. S. Dept. of Labor.

[4] Williams, J. Whitridge: The Limitations and Possibilities of Prenatal Care, THE JOURNAL A. M. A., Jan. 9, 1915, p. 95.

[5] Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the New-Born, THE JOURNAL A. M. A., Jan. 23, 1915, p. 287.

significance. Of 171 Wassermanns done in the past four years in the obstetric department, 113 were positive, and out of this number thirty-five, or 30+ per cent., were stillbirths. Out of the fifty-eight negative reactions there was only one stillbirth. It would probably be a safe estimate to say that at least 40 per cent. of the unknown stillbirths was caused by syphilis.

Prematurity, syphilis, inanition, atelectasis and toxemia constitute nearly 70 per cent. of the total mortality, and are independent of labor. These factors influence pregnancy disastrously, and yet are largely preventable and amenable to well-directed treatment.

The causes intimately connected with intrapartum mortality are malpresentation, forceps operations (asphyxia and intercranial hemorrhage), placenta praevia, ablatio placentae, rupture of the uterus, eclampsia, tetanic uterine contractions, etc., and were responsible for 18 per cent. of the fetal deaths.

It is difficult to estimate the probable percentage of this group that might have been saved, because many operators officiated and naturally the judgment and skill varied accordingly. I know, however, from personal experience and observation, extending over a number of years, as intern and member of the visiting staff, that I and others were responsible for some of the mortality because of errors of judgment and execution.

Pneumonia and enteritis were the most frequent mortality factors after confinement, and with the miscellaneous and accident groups made up 9 per cent. of the total, while hemorrhages of the new-born and malformations and monsters yielded 3 per cent.

This summary emphasizes the indubitable fact that there is a needless sacrifice of infants because of the neglect of prenatal care, and that early recognition of abnormal conditions and timely intervention would have averted many of the intrapartum disasters.

The public should be taught that the risks attending parturition can be, for the most part, avoided by intelligent oversight of the parturient; by preparedness for rendering aid when needed no less than by masterly inactivity when normal.

Much good is being accomplished by the various organizations engaged in the welfare of motherhood and childhood, by stimulating general interest in the cause and securing lay and professional cooperation; but if this much to be desired beneficence is to become nation-wide, the checking and follow up system can be satisfactorily done only under state subsidy and control.

For some inscrutable reason, the life of the child has been held to be of unequal value compared with that of the mother, and in complicated childbirth, when both lives are in jeopardy, the child is to be sacrificed. This is contrary to natural law, according to which all lives are equal; and furthermore, science has shown that this dictum is untenable in that there is no conflict between the life of the mother and the life of the child, and the direct sacrifice of either in the interest of the other can be defended, if at all, only on the ground of expediency and not on the claim of justifiability.

Expediency is a subterfuge used to subordinate right and justice to might and convenience, whether it be in the stifling of a human life in its inception by that heinous crime of convenience, criminal abortion, or the deliberate taking of a life in the fulness of its development and when ready for external existence by a destructive operation.

The passing of craniotomy on the living child is one of the greatest triumphs of modern obstetrics — a veritable turning of defeat into victory. Practiced almost from the dawn of civilization, down through the centuries, this mutilating operation is happily being supplanted by humane methods of intervention that have for their purpose the saving of both lives.

In this connection, I quote from the recent interesting paper of Dr. Wall.[6]

> It cannot be charged against us, as it was in the earlier days of medicine, that the interests of the child are entirely subservient to those of the mother. The abandonment of craniotomy on the living child was an acknowledgment of infantile rights, which, thanks to modern advancement in medical science, have attained a station hitherto unknown, so that the mortality of the child is mentioned in the same breath with that of the mother in almost all obstetrical conditions and procedures.
>
> I am of opinion that there is still room for improvement in judging the rights of the unborn child, and there are certainly enormous opportunities for advancement in the consideration and attention bestowed on the little individual after birth.

It is to the honor of this society, dedicated to the cause of motherhood and childhood, that its first anniversary (1883) was made memorable in the defense of the rights of the unborn child. The president, Dr. Busey, in a trenchant and forcible address, challenged craniotomy on the living child as being unethical and unscientific, and, in the light of medical progress, should be abandoned in favor of cesarean section and other conservative measures.

Until less than twenty-five years ago, cesarean section was rarely performed save for contracted pelvis, obstruction of the birth canal by tumors and in the case of sudden death of the mother, while today it embraces in its broadened scope not only deformities of the pelvis but also some cases of placenta praevia, eclampsia, disproportion between the size of the child and the pelvis, heart disease, ventrifixation, stenosis of the cervix and vagina, edema of the vulva and accidental hemorrhage; and a member of this society, Dr. Bowen, has recently advocated it for certain breech cases, particularly, in aged primiparas after a test labor, even though the pelvic measurements are normal.

I am in accord with this recommendation, for the usual methods of practice in this class of cases are attended with an infant mortality of from 10 to 20 per cent. In discussing the case reported by Dr. Bowen, I said:

> Under the conditions mentioned with the patient showing signs of fatigue, evidenced by increased pulse rate, uterine inertia, etc., cesarean section was not only justifiable but a rational method of procedure, even though the pelvic measurements be normal. If the bag of waters were intact and condition of mother and child favorable, some would advocate further trial aided with sedatives. Instead of putting forth "the desire for a live child," I would make it stronger by substituting "the inherent moral and legal right of the child to be born alive." I had two somewhat similar cases recently in consultation, in one of which I resorted to slow extraction, against the better judgment of the attending physician, who suggested the advisability of cesarean section, lost the baby and got severe perineal laceration and colon infection. In the other case, classical cesarean section was done with happy results to mother and child.

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[6] Wall: The Status of the Child in Obstetric Practice, read before the Washington Obstetrical and Gynecological Society.

In the complications that confront the obstetrician, there is none that is fraught with more danger or attended with greater anxiety than placenta praevia, save perhaps eclampsia. Its sudden manifestation, often alarming hemorrhage and consequent anemia, shock and possible infection present a formidable array of difficulties that even in the hands of the most skilled has been attended with a high maternal mortality. It is true that in recent years, with more definite method of treatment and advances of antisepsis and sepsis, the maternal death rate has been greatly lessened, but the extraordinarily high proportion of infants lost remains unchanged.

If we analyze the statistics, we cannot fail to recognize that it is the lateral and marginal varieties that have contributed largely to this improved showing by directly sacrificing the life of the child by using it as a plug to control the hemorrhage. In central implantation, modern methods have not materially affected the death rate. It was quite natural, then, that other measures would be evolved with the hope of reducing the frightful infant mortality, while still not increasing, if not improving the chances of the mother. Hence for more than two decades, from time to time, the justifiability of cesarean section in certain cases of placenta praevia, in the interest of the child as well as the mother, has claimed the attention of the profession. Some have recommended it on theoretical grounds, with the conclusion that it is not only justifiable, but also indicated in central implantation of the placenta. On the other hand, there are those who are equally positive in their belief that cesarean section has no legitimate field in placenta praevia, contending that the mother's life is of paramount importance; and further, that many of the infants will of necessity be born prematurely and likely to succumb at birth. The physician has no moral right to decide between the value of two lives, nor is he in conscience capable of determining whether the child will survive or not. Both are his patients, entitled to his best skill, and he is in honor bound not to deliberately sacrifice the life of one to save the other.

The induction of premature labor, though offering little danger to the mother, is opposed on the ground of fetal mortality. Besides, it is not an easy matter to determine the time for intervention, and the widest experience and most painstaking study and keenest mechanical sense are requisite for successful issue of this operation.

Expediency rather than fitness is often the determining factor in choosing the method of intervention in obstetric practice. The physician without surgical bent or training relies on such measures which, while usually safeguarding the mother's welfare, are often inimical to the interests of the child. How often do we see cases of delivery by forceps or version in which the child is sacrificed at birth or dies within a few days afterward of cranial hemorrhage? It is with the borderline cases that we have so much difficulty, and they require the most exacting care in deciding how best to act in the interests of both lives. The great mistake that many make is to apply forceps in cephalic presentations regardless of position and whether the head is engaged or not. The cardinal rule is that forceps should never be applied to a head that has failed to enter the brim of the pelvis, for in a very large percentage of cases disaster will be almost sure to follow.

I do not wish to be understood as in any way underestimating the value of forceps, version and the induction of premature labor, as they have their field of usefulness; nor am I unmindful of the fact that in the majority of cases the children would deliver themselves unaided; but what I do advocate is that more attention be given to the patient during pregnancy and that at the appropriate time a careful and thorough examination be made so as to be prepared to intervene at the proper time in the interest of both mother and child.

During the past year considerable attention has been given to *Dämmerschlaf* or "twilight sleep" in the medical and lay press. The Freiburg method was tried out in this country nearly a decade ago and practically discarded. Through the restatement of the method by one of the proponents, reiterating its claims for producing amnesia in labor, and the prompt exploitation of the address in a lay magazine article, the interest in the treatment has been reawakened, and the method is again being given a trial in several hospitals and by others. It matters little whether the lay propaganda is due to the alluring euphony of "twilight" or to commercial cupidity, when compared with the duty of the profession to settle definitely whether the method possesses the value claimed for it. This the searchlight of experience will determine, and the profession will before long be able to decide if it is to fill a much desired want in obstetric practice or share the fate of spinal analgesia.

With a view of learning of the status of *Dämmerschlaf* in Germany and elsewhere in Europe, I wrote to Professor von Heff, director of the Frauenspital, Basel, Switzerland. He replied as follows:

> I do not employ *Dämmerschlaf* (twilight sleep) because it requires constant supervision, also because it excites a number of the patients, and in my judgment the infants are likewise endangered. Years ago I made experiments which did not satisfy me. The results are given by von Dietschy, whose article I send you. In a large maternity like this where the lying-in women cannot be isolated, the treatment is, according to Krönig, contraindicated. So far as I can see, *Dämmerschlaf* is little used in Switzerland. If used at all it is by physicians who have private clinics, hence "painless labor" is to them a valuable advertisement. In Germany also one does not enthuse greatly, and I believe the majority of my colleagues decline this method, for example Fehling. In isolated cases, quite naturally, it is of service.

This criticism, from the knowledge I have gathered from the current literature, is very fair. That scopolamin will produce amnesia is conceded, but its utility and freedom from danger are not generally accepted. Reports of its indications and limitations are accumulating, and the almost universal discordant note is that it is not without danger to the child. Dr. Mundell has kindly placed at my disposal the replies of eight of the leading obstetricians in this country to whom he wrote asking advice regarding the use of the Freiburg treatment. Those who favor its use restrict it to the first stage, and all but one emphasized its danger to the infant.

There has been much undeserved criticism of those investigators who insist that the treatment should be given only by an expert. The fact that it should be administered only by one who has had experience and that it is not feasible in general practice will, if for no other reason, operate against its general adoption.

The field of obstetric practice has rarely been invaded by the quack, the work being too arduous and unremunerative; but the physicians who for mercenary considerations are imposing on the credulity of their insistent patients for the Freiburg treatment, by giving them "near" twilight sleep, are courting charlatanry.

> Obstetrics appears, as it passes before the mental vision, like a panorama of light and shade. Supposed discoveries in the science and improvements in the art illuminate the scene, till the crucial light of experience casts a shadow of disappointment over the factitious light. We seek the truth. Physicians know too well that the search is surrounded with difficulties, for we advance along the asymptote of the hyperbola; though we have not attained the absolute, we are approaching the object of our quest.[1]

There are still many problems in obstetrics to be solved, including a remedy that will produce amnesia in labor or preferably eutocia, at will — *tuto, cito, jucunde,* safely, quickly, pleasantly. Meanwhile let us continue to mitigate the pangs of labor with the measures which in succoring the mother do not jeopardize the life of her child.

The keynote to decreasing the appalling infant mortality is good obstetrics, and the watchword is efficiency — efficiency in prenatal care — so that at the time of birth, mother and child shall be in the best possible condition, and efficiency in the conduct of labor, whether it be in the rôle of "watchful waiting" or masterly activity, in order that the child shall be assured its inalienable right to be born alive and healthy, and the mother safeguarded to a successful and happy fruition of her noblest mission in life — maternity.

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WHERE CHIROPRACTORS ARE MADE

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DES MOINES, IOWA

As the season for legislation approaches, I feel that the information I have concerning chiropractors should be put at the disposal of those interested in guarding the public health and maintaining respectable educational standards. The chiropractor's machine-made bills will be introduced into the legislature of every state where they have not received recognition.

Iowa schools of chiropractic probably graduate more than the schools of any other three states. Davenport is called the home of this sect; but Iowa does not recognize chiropractors, and they are liable to a fine of $300 if they practice here. Obviously they swarm to other states, in some of which they are permitted by law to practice, and in others they are merely tolerated. It strikes us as peculiar that other states, some with high educational standards, should take large consignments of our "graduate" chiropractors who have graduated from schools which require no preliminary qualifications and which have no libraries or hospitals — graduates of schools without any standing, inspected by no one, regulated by no one and conforming only to their own low estimate, which refers entirely to financial and not at all to scientific standards.

After reading the reports of the inspector of the state of Pennsylvania, I believe the forty-seven other states will exclude the graduates of the Iowa schools of chiropractic the same as Pennsylvania has done. This report is remarkable in that it was made by one outside Iowa and in the interest of the health of the people of a far distant state. It is a testimonial to the care and judgment exercised by the officials of the great commonwealth of Pennsylvania in safeguarding the lives and health of those they are sworn to protect. Likewise it is an indictment of the officials in all those states which have accepted these graduates without first having made a careful inspection and ascertained the extreme wretchedness of the physical equipment of the schools and the mental equipment of their graduates.

The accompanying tabulation gives the reports on the three schools of chiropractic at Davenport, Iowa, made by the inspector of the Pennsylvania Bureau of Medical Education and Licensure.

CHIROPRACTIC COLLEGES OF IOWA

A TABULATION FROM REPORTS OF THE INSPECTOR OF THE PENNSYLVANIA BUREAU OF MEDICAL EDUCATION AND LICENSURE

	Davenport College	Universal College	Palmer School
Buildings	One, an old church.	One fair size	Four (crowded)
Access to hospitals...	None	None	None.
Dispensary facilities..	Saw no evidence of	Ample * ...	
Admission requirements.	None	Common school	Common school.
Anatomy, dissecting...	Not taught.	Dissect a few dogs	Only dogs dissected.
Histology	No equipment	Didactic only	Very incomplete.
Embryology	Not taught.	Not taught.	Not taught.
Surgical anatomy.....	Not taught.	Not taught.	Not taught.
Physiology	Didactic only	Lectures only	Lectures only.
Physiologic chemistry.	Not taught.	Lectures only	No equipment.
Chemistry, inorganic and organic.	Not taught.	No practical work done by students	No equipment for teaching.
Pathology	*	*	*.
Bacteriology	Not taught.	Not taught.	No equipment.
Pharmacology	Not taught.	Not taught.	Not taught.
Microscopic diagnosis.	Not taught.	Not taught.	Not taught.
Medicine	Not taught.	Not taught.	Not taught.
Pediatrics	Not taught.	*	*.
Nervous and mental diseases.	*	*	*.
Surgery	Not taught.	Not taught.	Not taught.
Anesthesia	Not taught.	Not taught.	Not taught.
Gynecology	Not taught.	Not taught.	*.
Eye, ear, nose and throat diseases.	Not taught.	*	*.
Dermatology and genito-urinary diseases.	*	*	*.
Class rooms	One	Two	Four.
Clinical amphitheater.	One large room	....	Two.
Medical library.......	None	Small	None.
Microscopes	None	Two	Twelve
Having oil immersion.	....	One	One.
Reflectoscopes	None	Yes	Yes.
Stereopticons	None	Yes	Yes.
Obstetric manikin.....	Part of one	Yes	Yes.
Maternity work.......	Not taught.	Not taught.	Lectures only.
Charts	A few.....	Large supply	Large supply.
Models	None seen.	Yes	Yes.

* This subject is taught only from the chiropractic standpoint, as it is related to certain spinal "lesions."

Regarding the individual colleges the inspector made the following statements:

Davenport College of Chiropractic.—"Their alleged 'chemical laboratory' consisted of a table about 18 inches square, on which were six dusty bottles and three dirty test tubes. There were no records of work done by the students or of attendance at lectures or clinics."

Universal Chiropractic College.—"They are not in any way equipped to give the character of instruction that would make their graduates safe advisers to the sick."

Palmer School of Chiropractic.—"They pretend to give a course in obstetrics with no practical experience. A person who assumed to practice on information gained from this course alone would be dangerously incompetent.

"Some of their professors are exceedingly ignorant. The 'professor' of chemistry alleged he taught the 'Widal test' chemically, but chemicals for even ordinary tests were not in evidence: those in evidence showed no marks of use, most of the bottles being still sealed.

"The institution is not physically equipped to turn out safe graduates."

A letter from Dr. J. M. Baldy, president of the Pennsylvania Bureau of Medical Education and Licensure, to whom the manuscript of this article was submitted, states as follows: "The data quoted from our inspection is correct. I have gone over it myself and have submitted it to the inspector."

It is sufficient to say that the three schools are uniform on the following points: None has a library, a hospital, a laboratory that is worthy of the name, postmortems or capable teachers. Add to this farce students without preliminary education beyond the mere ability to read and write and who "graduated" after a course of only one year in one of these "colleges," and we have an individual who is hopelessly handicapped for life, one who cannot in any sense be considered a safe adviser of the sick.

These reports set forth everything with painful exactness and embarrassing detail. Any patriotic legislator will be justly incensed at the thought of taking the intellectual refuse from these schools who are not permitted to practice in Iowa, to be used in his own state as the guardians of life and health. They should not be given legal recognition to practice in any state. If they are permitted to practice, it should be only after they have obtained the same professional and preliminary training that is required of physicians, which in Iowa is a high school education and two years of collegiate work plus four years of professional training in a medical school that maintains a standard satisfactory to the licensing board.

Inconsistency of the Antivivisectionist.—Of course there are all sorts of men among physicians and surgeons as in all other professions. Abuses and outrages do occur, no doubt. There have been wicked doctors who have abused their trust; and there have been clergymen with whom the virtue of a young lady boarder was not safe; but we need not say for this reason that all surgeons are arch torturers and that all preachers are arch-lechers. Just as you do not need to pass a special law against adultery by ministers of the gospel, but that if you did so you would put an imputation on the character of a large body of earnest, sincere and unselfish men, so you should not pass laws which would put on men in biological research the imputation of bad faith and cruelty. Make the general laws against cruelty to animals as strict and far-reaching as may seem necessary for the good of the human race; but do not single out the men who are devoting their lives to the search after that knowledge which is for the best good of the race, and make them the special objects of unnecessary restrictive limitations. If experiments on animals must be prohibited let the same law prohibit castration of animals and the dehorning of cattle. If the English law requiring all operations by a scientific man to be done under anesthesia be adopted, then require that operations on the farm be performed in the same way.—Maxwell, *Science.*

RECTAL AS A SUBSTITUTE FOR VAGINAL EXAMINATIONS IN LABOR

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In spite of the most rigorous regard to the details of asepsis in the preparation of the patient, of the attendant's hands, and of the supplies which may directly or indirectly approach the two, the dangers of puerperal infection have not been reduced to that negligible degree which our profession should attain. Since the days of Carl Braun, various authorities have recognized the dangers accompanying vaginal examinations, have strenuously demanded the diminution of their number, and have sought means whereby such curtailment might be possible. All modern authorities are agreed that vaginal examinations, no matter with what conscientious regard to aseptic technic they are conducted, carry with them their risk of sepsis. Today it is generally recognized that abdominal palpation, aided by a proper interpretation of clinical evidences, offers as much, if not more, certitude as to the condition of the woman and progress of labor than do vaginal examinations alone. The elimination of the necessity of entering the vagina, or at least reducing the frequency to the point at which imperative exigency demands it, will be a distinct obstetric advance. In this paper, I would show that rectal examination fulfils this purpose, and that rectal will secure as much definite information, in most particulars, as do vaginal examinations, and without the risks of infection which inevitably accompany the latter.

When ventral fixation was a popular procedure, I found it expedient, in a number of women in labor, to endeavor to reach the cervix by rectal palpation. This was merely applying a method resorted to in gynecologic cases when, as in virgins, it was impracticable or impossible to use the vaginal route. However, this did not suggest the full value of the method in the conduct of labor. Two or three years ago the broader application was grasped from a source not determined. At first, used in an incidental manner, then as a routine, an experience matured which has convinced me that it was an invaluable method of investigation. Now, I am certain that rectal examination, supplementing abdominal palpation, should largely supersede vaginal touch in the conduct of *normal labor*, and in certain pathologic cases to be hereinafter mentioned; the latter route should be reserved solely for those cases in which the findings are inconclusive, or as a preliminary to operative work through the parturient canal.

Rectal, as a substitute for vaginal examination, was suggested by Kroenig,[1] Nov. 20, 1893, in a paper read before the Obstetric Society of Leipzig. The method was introduced in his clinic early in August, 1893. The midwives quickly developed a facility in the procedure, so that in the three months covered by his report, 90 per cent. of all labors were conducted by rectal examination alone. He deduced the following conclusions:

1. Midwives could palpate the spines of the ischia, determine the movability of the coccyx, and estimate the degree of resistance of the perineum.
2. They could determine whether the presenting part were in the pelvis or not.

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[1] Kroenig: Zentralbl. f. Gynäk., March 10, 1894.

3. They could recognize the sutures of the forelying head.

4. They could determine the relationship of the crown of the head to the bisischiatic line.

5. They could determine the dilatation of the os definitely in multiparas. In primiparas, errors were apt to occur, when effacement was completed.

6. Generally the fontanels were not to be differentiated.

7. The promontory was palpable only when a high grade of pelvic contraction existed.

Independently of Kroenig, Emil Ries,[2] now of Chicago, began an investigation of the possibilities of rectal examination, in January 1894, in the Strassburg clinic, and published his results a few weeks after Kroenig. The possibilities of the method were largely determined by Kroenig through the work of the midwives. Therefore, we have conclusive evidence of its worth as a means for general application. Ries' deductions were fixed largely by the results obtained by his own personal experience. As a consequence, his findings are more valuable, more comprehensive and more utilitarian for the working needs of the medical attendant. He corroborates the teachings of Kroenig, but has determined the far wider range of its applicability than Kroenig concedes for the method. Ries has presented the only extensive monograph on the subject, an opinion based on a very cursory review of the literature. Only one American textbook on obstetrics mentions the utility of rectal examinations, in a paragraph which includes four or five lines. F. Menge[3] gives an adequate interpretation of the application of rectal examination. He says, "If one combines it [abdominal palpation] with rectal examination, then after a little practice, one is able to judge in every single case all diagnostic and prognostic details with certainty, even if the case comes after the onset of labor." He further recommends that a single vaginal touch is to be undertaken only when the combined external palpation and rectal examination is not clear in every particular.

That the logical position of rectal examination may be properly presented, I shall give the usual factors which must be determined by routine vaginal exploration. These are taught in most recent textbooks, and are the factors which essentially are to be determined by the new method of investigation. At this point I can but mention the necessity of a definite procedure with every woman who presents her case to the obstetric attendant: The physician should make it an invariable rule to study carefully every woman by repeated abdominal and pelvic examination during the months of pregnancy, in order that he may be conversant with her normality or abnormality, so he may properly and intelligently supervise the labor.

FACTORS TO BE DETERMINED

Vaginal examinations in pregnancy, as we have learned by precept and example, should comprehend the determination of the following facts:

1. The pelvic size, its normality or abnormality.

2. Soft parts: their normality or abnormality: (*a*) the perineum; (*b*) the vagina; (*c*) the cervix and os; (*d*) recognition of tumors in or about the lower segment — placenta praevia, etc.; (*e*) the rectum.

3. The fetus: presentation and position; the cephalopelvic adaptability.

Further, in labor additional data must be determined:

4. The fetus: (*a*) revisional diagnosis of presentation and position, which must be made because many of the deviations from the normal are the products of labor; (*b*) the station of the presenting part; (*c*) the fact of compound presentation, as prolapse of the arm, leg or cord; (*d*) fetal deformities.

5. The effacement of the cervix, and dilatation of the os.

6. The status of the membranes.

Of course, in the event that the woman is first seen with labor in progress, all the foregoing data must be determined at the first examination, and may demand a vaginal examination.

There may be no question of the expediency of combining external palpation with vaginal examination *in pregnancy*, for then, carefully conducted, in a cleanly manner, the danger is negligible. To control the vaginal findings by rectal touch, in pregnancy, will convince the most skeptical of the desirability and reliability of the latter, and will manifest to him the certitude and conclusiveness of the knowledge obtained by it. The information obtained by these means, and properly recorded for reference in labor, will determine with definiteness the potential possibilities of the safe passage of the child. Therefore, in labor, only the supplemental factors have to be elicited by a pelvic examination — and they may be conclusively fixed by rectal touch.

The Pelvis.—The configuration of the posterior half of the pelvis may be outlined with clearness, in many respects with a precision that is impossible vaginally. The contour of the sacrum, its irregularities and relation to other osseous structures may be determined; the position and movability of the coccyx are evident. The spines of the ischia may be palpated, and their influence on labor may be approximated, as in the case of the ischia themselves. I cannot concur in Ries' contention that the anterior pelvic half may be palpated as definitely rectally as vaginally. Likewise, I have not convinced myself that the diagnosis of pelvic size is easily feasible rectally, though I do not doubt that some resourceful mind will discover a practical means of determining the conjugata diagonalis, even the vera, rectally. I have not been able to determine the diagonal conjugate, though the cephalopelvic relationship may be judged with a certain precision.

The Soft Parts.—Generally, the condition of the soft parts may be determined with the same accuracy as by the vaginal examination; the perineum may be studied with clearness, the texture of the vagina and of the cervix may be readily estimated, and the important data appreciated. The progress of the effacement of the cervix may be observed, and the degree of dilatation of the os measured; the clearness of recognition is particularly evident if the cervix is directed posteriorly. It is a clinical fact that effacement of the cervix and dilatation of the os occur synchronously in multiparas. In primiparas, the rule is for effacement to occur; then dilatation follows. Therefore, it is more easy to recognize the degree of dilatation in multiparas. In primiparas, the difficulty of appreciation is due to the fact that the thinned cervix fits snugly over the bulging membranes without a thick ring to designate the os. As Ries has well pointed out, by palpating the cervix at the height of a contraction, little will be felt; in the interval of contraction, the lessened tension of the membranes will allow an indefinite band to develop which represents the boundary of the os. He also shows that the degree of dilatation is of relatively slight importance. Its size merely designates, to a certain extent, the progress of labor. An emergency which imperatively demands immediate operative intervention is not influenced by the fact that the os is dilated two or four fingers — a dilatation must be consummated artificially. The employment of this method has not been occasioned in placenta praevia, but, *a priori,* its recognition by rectal means would be influenced by the same factors which would permit its easy or difficult palpation vaginally. Often, a tumor may be outlined better by rectal examination than vaginal.

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[2] Ries, Emil: Zentralbl. f. Gynäk., April 28, 1894.

[3] Menge F.: Winckel's Handbuch der Geburtshülfe, i, Part 2, p. 1208.

The Fetus.—In the majority of cases the diagnosis of presentation and position may be made without difficulty, providing the presenting part be within the pelvic cavity, that is at least engaged; often, it is surprising with what degree of certainty the sutures and fontanels may be palpated. This is especially true after material dilatation has occurred. Unquestionably, the facility with which they may be recognized rectally is directly commensurate to the ease with which they may be differentiated vaginally. We all occasionally encounter women in whom it is well nigh impossible to recognize the landmarks of the fetal head on account of the advanced ossification, or from marked overriding of the bones the result of excessive molding, or a tense caput; or, finally, the pelvic floor may be so tense that it precludes proper digital exploration. In such, when conditions demand certainty of diagnosis, and external palpation is difficult or impossible, the necessity arises of passing the hand into the lower uterine segment, under deep anesthesia, before the position may be accurately fixed. In such cases, the rectal offers no more indefiniteness than the vaginal route. It has not been my fortune to encounter a compound presentation, during the period I have employed the method as a routine, but I am convinced that it will offer almost the same certitude of recognition as will the vaginal examination, especially if the compound presenting part be laterally or posteriorly directed. It has been determined that the maneuvers of Müller and Kerr may be applied through the combined abdominal and rectal palpation when the vaginal is replaced by the latter. This is of fundamental importance, in labor, when the woman has a pelvic contraction and it is necessary to determine approximately the cephalopelvic adaptability when a cesarean section is under advisement. The station of the presenting part, whether floating, fixed, engaged or deep in the pelvis, all may be as positively estimated by rectal as vaginal examination. Ries has found that the pulsations of the cord in the vagina may be felt through the rectovaginal septum. Even the still cord may be outlined in the same manner, showing the possibilities in the diagnosis of a prolapsed cord.

The Membranes.—If there is any distention of the amniotic sac by liquor amnii it is possible to determine the fact. In a few instances it has been possible to rupture the membranes by firmly pressing on them through the rectovaginal septum at the height of a contraction. If there be a very scanty amount of forewater, or it is practically absent, one necessarily must be kept in ignorance; but it has happened in a few instances (as in oligohydramnios) that the only way to determine the presence or absence of the amniotic sac is to open the vagina widely with specula and inspect the head to ascertain if it be covered with the chorion.

Nowhere does the efficiency of rectal examination stand out so distinctly as in the control of women who have a relative indication for cesarean section. In such, it is not good obstetrics, usually, to perform the section until by a test of labor it has been positively proved that the disproportion is so material that an intact, living child cannot pass. We all know that the surest prognostic aid in determining the outcome of a cesarean section is the fact that vaginal examinations have or have not been made within a period of two or three days of the operation. It cannot be reiterated too often and emphatically that the contamination produced by one or more vaginal examinations during the labor influences the outcome of a cesarean section more unfavorably than does any other factor except exhaustion or ill-advised attempts at delivery. It is possible to determine the nonengagement of the head by abdominal palpation and rectal examination with absolute positiveness: therefore, it is utterly needless to enter the parturient canal during the period of watchful expectancy.

Rectal examination at or near term is by no means the obstetric limit to the procedure, for it is efficacious at any period of gestation. In threatened abortion, or abortion in progress, the rectal touch will furnish many of the data requisite for an intelligent conduct of the case up to the point of operative intervention.

TECHNIC

The woman should be given an enema before examination. Preferably, she should be on a table, or at least she should lie across the bed in the lithotomy position, with the buttocks quite to the edge, so the gluteal groove will not be in a depression of the bedding. A sterile rubber glove should be employed, for even though the finger enters a contaminated cavity it is not good practice to use a glove which may have infective matter on it. The finger should be anointed with sterile petrolatum or other unguent, and then should be passed through the anus slowly and carefully. At the same time the other fingers should be flexed in order that they may not accidentally enter the vulvar orifice. The various movements of the fingers should be slowly made, that the minimum of discomfort may be caused. Rarely will there be any pain, even if hemorrhoids are present; in fact, the average discomfort is no greater than when a vaginal examination is made. Generally, the rectovaginal septum is so lax that the examining finger may move with great latitude. The only time I found the method positively indefinite was in a woman who had had proctitis, with secondary contraction of the wall.

DANGERS

Very possibly objections to the method may be developed in the course of a broader experience — objections which may be valid in a very circumscribed field, and limited, in all probability, to conditions in the rectum itself. As we now see it, the danger is that the inexpert may allow the fingers or thumb to slip within the introitus during certain manipulations. This will be entirely obviated by keeping them flexed. The method is contraindicated when the termination of the labor is imminent, for fear, if haste is necessary, the attendant might forget to change the glove, or which is quite as bad, attempt to wash the glove on his hand. The glove, after use, invariably should be boiled. Preferably, this glove should not be used in the conduct of the labor, even though it has been sterilized by prolonged boiling. In the old days when the method was introduced there was an obvious objection to it, as the examining finger necessarily was fouled, and sterilized with difficulty. Esthetically, also, it was not agreeable to contaminate the finger with fecal matter. Today, with the use of rubber gloves, there can be no such objection.

The basic principles on which this paper is founded were obtained in the course of my personal experience and practice. In substance they form the essentials of my teaching of pelvic examination in the class room. In the obstetric clinical instruction of the students of Rush College, rectal examination is practiced nearly to the exclusion of vaginal examination. Those who have charge of this work are convinced that the students have had no sacrifice of a means of teaching since vaginal examinations were eliminated. On the contrary, with the increased license of examination, the students have had an increased opportunity of pelvic investigation.

Since Dr. N. Sproat Heaney introduced this procedure in the dispensary clinic, the students have enormously augmented their practical knowledge of the phenomena of labor — are infinitely better placed than were the students who were permitted to make a limited number of vaginal examinations in a former period.

CONCLUSIONS

1. The discovery of the possibilities of rectal examination in labor by Kroenig and Ries is one of the most important contributions to modern obstetric medicine of the last generation.

2. There must be a complete revision of the chapter on pelvic examination in obstetric textbooks. Adequate presentation of the value of rectal examination must be stated. Vaginal examination should be made subordinate to rectal touch.

3. While, at the present time, rectal examination does not give us the means of measuring pelvic size, it is of great value in estimating the factors situated in the posterior half of the bony pelvis.

4. In almost every direction, under appropriate conditions, rectal examination is as definitive as vaginal, if combined with abdominal palpation.

5. The ease or difficulty of rectal examinations are commensurate to the ease or difficulty which encompass the vaginal ones, and are dependent on the same factors.

6. Rectal examination is an utterly innocuous procedure in labor, whereas, vaginal examinations are always potential sources of infection to the woman.

7. Rectal examinations are peculiarly appropriate to those women who are to receive the test of labor in relatively contracted pelves when a cesarean section may possibly be needed.

8. Vaginal examinations should be made in labor only when, for some special reason, the rectal findings are indefinite or inconclusive.

9. The least that can be said of rectal examination is that it permits the conduct of normal labor with the essential elimination of vaginal examinations: a decided advance in the technic of the conduct of labor.

122 South Michigan Avenue.

THE RAT A CARRIER OF A DYSENTERIC AMEBA *

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The purpose of this communication is to record observations incriminating the rat (*Mus norvegicus*) of a possible new rôle in the dissemination of disease, the details of which go to show that:

1. The rat (*Mus norvegicus*) suffers from spontaneous amebic dysentery similar to that occurring in man.

2. This apparently occurs in endemic foci in Charleston, S. C.

3. The ameba found in the cases of rat infection here reported are indistinguishable from *Endamoeba histolytica*.

4. This rat may be infected with *Endamoeba histolytica* by allowing it to eat human feces containing this parasite.

5. The disease thus produced is practically the same as that occurring in man and from spontaneous infection in rats.

6. This infection, spontaneous and experimental, may be transmitted from the infected to the healthy rat by close association, that is, living, eating and drinking together.

7. The rat is a possible and probable disseminator of dysenteric amebas pathogenic for man.

The details of the study from which these conclusions are drawn are as follows:

During the course of experimental transmission of the *Trichomonas intestinalis* to rats by feeding them human feces containing these parasites,[1] a large brown rat was given feces containing *Endamoeba histolytica* in addition to the trichomonas. At the end of three weeks the rat was noticed to be getting thin in spite of good feeding, and to be sluggish whereas he had been active and vicious. His emaciation became more noticeable in the course of a few days, and at the end of a month he appeared to be very sick and had developed a mucous diarrhea. This passed fecal matter, when examined fresh and warm, contained, in addition to the trichomonas and leukocytes, desquamated epithelium and shreds of intestinal mucosa, and red blood cells, numerous active and resting amebas identical with those in the feces with which he was fed. His feces as well as that of all the other animals used in this study had been examined for amebas before feeding and none found. His symptoms, sluggishness, dyspnea, turning of the hair, loss of appetite and diarrhea continued until he died on the thirty-second day after feeding.

Postmortem examination revealed a general anemia, acute mesenteric lymphadenitis, late perilobular cirrhosis of the liver with microscopic periportal abscesses in which no cells like amebas were found, jaundice of the liver and kidneys. The condition of the liver was probably due to the extensive infiltration with cysticerci and secondary infection. The following was the condition of the alimentary canal.

Stomach: Considerable mucus formation, otherwise normal.

Small intestine: Distinct acute catarrhal enteritis, fluid mucinous contents, no ulceration, no amebas present but many lamblias.

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* Read before the Medical Society of South Carolina, Nov. 15, 1915.

[1] Lynch, K. M.: The Trichomonas as a Parasite of Man and Certain Lower Animals, Tr. Pan-American Med. Cong., 1915.

Cecum: Semifluid yellowish mucinous contents containing the *Trichomonas intestinalis,* epithelium and mucosal portions, red blood cells, leukocytes, and large numbers of active and encysted amebas. The wall was the seat of an acute ulcerative inflammation practically identical grossly and microscopically with the more acute type of human amebic colitis, with irregular ragged undermined acute ulcerations, having necrotic edges and containing fecal matter and granular detritus in which the amebas were very numerous, and between which the mucosa was the seat of an acute catarrh.

Remainder of the large intestine: Acute catarrhal colitis, no ulcers, contents the same as that of the cecum.

The amebas in this animal and in the feces with which he was fed were recognized as *Endamoeba histolytica* by the following distinguishing features, according to Craig.[2] Size, from 20 to 60 microns; pseudopodia, large and blunt or slender finger-like; active; ectoplasm distinct, nongranular, refractive; endoplasm, granular, containing numerous noncontractile vacuoles and occasionally a red blood cell; nucleus indistinct; when at rest possessing a distinct clear shell enclosing the hyaline refractive body; with Wright's stain, ectoplasm dark blue, endoplasm light blue, nucleus pale red or pink.

This occurrence brought to my mind the habits of the rat, and his liking for feces and also for almost any and all of our food and drink. Failing to find any record of experimental transmission of dysenteric amebas to rats, although it has been done with other animals, notably kittens,[3] I instituted experiments to determine whether it could be done with any constancy by feeding, as this method alone could be of importance in incriminating the animal of possibly disseminating the infection.

To date I have fed about twenty rats with feces of as many human beings containing dysenteric amebas, active and in the resting stage. These include both the brown rat and the pet white rat (*Mus norvegicus*). Four of these have followed the same course as the first, that is, at about the end of the first month after feeding, they became sick, showing dyspnea, loss of appetite, emaciation, turning of the hair, and sluggishness, and developed a mucous diarrhea from an acute ulcerative inflammation of the cecum and acute catarrh of the remainder of the intestine. Some of them died after a few days of the well-marked symptoms, while others were killed for purposes of better study. Amebas identical with those administered were recovered from the large bowel, particularly the cecum, to which the ulceration was limited. While all of them exhibited this ulceration of the cecum, in some it was more severe and diffuse and acute than in the others and in the usual human case. None have shown any involvement of the other organs except in the nature of toxic degenerations. Three of these rats were white and the fourth brown.

What will occur in the remainder of the animals under experimentation remains to be seen, as none have yet arrived at the usual time of onset of symptoms.

In order to determine whether the infection could or would be transmitted from rat to rat, feces of the first were fed to another, and this one became sick with the usual symptoms at the end of two weeks, exhibited the ameba in stools and cecum, died shortly and showed an acute diffuse ulcerative inflammation of the upper large intestine. Sufficient time has not yet elapsed to show whether the third in this series, which was fed the feces of the second, will suffer in like manner. Also, a noninfected rat was placed in the cage with one which had been fed, but some time before it developed any symptoms of disease, to see if possible contamination of food and drink would infect the other. One of these developed the disease and died of it ten days after its fellow had suffered a like fate.

For the purpose of obtaining wild rats for the work, and also with the hardly formulated idea of searching for spontaneous amebic infection, these animals were trapped in different sections of the city of Charleston. The first source, a grain house on the water front, proved free of the infection. I have had about fifty rats from this place, have killed a number for examination, and failing to find amebas in them, have selected all those used for the feeding experiments from this source.

The first rat caught at the second place and brought to me after it had been killed exhibited as typical an example of amebic inflammation of the cecum as I have seen in a human being. Other than being less acute, and it must be remembered that the animal did not die of it, the lesion was practically the same as that seen in the first experimentally produced. The ulceration was limited to the cecum, was of irregular serpiginous character, undermined, with ragged edges, contained granular material and fecal matter, and the intervening mucosa was the seat of a subacute catarrh. The small intestine was not altered, and the lower large intestine had suffered a very mild catarrh. The content of the large bowel was softer than usual, but the stool well formed.

An ameba indistinguishable from the *Endamoeba histolytica* was present in the large intestine, a few in the rectum, many in the cecum, and large numbers in the material from the ulcers. It possessed the characteristics in size, activity, differentiation of ectoplasm from endoplasm, indistinctness of nucleus, appearance of pseudopods, resting stage, and staining properties. After direct comparison of the parasite obtained from this rat, and from others hereafter mentioned, to *Endamoeba histolytica* from human beings and experimentally infected rats, I am unable to tell them apart and conclude that it was *Endamoeba histolytica.*

The house in which this rat was caught was a negro habitation in a negro community, and while it had water closets and sewer connections, unfortunately these things do not always mean proper sewage disposal among these people and in such houses in Charleston. I have learned of a house within a few numbers of this one in which the water closet had been out of use and the several families living there using a basement for the purpose for some time. I also know of a case of amebic dysentery which came from this locality, apparently originating there. The suggestive relationships are obvious.

From this place, I have since obtained another rat in the same condition as the first; and from feeding the cecal contents of the first to two young white rats, have been able to produce the same condition in them as occurred in the previously described experimental infections from human feces, the same colitis, diarrhea and ameba, and death at the end of about one month.

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[2] Craig, C. F.: Entamoeba Tetragena as a Cause of Dysentery in the Philippine Islands, Arch. Int. Med., March, 1911, p. 362.

[3] Sellards, A. W., and Baetjer, W. A.: Bull. Johns Hopkins Hosp., February, 1915, p. 45.

From two other localities of similar nature but in different parts of the city, I have obtained five other rats with amebic colitis, one from one place and four out of six obtained from the other. In these five the ulcers were small, irregularly rounded, with elevated undermined edges, only from three to six or eight in the cecum, and the remainder of the intestine normal. The same ameba was present, mainly in the resting stage in the rectum, but active in the cecum and especially in the ulcers. In another of the six, the ameba was present, and although there was some desquamation of epithelium and catarrh of the cecum and small points of microscopic erosion of the mucosa, there were no gross ulcers. None of these rats exhibited amebic infections of other parts of the body.

I am now undertaking a search for the extent of the distribution of this spontaneous infection, both in the city and in the rural districts, and am also looking for possible human endamebic intestinal infection from the same localities, an indication of which is already given in the case from the second place mentioned.

At the same time the experimental work will be continued and any further observations made known.

The *Endamoeba histolytica* is a frequent inhabitant of the intestine of the negroes in Charleston. The possible relationship is interesting.

The rat has a liking for human feces and he is no respecter of our food and drink. Stiles[4] believes that man may become infected with lamblias through eating food which has been soiled by the excrement of rats. The important possibility of the same manner of transmission of dysenteric amebas to man is obvious.

Stiles fails to mention any knowledge of amebas in rats; neither have I found it recorded from any other source.

The burden of the sins of the rat and this menace to the health of man seem certainly increased by the incriminating evidence included in these observations.

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[4] Stiles, C. W.: The Rat and Its Relation to Public Health, Publication, U. S. P. H. S., 1910, p. 89.

SYPHILITIC IRITIS WITH CONDYLOMAS

REPORT OF THREE CASES

WALTER BAER WEIDLER, M.D.

NEW YORK

The three cases here presented are of such a nature that many authors would regard them as gumma of the iris; but as all of these lesions were seen during the secondary stage of syphilis, it would seem that they should be more properly diagnosed and classified as papules or condylomas of the iris.

Papular iritis is often called iritis gummosa. This is because papules of the iris were always regarded anatomically as gummas, and it is often impossible to differentiate between these syphilitic formations even with the microscope. I believe that in the very virulent or malignant form of syphilis, it is possible to have true gumma of the iris during the secondary stage. It would seem that it is more a matter of size and the period of its appearance that makes one lesion a papule and the other a gumma. It is my opinion that gummas are rarer than papules. The papules often occur in numbers, whereas the gumma is single and perhaps more often seen near the ciliary body.

Case 1.—Mr. J. T., aged 45, chauffeur, had chancre of the penis seven months before he came to the Manhattan Eye and Ear Hospital, Dec. 2, 1913, with the history that for the past ten days the left eye began to be red and painful. He had no treatment for the eye conditions and only a short period of treatment for the syphilitic infection. There was considerable photophobia and lacrimation, and the lids of the left eye were kept closed. There was considerable haziness of the cornea, more pronounced in the lower half. There was a very severe congestion and engorgement of the superficial and deep ciliary vessels, giving a violaceous color to the pericorneal region. The iris was muddy and discolored. The pupil was contracted and did not respond to light, accommodation or convergence; but the tension was normal. The vision was reduced to counting of fingers at 3 feet. There was a condyloma of the iris down and in, and it seemed to be in the anterior portion of the iris stroma. It was grayish-yellow, about 5 mm. at its base, extended forward in the anterior chamber and was in contact with the posterior surface of the cornea. There were a number of small blood vessels visible over the growth.

The Wassermann test was positive (++++). The patient refused to have an injection of neosolvarsan, and was put on the iodid-mercury treatment, and after ten days the mass began to get smaller, the pupil began to dilate somewhat, the cornea was entirely clear, the bulbar congestion was much less, and the iris about the same color as its fellow. The condyloma or papule reduced to one fourth of the original size, and two weeks later the eye was absolutely quiet within a vision of $^{20}/_{70}$.

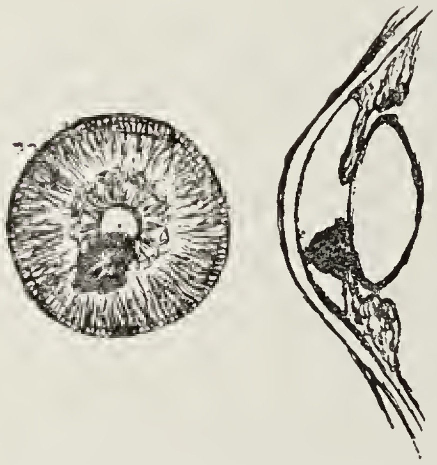

Fig. 1. — Left eye; growth was down and in, reaching forward to posterior surface of the cornea. Pupil contracted and did not respond to light.

Case 2.—Mr. L. M., colored, aged 23, elevator man, gave the history of having chancre on the penis seven months previous, and has been under treatment for syphilis at St. Luke's Hospital, receiving mercurial injections. Presented himself at the Manhattan Eye and Ear Hospital, Feb. 27, 1914, stating that twelve days before the right eye began to give him pain and this was accompanied with photophobia and lacrimation. He had no treatment at any time for the eye conditions. There was at this time considerable swelling of the lids with marked photophobia and lacrimation. The cornea was clear, there was a very pronounced pericorneal injection, and the deep ciliary vessels were very much engorged. The eye was very tender over the ciliary region. The aqueous was clear, the anterior chamber normal, and the general appearance of the stroma layer of the iris was unchanged, except up and out, where the stoma was decidedly elevated. At the pupillary edge of the iris, up and out, there was a whitish-gray exudate which seemed to protrude between the stroma and retinal pigment layer of the iris. This exudate had apparently attached itself to the anterior capsule of the lens, and the mass was protruding forward into the anterior chamber about 3 mm. There was only this single papule or condyloma with slight or no inflammatory changes in the iris. The vision of the right eye was $^{20}/_{40}$??, of the left eye $^{20}/_{20}$. The pupil was 3 mm. and did not react to the light, showing the presence of synechiae. The von Pirquet was positive, and there was the history of one of his brothers dying of tuberculosis. The Wassermann test was also positive (++++).

March 15, 1914, neosalvarsan was given, and the photophobia, lacrimation and pain entirely disappeared in thirty-six hours. The superficial and deep injection was much less. The tumor mass was rapidly reduced to at least two-thirds its former size, and the pupil dilated fully and freely. There are still the synechial remains on the capsule of the lens, but no trace of the condyloma remains.

Case 3.—Mr. P. E., aged 26, Irish, gave a history of having chancre about three months before and had taken treatment for syphilis for a few weeks. He came to my clinic at the Manhattan Eye and Ear Hospital. There was some swelling of the lids of the right eye, marked pericorneal injection involving the ciliary vessels. The cornea was slightly hazy, and the aqueous cloudy. The iris showed effects of inflammation, being discolored and the pupil 2.5 mm. Down and out there was a circumscribed elevation about 3 by 4 mm. at its base and about 2.5 mm. high, extending forward toward the posterior surface of the cornea but not in contact. This mass was pinkish-gray, and no distinct vessels were noted; but there was apparently some synechia formation. There was some photophobia and lacrimation. The Wassermann test was positive (++++). Two days later neosalvarsan was given, and after thirty-six hours a decided decrease in the size of the condylomas was noted. Inside of four days there was almost complete absorption of the mass. The iris cleared and the inflammatory symptoms were entirely relieved. A small synechia remains on the outer side of the iris above the location of the condyloma.

The very rapid response of this special syphilitic lesion in Cases 2 and 3 to the neosalvarsan was remarkable, and its use would seem to be especially indicated in this sort of syphilitic manifestation.

The diagnosis of the syphilitic lesions of the iris has been made much easier and surer by means of the serologic test. Where a definite history of the syphilis can be obtained, diagnosis of these lesions is a simple matter; but in the cases in which such a history is not obtained, the Wassermann reaction has added a most important factor in the diagnosis. It might be well to mention here that at times it has been difficult to differentiate between a papule or condyloma and a tubercle of the iris. It is in this sort of a case that the von Pirquet test and the subcutaneous tuberculin test become of great importance. Recently I have seen several cases of tubercle of the iris which have been treated for syphilis of the iris in spite of a negative syphilitic history and a negative Wassermann reaction with no improvement. For those who have not been especially interested in the tuberculin tests and therapy, I can readily see why such a line of treatment would be persisted in. It might be argued that previous antisyphilitic treatment has been employed; hence the negative Wassermann; or that the patient may deny syphilis for reasons best known to himself, and therefore without any further search for the cause, antisyphilitic treatment is used.

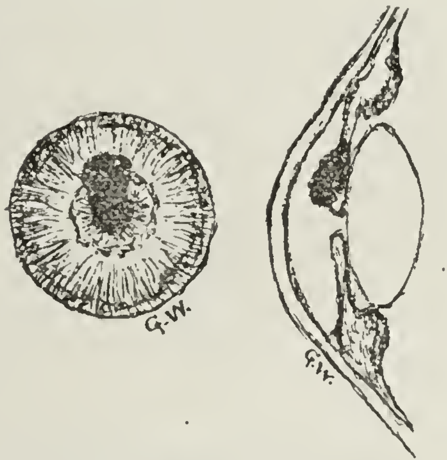

Fig. 2.—Right eye; growth was up and out, but did not reach to the cornea as in Figure 1. There was a grayish white exudate between the retinal pigment layer and the stroma of the iris.

The microscopic examination of the iris and the ciliary body when affected with gumma or condyloma reveals about the same changes as are noted in chronic inflammation of these tissues. There is nothing definite and characteristic which would make it possible to say that syphilis was the factor which caused the growth. The blood vessels show fairly constant involvement and microscopic changes in syphilis of the iris. There is an endarteritis especially of the smaller vessels with an apparent increase of the endothelial cells. This is partly due to the increase of pressure on the highly sensitized cells which line the lumens of the vessels. The adventitia also shows a proliferation or new deposition of cells with a marked increase of epithelioid cells outside of the adventitia.

Fuchs found the iris of normal thickness infiltrated with round cells, and these chiefly in the anterior limiting membrane. This inflammatory exudate of the leukocytes was also in the reticulum, and in some of his cases he found typical giant cells present. The presence of giant cells has been noted by other observers but in none was there any caseation present. There are always a number of capillaries seen inside or around these syphilitic nodules, which is not the case in the tubercular nodules of the iris.

131 East Sixtieth Street.

SUPPURATIVE CHOLECYSTITIS FROM THE PARATYPHOID BACILLUS

REPORT OF A CASE

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History.—The patient is married, aged 25; occupation, electrician. His family history is unimportant, except that he had one aunt on the paternal side who died of tuberculosis at the age of 40. He had the usual diseases of childhood, including spinal meningitis. He never had pneumonia, typhoid fever, tonsillitis or rheumatism. At the age of 13 he developed malaria of the tertian type, which recurred for three summers. He uses tobacco to excess, and occasionally beer and whisky. Venereal history is negative. About once a year he becomes badly constipated, and this is usually associated with cramps in the abdomen. These cramps continue for several days, unless relieved by a purgative. His digestion has always been perfect. There is no history of any accident or injury, although he has a cataract of his left eye, which has produced a loss of sight in that eye.

Monday morning, Aug. 16, 1915, he went to his work in his usual good health. In two hours' time, however, a severe headache came on, which was followed by pain in the abdomen and this in turn by nausea. He continued at his work, however, for the remainder of the day and returned home about 5:30 p. m. About 6 o'clock the pain in the abdomen was so severe that he called his physician, Dr. W. E. Reynolds. After making a careful examination, Dr. Reynolds told him that his symptoms were suspicious of intra-abdominal trouble, and asked to bring in a surgeon as a consultant, to which the patient consented. I saw the patient for the first time in consultation with Dr. Reynolds about 9 p. m. He was then complaining of pain on the right side of his abdomen. The temperature was 102 and the pulse was 100. An abdominal examination showed a marked rigidity of the right side and a localized tenderness most acute midway between the navel and costal margin, about 2 inches from the median line. He had, however, some tenderness all over the right side. The symptoms were rather suggestive of appendicitis, but we decided to wait until morning. Meanwhile he was ordered to abstain from all food, liquids or medicine. He continued to suffer in the night, and the next morning when his physician saw him, a localized pain was found in the region of the gallbladder. This pain continued with moderate severity during the forenoon. When the physician examined him again at midday, it was discovered that the localized pain had shifted from the region of the gallbladder to the region of the appendix. The temperature at this visit was 101, and the pulse had gone up to 120. He was advised to go to the hospital for a more careful study of his case, and an operation, if necessary.

He was brought to my infirmary about 8 p. m. His pain was somewhat better, although there was a marked rigidity on the right side and a point of acute tenderness two finger breadths beneath the costal margin on that side. A urinalysis was made, which was negative. Blood examination revealed: hemoglobin 85 per cent., white blood cells 12,000. Temperature, 99.6. We had now had the case under observation for twenty-four hours, and as no appreciable improvement was present and as the symptoms were very suggestive of an intra-abdominal lesion, either the appendix or the gallbladder, an operation was advised, to which the patient consented.

Operation and Result.—A right rectus incision was made in order that a thorough exploration could be carried out. The appendix was enlarged and somewhat inflamed. We felt, however, that this could not be the entire cause of the trouble, and further search of the abdominal viscera was instituted, although the appendix was removed. The gallbladder was found in a state of marked distention. It was quite red, covered with lymph in numerous areas, and on the fundus were several small patches that were almost black. A needle was introduced, and about 5 ounces of cream-colored pus were drawn off. The gallbladder was then packed off, opened, cultures from the interior were taken, and a drainage tube inserted and the abdomen closed. The next morning the patient stated that he had been perfectly comfortable since he regained consciousness. The temperature, however, was 102, but the pulse had dropped to 100. The drainage from the gallbladder was copious and of a black color.

For the next few days the patient continued to feel well. His abdomen was flat and he complained of no pain at all except a headache. The temperature continued to run between 103 in the afternoon to 101 in the morning. On the fifth day after the operation the temperature was 104 and a blood count was made which was as follows: red blood cells 6,200,000; white blood cells 8,000. A careful examination of the patient's throat, lungs and abdomen was made, all with negative result. The Widal was also negative. The laboratory report at this time had not been received, and for this reason we were unable to account for the continued temperature with almost a normal blood count. The temperature continued to drop gradually, and reached the normal on the morning of the tenth day after the operation. It continued to run up in the afternoon for four days, ranging from 99 to 100.2. Fourteen days after the operation, for the first time, the temperature remained normal for the whole twenty-four hours, and continued to do so for the remainder of the patient's stay in the hospital. The wound healed by first intention, the tube was removed at the end of the tenth day, and the drainage tract was closed at the end of three weeks. At the end of five weeks and a half the patient returned to his business, feeling in first-class condition, although a little weak.

Laboratory Report.—The following report was received from the Department of Bacteriology, Vanderbilt University, Medical Department:

"Cultures made from the pus obtained from the gallbladder showed that there was but one organism present. This organism was found to be a short bacillus, irregular in length, actively motile, and gram-negative. When grown in litmus milk the medium became acid after twenty-four hours, but by the twelfth day had become alkaline again. The milk was not coagulated. There was marked gas formation after twenty-four hours in glucose bouillon. On Russell's medium the surface was bluish-white in appearance, while the lower layer became red and contained considerable gas. On endomedia the colonies formed a pale, bluish-white, translucent growth.

"The bacillus was not agglutinated by stock serums which had been obtained from patients suffering from infection with the typhoid bacillus and with the paratyphoid bacillus B, but was strongly agglutinated by the serum from a patient suffering from infection with the paratyphoid bacillus A.

"The serum of the patient did not agglutinate stock culture of the typhoid bacillus or the paratyphoid bacillus B, but did agglutinate the paratyphoid bacillus A, in a dilution of 1:200.

"From the cultural reactions and the agglutination tests, the organism isolated in pure culture from the pus is probably the paratyphoid bacillus A."

COMMENT

The interesting feature of the case was the early involvement of the gallbladder, as the first symptoms presented by the patient were due to the cholecystitis. I am unable to find in the literature of paratyphoid how early and how often cholecystitis occurs. With the typhoid bacillus it is not unusual, but comes up later in the disease. I am of the opinion that a careful culture made in all cases of noncalculous suppurative and gangrenous cholecystitis will clear up, to a great extent, the uncertainty concerning the etiology that now exists in these conditions.

PAINFUL WEAK FEET

REPORT OF CASE

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Many persons with very flat feet have no discomfort whatever. They have no foot strain, and strain is what causes all, or nearly all, the distress and secondary symptoms in these cases. Conversely, in those who have pain, to relieve the strain is to cure the patient. Usually, a period of rest, a change of shoes (especially shoes that are too tight, too narrow, or too short) "arch supports," or more scientifically constructed braces, or a combination of several of these measures, will afford the patient great relief. I encounter a considerable number of patients, however, who have tried all of the above methods and who are still not relieved.

CASE REPORT

History.—A young man, 23 years of age, consulted me last July with a history of disability on account of painful feet, which had been increasing for about three years. From January to July, 1915, he had been able to do only three weeks' work at his trade, that of a foundryman. His feet were swollen and acutely tender. He had leg ache, with pain in the knees and hips. At times there was much cramping of the muscles of the legs—so much sometimes that he could not sleep at night. He had a family dependent on him and was extremely anxious to resume work. The feet were markedly everted and there was pronounced spasm of the peroneal muscles. He came to me seeking braces, but I dissuaded him from this and advised tenotomy of the peronei with a period of fixation of the feet in inversion in plaster of Paris.

Operation.—He accepted this advice and the operation was done the next day. An attempt to forcibly invert the feet under anesthesia before tenotomy was not successful. Accordingly all of the peroneal tendons were divided just back of the external malleolus and then the feet could easily be strongly inverted.

Plaster casts were put on with the feet in this position and the patient kept in bed for about two weeks. Then he was allowed to get around, still wearing casts for a total of six weeks. During the seventh week after operation the casts were removed, ordinary shoes were put on, and he went home.

Result.—He now (November, 1915) reports that at first he walked with his feet in an extremely inverted (overcorrected) position, but that there is only a slight tendency in that direction in one foot at present.

He stands and walks perfectly well and can even walk on tip toe (an impossible feat for most of these patients). He also relates that one day recently he husked corn for an entire afternoon. He wore ordinary shoes, following the wagon over rough ground with no discomfort except that he felt a little tired afterward.

He is resuming his work as a foundryman less than four months after operation and following three years of great disability.

A comparison of results by this method with those of other methods—especially forcible correction without tenotomy—leads to the conclusion that peroneal tenotomy (or, perhaps still better, resection of a portion of the peroneal tendons as suggested by Robert Jones) is much superior. The operation must, of course, be carefully done under strict asepsis and the after-care faithfully carried out or it will not fully succeed. If properly done, however, great relief may be had for a class of patients who suffer great distress and extreme disability, and who will not be relieved in any other way.

REPORT OF A CASE OF MERCURIC CHLORID POISONING

WITH PARTICULAR REFERENCE TO ITS TREATMENT

Harry M. Kay, M.D., Madison, Wis.

C. W., man, aged 47, July 3, 1913, at 2 p. m., took five tablets, 7½ grains each, of mercuric chlorid. Fifteen minutes after taking this drug, he was attacked with a desire to vomit and barely reached the toilet room when violent vomiting began. Three or four spasms occurred at the same time, and profuse perspiration started. This continued for about fifteen minutes, when there was a respite of about ten minutes. Then another attack of violent vomiting occurred, this attack being accompanied by simultaneous involuntary movements of the bowels. This lasted for about thirty minutes. His mouth began to fill with frothy saliva which, when expectorated, would remain connected to the mouth by a silver thread. Attacks of vomiting and diarrhea, less violent, continued to recur at longer intervals. The movements of the bowels took place at intervals of fifteen or twenty minutes. About 8 p. m., the patient drank some cold water, which seemed to give him considerable relief. During the entire night, he was subject to occasional spells of vomiting and involuntary movements of the bowels.

July 4, vomiting was much less frequent. The bowels still moved involuntarily, and there was continuous salivation. Sweating ceased during the night. Cramps did not recur. The patient drank some lemonade at noon and again at night; this seemed to give him considerable relief.

July 5, the symptoms continued, but were less violent, vomiting occurring but four or five times a day. In the morning the patient drank a pint of cold milk; at noon-time, he took lemonade; between times, ice-water; at evening, a bottle of beer.

July 6, vomiting had almost ceased. There was one movement of the bowels.

July 7, the patient felt considerably better. There was one attack of vomiting. Salivation still continued. The bowels moved about every hour; the stools were of the consistency of mucus and blood. Defecation was painful.

July 8, the patient did not vomit. The diarrhea was continuous. The stools were bloody, as on the previous day.

The foregoing history was obtained from the patient two months later.

July 8, five days after he had taken the poison, I was called to see the patient. His appearance much resembled that of a person in a uremic condition. He was semiconscious; he would answer an occasional question and go back to his partial slumber; the pulse was 120, temperature 99.4, and respiration 12. The patient gave me a history of *complete anuria for five days.*

The patient was taken to the hospital. On arrival he was immediately given a hypodermoclysis of 3,000 c.c. normal salt solution and put in a hot pack for twenty minutes. Catheterization resulted in 1 ounce of bloody urine. There was a good reaction from the skin. Profuse perspiration lasted about half an hour. During the night the patient slept very little. One of the troublesome complications with which we had to deal was hiccups; the patient hiccuped constantly during four days and nights; this was controlled somewhat by an occasional hypodermic of 1/100 grain of nitroglycerin.

July 9, the patient was again catheterized, and 2 ounces of urine resulted. Examination showed a faint trace of albumin, and a few pus cells and blood cells. There were no casts. Specific gravity was 1.008.

Every day for the ten following days, he was given from 2,000 to 3,000 c.c. normal salt solution hypodermoclysis and about the same quantity of normal salt solution proctoclysis. Following the hypodermoclysis, daily, the patient was put into an electric bath cabinet for from twenty to thirty minutes. The reaction of the skin was very marked. The patient was returned to bed and placed between blankets and the perspiration continued for two or three hours. The patient was catheterized the first three days, but on the fourth day he voluntarily voided 4 ounces of urine. The examination of this urine showed considerable albumin, and many granular and hyaline casts. The blood pressure at this time was 180 mm.

On the fifth day, the patient voided 10 ounces of urine, on the sixth day 15 ounces, and on the seventh day 20 ounces. From then on, the voidance of urine was about normal. The continuous examinations showed albumin, and also numerous hyaline and granular casts. When the normal flow of urine was established, he experienced relief from considerable pain in the region of the kidneys which had persisted since the early stages of the case.

During the first two weeks of his stay at the hospital it was necessary to give considerable attention to the condition of the bowels. The first few days there was a constant diarrhea, the stools having the consistency of mucus and blood. This we tried to correct with large doses of bismuth subnitrate and sodium bicarbonate. Later, constipation followed and was treated with mild enemas.

The mouth, also, was a source of great trouble. Fortunately, the patient had a partial plate which was removed and the gums treated. There was also constant salivation. Burning of the mouth was treated with alkaline mouth washes and also some potassium chlorid solution. The cardiac weakness and special symptoms were treated according as they developed. No morphin was given at any time. Occasional doses of 5 grains of veronal were given.

Diet consisted of milk, egg albumin, cereals, cream toast, etc.

The patient left the hospital July 22, apparently in good condition. The urinary examination at that time showed traces of albumin, a few blood cells and an occasional granular cast. Blood pressure was 130 mm., leukocytic count 8,000, red cells 4,300,000. Two weeks after the patient's discharge, he was back at his work. About a year after his discharge, I was fortunate enough to procure a specimen of urine. Examination showed that there remained no ill effects from the poison. I have not seen him since, but recently heard that he is in Milwaukee going about his work regularly and apparently in perfect health.

I wish to acknowledge my indebtedness to Prof. A. S. Loevenhart and Dr. Leopold Schumacher for their assistance and cooperation during the progress of the case.

Tuberculosis Number.—The September number of the Illinois *Health News*, the official monthly bulletin of the Illinois State Board of Health, is devoted entirely to the cause, prevention and cure of tuberculosis. The pamphlet is written for the benefit of the laity among whom it is intended to circulate, and recites in easily understood language the facts concerning this disease. It contains a number of pointed cartoons which emphasize various phases of the tuberculosis problem that should appeal strongly to the readers of the bulletin. Emphasis is laid on the danger of employing or depending on any so-called cures for consumption done up in a bottle.

Therapeutics

TUBERCULOUS MENINGITIS

Before discussing this almost hopeless disease, a review of our present knowledge of the physiology of the cerebrospinal fluid will enable us better to understand the causes of, and the danger from, cerebrospinal pressure.

We may epitomize our knowledge of this fluid as follows:

1. The cerebrospinal fluid is a secretion of the cubical cells of the choroid plexuses of the lateral ventricles and of the perivascular lymph spaces.[1]
2. Some barrier prevents most medicaments from reaching the cerebrospinal fluid by way of the blood stream, though bile pigments and sodium salicylate have been found in the cerebrospinal fluid.
3. The whole normal quantity of cerebrospinal fluid may be secreted in three or four hours.[2]
4. Normally the fluid has free passage from the lateral ventricles to the third ventricle, then through the aqueduct of Sylvius to the fourth ventricle, and from there is distributed through foramina into the subarachnoid space, and from this reservoir over the cerebrum, the cerebellum and downward into the spinal arachnoid.
5. The fluid is absorbed from the cerebrospinal canal by both blood and lymph vessels, but is mostly taken up by the veins; hence any obstruction to the venous circulation in the brain or meninges is more serious than a lymphatic obstruction in the same region.
6. A slowly developing cerebral pressure (compression) is better tolerated than a rapidly developing pressure. Also, rapid loss of pressure (decompression) is often dangerous. There is danger, therefore, from too rapid injection of an antitoxin or other fluid, and there are sometimes serious consequences from a too rapid withdrawal of cerebrospinal fluid.
7. The symptoms of any form of meningitis are due to the toxins of the germ infection plus increased cerebrospinal pressure. If this pressure is sufficient to cause coma, repeated spinal puncture will relieve it, and such drainage is theoretically indicated. Of course, in spite of the relief from such pressure the patient may die of toxemia.
8. Phenol (trikresol) preserved serums for intraspinal use have some elements of danger, although they are used with impunity by some clinicians.
9. Brain tumors mostly cause increased cerebral pressure, not by their growth or by local pressure, but by obstructing venous drainage of the cerebrospinal fluid.[3] Edemas of the eye grounds and choking of the disks seem to be caused by pressure in the optic nerve sheath, due to venous obstruction.
10. Dandy and Blackfan[4] have shown that hydrocephalus may be of two types, due either to an obstruction to the outflow from the ventricles, or to decreased absorption from the subarachnoid space. They also have found that there is but little absorption of surplus fluid in the ventricles. Hence if absorption is delayed in the arachnoids, operative interference gives no outlook of success.

Meyers[5] has given a numerical classification of the etiologic factors, symptoms and signs of 105 patients with tuberculous meningitis. A brief review of these factors will be of interest. As to sex, they were equally divided. The ages varied from 5 months to 11 years, with about one-third of the patients between the ages of 2 and 3, while over half were between the ages of 2 and 5. The greatest number of these cases occurred in January and March (in Boston). The variations in the number of cases occurring in the different months would probably change somewhat with the region and the climate investigated; therefore a monthly analysis is of but little value. Meyers found that 38 per cent. of these children had had no previous diseases; in the remaining 62 per cent. measles had occurred more frequently than any other disease. The average duration of the disease from the time of the beginning of symptoms was seventeen days. Meyers thinks the disease is not so rapidly fatal as it once was on account of lumbar puncture being now more frequently done, thus preventing early deaths from cerebral pressure.

Lumbar punctures were done from one to seven times to a single patient. He finds that lumbar puncture prevents convulsions, which become rare in the clinical history of the disease thus treated. Meyers believes that the advantage of lumbar puncture is not only in relieving pressure, but also in eliminating a certain amount of toxin. He has not found unpleasant symptoms to occur from the withdrawal of even a considerable amount of spinal fluid, even though it was not under high pressure.

The rule of Meyers is to allow the spinal fluid to drain until it runs at the rate of from 10 to 12 drops per minute, and to draw off from 20 to 30 c.c. of fluid, depending on the pressure. Eighty per cent. of the cases showed increased pressure, but varying of course, in degree. If the child lived, lumbar puncture was done once every forty-eight hours. If the fluid removed at the first puncture did not show the organism causing the meningitis, the later punctures usually did, and tubercle bacilli were found in 21.5 per cent. of these 105 cases of tuberculous meningitis.

When there was no increase of pressure in the cerebrospinal canal, there were almost no disturbances of the reflexes, and there seemed to be no relation between the amount of pressure and the presence of convulsions, bulging fontanel or retraction of the head. The fluid in this disease was never found really turbid, and was generally absolutely clear. The cell count of the fluid varied from 24 to 960 per cubic millimeter, with an average of 198. This cerebrospinal fluid cell count seems to vary with the leukocyte count of the blood: the greater the leukocyte count, the greater the number of cells in the spinal fluid. The prevailing type of cell in the spinal fluid was the small mononuclear, ranging from 90 to 100 per cent. in 67 per cent. of the cases, and from 80 to 90 per cent. in 20 per cent. of the cases. A fibrin clot was found in 70 per cent. of the cases, and a positive globulin test in about 50 per cent. The globulin content seems to vary directly with the cell count. The first part of the spinal fluid withdrawn at each puncture has a different cellular content from the last part that is withdrawn, the first part giving the greater number of cells.

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[1] Weed: Jour. Med. Research, September, 1914.

[2] Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, The Journal A. M. A., Dec. 20, 1913, p. 2216; Internal Hydrocephalus, Am. Jour. Dis. Child., December, 1914, p. 406.

[3] Frazier: New York Med. Jour., June 27, 1914.

[4] Dandy, W. E., and Blackfan, K. D.: Internal Hydrocephalus, Am. Jour. Dis. Child., December, 1914, p. 406.

[5] Meyers, A. E.: A Study of 105 Cases of Tuberculous Meningitis, Am. Jour. Dis. Child., May, 1915, p. 427.

One fourth of the cases showed a leukocyte count of the blood between 10,000 and 15,000; the lowest count was 8,500, and the highest 48,000. Absence of eosinophils, as in some other diseases, is considered an unfavorable symptom.

In those tested for the von Pirquet reaction, 63 per cent. were positive.

Twenty-five per cent. of the cases gave a history of definite exposure to tuberculosis. Thirty per cent. of the cases showed lung involvement, and had more or less cough. In 71 per cent. the eye reflexes were abnormal, but in 29 per cent. the pupils were equal, and reacted normally to light. Thirty per cent. showed normal patellar reflexes, and in 21 per cent. the reflexes were absent. There was a positive Babinski in 21 per cent. Fifty per cent. of the cases gave the Oppenheim sign. Ankle clonus was rarely present. Kernig's sign was present in 27 per cent. of the cases. Forty-three per cent. showed some signs of paralysis, with strabismus as the most frequent form. Seventy per cent. showed some rigidity of the neck, and, late in the disease, there was definite stiffening of the limbs.

While 39 per cent. of the patients had a history of convulsions before entering the hospital, as stated above, spinal puncture seemed to relieve or prevent convulsions. The subjective symptoms were drowsiness, indifference, and sometimes irritability. Eighty-five per cent. had vomiting as an initial symptom. This vomiting had no relation to the food taken, and in no case was there projectile vomiting as is so frequently seen in meningococcic meningitis. Pain was a frequent symptom.

In 18 per cent. of the cases the urine showed acetone, and sometimes slight traces of albumin.

Before death, pulse, temperature and respiration in about half of the cases became higher. Early in the disease the pulse was slow and irregular; later in the disease it became soft and rapid. In 64 per cent. of the cases there was a remission, with a drop in pulse and temperature; but this was apparently not a sign of improvement. Also, a patient, who may have been comatose, may brighten up and answer questions from twenty-four to thirty-six hours before death. Forty-two per cent. of the cases showed terminal bronchial pneumonia.

In no case in this series was there recovery. The treatment tried was sodium benzoate in large doses, and inunctions of mercury.. Hexamethylenamin was used in large doses, but even with these large doses there was never a trace of formaldehyd found in the spinal fluid. This seems again to disprove the value of this drug in cerebrospinal inflammations.

CEREBROSPINAL MENINGITIS

The treatment of meningococcus meningitis was thoroughly considered in The Journal, April 3, 1915, p. 1158, and again on page 217 of "Prevention and Treatment of Infections."

The value of the Flexner serum continues to be shown, but it is not generally recognized that it often has curative value, even after the child has been sick with this disease for days and even weeks. Smith[1] reports five cases all cured by meningococcus antitoxin, and four of these patients had been sick four days, nine days, twenty days and twenty-three days, respectively. These five patients not only were cured, but they recovered without sequelae. The history of these patients and the results show the value of repeated injections of the serum, and also the value of withdrawing the cerebrospinal fluid at frequent intervals, even after the fluid has become clear and there are no organisms to be found either microscopically or by culture.

All nervous symptoms in these cases were ameliorated after lumbar puncture. The fact that as much as 80 c.c. of fluid was withdrawn at once shows that normal absorption of fluid is interfered with, and that the removal of the surplus fluid is life-saving.

Smith's finding bears out the clinical fact recognized before the discovery of the meningococcic serum that repeated spinal punctures and drainage in cerebrospinal meningitis frequently save life.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

OUABAIN, CRYSTALLIZED (See N. N. R., 1915, p. 103).—The following non-proprietary preparation has been accepted:

G. Strophanthin (Thoms), Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MERCURY BINIODIDE OIL SOLUTION IN AMPULES, H. W. & Co.—One Cc. of solution contains red mercuric iodide in a neutral fatty oil, 0.1 Gm. (⅙ grain). Each ampule contains more than 1 Cc.

(Accepted for inclusion in the appendix to New and Nonofficial Remedies.)

Prepared by Hynson, Westcott & Co., Baltimore.

MERCUROL (See N. N. R., 1915, p. 197).—The following dosage forms have been accepted:

Mercurol Tablets, ¼ gr.—Each tablet contains mercurol 0.016 gm. (¼ grain). Prepared by Parke, Davis & Co., Detroit.

Mercurol Tablets, ½ gr.—Each tablet contains mercurol 0.03 gm. (½ grain). Prepared by Parke, Davis & Co., Detroit.

Mercurol Tablets, 1 gr.—Each tablet contains mercurol 0.065 gm. (1 grain). Prepared by Parke, Davis & Co., Detroit.

Mercurol Tablets, 2 grs.—Each tablet contains mercurol 0.13 gm. (2 grains). Prepared by Parke, Davis & Co., Detroit.

Mercurol with Potassium Iodide Tablets.—Each tablet contains mercurol ¼ grain and potassium iodide 1 grain. Prepared by Parke, Davis & Co., Detroit.

IODALBIN (See N. N. R., 1915, p. 157).—The following dosage form has been accepted:

Iodalbin and Mercurol Tablets.—Each tablet contains iodalbin 5 grains and mercurol 1 grain. Prepared by Parke, Davis & Co., Detroit.

LIQUID PETROLATUM. — Petrolatum Liquidum.—Liquid petrolatum is described in the U. S. Pharmacopeia. For description see the Pharmacopeia or Useful Drugs.

Non-Proprietary Preparation:

Liquid Petrolatum-Merck. — Liquid petrolatum made from American petroleum. It is colorless, nonfluorescent, practically odorless and tasteless. Specific gravity 0.855 at 15 C. or 0.846 at 25 C. It complies with the tests of the U. S. Pharmacopeia (8th ed.).

Merck & Co., New York.

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[1] Smith, W. A.: Cases of Epidemic Cerebrospinal Meningitis Treated with Flexner's Antimeningitis Serum, Am. Jour. Dis. Child., May, 1915, p. 418.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 25, 1915

On account of the large amount of space occupied by the Index in this issue of The Journal, certain departments have been omitted entirely and others abbreviated.

THE INDEX AND HOW TO USE IT

This number of The Journal contains the index to Volume LXV, July-December, 1915. If this were all the index contained, comment would be unnecessary. It is not, however, simply an index to the matter printed in The Journal, but covers also the articles that have appeared in the principal medical journals of the world — seventy-nine domestic and eighty-one foreign. It is a practical everyday working index to current medical literature, cross indexed by subjects, authors, etc. The preparation and issuing of such an inclusive index is a rather large undertaking. Those who have any idea of what this work means will appreciate this the more when it is realized that the index in this issue occupies 320 columns. Sometimes a doubt arises whether the index is fully appreciated by those who have occasion to look up bibliographic references. So many letters are received requesting The Journal to supply references to literature when the writer has the index at hand, that it is feared sometimes that readers do not fully realize its value.

To facilitate the use of the index it has been the custom to make a separate publication under the title, "Guide to Current Medical Literature." This includes, in addition to the index as it appears in this issue, the titles of articles arranged chronologically and by journals as they appear weekly in the Current Medical Literature department of The Journal.[1]

The loan feature by which our readers, for the sum of 6 cents in postage, may borrow certain foreign journals listed in the index is being appreciated more and more, and evidently is proving of great convenience and usefulness to physicians. There looms up the possibility that The Journal will be compelled to subscribe for extra copies of some of the more important foreign journals in order to supply the demand.

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[1] See advertising page 2.

RECENT ADVANCES IN KNOWLEDGE OF ALLERGIC PHENOMENA

An important step in the development of our knowledge of the phenomena of immunization was the demonstration that the treatment by injection of an animal with a foreign protein, bacterial or otherwise, leads to profound changes in the body which may endanger as well as protect the life of the animal when this protein is reinjected. These changes are characterized by the formation of antibodies which, while they increase the resistance of the animal against subsequent inoculations of toxins and microbes, certainly seem to render the body highly susceptible to poisoning in the instance of innocuous proteins. This apparent hypersusceptibility, which we speak of as allergy or anaphylaxis, may be so marked that a second injection of the foreign protein results in severe or even fatal injury to the animal. The clinical and pathologic picture of the allergic reaction suggests that the injury to the cells is due to a poisonous action, and an early explanation of anaphylactic phenomena assumes that under certain conditions toxic substances are liberated as a result of a reaction in vivo between the protein and its antibody. On such a hypothesis has been developed the widely accepted theory of parenteral digestion. Vaughan, using chemical methods, found that all proteins contain a similar poisonous group which can be liberated when the protein molecule is broken up. Furthermore, when this toxic product is introduced into an animal, a condition quite typical of anaphylactic shock results. Hence he concluded that protein sensitization is due to the development of a specific proteolytic ferment in the body which acts on the reinjected protein and liberates the toxic element. This supposition that a specific protease is formed when a foreign protein is introduced into the body has been developed also by Abderhalden and his associates. By the use of biologic methods, Friedemann and Friedberger were able to demonstrate that poisonous products could be obtained, for example, by treating red blood cells or bacteria with fresh unheated guinea-pig's serum (complement), and they thought that the toxic substance in anaphylaxis is formed from the antigen, and that in this process, which Friedberger assumed to be intravascular, the complement plays an active rôle. The fundamental hypothesis of the theory of parenteral digestion as developed by Vaughan, Friedemann, Friedberger and others has been generally accepted, but there is still much difference of opinion as to the matrix of the toxic fraction and the mechanism by which it is formed in the body.

While the principle that allergic phenomena are due to enzymatic proteolysis has been upheld, much doubt has been cast on the early assumption that the antigen furnishes the toxic product. Using insoluble substances such as agar, kaolin and barium sulphate instead of bacteria and red blood corpuscles, many observers found that these substances when treated with horse serum and then with guinea-pig serum yield a poison similar to the so-called anaphylatoxin of Friedberger. Such experiments strongly indicate that the toxic product is formed by the action of the complement on the horse serum absorbed by these insoluble substances. Again, the observations of Jobling and Petersen, recently reviewed in these columns,[1] emphasize the importance of the proteins of the animal itself as the matrix of the poison in the allergic reaction. Jobling and Petersen find that bacteria as well as agar, kaolin and chloroform, when mixed with fresh guinea-pig serum, absorb the antienzymes normally in the blood and thereby render the serum toxic. They assume that poisons are formed because the nonspecific proteolytic ferments of the blood are liberated through the absorption of the antienzymes by the antigen injected, and now the blood proteins undergo digestion. Does the complement enter into these proteolytic changes? The experiments of Friedberger and others indicate that there is a diminution of the complement during protein intoxication, but there is no other evidence of a convincing nature to establish the assumption that it plays an active rôle in the proteolytic process.

As to the localization of the allergic mechanism, recent researches permit certain definite statements. The earlier investigators, especially Friedberger, explained anaphylactic shock as entirely due to an intravascular mechanism; but later work points to the probability that cellular reactivity is of the greatest importance. Pearce and Eisenbrey, using transfusion methods, and Schultz, Dale and Weil, using isolated muscle tissue of sensitized animals, have shown conclusively that the condition of hypersensitiveness is largely determined by an increased capacity for reaction on the part of the fixed cells to the specific antigen. In other words, allergy is largely due to a changed reactivity of the cells, occasioned, we may assume, by an excess of specific antibodies or enzymes in the protoplasm. Such a condition easily explains both the acute death in sensitized animals and also the local skin reactions that we ascribe to allergy. But the experiments of Biedl and Kraus, Friedemann and others afford evidence that all the factors necessary for the production of allergic reactions may be present in the blood stream; hence, in the light of these two lines of evidence, it seems logical to conclude that both fixed cells and the blood stream are capable of furnishing the necessary agencies in the production of protein intoxication.

Although there is a great mass of experimental data at hand pertaining to allergy and associated phenomena, the facts are not sufficient to warrant any very definite conclusions. The injection of a foreign protein into the body really does not render the body any more sensitive than before to that protein, but increases the power of reaction whereby the substance is more easily broken up. Furthermore, in this reaction changes take place of both a chemical and a biologic nature, a correlation of which is fundamental in the thorough understanding of the phenomena of anaphylaxis.

The application of the knowledge of the allergic phenomena to the study of bacterial infection and immunity is difficult, for numerous factors enter into the reaction which are not present in the instance of unformed proteins. Active sensitization of animals with bacterial proteins is not difficult to accomplish, however, and the treatment of bacteria in vitro with active serum results in the formation of acutely toxic products. Doerr considers the bacterial cell as representing a group of antigens which, when liberated by lytic substances in the body, are free to act as unformed proteins. Whether this explanation or that of Jobling and Petersen contains the solution of the problem, it still remains that whatever proteolysis takes place, toxic products may be liberated. Thus in acute infectious diseases the invading bacteria stimulate the production of specific antibodies, which react with the bacteria, leading to the liberation of protein constituents of the bacterial cell. On this basis the incubation time as well as the general reaction of the infectious diseases may be explained (von Pirquet). It is interesting to note that such an explanation would not be illogical in case of the acute eruptive diseases. The possibility of the development of complete immunity against unformed, primarily harmless proteins seems questionable, for it has been demonstrated that animals with high antibody contents in their blood die following subsequent inoculations of the antigen. But in the instance of cellular proteins, that is, microbes, a definite resistance is often developed which usually is characterized by a marked increase in the power of phagocytosis, a process the influence of which, if any, we are not able to trace in the reactions against unformed proteins.

NEW FOOD GRAINS—PROSO AND KAOLIANG

We are accustomed to novelties in drugs. Scarcely a week passes without the heralding of some new synthetic chemical compound, plant ingredient or animal tissue constituent to which therapeutic potency is attributed. It requires not only a clear memory but also a critical judgment to cultivate a progressive and proper attitude of mind in the midst of such incessant therapeutic suggestions. Far rarer are the proposed innovations in the domain of foods. Now and then some unusual fruit or nut or green vegetable is brought to the attention of the public; but our "staple" crops persist unchanged in popular favor. Corn, wheat, rye and potatoes each have a preferential place in dietary esteem in different localities, depending on tradition and geopraphic and economic conditions. The praises of millet seed and sorghum grain as human foods have a truly novel ring, however, even in these days of possible shortage in the usual cereal food supply of some of the European countries.

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[1] The Antiferments of the Blood, editorial, The Journal A. M. A., Oct. 30, 1915, p. 1554.

Millet, as is well known, has been cultivated for forage and grain since ancient times. To Americans the name will at once suggest a fodder for animals, and its significance is not enhanced by the familiar designation of "hog millet." Professor Nansen[1] of the South Dakota Agricultural Experiment Station, who has investigated the possible use of millet as food for man, has suggested the substitution of "proso," the ancient Slav name for the grain. The seed of proso millet, although practically unknown in America as a food for human consumption, is a familiar article of diet in Russia and India. It is said that during the Russian famine of 1890 proso millet bread was for a long time the only food remaining between the peasantry and starvation. The grain can be milled and cooked in the same ways as are many other cereals. The composition of hulled proso is much like that of patent wheat flour, being even richer in protein. The grain can be used whole, ground like corn meal and thus made into palatable dishes, or used as flour. The lack of gluten makes it necessary to combine proso with wheat flour if it is to be converted into a good bread. A "public" test of proso as a table cereal was made at the South Dakota State College of Agriculture early in the present year, so that it has already experienced an "official introduction." From the standpoint of practical agriculture proso deserves consideration because, like kafir corn, it represents a crop which can be produced in dry seasons or in arid regions where the attempts to raise the more popular cereals are often discouraging.

Another plant product tested for its possible usefulness as a human nutrient is kaoliang, a drought-resistant grain sorghum long used in Africa, India and parts of Asia.[2] This plant, once a tropical annual, also can by careful selection be extended as far north as Indian corn on this continent. Specimens of hardy kaoliang from China reached America as early as 1866, but were discarded because they seemed of no value for sugar making, the only use to which the sorghum plant was put at that time. This sorghum seed can be milled; and when mixed with gluten-yielding flours kaoliang contributes to the production of palatable baked products as does kafir flour which has lately been exploited as a human food.[3]

Variety in diet is a physiologic desideratum, and changes in our food staples occasionally become a climatic, agricultural, or economic necessity. Sometimes revolutions occur in the domain of popular nutrition. The potato was introduced in this way. We must at least be equipped with detailed information of the increasing dietary and culinary possibilities in this field.

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[1] Nansen, N. E.: Proso and Kaoliang as Table Foods, South Dakota Agric. Expt. Sta. Bull. No. 158, March, 1915.

[2] Ball, C. R.: The Importance and Improvement of Grain Sorghums, U. S. Dept. Agric., Bureau Plant Industry Bull. 203, Washington, 1911.

[3] See U. S. Dept. Agric. Farmers' Bull. 559, 1913.

THE EFFECT ON THE OFFSPRING OF LEAD POISONING IN THE FATHER

In articles on industrial lead poisoning, it is usual to find the statement that this form of intoxication results in fetal death and in death of offspring soon after birth, not only when the mother is the victim of the poisoning, but also when the mother is normal but the father "leaded." As far as maternal lead poisoning is concerned, there seems to be abundant evidence that women who work in lead are far more likely to abort than are women in ordinary factory work. Legge[1] abstracted from the reports of British factory inspectors for the year 1897 the following statistics concerning women lead workers: Of 77 married women, 15 were sterile; among the 62 who became pregnant, 15 never bore a living child. The stillbirths numbered 21, the miscarriages 90; 101 living children were born but 40 of them died, leaving 61 living children as the result of 212 pregnancies. Another striking report comes also from the British factory inspection service. Oliver[2] quotes Reid's figures as follows: For 100 mothers engaged in housework, there were 43.2 miscarriages and stillbirths; for 100 mothers engaged in mill work, not lead, 47.6; for 100 mothers, in lead work before marriage, 86.0; for 100 mothers, in lead work after marriage, 133.5. Tardieu[3] reported to the French government in 1905 that 608 out of 1,000 pregnancies in lead workers resulted in abortion. Animal experiments also, carried on by Oliver, by Glibert, and by Legge and Goadby, show that death of the fetus may be produced by poisoning the mother with lead.

In those countries in which many women are employed in the lead industries, these facts are of great importance and have resulted in laws forbidding the employment of female labor in certain processes. In the United States, few women employees are exposed to lead poisoning, and we are more vitally interested in the question whether or not paternal plumbism has any effect on the germ. The conscientious seeker after evidence will find far less to support the theory of paternal influence than of maternal; indeed, he will wonder at the positiveness on this subject shown by many textbooks on industrial diseases. There is the report of Chyzer[4] which is often quoted, concerning degeneracy among the children of Hungarian potters. But pottery dipping is a house industry in the Hungarian villages, and there is ample opportunity both for maternal poisoning and for poisoning of the children after birth. A few statistics are furnished us from France. Rudeaux[5] in 1905 stated that out of 442 pregnancies in women married to lead workers, 66 ended in abortion and 241 in premature birth. The most often quoted report on this subject is Constantin Paul's,[6] written in 1860. Lewin[7] seems to have borrowed it in 1904 and republished Paul's figures without quotation marks; and as German medical literature is read more than French in this country, the figures are almost always attributed to Lewin. They are as follows: Seven wives of lead workers who had given evidence of plumbism had 32 pregnancies, of which 11 ended in abortion, and 1 in stillbirth. Of the 20 children born living, 8 died in the first year, 4 in the second, 5 in the third and 1 after the third, leaving only 2 alive out of the 32 pregnancies.

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[1] Legge: Jour. Hyg., 1901, i, 96.

[2] Oliver: Brit. Med. Jour., 1911, i, 1906.

[3] Tardieu: Poisons industrielles, Paris, 1905.

[4] Chyzer: Chir. Presse, Budapest, 1908, xliv, 906.

This is, after all, slender evidence on which to base positive statements on so important a matter as the effect of paternal lead poisoning on the germ, and we are grateful for two experimental studies in this field which have just been published independently. Cole and Bachhuber,[8] working at the Wisconsin Agricultural Station, fed lead acetate to rabbits and fowls. Experiments with rabbits resulted in a mortality of young during the first four days after birth of 47.7 per cent. for offspring of leaded males as contrasted with 29.2 for the offspring of normal males. The average weight at birth was 49.8 grams for the former, 59.0 grams for the latter. With Leghorn hens the results were similar. When the hen was bred to a cock which had been fed lead acetate, 27.5 per cent. of the embryos in fertile eggs died and 14.1 per cent. of the chicks born alive died in less than three weeks, while the corresponding figures were only 17.2 per cent. and 3.7 per cent. when the cock was normal.

C. V. Weller[9] of the University of Michigan used commercial white lead — basic carbonate — and fed it in capsules to guinea-pigs. The experiments which interest us especially are those with leaded males, and these are some typical results which he obtained:

	Free Female Mated with:	
	Free Male	Lead Male
Number of offspring........	58	65
Average birth weight, grams.	81.5	66.3
Number stillborn	3	3
Died first week..............	2	9

The effect of alternate matings of the same normal female with a normal and with a lead male is also interesting. For instance, the birth weights of the offspring of a free male were 79 gm. in two instances, and of a lead male 54, 47 and 40 gm.

The results of paternal lead poisoning in guinea-pigs are shown, not in sterility or in stillbirth, but in reduction of weight at birth, and this underweight persists through life. Next to this the most striking change is the high rate of mortality during the first few days after birth. Nine out of 65 offspring of leaded males died during the first week, but only two out of 105 offspring of control males.

In a lecture on industrial plumbism delivered in London in 1911, Thomas Oliver declared that from the purely physical point of view a nation's strength is measured by its reproductive powers and the high percentage of fitness of its children. He then went on to point out the danger to the race of industrial plumbism, especially as it affected potential mothers. In our country this danger is largely confined to men; but that it is a serious evil in our lead trades has been shown by numerous state and federal investigations. If we are to believe that this results in impairing the efficiency not only of this but also of the coming generation, it would make a strong argument for the legal regulation of the lead trades.

PUTREFACTION, PHENOLS AND PROTECTIVE MECHANISMS IN THE BODY

It has long been known that when urines are distilled with a mineral acid, phenols may be recovered in the distillate. This result is obtained not only when phenol (carbolic acid) itself is absorbed through some channel into the circulation, but also under ordinary conditions of diet and health in which the antiseptic has never been employed. Baumann showed that in the urine itself the phenols are present in the form of ethereal compounds. Among these are the organic or "conjugated" sulphates and the glycuronic esters of the phenols. The fact that in "carbolic acid urines" the phenol occurs in the form of an ethereal sulphate early became a classic example of the detoxicating power of the animal organism. This was comparable with the protective reaction by which indol derivatives were found to be excreted as ethereal sulphates, particularly in the form of the clinically familiar indican of the urine.

At first it was believed that the phenol derivatives in the urine owe their origin to plant products in the food; for the urine of herbivora was observed to be particularly rich in its yield of the phenols. The progress in the study of the chemistry of putrefaction presently developed a new interpretation. In man the elimination of phenol was seen to be increased by a diet rich in proteins. The latter yield tyrosin, which can be converted into phenol and cresol by putrefactive changes. Here, then, was the key to the sequence of events. Proteins, tyrosin, intestinal putrefactive changes with production of phenols and their alimentary absorption, condensation to phenol esters, and excretion in the urine — these were the steps. Like indican, which owes its origin to the tryptophan complex of the proteins, the phenols likewise became an index, so to speak, of putrefactive conditions in the bowel. By vigorous catharsis phenols are made to disappear from the excretions; whereas in severe constipation or intestinal obstruction they are reported to be increased in amount.

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[5] Rudeaux, quoted by Thompson: The Occupational Diseases, New York, 1914, p. 257.

[6] Paul, Constantin: Arch. gén. de méd., 1860, i, 513.

[7] Lewin: Berl. klin. Wchnschr., 1904, xli, 1074.

[8] Cole and Bachhuber: Proc. Soc. Exper. Biol. and Med., 1914, xii, 24.

[9] Weller, C. V.: Jour. Med. Research, 1915, xxxiii, 271.

In the light of all this interesting information it seemed at first to be merely a question of expediency as to which of the various excretory products of putrefaction should be measured to furnish a helpful clinical guide to intestinal conditions. The indican tests, being easily applied, were earliest in use and still enjoy a widespread popularity. When they are "checked up" by estimations of the ethereal sulphate in the urine it is frequently found that there is a lack of correspondence between the two. Either other substances than indol compounds are eliminated as conjugated sulphates, or the indican precursor may find its way into the urine in a form other than sulphate. Both circumstances are known to occur. The phenols may add to the content of "ethereal" sulphate, and the indol derivatives may leave the body as glycuronates. And when it comes to a practical application of the urinary content of either phenols, indican or ethereal sulphates to the question of the extent of the putrefactive conditions in the bowel, experience has shown that the diet as well as the bacterial invaders plays a dominant part. If the food is deficient in protein precursors of these peculiar excretory products the latter are necessarily reduced in amount. Without a suitable pabulum the putrefactive micro-organisms cannot manifest their characteristic reactions.

In all of this development of our knowledge of the interrelations between putrefactive products and urinary derivatives, it has for the most part been tacitly assumed that the conversion of the harmful into the more harmless product is ordinarily quite complete. Certain it is that the ethereal sulphates of the urine are decidedly increased after the deleterious compounds have been introduced into the organism. Considerable interest will be awakened, therefore, by the recent communication of Folin and Denis[1] demonstrating that the phenols are by no means quantitatively converted into conjugated phenols in the body. This fact has been established by the use of an improved method of analysis.[2] The free phenols, of which the most important quantitatively is doubtless paracresol, represent from 30 to 90 per cent. of the total output. In addition to this unexpected finding, the excretion of total phenol products in the urine appears to be much greater than is indicated by the phenol figures heretofore recorded in the literature. The new data furnished by Folin and Denis indicate 0.3 to 0.5 gram of "total phenols" in a twenty-four-hour quantity of human urine. Normal human subjects (as well as larger animals) yield comparable figures, and those furnished by infants and children are proportionate. In some children there is little or absolutely no conjugation, the whole of the phenols being excreted in the free form. As the Boston investigators remark, this is unexpected when considered from the prevailing concept of the protective mechanism by means of which the phenols are supposed to be detoxicated through transformation into conjugated compounds. The phenol excretion tends on the whole to be much higher on protein-rich diets and lower on a regimen containing smaller amounts of protein.

The possible bearing of these newer discoveries on current conceptions of the pathology of nutrition is intimated by Folin and Denis. In general, they state, biologists are inclined to assume that the protective processes are adequate — that certain poisonous or deleterious substances are easily converted into harmless compounds; while the clinicians are constantly considering established or possible deficiencies and generally believe in "auto-intoxications" as an important feature in the etiology of diseases. The inadequacy of some of these supposedly perfect protective mechanisms hitherto championed by the physiologists has been brought to light in the case of the phenols.

THE LIVER AND FAT METABOLISM

A considerable number of diseases either border on or are actually classified as attended with an infiltration of fat in some of the organs. The abnormal states of the body in which an infiltration of the liver, for example, has been observed include such diverse and unlike cases as diabetes, poisoning with phosphorus, phlorizin, chloroform or alcohol, emaciation, pernicious diarrhea, etc. A symptom which is common to such a variety of pathologic conditions cannot well represent the fundamental etiologic factor in each instance; on the contrary, it is far more likely that the common feature is the outcome of, or is conditioned by, some primary disturbing agency. As one of the authorities in this field says, the common factor of the above-named pathologic conditions "is undoubtedly a disturbed or deficient metabolism either of protein or of carbohydrate." In all these cases the fat reserves must be mobilized to supply material for the energy changes ordinarily furnished by the other foodstuffs.

Why the liver should be singled out so conspicuously for this "mobilization" of fat has long remained obscure. More recent comparisons of the fats ordinarily present in the hepatic tissue with those found in the usual fat-storage localities of the adipose tissue have furnished the clue to a possible explanation. The fat from the fat depots like the subcutaneous tissue, the omentum, mesentery, and adipose tissue about the kidney consists essentially of the glycerids of fatty acids, such as palmitic, stearic and oleic acids. Of these the oleic acid is an "unsaturated" organic compound. Without elaborating the chemical details it may suffice to say that the content of unsaturated fatty acids in any fat is indicated by the amount of iodin it can absorb. The "iodin values" of the fats therefore have a useful significance in this respect. It appears that under ordinary circumstances the fats of the liver, heart and kidney have much higher iodin values than the fats which are deposited in the fat depots of the body and are derived directly from the food fat as well as by synthesis from other absorbed nutrients.

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[1] Folin, O., and Denis, W.: The Excretion of Free and Conjugated Phenols and Phenol Derivatives, Jour. Biol. Chem., 1915, xxii, 309.

[2] Folin, O., and Denis, W.: A Colorimetric Method for the Determination of Phenols (and Phenol Derivatives) in Urine, Jour. Biol. Chem., 1915, xxii, 305.

The unsaturated fatty acids are apparently more readily oxidizable than the normal compounds. Leathes[1] has expressed the view that the liver exercises the function of "desaturating" fats brought to it so that they are prepared for the subsequent metabolic processes. "It looks," he fancifully remarks, "as if the work of the liver consisted in an operation which may be compared to the drying of gunpowder. The fats we take in our food are remarkably unreactive substances, and it has always been one of the most astonishing chemical achievements of animal cells that they should be able to burn up completely and cleanly as they do so stable a structure as saturated fatty acids like palmitic or stearic acids. They are wet gunpowder. And the body stores its gunpowder wet, and safely removed from the inflammatory operations of busily working cells. When the orders for mobilization are issued this wet powder is conveyed to the drying chambers in the liver, and from there distributed to the fighting line in a proper condition for use. There are times when the stress of this work is manifestly too great. Too active a mobilization of stored fat, or too little activity in dealing with it on the part of the liver, will result in an accumulation of the unfinished product in that organ. A fatty liver is then the result, and the fatty acids which it contains are found to have a low iodin value. There is an accumulation of wet powder."

In harmony with the foregoing, Mottram[2] has recently pointed out that, in the case of infiltration, the fat is in the liver for physiologic, not pathologic, reasons. When there is need for fat for energy transformations, particularly when the other foodstuffs such as sugar are not available for nutritive purposes, the liver is found to be infiltrated with fats, presumably in order to be chemically transformed in some degree before they are handed on for use elsewhere. It is interesting to recall that absorbed food fat is not carried directly to the liver as the other digestion products are; but it enters the circulation directly by way of the thoracic duct and thus avoids the hepatic cells before it is carried to the storage places for fat. Mottram suggests that when energy is wanted by the body in a nutritive emergency as the result of some pathologic condition, it might be advantageous to save the liver the work of desaturation by feeding fats containing a high percentage of unsaturated fatty acids. These are found in some of the fish oils like cod liver oil, and in such food products as sardines and herring. Opie and Alford[3] have noted that ordinary fat is not an advisable food in conditions like chloroform poisoning, in which infiltration ordinarily occurs in notable degree.

The view which presents infiltration of the liver as a physiologic response rather than a pathologic consequence is supported in an indirect way by the usual absence of degenerative histologic features in this organ. It explains the fatty infiltration of the liver observed during late pregnancy and early lactation.[4] Evidently the fetus is greedy for unsaturated fats, which are worked up for its benefit by the liver.

It is generally accepted that acidosis, in the sense of ketonuria, is related in the body to the fats as its antecedent. Ketonuria occurs under the same conditions that manifest fatty infiltrations of the liver. When the isolated liver is perfused with fatty acids the acetone substances may arise. Mottram[2] postulates that just as the infiltration is an expression of a physiologic function (desaturation) in fat metabolism, acidosis leading to ketonuria is the result of the fatty acid pursuing an abnormal path of metabolism, possibly as a result of overwork of the liver. Either condition is relieved when carbohydrate is available. Whether the usefulness of unsaturated oils is likewise indicated, as has been suggested, remains to be ascertained.

Current Comment

THE BILE AND CHOLESTEROL EXCRETION

There appears to be little doubt at present that cholesterol (or, as it is sometimes designated, cholesterin) can be absorbed in the alimentary tract from such food intake as may contain it. This has been ascertained in particular from the fact that after suitable feeding of foods rich in cholesterol, the content of this substance in the blood may be increased. Cholesterol is found, among various tissues and fluids of the organism, in the bile. The origin of the biliary cholesterol, which betrays itself in a familiar pathologic way in the formation of gallstones, is by no means certain as yet. It may be derived from disintegrating red blood cells, or it may represent food cholesterol that is being eliminated in the only excretory fluid that contains a suitable solvent for it. Whether the bile presents a normal or physiologic mode of excretion for cholesterol has been much debated. In so far as the evidence on this subject is derived from an examination of bladder or fistula bile, it must be remembered that the cholesterol thus found may have its origin in the walls of the biliary passages. Naunyn always defended the view that this is the case. Inasmuch as bile from the gallbladder is much richer in cholesterol than that from a fistula it was contended that this substance is added to the bile largely by the epithelium of the bladder. The evidence is, however, by no means conclusive. A number of feeding experiments have been undertaken by various investigators at different times to ascertain whether an abundance of cholesterol in the diet would be attended with an increase of the substance in the bile. The results, from which it was hoped to learn whether absorbed cholesterol would be excreted again in the bile, have been rather conflicting or indecisive. In the newest experiments conducted by D'Amato[1] at the University Medical Clinic in Naples, on dogs with biliary fistulas, it appears that a diet rich in food containing cholesterol does increase the content of cholesterol in the bile. But the increment is so slight and insignificant in comparison with the quantity of cholesterol fed that there is no real justification for the contention that the bile forms a prominent mode of excretion for the substance under discussion. Furthermore, there is no convincing evidence that cholesterol is converted, as some have assumed,[2] into cholic acid, which enters so largely into the make-up of the bile salts.

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[1] Leathes, J. B.: The Functions of the Liver in Relation to the Metabolism of Fats, Harvey Lectures for 1908-1909, p. 213.

[2] Mottram, V. H.: Fat Metabolism and Its Relation to Acidosis, Canadian Med. Assn. Jour., July, 1915.

[3] Opie and Alford: Jour. Exper. Med., 1915, xxi, 21.

[4] Cf. Coope, R., and Mottram, V. H.: Fatty Acid Metabolism in the Liver, Jour. Physiol., 1914, xlix, 23; 1915, xlix, 157.

OSTEITIS DEFORMANS

Any disease which can claim a record of scarcely more than 200 authenticated cases in the modern literature of clinical medicine surely deserves to be classed among the rarer maladies. This situation applies to osteitis deformans, which Sir James Paget, who described it in 1876, termed a "rare disease of bones." Although in its advanced stages it presents an unmistakable clinical appearance, there have been comparatively few scientific investigations of osteitis deformans. Heredity, syphilis and other bacterial infections have at times been regarded as predisposing causes; but there is little to justify this belief in the light of more critical analysis of the case reports and laboratory findings. Neurotrophic factors have seemed to some students of the disease to be more likely causes of the bone dystrophy, perhaps because so little that is definite can be postulated in relation to the association of bone defects and nervous disorder. An opportunity to make a study of new cases of osteitis deformans has arisen at the Jefferson Hospital in Philadelphia. The unusual feature of the investigation there[3] is the detailed examination of the metabolism in two cases, one advanced and the other early. In the advanced case there was a pronounced retention of calcium, magnesium and phosphorus. This metabolic picture is thus to a certain degree the reverse of that seen in osteomalacia. In the latter disease, the skeletal structures of the organism have been depleted through the resorption of both organic and inorganic substances. Inasmuch as calcium is the principal element concerned in bone growth, the significance of the observed high retention of this element in osteitis deformans may be related to the abnormal development of certain portions of the skeleton. It must be stated frankly, however, that some students of the disease assert that the increased development of the bone or bonelike structure is not accompanied by the calcification of these parts, though the few available analyses tend to support the evidence of positive calcification. The association of acromegaly and gigantism with disease of the pituitary gland, and likewise the osseous lesions of cretinism in which the thyroid is unquestionably concerned, have justified the Philadelphia investigators in a hypothesis in regard to osteitis deformans. They recall that the interrelation of disorders of the bone metabolism and perverted function of some of the ductless glands has been verified in certain cases. This fact, together with other observed features of abnormal calcium metabolism, leads them to the belief that Paget's disease also is a disorder of bone metabolism probably dependent on the absence or perversion of some internal secretion. Every available opportunity in the future ought to be utilized to consider the etiology of osteitis deformans critically in the light of the suggestions here recorded.

THE KIDNEYS AS A FACTOR OF SAFETY

"For a score of years, or more, in many of us the kidney is gradually losing some of its valuable material from one cause or another without any symptom, without a reminder sufficient to spoil our pleasure of life or to hamper our activities. Not until that luxurious surplus is approaching its exhaustion do we get a warning. But then our work is mostly done and our time limit nearly reached." This quotation, from a lecture by Meltzer[1] on the factors of safety in animal structure and economy, may serve to remind us not only that we are continually producing metabolic products which would be harmful if they were not promptly removed from the body, but also that our organism is doubtless absorbing substances from the varied intake of food mixtures which might be expected now and then to exhibit toxic effects, were it not for the efficiency of the excretory organs. In other words, it is not at all improbable that we frequently escape the detrimental possibility of ingested products because they are excreted so promptly and completely that they cannot accumulate in sufficient concentration to do harm in the body. The actual danger never reveals itself unless the eliminating organs have had their potency impaired in some way. An interesting illustration has recently been furnished

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[1] D'Amato, L.: Uebt das in der Nahrung enthaltene Cholesterin einen Einfluss auf die Cholesterinausscheidung in der Galle aus? Biochem. Ztschr., 1915, lxix, 217.

[2] Compare Grigaut: Le cycle de la cholestérinémie, Paris, 1913.

[3] Da Costa, J. C.; Funk, E. H.; Bergeim, Olaf, and Hawk, P. B.: Osteitis Deformans: A Report of Five Cases with Complete Metabolism Studies in Two Instances and a Review of the Literature, Jefferson Medical College and Hospital Publications, 1915, vi, 1.

[1] Meltzer, S. J.: The Factors of Safety in Animal Structure and Animal Economy, the Harvey Lectures, 1906-1907, p. 139.

The Oath of Hippocrates

I Swear by Apollo, the physician, and Aesculapius, and Health, and All-heal, and all the gods and goddesses, that, according to my ability and judgment, I will keep this oath and stipulation: to reckon him who taught me this art equally dear to me as my parents, to share my substance with him and relieve his necessities if required; to regard his offspring as on the same footing with my own brothers, and to teach them this art if they should wish to learn it, without fee or stipulation, and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the art to my own sons and to those of my teachers, and to disciples bound by a stipulation and oath, according to the law of medicine, but to none others.

¶ **I Will** follow that method of treatment which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest any such counsel; furthermore, I will not give to a woman an instrument to produce abortion.

¶ **With Purity** and with holiness I will pass my life and practice my art. I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick and will abstain from every voluntary act of mischief and corruption; and further from the seduction of females or males, bond or free.

¶ **Whatever,** in connection with my professional practice, or not in connection with it, I may see or hear in the lives of men which ought not to be spoken abroad, I will not divulge, as reckoning that all such should be kept secret.

¶ **While I Continue** to keep this oath unviolated, may it be granted to me to enjoy life and the practice of the art, respected by all men at all times, but should I trespass and violate this oath, may the reverse be my lot.

by Smillie,[2] who has found that a potassium salt, such as the chlorid, in a dose which is harmless to normal individuals may be injurious in nephritis. Inasmuch as suitable patients may react to potassium chlorid without showing adverse effects from comparable quantities of sodium chlorid, the "salt action" cannot account for the effect. It may be assumed, therefore, in the constant presence of the chlorin ion, that the toxicity is due to the potassium ion. Smillie has found that rabbits die with great suddenness after an ingestion of 1 gm. (15 grains) of potassium chlorid, if they have acquired an experimental uranium nephritis of a degree sufficient to increase the nonprotein blood nitrogen to 100 mg. per hundred cubic centimeters. The fatal outcome is not due to "salt action" but probably to the action of the potassium ion on the heart muscle. Comparable acute poisoning was also observed in human nephritis. This acute intoxication occurs probably because the salt, which normally is readily absorbed and very rapidly excreted, in nephritis is readily absorbed but not excreted, thus reaching a concentration in the blood which is injurious. Such a demonstration is highly significant in its relation to the management of diet in nephritis. Some of our foods, notably the vegetables, are particularly rich in potassium. Smillie refers to a calculation indicating that a man who took a large part of his food in the form of potatoes might have an intake of ten times the fatal dose, calculated on the basis of experience on animals with kidneys removed. Bunge has actually reported taking more than half an ounce of potassium salts in a day. Were it not, says Smillie, for the fact that potassium salts are so rapidly excreted by the kidneys in health, the effects might be very serious.

COOPERATION IN INDUSTRIAL HEALTH INSURANCE LEGISLATION

At the request of the American Association for Labor Legislation, the Council on Health and Public Instruction of the American Medical Association has appointed a committee to assist in drafting a health insurance bill to be introduced into the legislatures in session in 1916. The committee consists of Dr. Alexander Lambert of New York, chairman, Dr. Henry B. Favill of Chicago, and Dr. Frederic J. Cotton of Boston. The preparation of this bill and the plans for its immediate introduction into several legislatures have removed health insurance from the realm of academic discussion and have placed it in the front rank of the pressing practical questions confronting the medical profession. The Association for Labor Legislation, which is responsible for this bill, has been influential in securing the enactment of workmen's compensation laws in thirty-three states within five years. It has also worked for protection against industrial disease, and drafted the federal law abolishing the use of poisonous phosphorus in matches. In its legislative program it has been backed by progressive employers, by representative labor leaders and by members of the medical profession interested in industrial diseases. Every extension of its activities in the field of industrial hygiene has made increasingly clear the absolute necessity for making systematic provision for sickness of working men, which is possible only through a comprehensive system of health insurance. In preparing its bill, which is the next step in health legislation, the association wisely has recognized that adequate medical care is of the first importance, both to the wage earner and to his family, and it has been equally wise in asking the cooperation of medical men in drafting those provisions which affect physicians. The certainty that such laws will be enacted within a few years, the success of the American Association for Labor Legislation in obtaining the legislation it advocates, and the consideration shown to the medical profession have convinced the Council on Health and Public Instruction that cooperation is desirable and opportune. This close cooperation will guarantee that the best interests of the medical profession under health insurance will be borne in mind at every step.

THE INCORPORATION OF THE AMERICAN MEDICAL ASSOCIATION

On last Monday, December 20, the Supreme Court of Illinois rendered a ruling — it was not a decision, as the newspapers stated, but simply a ruling — in the case of *Lydston* vs. *the State's Attorney*. The newspapers, in sweeping statements — inspired? — have carried the impression that the ruling is against the American Medical Association; that the officers, including trustees, are holding their offices illegally; that a new election must be held immediately, etc. Nothing could be farther from the truth. It is the old story; it is merely another step in the case started about the time of the meeting of the American Medical Association in St. Louis in 1910, at which time Lydston tried to compel the state's attorney to bring quo warranto proceedings against the Association. The American Medical Association has not yet technically been brought into the case; thus far the issue has been between Lydston and the state's attorney. The technical announcement of the ruling just made is "*Hoyne, State's Attorney,* vs. *People ex rel;* Lydston; petition certiorari denied." The state's attorney tried to get a decision from the Supreme Court, but the Supreme Court declined to hear the case at this time and therefore denied the writ of certiorari.

Foreign Technic.—In technic the general observation is made that the foreign operator does much more of his own work than is the rule with us. He assists himself notably. He often ties, cuts and sponges himself. Yet he obtains no small speed. His assistants are usually far better trained than ours because they work longer with him. Man or nurse, the same individual has learned to know, by years of association, just what the next need or move of the surgeon is to be, and the assistant, even when changed, as in Britain, does not stay less than six months, and is a senior on salary. The operator may even thread his own needles and lay out his own simplified outfit. Lessened infection is said to result from a minimum number of persons in contact with instruments, sponges and wound.—Robert L. Dickinson.

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[2] Smillie, W. G.: Potassium Poisoning in Nephritis, Arch. Int. Med., August, 1915, p. 330.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Municipal Clinic.—A municipal clinic for the treatment of tuberculosis in Sacramento is practically assured. A site has been secured at Second and Q Streets, and the clinic will be opened early in the year.

Physician Wins Malpractice Suit.—In Judge Woods' court, November 12, a jury rendered judgment in favor of Dr. James C. Negley, Los Angeles, in the suit for $30,000 brought against him by Agatha Wells for alleged malpractice.

Hewlett to Succeed Wilbur.—Dr. Albion Walter Hewlett, formerly professor of internal medicine at the University of Michigan, Ann Arbor, was appointed, December 8, to succeed Dr. Ray Lyman Wilbur, president-elect of the University of California, as professor of medicine at Stanford University.

Hookworm.—The California State Board of Health will establish headquarters in Los Angeles for the study of hookworm disease which is said to afflict many of the miners in Southern California. The malarial belt of the Sacramento Valley will also be studied. Dr. James G. Cumming, formerly head of the Pasteur laboratory at the University of Michigan, Ann Arbor, has been appointed head of the laboratories in Los Angeles.

Head of Tuberculosis Bureau.—Miss Edythe L. M. Tate, executive secretary of the California Association for the Prevention of Tuberculosis, has won first place in a competitive examination held by the California Civil Service Commission for a position as director of the Tuberculosis Bureau of the State Board of Health, which carries with it a salary of $3,000. Miss Tate was largely instrumental in securing the passage of the law appropriating $75,000 to the Tuberculosis Bureau.

Personal.—Dr. Frederick Parker Gay, professor of pathology in the University of California, Berkeley, has been selected as faculty research lecturer for 1916 and will give the annual public address on the result of his own research in some special field at the University of California, March 23, 1916. Dr. Gay's selection was in recognition of his recent work in developing improved methods for the treatment of pneumonia and typhoid fever.——Dr. Norman Bridge, president of Throop Institute, Los Angeles, was the guest of honor at a dinner given by the Chicago members of the Alumni of Lake Forest College and representatives of the faculty of that institution at the University Club, Chicago, December 9.——Lillian J. Martin, professor of psychology at Stanford University, has been appointed head of the department of psychology, succeeding Dr. Frank Angel, who has resigned to take charge of the Belgian relief work in London and who sailed for the war zone, December 10.——Dr. Charles C. Landis, Chico, will leave for China next month. He will be located in the province of Hunan as a missionary of the Adventist Church.——Dr. Thomas A. Stoddard, Santa Barbara, has returned after several months' work in a British base orthopedic hospital, Liverpool.——Dr. Percy T. Phillips, Santa Cruz, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. Frederick F. Gundrum, Sacramento, who resigned to accept appointment as a member of the State Board of Health.——Dr. Ray Lyman Wilbur, dean of the medical department of Stanford University, San Francisco, will assume office as president of the Leland Stanford Jr. University, January 1.——Dr. Josiah Morris Slemons, of the faculty of the University of California, has resigned to accept a similar position in Yale Medical School.

DISTRICT OF COLUMBIA

Diphtheria.—For the first ten months of 1915 there were 191 cases of diphtheria in Washington, with eleven deaths. During the same period of 1914, 100 cases were recorded.

Mental Hygienists Meet.—At the first meeting of the board of directors of the Society for Mental Hygiene of the District of Columbia, December 2, Surg.-Gen. Rupert Blue, U. S. P. H. S., was elected president; Mr. Cuneo H. Rudolph, first vice president; Dr. D. Percy Hickling, secretary; and Miss Nellie Sedgley, treasurer.

Personal.—Dr. D. Percy Hickling has been appointed chairman of the Public Health Committee of the Washington Board of Trade.——Dr. Edgar D. Thompson has been selected as president of the North Capitol and Echington Citizens' Association.——Dr. Philip Newton is reported to have been made corps surgeon in the Russian service.

District Society Election.—At the annual meeting of the Medical Society of the District of Columbia, December 1, the following officers were elected: president, Dr. Edward Y. Davidson; vice presidents, Drs. Joseph D. Rogers and Isaac S. Stone; recording secretary, Dr. Henry C. MacAtee; corresponding secretary, Dr. Arthur L. Hunt; and treasurer, Dr. Charles W. Franzoni, all of Washington.

Medal of Honor to Major Heller.—A bill has been introduced into the senate to authorize the secretary of war to award the congressional medal of honor to Maj. Joseph M. Heller, M. C., U. S. V., for unusual, distinguished and gallant action in attending the wounded under fire while a contract surgeon, U. S. Army, at the battle of Naguilan, North Luzon, Philippine Islands, Dec. 17, 1899, and during the months of September, October, November and December of the same year while attached to the first battalion, Twenty-Fourth United States Infantry, First Division, Eighth Army Corps, under the command of Maj. Gen. H. W. Lawton, U. S. V.

FLORIDA

Personal.—Dr. Grace Whitford, Ozona, has been appointed acting chairman of the health department of the Florida Federation.——Dr. Theodore G. Croft has been appointed city physician of Jacksonville.

New Officers.—Duval County Medical Society at Jacksonville, December 7: president, Dr. James H. Pittman; vice president, Dr. W. Williams McDonell, and secretary-treasurer, Dr. Herbert O. Black, all of Jacksonville.——Hillsboro County Medical Society at Tampa, December 7: president, Dr. Louis S. Oppenheimer, Tampa; vice president, Dr. John W. Alsobrook, Plant City; secretary, Dr. Earle H. McRae, Tampa; and treasurer, Dr. William C. Douglass, Tampa.——Pinellas County Medical Association at Clearwater, November 11: president, Dr. Franklin W. Wilcox; vice president, Dr. Alvin J. Wood; secretary-treasurer, Dr. William McK. Davis, all of St. Petersburg.

GEORGIA

Personal.—Dr. Howard J. Williams has retired after twenty years' service as a member and president of the Macon Board of Health. At the last meeting which Dr. Williams attended, he was presented with a loving cup by members of the board.—Dr. Alfred F. White, Flovilla, has been appointed a member of the State Board of Medical Examiners, to succeed himself.——Dr. Olin H. Weaver has been appointed chairman of the Macon Board of Health.

ILLINOIS

Personal.—Dr. William E. Range, Glen Carbon, has been obliged to go to the Southwest on account of the health of his wife.——Dr. and Mrs. J. L. Huntington, Princeton, have decided to locate in Santa Barbara, Calif.

Quarantine Lifted.—Three counties of Illinois have been freed from quarantine for the foot and mouth disease and the quarantine in six other counties has been modified by an order from the Department of Agriculture, effective December 18. This order releases from quarantine the counties of Dupage, Livingston, Marshall and all of Cook County, excepting the Union Stock Yards, which remains a restricted area for handling animals for immediate slaughter.

Chicago

Inspecting the Children.—The health commissioner suggests that to supplement the efforts to improve the public health by inspection of the schoolchildren, the thousands of children gathered in the Sunday schools, particularly during the holiday season, should likewise be inspected. He suggests that the pastors of the churches throughout the city and the superintendents of Sunday schools invite local physicians to look over the Sunday school classes on Sunday mornings or afternoons to determine whether any of them suffer from communicable diseases. He believes that physicians would be glad to render this service without pay.

Memorial Service for Dr. Black.—A memorial service for the late Dr. Green Vardiman Black, dean of the Northwestern University Dental School, who died August 31, was held in the Hotel LaSalle, December 14, by the Chicago Dental Society. Addresses were made by President Harris of Northwestern University, who spoke of Dr. Black as the dean of the dental department of that institution; Dr. Fred B. Noyes, who paid tribute to the student, investigator and inventor; Dr. C. N. Johnson, who spoke on "The Teacher and Writer"; and Dr. Thomas L. Gilmer, the subject of whose address was "The Man and Friend."

INDIANA

Trachoma.—Fifty cases of trachoma have been found in Indianapolis, some of the cases among schoolchildren.

Personal.—Dr. Clarence H. Mead, health commissioner of Bluffton, is ill with diphtheria.——Dr. Andrew J. Gray, Young America, is reported to be seriously ill as the result of a cerebral hemorrhage.——Dr. T. Roy Cook, Bloomfield, who has been ill with general neuritis, is reported to be improving.

Physicians Running Drug Stores.—In one of the justice's courts in Indianapolis a physician was convicted of running a drug store without a license, because he had filled the prescriptions of another physician. This case was appealed from the justice's court to the county criminal court where the verdict was upheld.

Measles.—Under date of December 18 it was said there were 140 cases of measles in Indiana Harbor. A meeting of the health board with school physicians and inspectors was held to consider the epidemic. A circular was prepared by the health department giving instructions to the heads of families with regard to the prevention of the spread of the disease.

MONTANA

Personal.—Dr. Clem C. Seerley, Manhattan, is taking postgraduate work in New York City.——Dr. Alfred N. Smith, Glasgow, has been appointed physician of Valley County.——Dr. Daniel J. Donohue, Glendive, has moved to Butte.

New Society Organized.—The organization of the Southeast Montana Medical Society was perfected at Miles City, December 3: Dr. Wimon W. Andrus, Miles City, was elected president; Dr. Virgil P. Garst, Terry, vice president; Dr. John G. Randall, Missoula, secretary, and Dr. Sadie B. Lindeberg, treasurer, Miles City.

NEW YORK

Emergency Health Expenditures.—The attorney-general in an opinion rendered to the health officer of the port of New York says that he may, with the approval of the governor, not only expend the fees collected by him, but may employ any additional measures he deems necessary. It is stated in section 37 of the state finance law that the health officer must turn into the state treasury by the fifth of each month the fees received by him. This gives him in cases of immediate danger the power to use them in the protection of the public health.

Tuberculosis Patients and the Law.—The state law gives health departments power to enforce their mandates with reference to the care of tuberculous persons. Many afflicted with tuberculosis are not careful to comply with the measures necessary to prevent the spread of the disease to others. It has been necessary in some instances to enforce the regulations of health boards in this respect by application to the courts. Several such instances have occurred in Buffalo. Tuberculous persons who are refractory in this respect may even be sent to the penitentiary where special quarters are set aside for them.

Health Centers.—Buffalo has three health centers, the last established at the Municipal Hospital, 770 East Ferry Street. The two centers first established were very successful in their work. This led to the opening of a third center and others may possibly follow. The outstanding feature of the work at these centers is their cooperation with the various private welfare agencies. The scope of these health centers includes: prenatal work, child welfare—not only immediately after birth but until school age—supervision of midwives, prevention of blindness and conservation of vision, milk dispensaries, egg dispensaries, dental dispensaries, tuberculosis dispensaries and social service. This cooperation prevents waste of energy and the duplication of work; it will also save expense.

New York City

Eminent Chemist Dead.—A telegram has just been received announcing the death in New York City, on December 20, of Dr. Rudolph August Witthaus, aged 69, the eminent chemist and toxicologist, professor of chemistry and toxicology in the University Medical College, New York City, and Cornell University, and emeritus professor since 1911; the author of several standard works on chemistry, urinalysis and toxicology.

Building Fund for Women's Medical College.—At the meeting of the Woman's Guild of the New York Medical College and Hospital for Women it was announced that $25,000 has been pledged toward the $200,000 required for a new building for the college. The largest gift, $10,000, came from W. W. Cole, and Cornelia C. Brant, the dean of the college, gave $2,000. Among the subscribers are 104 women and 99 men.

NORTH DAKOTA

Obtains Position in Red Cross.—Dr. Thomas J. Strong, Williston, has received appointment as Red Cross director with the American Red Cross in Germany.

State Laboratory Charges Fees.—Dr. Leverett D. Bristol, University, director of the State Public Health Laboratory, announces that the State Board of Regents has authorized the charging of fees for all work which is not strictly public health work and which the laboratory is not called on to do by the law.

Health Survey of State.—Surg. Carroll Fox, U. S. P. H. S., has completed his health survey of North Dakota, and states in his preliminary report that the chief needs of North Dakota are a sanitary engineer who will devote his whole time to the work and whole-time health officers and correlation in public health service.

Smallpox.—At Grand Forks, December 2, it is said there were thirty-six cases of smallpox. The vaccination order had been generally obeyed by the schoolchildren. Attorney-General Linde has given an opinion that the regulations requiring vaccination may be enforced, although this is contrary to an opinion delivered by his predecessor. There were also many cases in East Grand Forks. The disease was mild and no deaths had occurred. The health board by resolution urged on the board of education that a rule requiring the vaccination of all schoolchildren be established.——In an effort to suppress an epidemic of smallpox at Bismarck, the school authorities have prohibited teachers to attend theaters and children to attend motion-picture shows and have made vaccination compulsory.——The physicians of Mandan are at hard work in an effort to prevent the spread of the disease.

Hospital Notes.—The new hospital at Fort Yates, Standing Rock Reservation, which has been erected at a cost of $26,000, is practically completed and will be opened early in January.——A site has been selected for the Crosby Hospital on the Herring farm adjoining the city. The building is to be 50 by 70 and two stories in height.——C. C. Marson, Cooperstown, has agreed to donate a half block within the city limits, providing a hospital is built thereon, and a quiet campaign is being carried on to secure funds for the construction of the building.

OHIO

Health Sunday.—Health Sunday was observed in Youngstown, November 28, when the pastors of twenty churches gave up their pulpits to physicians who delivered addresses on various phases of public health.

Conserving Vision.—Cincinnati is about ready to form its third class in the schools for the conservation of vision. During the previous two years 3,475 schoolchildren with defective vision were found, 1,179, or 51 per cent., of whom were provided with glasses up to June 20, 1915. Regulations for the admission of children to the special classes have been published.

New Faculty Appointments.—The following appointments have recently been made to the faculty of Western Reserve Medical School: Dr. Julius M. Rogoff of Vanderbilt University, Nashville, Tenn., instructor of experimental medicine; Dr. Cyrus H. Fiske, Harvard Medical School, Boston, associate in biochemistry; Dr. Roy W. Scott, formerly demonstrator in medicine in Western Reserve University, instructor in physiology.

Vaccination.—Notices have been posted at the mills of the Carnegie Steel Company at Youngstown requesting all employees to submit to vaccination in accordance with the recommendation of the Youngstown Board of Health. The company will not compel the employees to be vaccinated, but they are strongly urged to submit to this measure, which will be carried out free of charge. The Youngstown Iron and Steel Company had previously made a similar request of the men, and it is believed that all other industrial concerns in the city will follow this plan.

Personal.—Dr. Frederick E. Dilley, instructor in surgery in the Union Medical College, Peking, Chih-li, China, has returned and will take postgraduate instruction in Cleveland until next August.——Dr. Alfred Irving Ludlow, professor of surgery and surgical pathology in the Seoul Medical College, Korea, will sail for the Orient, June 8.——Dr. George Niel Stewart, director of the H. K. Cushing Laboratory of Experimental Medicine at Western Reserve University, Cleveland, has returned from abroad.——Dr. Herbert E. Twitchell, Hamilton, has been appointed assistant surgeon at the National Military Home, Dayton.——Dr. Eli R. Crew, superintendent of the Miami Valley Hospital, Dayton, is ill and under treatment in the hospital.——Dr. Fred B. Larimore, New Philadelphia, is seriously ill in the Columbus Hospital as the result of a hemorrhage.

Cincinnati

Scholarship Donated.—Gifts of $600 each have been made by Henry Strauss, Casper H. Rowe, Adam A. Kramer and Albert Lackman for scholarships in the medical department of the Cincinnati University.

Return After Tour of Medical Colleges.—Dr. Christian R. Holmes and Profs. Martin H. Fischer and H. M. Knower of the University of Cincinnati and Architect Harvey Haniford have returned after two weeks' tour of inspection of medical colleges in the East, and during which they submitted plans for the new medical college to experts for their consideration and criticism.

Personal.—Dr. Samuel J. Holdberg has been appointed assistant clinical instructor of laryngology and otology in the medical department of the university.——Dr. Lewis Bader has resigned as receiving physician at the General Hospital and will take up Roentgen-ray work. He has been succeeded by Dr. Max Shaweker.——Dr. Earl A. Martin, Mount Vernon, has been appointed assistant to Dr. Harry Freudenberger of the Tuberculosis Sanatorium.——Dr. Eric A. Fennel has resigned as physician in charge of the City Infirmary and the two house of refuge farms.

OKLAHOMA

Free Antitoxin.—Dr. John W. Duke, Guthrie, state health commissioner, announced that free diphtheria antitoxin will be distributed in all deserving cases.

Research Department to Be Established.—Announcement was made, December 1, by the officials of St. Anthony's Hospital, Oklahoma, of the immediate establishment of a medical research laboratory to be in charge of Dr. Abraham Sophian, New York City, and of the building of an addition to the hospital to cost $150,000.

Personal.—Dr. I. H. Lamar, Texhoma, who has been ill with typhoid fever in Kansas City, has recovered and returned home.——Dr. Albert M. Chambers, McCurtain, was recently operated on for appendicitis.——Dr. Benjamin W. Ralston, Lindsay, is convalescent after a severe attack of septicemia.——Drs. Ross D. Long and George D. McLean, Oklahoma City, are on duty with the Allies in France.

New Organizations.—The Tulsa Academy of Medicine was organized October 28, and the following officers were elected: president, Dr. W. Forest Dutton; vice-president, Dr. Robert S. Wagner; and secretary-treasurer, Dr. Paul N. Atkins.——Physicians in the Henryetta District organized the Henryetta Hospital Association, November 27, electing Dr. Nathaniel N. Simpson, president, and Dr. C. N. Stevenson, secretary-treasurer. The purpose is to found and build a modern hospital. A favorable report was made at this meeting on the plans and finances.

PENNSYLVANIA

Personal.—Dr. Joseph D. Findley has been selected as health physician of Altoona, succeeding Dr. Jesse P. Seedenburg, removed from the city.——Dr. Frank Horning, Hellam, is reported to be ill at his home.

Addition to Sanatorium.—The Philadelphia Sanatorium for Consumptives at Eagleville is installing a completely equipped Roentgen-ray department for scientific study and research in pulmonary tuberculosis. Dr. Gilbert M. Neuberger has been appointed roentgenologist.

Philadelphia

Mütter Lecture Postponed.—Owing to illness in the family of Dr. Rudolph Matas, New Orleans, the Mütter lecture and reception scheduled for December 17 was postponed.

Physicians Motor Club House.—Negotiations have been completed for a club house and supply station for the Physicians' Motor Club of Philadelphia. This will be ready for occupancy and transaction of business very soon after Christmas.

Personal.—Dr. Charles B. Penrose, who was taken suddenly ill with pleurisy in Baltimore and removed to Johns Hopkins Hospital, has greatly improved and will return to his home in a few days.——Dr. Mary W. Griscom, who recently returned from a trip through the Far East, visiting medical women in isolated stations, was the guest of honor at a dinner given December 16, at the Hotel Adelphia, by a number of her associates.——Dr. Frank W. Swallow has been appointed assistant medical inspector in the bureau of health.——Dr. William Hewson has been appointed an assistant school medical inspector.——Dr. Wilmer Krusen, the new director of health and charities, was the guest of honor at a dinner given at the home of Dr. Frank C. Hammond, December 9.

Duhring Annex Dedicated.—The Duhring Memorial Building, recently erected annex to the library of the University of Pennsylvania, was dedicated in the afternoon of December 13. A memorial tablet to the donor, Dr. Louis Adolphus Duhring, class of 1867, medical department, clinical professor, professor and finally emeritus professor, was unveiled at the entrance of the annex. Brief addresses were made by Maurice Jastrow and Joseph T. Rosengartner. Provost Edgar F. Smith accepted the building on behalf of the university. The new wing extends across the south end of the library, is of red terra cotta and brick work, the design being in keeping with the old structure. This addition is a emmorial to the late Dr. Duhring, who left more than a million dollars to the university.

TENNESSEE

Personal.—Dr. James W. McClaran, Jackson, has accepted a position in a war hospital in Paris.——Dr. Henry Berlin, Chattanooga, is reported to be seriously ill at his home.

Minnesota Surgeon in Chattanooga.—Dr. J. Minor Blackford, Rochester, Minn., delivered an address on December 10 before the physicians of Chattanooga on "Newer Cardiac Pathology and Diagnosis," illustrated by moving pictures.

Physician Wins Suit.—In the suit brought by the father of Hyram Henderson, Potts Camp, Miss., against Dr. Frank D. Smythe, Memphis, in which damages for $20,000 were claimed on account of negligence in performing a surgical operation, the jury rendered a verdict December 3, in favor of Dr. Smythe.

State Board Officers Reelected.—At the annual meeting of the State Board of Health held in Nashville, November 6, the following officers were reelected: Dr. Rufus E. Fort, Nashville, president; Dr. Walter J. Miller, Johnson City, vice president, and Dr. Reese Q. Lillard, Lebanon, secretary and executive officer.

New Officers for Middle Tennessee Association.—The forty-third semiannual meeting of the Middle Tennessee Association was held at Sparta, November 18 and 19: Dr. Roy W. Billington, Nashville, was elected president; Dr. W. Scott Farmer, Cookeville, vice president, and Dr. John Witherspoon, Nashville, secretary-treasurer. Lewisburg was selected as the next place of meeting.

Sanatorium at State Prison Opened.—The new modern tuberculosis hospital connected with the State Prison, Nashville, which has been erected at a cost of $40,000, was opened December 4 and 125 infected state prisoners were installed in the new institution. Hereafter, all prisoners sent to the penitentiary will be carefully examined for tuberculosis at the time of their admission.

Preventable Blindness.—The campaign against preventable blindness is being pushed vigorously by organizations in Nashville. A pamphlet has been prepared giving the state law on the subject, outlining the methods of preventing blindness in infants, and laying emphasis on the importance of the subject. The pamphlet has been endorsed by the State Board of Health and the Nashville health authorities.

TEXAS

Drug Law Violations.—In the federal court at Fort Worth, December 6, fourteen persons were sent to jail for violation of the antinarcotic law.

North Texas Physicians Hold Meeting.—The North Texas Medical Association held its annual meeting in Fort Worth, December 7 and 8, and adjourned to meet in Greenville in June. Dr. Charles R. Johnson, Gainsville, was elected president; Dr. Claude O. Harper, Fort Worth, vice president; Dr. H. Leslie Moore, Dallas, secretary (reelected for the thirty-second term), and Dr. John H. McLean, Fort Worth, treasurer.

Diphtheria.—In October diphtheria was reported from fifty-three of the 252 counties in the state, the largest number of cases in any one county being forty-one. There was a total of 554 cases. Under contract made by the State Board of Health, antitoxin approved by the United States Public Health Service costs patients $4 per 10,000 units as against $12.50, the price formerly charged. It has been concluded that if an average of 15,000 units was used in each case of diphtheria, at the new price there would be a saving of over $7,000 to the people of the state. Distributing stations have been established in every county of the state, although it is believed the people are not all aware of this arrangement for distributing antitoxin.

CANADA

Word from Saloniki.—The Toronto University Base Hospital is located 5 miles north of Saloniki on the road to Monastir. Directly in front of their camp is the railroad to Nish. At the present time there are about 500 patients, very few wounded soldiers, but mostly cases of typhoid dysentery and influenza.

Germany Refuses to Liberate Hon. Dr. Beland.—The German government has refused to liberate the Hon. Dr. Beland, former postmaster-general of Canada, who was captured at the fall of Antwerp. They are willing, however, to exchange him for a lieutenant of the German Army now in the London Tower under sentence of death for espionage.

Canadian Appointments.—The following Canadian physicians have been gazetted lieutenants, R. A. M. C.: Drs. C. E. Wilson, H. C. Sutton, H. B. Moyle, H. P. Rogers, A. W. Nixon and H. B. Stacpoole, all of the Canadian Army Medical Corps.——Drs. James Donald, M. MacAdam and Norman Ferguson have been appointed captains in the army service corps.——Major J. T. Clarke, M.D., formerly a practitioner in Toronto, has been promoted to lieutenant-colonel and has been placed in charge of No. 2 Stationary Hospital, Boulogne, France.

Toronto Convalescent Home Staff.—For the returned soldiers in Toronto the medical staff of the Convalescent Home is being chosen by Lieut.-Cols. Herbert A. Bruce and Harry B. Anderson, who will be chief surgeon and physician, respectively. The following are the appointments so far named: Drs. Herbert J. Hamilton, Goldwin Howland, Jabez H. Elliott, Brefney O'Reilly, Robert W. Mann, Harold Tovell, William J. McCollum, D. J. Gibb Wishhart, Colin Campbell, George H. Burnham, Newbold Jones, John A. Oille, Arthur Wright, Charles B. Shuttleworth, A. Muirhead, Charles Temple and Albert E. Webster, M.D., D.D.S.

University Looks for Government Aid.—A deputation from Queen's University, Kingston, Ont., recently waited on the premier of Ontario and the provincial treasurer to ascertain the attitude of the government toward the future of that institution. Three years ago Queen's severed its connection with the Presbyterian Church in Canada, and following that the Mining School agreed to affiliate with the University. The Ontario government has been giving Queen's an annual grant of $70,000 for the mining and medical branches. On account of war conditions Queen's will have a deficit for the current year of $30,000, the large number of enlistments from the student body having brought about a decreased attendance and a consequent decrease in the fees received. The government has promised to consider the matter.

GENERAL

Correction.—In the article by Woodyatt, Wilder and Sansum, The Journal, December 11, p. 2068—the last sentence of the first paragraph, second column, p. 2069, should read—"But if the glucose is given at a rate faster than 2 gm. per kilogram and hour, 50 per cent. of all glucose injected appears in the urine, once constant conditions have been secured." In the third paragraph the figures 3.6 gm. should be 2.7 gm.

Roentgenologists Unite.—About seventy-five roentgenologists from Illinois, Indiana, Iowa, Missouri and Kentucky met in Chicago, December 15 and 16, and organized the Western Roentgen Society, electing the following officers: president, Dr. Fred S. O'Hara, Springfield, Ill.; vice presidents, Drs. Miles B. Titterington, St. Louis, and Noble M. Eberhart, Chicago; secretary, Dr. Thomas A. Burcham, Des Moines; and treasurer, Howard Raper, D.D.S., Indianapolis. The next meeting will be held in Chicago, June 15 and 16, 1916.

Compensation for Federal Employees.—The American Association for Labor Legislation announces that the Kern-McGillicuddy Bill to provide just compensation for federal employees will be introduced into the new congress at an early day. This bill, which was reported favorably by the judiciary committee of the last congress, and has been endorsed by the Federal Bureau of Labor Statistics, American Federation of Labor and other bodies, was drafted to supersede the law of 1908. Nearly three quarters of the half million employees of the United States are not entitled to any compensation whatever for injuries and moreover, no injured workman can sue the national government for liability. In the present year, eight states have adopted the workman's compensation bill far in advance of the existing law for federal employees while five of the thirty-three states which have workman's compensation law have adopted liberal and progressive amendments.

Examination for Philippine Service.—The United States Civil Service Commission announced that open competitive examinations will be held on January 8, for the positions of bacteriologist and pathologist (male), with a salary of $2,000 to $2,500 a year, and for assistant surgeon (male), with a salary of $1,800 a year. The competitors will not be assembled for examination, but will be rated on education, experience and publication or thesis. Applicants must be graduates in medicine and must have had special training in bacteriology, must be between 21 and 40 years of age, and must have executed the prescribed medical certificate. Persons who meet the requirements and desire the examination, should apply for Form B.I.A. 2 and 2118 stating the title of the examination for which the forms are desired, and these applications should be sent to the United States Civil Service Commission at Washington, or to the secretary of any local United States Civil Service Board. They must be filed prior to the hour of closing business on January 18.

Deaths Abroad.—Kenneth William Millican, M.R.C.S., England, 1879; L.R.C.P., Edinburgh, 1880; for two years a member of the editorial staff of The Journal; died at his home in West Kensington, London, November 28, aged 62. After graduating in medicine, Dr. Millican was for several years an officer of the Royal Army Medical Corps in India and Africa, and then came to this country. While here he acted as associate editor of the *New York Medical Journal*, under the late Dr. Frank P. Foster; editor of the *St. Louis Medical Review*, and later became associated with The Journal. In 1909 he returned to St. Louis for a short time as editor of the *Bulletin of the Municipal Commission on Tuberculosis*, and then returned to England as a member of the editorial staff of the *Lancet*. Dr. Millican's society affiliations included Fellowship in the American Medical Association and membership in the British Medical Association, Missouri State Medical Association and St. Louis Medical Society, of which he was once president. Dr. Millican was a gentleman of charming personality, a scientist of high rank and a writer of high literary ability.

Death Rate in Registration Area in 1914.—According to a bulletin issued by the Bureau of the Census, the total number of deaths recorded in the registration area in 1914 was 898,059, corresponding to a death rate of 13.6 per thousand population. This rate is said to be the lowest on record, the next lowest being for the year 1912, when the rate was 13.9. This has added significance by reason of the fact that the number of states in the registration area has increased since 1912, the number now being twenty-five, comprising 66.8 per cent. of the total estimated population in the United States in 1914. The death rate for 1914 is said to be 16 per cent. lower than the average for the five year period of 1901-1905. This means that in 1914 there were only 10 deaths, where ten years earlier there were 11 deaths. Decreases in the death rate in the number of states of the registration area in 1914 as compared with 1901-1905 period are as follows: Rhode Island, 17.4 per cent.; New York, 14; New Jersey, 11.8; Massachusetts, 11.4; Vermont, 7.4; Connecticut, 3.8; Indiana, 2.3; Maine, 1.9, and New Hampshire, 1.8. Michigan showed a slight increase, 0.8 per cent. It is shown that in cities of 100,000 or over the tendency is toward a still greater reduction. In comparing the five year period 1901-1905 with 1914, the following reductions were shown in cities: Jersey City, 28.5 per cent.; New York, 25.8; San Francisco, 23.6; Denver, 23.3; Newark, N. J., 22.5; Los Angeles, 21.3; Pittsburgh, 21.9; Atlanta, Ga., 21.8; Lowell, Mass., 21.3; and Paterson, N. J., 20.1. The caution is given that these figures are crude rates and that inferences regarding the relative health advantages of different states should not be drawn without more thorough investigation.

Report of the Surgeon-General of the U. S. P. H. S.—The advance summary of the annual report of the surgeon-general shows that the organization under the broadened functions assigned to it by the law of 1912 has made possible the largest amount of work in its history. Among the notable features of this work for 1915 enumerated in the summary are: the conclusion, after seven years of investigation, that pellagra is a deprivation disease; the establishment of a new quarantine station at Galveston, and the transference of the station at Boston to the Public Health Service; eradication of plague from New Orleans, and the establishing of extensive rat-proofing and other antiplague measures; great reduction in the incidence of malaria where surveys were conducted, and the establishment in this connection of the fact that malaria is carried over the winter by persons infected with the disease rather than by hibernating mosquitoes; important knowledge gained from the study of occupational diseases and tuberculosis among industrial workers, and relating to the migration of persons suffering from tuberculosis; improvement in the powers and duties of health boards in five states, on the recommendations of the Public Health Service; investigation of the pollution of streams and the examination of shellfish; important studies of trachoma in the Appalachian Mountains, where over 12,000 cases were treated; rural sanitation work in six different states, resulting in the reduction of typhoid and other communicable diseases; and the establishment at Chicago, Seattle and other railway centers of public health laboratories for the prevention of the interstate spread of disease. On account of the extension of relief benefits to the newly organized Coast Guard and the physical examination of seamen applying for the rating of "able seamen," the service asks for an increased force to take care of this additional work. An additional building for the Hygienic Laboratory and the establishment of a national leprosarium are also recommended in the report.

Bequests and Donations.—The following bequests and donations have recently been announced:

Harvard College, $75,000, the remainder of the bequest of Morrill Wyman to establish the Morrill Wyman Research Fund, the income to be applied to investigation by Harvard Medical School, into the origin, results, prevention and treatment of disease.

Harvard Unit in France, $4,000; American Ambulance Field Service fund, $4,000, and New England-Belgium relief fund, $3,537.39, being the amount collected in the stadium at the Harvard-Yale football game.

Children's Hospital, Brookline, Mass., $3,000; Boston Floating Hospital, $2,000, and Angell Memorial Animal Hospital, $2,000 by the will of Edward Friebe, Cohasset, Mass.

Americus, Ga., Hospital Association, $2,500 by Mr. and Mrs. Frank Lanier, Americus, in memory of their son who died November 25.

James Walker Memorial Hospital, Wilmington, N. C., an annex for the treatment of children and nursing mothers, erected by Mr. and Mrs. James Sprunt, Wilmington, as a memorial to their deceased daughter, to cost $30,000.

School of Medicine, of the University of Kansas, Rosedale, the balance of the estate of Dr. Joseph Porter, Paola, appraised at from $27,000 to $37,000, the income only from this fund to be used, and of the income, $300 is to be used for a scholarship, the remainder to be used as thought advisable by the dean.

University of Kansas, Rosedale, donations of three acres of land to be added to the campus, from the Bell estate, Dr. Marshall A. Barber, Rosedale, and Mr. H. L. Rose.

United Hebrew Charities and Mount Sinai Hospital, New York City, each $2,500; Montefiore Home, $2,000; Home for Aged and Infirm Hebrews, Hebrew Infirmary and German Hospital, each $1,500 by the will of Bernhard Ulmann.

Eaglesville (Pa.) Sanatorium for Consumptives, about $4,000, the proceeds of a card party and dance given December 8, under the auspices of the Ladies' Auxiliary of that institution.

Abbington (Pa.) Memorial Hospital, a nurses' home to cost $50,000, on property adjoining the hospital, donated by George W. Elkin, Sr., in memory of his wife.

University of Pennsylvania for the use of its hospital, two-ninths of the residue of the estate of William B. Rawle, after the death of Mrs. Rawle; Children's Hospital, Philadelphia, establishment of a free bed to be known as the Charles Wallace Brocke, Jr., free bed, by the will of the mother of Mr. Rawle on the death of his wife.

Children's Aid Society, Country Week Association, Society for Protection of Children from Cruelty, and Sanatorium Association for Children, $4,000 each, by the will of Henry A. Rogers.

Children's Hospital, Philadelphia, a bequest of $10,000 for the endowment of a free bed in memory of her son George, by the will of Emily M. Price.

Women's Homeopathic Hospital, $5,000, by the will of Mary E. Harbeson.

American Oncologic Hospital and Kensington Dispensary, each $1,000, by the will of Maggie Green.

LONDON LETTER

London, Nov. 26, 1915.

The War

THE TYPHOID GROUP OF DISEASES

The immense experience of the war is extending our knowledge of disease in several directions. In previous letters it has been shown that, thanks to the excellence of medical arrangements, and to inoculation in particular, the incidence of typhoid fever among the troops has been very low. The fact has come to light that a good many of the cases which clinically appeared to be typhoid fever were examples of paratyphoid fever. Thus, in a recent discussion at the Royal Society of Medicine, Sir Bertrand Dawson stated that of 1,636 cases first regarded as typhoid fever, 910 proved to be paratyphoid. Among them were many of the form of paratyphoid A which is little known in this country though common in India; the form paratyphoid B has been recognized in England for some time. Observations in regard to inoculation tend to confirm the specificity of the several pathogenic micro-organisms responsible for the various forms of infectious disease. Thus it has been shown that inoculation against typhoid infection does not confer immunity to paratyphoid, and that inoculation against the one infection does not increase susceptibility to the other. It would seem that safety can be secured only by a number of inoculations, each directed to a specific end. However, quite satisfactory results follow the practice of simultaneous mixed inoculation. Thus Professor Dreyer reports that the injection of a vaccine containing in certain proportions the typhoid bacillus, paratyphoid bacillus A and paratyphoid bacillus B is followed in some cases by protection against all the three infections and in other cases by protection against two of them, and this without any greater immediate disturbance than is common in the ordinary antityphoid inoculation. Professor Castellani has gone further and has used what he calls a tetravaccine, which aims at protection not only against the three infections mentioned but also against cholera. His experience in Serbia includes 50,000 men, and he reports absence of immediate ill effects and the practical absence from the inoculated troops of the diseases in question.

THE CARE OF THE BLIND SOLDIER

Soon after the outbreak of the war, the need was recognized of an institution for those sad cases of loss of the sight of both eyes from the injuries of warfare. The Hostel of St. Dunstan's, Regent's Park, London, was established, and is being maintained by the National Institute for the Blind, the British Red Cross, and the Order of St. John of Jerusalem. The Hostel, which was given by Mr. Otto Kahn, stands in about 15 acres of ground. It includes a portion of the Regent's Park lake, which affords facilities for rowing—a pastime keenly appreciated by the blind inmates. The men come from the various military hospitals, and are afforded the opportunity of learning a trade by which they may earn a livelihood. The occupations taught include carpentry, boot repairing, mat and basket making, massage and telephony. An interesting adjunct to the institution is the model farm, under the care of Captain Webber, a blind expert. Here the men are taught market gardening, bee keeping and poultry farming; and by clever devices it is possible for the patients to carry on the work with success. After a short period of training they can drive birds from one pen to another, catch any particular fowl, and collect eggs. Arrangements have also been made for attendance at a neighboring public bath on certain days. The exercise of swimming is much enjoyed by the men, and some of those who were nonswimmers are rapidly becoming experts in the art. The Council of the National Institute for the Blind has placed at the disposal of the committee its seaside home at Brighton, where men can be sent to recuperate after discharge from hospital and previous to their taking up their training.

THE RECRUITING OF MEDICAL STUDENTS

A scheme of recruiting the whole country for the army has been adopted. Fit men are given the option of joining the army at once or being attested and placed in one of forty-six groups of all those aged from 18 to 40 years. There are twenty-three groups for single men (each year of age constitutes a separate group) and twenty-three similar groups for married men. The first group consists of single men aged 18, the forty-sixth group of married men aged 40. It is proposed to call the men up in the numerical order of the groups, except that men of 18 will not be called up for service until they have attained the age of 19. The special case of the medical student has given rise to a good deal of discussion. As stated in a previous letter, the War Office decided that in consequence of the great shortage of physicians, fourth and fifth year students should proceed with their course and qualify as soon as possible so as to be able to enter the army as surgeons. On the other hand, students in the first, second and third years should, if physically fit, join the army as combatants. Exception has been taken to this rule because of the shortage of physicians which it will create in future years by withdrawing so many students from their studies. But the authorities pointed out that the need of the army must be paramount at the present moment, and that medical students who are generally men of good physique and full of spirit and courage make admirable combatant officers. However, some extension of exemption has been granted in the latest announcement from the War Office. Students who at or before the close of the present winter session will be qualified for entry to one of the examinations for the third year students in medicine, and duly enter for the examination for which they are studying, will not be attested until after its conclusion, and if they are successful will be included in the class of fourth year men.

THE BIRTH RATE AND THE WAR

At the Royal Sanitary Institute, Dr. Louis C. Parkes, a well-known health officer and authority on hygiene, read a paper on the national and social aspect of the lowered birth rate. He said the birth rates of nearly all the European nations had been steadily decreasing during the past thirty years. He estimated the total destruction of life in Europe in two years of war at nearly 20,000,000 persons. But in past ages of the world's history, evolution of higher types in animal and vegetable life had resulted from cataclysmic changes, and great destruction by plague, pestilence and famine had led to an advance in civilization. So it was possible that Armageddon might be of ultimate benefit to humanity. The figures for England and Wales for the past forty years showed that on the whole the birth rate had been falling faster than the death rate, and the mean rate of increase, except for the first few years of the present century, showed a downward tendency. There was foundation for the belief that the lowering of the birth rate had been specially marked among the upper, the middle and the superior working classes. Tables giving mean birth rates among other nations for the years 1910-1912 showed generally that nations largely agricultural had the highest birth rates, while in the more highly industrialized countries the birth rates were lower. With the exception of Bulgaria, with a decided increase in the rate of 3.6, and of Ireland and Roumania, with very slight increases, most of the nations which furnished statistics showed lowered birth rates in the course of the last quarter of a century. After the war a government commission should be appointed to make exhaustive inquiry into the whole question with a view to taking measures of social and economic amelioration. With a happy combination of circumstances the country should start a new life, and the replenishment of its young life on a sufficiently ample scale might be anticipated.

Tuberculosis in the Boot and Shoe Industry

There is an unusually high incidence of tuberculosis in the boot and shoe industry. The means of dealing with this has been investigated by the Medical Research Committee appointed under the national insurance act for such purposes. The high mortality is attributed to several factors, among these being the sedentary nature of the employment and the attitude adopted, the presence of infected workers who are by circumstances favorably placed for disseminating bacilli among their neighbors, the lack of sufficient daylight and adequate ventilation, and the presence of infected dust. The economic as well as hygienic advantage of so-called play intervals is insisted on. A quarter of an hour interval at 11 a. m. and again at 4 p. m. is suggested, and opportunity for Swedish drill or for games. It has been shown that more and better work is done with than without such intervals. The importance of ventilation and keeping the factories adequately cool is also insisted on.

BERLIN LETTER

Berlin, Nov. 9, 1915.

Birth Rate and Nurslings' Mortality in the Large German Cities During the War Period

The records of the imperial health bureaus of twenty-six German cities having more than 200,000 inhabitants show, as was to be expected, that with the beginning of the tenth month of the war the number of living new born has diminished considerably. For instance, in Berlin during the month of April the birth rate was 17 against 79 in the same month of the previous year. Exactly nine months after the declaration of war during the first week of May, 99 fewer children were born in Berlin than during the previous year. In the second week 138 and in the last week of May 198 fewer children were born and during the second week of June the decrease was 244. This is the height of the growth of the lowering of the birth rate. The diminution thereafter was usually below 200. In the other large cities there was in part an increase during the month of April but beginning with May there was a considerable diminution. The one exception is the city of Essen but even here the increase in the number of births was due to an increase in population. In Cologne the diminution was the least but here, as in Essen, the death rate during the first year of life was increased. Elsewhere this death rate was diminished. One must not construe, however, that there was a general falling off in the death rate of infants because, arriving at such a conclusion, one must estimate how many deaths occur among the nurslings born during that time.

Value of Prophylactic Immunization in Typhoid

During the Franco-Prussian war there were 74,205 cases of typhoid, from 8 to 9 per cent. of the whole number of soldiers. There were 8,904 deaths, or about 1 per cent., of the total strength of the army. More than one half, 60 per cent., of the total loss for all the troops was caused by typhoid. The observations made during the prophylactic immunization of the troops in Southwest Africa showed that among protected soldiers there were fewer and less severe cases of typhoid than among the unvaccinated soldiers. The death rate among the vaccinated was 4 per cent., among the unvaccinated 11.1 per cent. Therefore vaccination against typhoid is not an absolute protection against the disease but typhoid in a vaccinated person runs a very mild and much more favorable course. In those vaccinated more than once the course of the disease was even more favorable. Positive conclusions as to the value of such vaccination in the present war cannot as yet be drawn but the numerous observations that have been made enable one to express an opinion as to the value of this prophylactic immunization. Goldscheider and Koner have reported that in addition to vaccination prophylactic sanitary measures were prescribed and to these a large measure of the success obtained must be ascribed. The vaccination therefore was only an operating factor in the reduction of the number of cases of typhoid and the death rate from typhoid. The course of the fever was much less severe among the vaccinated than among the unvaccinated. The temperature was lower but the duration of the fever was not appreciably shortened. There is almost a complete absence of headache, restlessness and delirium and convalescence is rather rapid. Fewer complications are met with among the vaccinated; especially is this true of the disastrous effects on the heart muscle, and when complications did occur they were much less severe. Among the soldiers vaccinated twice the course of the disease was even more favorable. Among the vaccinated the death rate was 6.9 per cent., among the unvaccinated the death rate was 12 per cent. One must not forget that the general hygienic prophylaxis which can be carried out during war time is not comparable with the prophylaxis in time of peace and therefore the prophylactic immunization against typhoid undoubtedly is of much greater value in peace than in war. However, we must admit that such immunization is of very great value especially in war times.

Marriages

Charles John Hufnagel, M.D., to Miss Lucina Kirst, both of Cannelton, Ind., November 25.

Philip Newton, M.D., Washington, D. C., to Princess Shahofskaya of Petrograd, Russia, recently.

Walter S. Clack, M.D., to Miss Elizabeth Haley, both of Rockwood, Tenn., December 8.

Clara Pauline Seippel, M.D., to Robert A. Widdowson, both of Chicago, in Minneapolis, December 11.

Frank Murray Scheele, M.D., Waukesha, Wis., to Miss Emma Edmonds of Wauwatosa, Wis., December 1.

Allen Wheeler Holmes, M.D., Dansville, N. Y., to Miss Clara Lillian Merrill of Hamilton, Mass., December 7.

Margaret Cartwright, M.D., to Joel B. Good, both of Albuquerque, N. M., November 30.

F. Stuart Graves, M.D., to Miss Louise Brown, both of Louisville, Ky., December 11.

Deaths

George Peaslee Shears, M.D. New York University, New York City, 1886; aged 53; a member of the Medical Society of the State of New York; clinical professor of obstetrics in the New York Polyclinic Medical School; chairman of the board of directors of the City Hospital, Blackwell's Island; attending obstetrician to the City, Misericordia and New York Polyclinic hospitals; died at his home in New York City, December 12, from cerebral hemorrhage.

Edward H. Thrailkill, M.D. Kansas City Medical College, Kansas City, Mo., 1890; aged 52; a Fellow of the American Medical Association; professor of rectal surgery in the University of Kansas; rectal surgeon to St. Joseph's and the Swedish hospitals, Kansas City; proprietor and manager of Thrailkill's Sanitarium for Diseases of the Rectum, Kansas City; died at his home in Kansas City, December 7, from the effects of an overdose of chloroform.

Frank Joseph Sykora, M.D. Chicago College of Medicine and Surgery, 1909; aged 38; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association and well-known as a surgeon of Brainerd, Minn.; a director of the Brainerd City Bank; died in St. Joseph's Hospital, St. Paul, November 17, from disease of the intestines for which three operations had been performed.

Erastus Perry Swazey, M.D. College of Physicians and Surgeons in the City of New York, 1869; aged 68; a Fellow of the American Medical Association and a well-known practitioner of New Britain, Conn.; who had been ill for a long time with disease of the heart and kidney; died at his home in New Britain, November 13, from cerebral hemorrhage.

James Irving Cawley, M.D. University of Pennsylvania, Philadelphia, 1877; aged 62; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; register of wills of Bucks County, Pa., and postmaster of Springtown where he had practiced for thirty-six years; died at his home December 10.

Michael M. Leahy, M.D. University of Glasgow, Scotland, 1857; University of Dublin, Ireland, 1862; Jefferson Medical College, 1883; aged 75; a Fellow of the American Medical Association; for many years a practitioner of Chicago, but for the last twenty years a resident of Montana; died at his home in Anaconda, Mont., December 15.

George K. Binkley, M.D. University of Pennsylvania, Philadelphia, 1873; aged 69; a Fellow of the American Medical Association; president of the Schuylkill County (Pa.) Medical Society; a veteran of the Civil War and a well-known practitioner and druggist of Orwigsburg, Pa.; died at his home in that place, December 4.

William Brewster Millwee, M.D. Castleton (Vt.) Medical College, 1848; aged 89; one of the oldest practitioners of Greenwood County, S. C.; first president of the Greenwood Oil Mill and vice president of the Bank of Greenwood; once mayor of Williamston; died at his home in Greenwood, December 1.

Benjamin H. Perce, M.D. Medical College of Indiana, Indianapolis, 1873; aged 77; a member of the Indiana State Medical Association and for two terms president of the Madison County Medical Society; a veteran of the Civil War; died at his home in Anderson, Ind., December 3, from nephritis.

Lewis Frey, M.D. University of Pennsylvania, Philadelphia, 1888; aged 52; formerly a Fellow of the American Medical Association; visiting physician to the State Hospital and the Consumptive Hospital, Scranton, Pa.; died suddenly at his home in Scranton, December 6, from angina pectoris.

C. Robert Martin, M.D. Miami Medical College, Cincinnati, 1866; aged 73; one of the oldest practitioners and druggists of Henry County, Ky., and one of the directors of the Deposit Bank of Sulphur, Ky.; died at his home in that place, December 9, from cerebral hemorrhage.

Ira Dean Payne, M.D. University of Iowa, Iowa City, 1880; Bellevue Hospital Medical College, 1886; aged 63; who after many years of practice in Linton, Iowa, retired five years ago and moved to Des Moines; died at his home in that city, September 7, from heart disease.

James E. Gauline (license, Maryland), for more than twenty-two years connected with the Home Friendless Society, Waverly, Baltimore; died at his home in that place, December 3, from cerebral hemorrhage.

James Garrett Linthicum, M.D. University of Maryland, Baltimore, 1859; aged 81; formerly professor of the practice of medicine in Baltimore University; a member of the Baltimore city council for four terms; died at his home in West Baltimore, December 7, from pneumonia.

Jesse Lincoln Melton, M.D. Hospital College of Medicine, Louisville, 1902; aged 55; formerly a member of the Kentucky State Medical Association, and until a year ago a practitioner of Shelbyville, Ky.; died at his home in Louisville, December 10, from typhoid fever.

Rhys Williams, M.D. Western Pennsylvania Medical College, Pittsburgh, 1894; aged 46; of Federal, Pa.; for twenty years a practitioner of the Bridgeville District and director of the Bridgeville Trust Company; died at his home in Federal, about December 11.

John A. Kirkland, M.D. Jefferson Medical College, 1885; aged 59; a Fellow of the American Medical Association; for many years a member of the school board of Cambridge, Ill., and a well-known ornithologist; died at his home in Cambridge, December 10.

Henry Manning Fish, M.D. Hahnemann Medical College, Chicago, 1900; aged 62; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; a well-known specialist; died at his home in Chicago, December 11, from pneumonia.

Ellis Henry Bishop, M.D. Bennett Medical College, Chicago, 1905; aged 43; a Fellow of the American Medical Association; died at his home in Neponset, Ill., December 5, from an overdose of medicine taken for the relief of acute gastritis.

Carl Martinus Nielsen, M.D. University of Copenhagen, Denmark, 1885; Bennett Medical College, Chicago, 1893; aged 59; president of the Scandinavian-American Medical Society, Chicago; died at his home in that city, December 14.

Lloyd McDonald Burgess, M.D. Marion-Sims Medical College, St. Louis, 1893; aged 44; a Fellow of the American Medical Association; died at his home in Delta, Colo., September 5, six months after an operation for cholecystitis.

John W. Davis, M.D. Georgetown University, Washington, D. C., 1860; aged 78; a veteran of the Civil War; and a resident of Lansing, Iowa, for more than fifty years; died at his home in Lansing, December 6, from heart disease.

John Jackson Esmond, M.D. University of Toronto, 1877; aged 63; for several years a practitioner and postmaster of Tracy, Mo., but for nearly twenty years a practitioner of Kansas City, Mo.; died at his home in that city, December 8.

P. Watt Cate (license, Tennessee, 1889), aged 61; for thirty-two years a practitioner of Charleston, Tenn., but who made his home for two years with his daughter at Solano, N. M.; died at his home near Charleston, December 10.

Lomax Anderson, M.D. University of Alabama, Mobile, 1879; aged 69; a Confederate veteran and an active practitioner of Jackson, Miss., until his retirement in 1908; died at his home in that city, December 9, from nephritis.

Jacob B. Lewis, M.D. Eclectic Medical Institute, Cincinnati, 1893; aged 44; formerly of Boise, Idaho; and for four years physician of Ada County; died on his stock ranch near Meridian, Idaho, December 5, from pneumonia.

Jeremiah Elwood Sayre, M.D. Jefferson Medical College, 1883; aged 63; for twenty-five years a member of the board of education of Red Bank, N. J.; died at his home in that place, December 11, from cerebral hemorrhage.

Wiley M. Baird, M.D. University of Nashville, Tenn., 1861; aged 75; a Confederate veteran and for one term state senator from the Jackson County District, Ark.; died at his home in Bentonville, Ark., December 4.

George W. Haislip, M.D. Jefferson Medical College, 1882; aged 57; a member of the Medical Society of Virginia and a well-known practitioner of Lorton, Va.; died in the Sibley Hospital, Washington, D. C., December 5.

Richard James Sadlier Wheeler, M.D. L.R.C.P., L.R.C.S., Edinburgh, 1884; M.D., University of Edinburgh, 1894; aged 53; of Birtle, Man.; died in the Winnipeg General Hospital, September 17, from cerebral hemorrhage.

Joseph Etienne Gendron, M.D. Dartmouth Medical School, Hanover, N. H., 1871; aged 72; of Worcester, Mass.; died in St. Vincent's Hospital in that city, October 5, from intestinal obstruction.

Samuel C. Corbett, M.D. Victoria University, Coburg, Ont., 1867; aged 70; a resident of Winnipeg, Manitoba, from 1882 until a short time ago; died at Vancouver, B. C., September 18.

Thomas Miller, M.D. Howard University, Washington, D. C., 1884; aged 58; a member of the Medical Society of the District of Columbia; lecturer on anatomy and diseases of children in his alma mater; died at his home in Washington, November 30.

William Lewis Suesholtz, M.D. Long Island College Hospital, Brooklyn, 1907; aged 43; a member of the Medical Society of the State of New York; died at his home in Brooklyn, November 26, from the effects of an overdose of acetanilid.

Frank D. Wheeler, M.D. Detroit Medical College, 1880; aged 60; a Fellow of the American Medical Association and prominently identified with the medical work of Detroit for more than thirty years; died at his home in Detroit, November 27.

Laura J. Ross Wolcott, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1856; aged 82; said to have been the third woman in the United States to receive a degree in medicine; died at her home in Chicago, December 8.

Francis Coffin Martin, M.D. Harvard Medical School, 1883; aged 57; formerly a member of the Massachusetts Medical Society and a Fellow of the American Academy of Medicine; died at his home in Roxbury, Boston, December 3.

Freeman Hardin Hornibrook, M.D. College of Physicians and Surgeons, Chicago, 1902; aged 37; a member of the Iowa State Medical Society; was found dead at his home in Cherokee, Iowa, November 30, from cerebral hemorrhage.

Patrick Henry Bumster, M.D. New York University, New York City, 1893; aged 56; visiting physician to St. John's Hospital, Long Island City, N. Y.; died at his home in Long Island City, December 1, from hemorrhage of the stomach.

Patrick J. Marren, M.D. Medico-Chirurgical College of Philadelphia, 1896; aged 43; a member of the Medical Society of the State of Pennsylvania; died at his home in Bellevue, Pittsburgh, November 28, from pneumonia.

William E. Scriber, M.D. Michigan College of Medicine, Detroit, 1883; aged 46; a member of the Michigan State Medical Society; died at his home in Detroit, December 3, from septicemia following a carbuncle of the neck.

John H. Ashcraft, M.D. Jefferson Medical College, 1855; aged 82; an honorary member of the Gloucester County, N. J., Medical Society; died at his home in Mullica Hill, N. J., September 26, from carcinoma of the back.

Louis Lee Abbott, M.D. Tulane University, New Orleans, 1898; aged 52; a member of the Louisiana State Medical Association; a practitioner and druggist of New Orleans; died at his home in that city, November 30.

John Wallace Allison, M.D. Cincinnati College of Medicine and Surgery, 1877; aged 62; twice a representative from Kankakee County in the Illinois State Legislature; died at his home in Essex, Ill., December 4.

Hiram Parker Trull, M.D. University of Buffalo, N. Y., 1868; aged 73; a member of the Medical Society of the State of New York; died at his home in Williamsville, N. Y., September 14, from arteriosclerosis.

Nathaniel A. Gray (license, Milwaukee, 1899); aged 75; a member of the State Medical Society of Milwaukee and a practitioner since 1867; died at his home in Milwaukee, November 25, from pneumonia.

Stephen Horace Murphy, M.D. Bellevue Hospital Medical College, 1879; aged 62; until 1904 a practitioner of New York state; died at his home in Spokane, Wash., November 11, from carcinoma of the palate.

Francis O. Hawley, M.D. University of Edinburgh, Scotland, 1868; aged 69; city physician and health officer of Charlotte, N. C.; died at his home in that city, September 14, from cerebral hemorrhage.

C. Beverly Martin, M.D. Hospital College of Medicine, Louisville, 1903; aged 35; a member of the Kentucky State Medical Association; died suddenly at his home in Greenville, Ky., December 1.

Lewis Lanzer, M.D. Eclectic Medical College of the City of New York, 1892; University of Tennessee, Nashville, 1896; aged 50; died at his home in Brooklyn, December 3, from diabetes.

James S. Miller, M.D. University of Louisville, Ky., 1877; aged 62; president of the Titus County (Texas) Medical Society in 1910; died at his home in Mt. Pleasant, Texas, November 28.

Jule E. Marcus, M.D. Cincinnati College of Medicine and Surgery, 1871; aged 64; a member of the Ohio State Medical Association; died at his home in Walnut Hill, Cincinnati, December 6.

Alexander C. Faivre (license, Crawford County, Pa., 1881), aged 78; for many years a practitioner of Meadville, Pa.; died at the home of his daughter in that city, November 26.

Abraham Turner Fulton, M.D. New York University, New York City, 1882; aged 60; of Mount Vernon, Ohio; died in the Mount Vernon Hospital, November 29, from nephritis.

Erner Jones, M.D. Memphis Hospital Medical College, 1882; aged 38; formerly a member of the Arkansas Medical Society; died at his home in Harrell, Ark., November 28.

Brice M. Sprayberry, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1882; aged 68; died at his home near Ellenwood, Ga., December 4, from nephritis.

Gabriel F. Thornhill, M.D. Hering Medical College, Chicago, 1898; aged 56; of Paris, Texas; died suddenly, in his automobile, December 6, from cerebral hemorrhage.

Joseph A. Kohout, M.D. University of Nebraska, Omaha, 1905; aged 35; formerly of Ord, Neb.; died at his home in Cuba, Kan., about November 10, from tuberculosis.

George Besson McCosh, M.D. Rush Medical College, 1880; aged 58; a practitioner and druggist of Morris, Ill.; died at his home in that place, December 5.

George Henry Wilkins, M.D. New York Homeopathic Medical College, New York City, 1883; aged 60; died at his home in Newtonville, Mass., November 17.

Bernhardt S. Schwarz, M.D. American Medical College, St. Louis, 1897; aged 74; formerly of Kansas City; died at his home in San Francisco, December 6.

Wesley Queen, M.D. Physio-Medical Institute, Cincinnati, 1864; aged 79; of Lincoln, Neb.; died at his home in that city, December 12, from senile debility.

Joseph Hormisdas Boucher, M.D. Laval University, Montreal, 1884; aged 59; died at his home in Woonsocket, R. I., September 25, from arteriosclerosis.

Henry Miller Hewitt, M.D. Rush Medical College, 1878; of Franklin Grove, Ill., and Chicago; died at the home of his aunt in Dixon, Ill., November 29.

Onofrio Abruzzo, M.D. College of Physicians and Surgeons in the City of New York, 1883; aged 74; died at his home in Brooklyn, December 7.

Thomas Jefferson Slayden, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 55; died at his home in St. Bethlehem, Tenn., December 1.

V. R. Kneberg, M.D. Homeopathic Medical College of St. Louis, 1889; aged 66; died at her home in Chetoka, Kan., November 16, from peritonitis.

William Martin Moran, M.D. Bellevue Hospital Medical College, 1887; aged 61; died at his home in Boston, September 2, from angina pectoris.

George Slocomb Wilson, M.D. Eclectic Medical College of the City of New York, 1881; aged 76; died at his home in Boston, November 30.

John B. DesRochers (license, Washington, 1889), aged 66; formerly of Spokane, Wash.; died at his home in Tacoma, Wash., December 2.

Ella M. Fowle, M.D. Hahnemann Medical College, Chicago, 1893; aged 61; died at her home in Denver, November 25, from carcinoma.

Henry T. Fisher, M.D. Lincoln Memorial University, Knoxville, Tenn., 1891; aged 67; died at his home in Knoxville, November 27.

John E. Robinson, M.D. Louisville Medical College, 1876; aged 63; died at his home in Bethany, Miss., November 9, from paresis.

Thomas R. Allen, M.D. Homeopathic Hospital College, Cleveland, 1866; aged 71; of Ionia, Mich.; died in Chicago, December 4.

Stanard D. Harris (license, Michigan, nineteen years' practice, 1900), aged 79; died at his home in Holly, Mich., December 1.

Charles F. Burger (license, years of practice, Michigan, 1900), aged 84; died at his home in St. Clair, Mich., December 2.

Silas C. Myers (license, years of practice, Iowa, 1887), aged 64; died at his home in Waterloo, Iowa, November 29.

Albo Miller, M.D. Jenner Medical College, Chicago, 1904; aged 51; died at his home, December 1, from heart disease.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

POSLAM AND SOME OFFICIAL OINTMENTS

The following inquiry was recently made by a physician who asked that his name be omitted:

> "One of my patients is anxious to learn something about Poslam, an alleged eczema cure. I should like to know if the composition of Poslam has ever been published. Are there any official products similar to it?"

Poslam was discussed in The Journal, May 22, 1909, page 1678 and on page 612 of "Nostrums and Quackery" (Second Edition). The results of a chemical analysis of this preparation made in the A. M. A. Chemical Laboratory as published in these articles indicated that Poslam consisted of:

Zinc oxid	12.01 parts
Sulphur	6.67 parts
Corn starch	22.00 parts
Tar oil	15.18 parts
Menthol	
Salicylic acid	
Fatty base, of each sufficient to make	100.00 parts

The results of the analysis were commented on as follows: "From the results of the analysis it can be seen that the preparation depends for its action on such simple remedies as zinc oxid, sulphur and oil of tar. These have long been used and known as more or less effectual remedies for the treatment of skin affections, but certainly do not warrant such claims as are made in the advertising matter sent out with poslam stating it to be 'The newest medical discovery for the treatment of eczema and all other skin affections' and '. . . entirely different from anything yet used. . . .'"

For skin affections which may be benefited by ointments the official pastes and unguents should be kept in mind. Needless to say these are as effective as the proprietary products and have the added advantage of being of known and more uniform composition. Among the pastes may be mentioned:

LASSAR'S NAPHTHOL PASTE

(Pasta Naphtholi, Lassar)

	gm. or c.c.	
Betanaphthol (U. S. P.), in very fine powder	10	gr. xlviij
Precipitated sulphur (U. S. P.)	50	ʒ iv
Petrolatum (U. S. P.)	20	ʒ iss
Soft soap (U. S. P.) sufficient to make	100	℥ j

Triturate the betanaphthol and sulphur with the petrolatum and then incorporate the soft soap with the mixture.

LASSAR'S MILD RESORCIN PASTE

(Pasta Resorcini Mitis, Lassar)

	gm. or c.c.	
Resorcinol (U. S. P.)	10	gr. xlviij
Zinc oxid	25	ʒ ij
Starch	25	ʒ ij
Liquid petrolatum (U. S. P.) sufficient to make	100	℥ j

Thoroughly levigate the zinc oxid with sufficient of the liquid petrolatum to make a thin paste. Reduce the resorcin to a very fine powder, mix with the starch and add the mixture to the zinc oxid paste, triturating until a uniformly smooth mixture is obtained. Then add the remainder of the liquid petrolatum, and incorporate it thoroughly.

LASSAR'S ZINC-SALICYL PASTE

(Pasta Zinci, Lassar)

	gm. or c.c.	
Salicylic acid, in fine powder	2	gr. x
Zinc oxid	24	ʒ ij
Starch	24	ʒ ij
White petrolatum (U. S. P.) sufficient to make	100	℥ j

Thoroughly levigate the zinc oxid with a portion of the petrolatum; then add the salicylic acid, the starch and the remaining petrolatum, and triturate until a perfectly smooth mixture is obtained.

UNNA'S SOFT ZINC PASTE

(Pasta Zinci Mollis, Unna)

	gm. or c.c.	
Zinc oxid	20	ʒ ij
Calcium carbonate	20	ʒ ij
Linseed oil	20	ʒ ij
Lime water sufficient to make	100	℥ j

Thoroughly levigate the zinc oxid and the calcium carbonate with the linseed oil, gradually added, so as to form a perfectly smooth mixture, then incorporate the lime water by trituration.

UNNA'S SULPHURATED ZINC PASTE

(Pasta Zinci Sulphurata, Unna)

	gm. or c.c.	
Zinc oxid	15	gr. lxxij
Precipitated sulphur (U. S. P.)	10	gr. xlviij
Silicic acid	5	gr. xxiv
Benzoinated lard (U. S. P.) sufficient to make	100	℥ j

Thoroughly levigate the zinc oxid with a small portion of the benzoinated lard; the silicic acid with another, and the precipitated sulphur with a third portion. Mix the three portions until a uniformly smooth mixture results, and thoroughly incorporate the remainder of the benzoinated lard.

COMPOUND RESORCIN OINTMENT

(Unguentum Resorcini Compositum)

	gm. or c.c.	
Resorcinol (U. S. P.)	6	gr. xxx
Zinc oxid	6	gr. xxx
Bismuth subnitrate	6	gr. xxx
Oil of cade	12	ʒ j
Paraffin	10	ʒ j
Petrolatum	25	ʒ ij
Hydrous wool fat...sufficient to make	100	℥ j

Triturate the resorcinol, zinc oxid, and bismuth subnitrate with a small quantity of the hydrous wool fat, until a perfectly smooth mixture is obtained. Incorporate this with the remainder of the wool fat, add the paraffin and petrolatum, previously melted together, and lastly, the oil of cade. Mix intimately, and preserve the ointment in containers protected from the light.

COMPOUND SULPHUR OINTMENT

(Unguentum Sulphuris Compositum)

	gm. or c.c.	
Precipitated calcium carbonate	10	gr. xlviij
Sublimed sulphur	15	gr. lxxij
Oil of cade	15	gr. lxxij
Soft soap (U. S. P.)	30	ʒ ij
Lard...sufficient to make	100	℥ j

Mix the lard with the soft soap and oil of cade. Then gradually incorporate the sublimed sulphur and precipitated calcium carbonate.

COMPOUND TAR OINTMENT

(Unguentum Picis Compositum)

	gm. or c.c.	
Oil of tar	4	gr. xx
Tincture of benzoin (U. S. P.)	2	gr. x
Zinc oxid	3	gr. xv
Yellow wax	25	ʒ ij
Lard	32	ʒ iiss
Cotton seed oil.....sufficient to make	100	℥ j

Melt the yellow wax and lard with the cotton seed oil at a gentle heat. Add the tincture of benzoin, and continue heating until all the alcohol has evaporated. Then withdraw the heat, add the oil of tar, and finally the zinc oxid, incorporating the latter thoroughly, so that on cooling, a smooth, homogeneous ointment may result.

Correspondence

Effects of Athletic Competition on Childbirth

To the Editor:—There seems to be a division of opinion among those interested in physical education as to the effects of strenuous athletic competition during adolescence on parturition. The consensus of opinion, apparently supported by the fact that the foreign-born American woman or those accustomed to hard life have an easier labor than the American woman of nervous temperament, seems to be that athletics are beneficial at all times, except possibly at the menstrual periods.

Besides the many factors, such as heredity, increased sensory conduction and reception, deficient muscular forces, etc., that influence childbirth, I believe there is a marked difference on the pelvis in the physiologic effect of the exercise performed.

The type of exercise (work) of the working woman has its predominating effect on the musculatures of the trunk and upper extremities. The movements are invariably rhythmic, slow and continued over a long period of time with a minimum stress and strain on the pelvis. The character of athletic movements is entirely different. Here the body weight is quickly shifted from one foot to the other, and there are sudden stops, starts and twists, with a maximum stress and strain on the pelvis.

In the latter condition the pelvis is apt to show more rigidity, and there is a generally increased muscular development, which is better adapted to sudden spasmodic effort. In the former case, there is a maximum muscular development with a minimum rigidity of the pelvis, and the musculature is more trained to continuous muscular exertion, which more readily meets the demands of labor.

I have been endeavoring to obtain data confirming or disproving the foregoing theory, and should like to hear from others interested in the subject. I have prepared for circulation a questionnaire and case-record blank, copies of which I shall be glad to furnish on request. The questionnaire covers the following points:

1. Is labor more difficult in the athletic girl, and if so, why?
2. If strenuous athletics are detrimental, what form of exercise would you advise?
3. At what period in a girl's life is the most injury done?

The history and record blank is a tabulated form to obtain:

1. Paternal and maternal histories as to physical characteristics.
2. Type, duration, etc., of the forms of athletics engaged in.
3. Character of the pelvis, of labor, etc.
4. Size, health, etc., of child.

G. Bigelow Mullison, M.D.,
5615 Girard Avenue, Philadelphia.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CU-CO-BA, TARRANT

To the Editor:—What is there to all this?
W. E. Delaney, M.D., Williamsport, Pa.

Answer.—"This" is a circular letter in which it is asserted that:

"More favorable results are reported from the administration of CU-CO-BA, Tarrant, in cases of pyelitis, inflammation of the bladder, urethritis, urethro-blenorrhea, vaginitis, leucorrhea than from any other combination."

Cu-co-ba, Tarrant (Tarrant Company, New York) is described as "a preparation of the purest and most highly esteemed variety of balsam copaiba with a concentrated extract of cubebs." It appears to be one of the balsamic preparations for internal use that formerly were in vogue as a routine measure in the treatment of gonorrhea. Little reliance is now placed in this form of treatment by the medical profession, but a portion of the public still has faith in it.

LITERATURE ON WAR SURGERY

To the Editor:—Please give me information or send me literature on war surgery.
Robert W. Shipp, M.D., Austin, Texas.

Answer.—The following is a list of references to articles which have been published in The Journal on this subject. The index of the current literature for the past year and a half contains numerous references under the headings of war, wounded soldiers, etc.

Mills, L.: Projectile Wounds of the Head: Experiences During Recent Service in Austria, The Journal, Oct. 23, 1915, p. 1424.
Wounds and Hydrogen Peroxid, editorial, The Journal, Sept. 4, 1915, p. 878.
Sir Wiliam Osler on Wounds and Diseases in War, The Journal, Aug. 7, 1915, p. 543.
Drennen, W. E.: Experiences in Military Surgery, The Journal, July 24, 1915, p. 296.
Jablons, B.: Pathology of War Surgery, The Journal, June 19, 1915, p. 2045.
War Experiences With Infected Wounds, editorial, The Journal, May 22, 1915, p. 1764.
Mills, L.: Wounds Received in Battle, The Journal, April 10, 1915, p. 1224.
War Surgery, editorial, The Journal, March 13, 1915, p. 912.
Current Aspects of Military Surgery, editorial, The Journal, March 6, 1915, p. 832.
Blech, G. M.: Military Surgery, The Journal, Jan. 9, 1915, p. 167.
Hoguet, J. P.: Observations on Military Surgery in the Early Weeks of the War, The Journal, Dec. 19, 1914, p. 2194.

HYDROCHLORIC ACID IN GASTRIC JUICE—NICHROME WIRE AS A SUBSTITUTE FOR PLATINUM

To the Editor:—1. Kindly inform me what are considered the normal free hydrochloric acid findings in gastric juice. I was taught and have always considered from 25 to 30 tenth-normal sodium hydroxid to be about correct. Niles places it at 0.2 per cent. hydrochloric acid, but also states it as being from 15 to 25 tenth-normal sodium hydroxid, which is not quite 0.1 per cent. Webster says from 0.2 to 0.3 per cent. hydrochloric acid, and gives his figures as from 50 to 55 or from 0.18 to 0.2 per cent. hydrochloric acid. Lately articles in The Journal place it as high as 0.5 per cent. Will you kindly clear this muddle for me?

2. Please supply me with the name of the wire which is used in place of platinum. S. Roy Mills, M.D., Braddock, Pa.

Answer.—1. It is fairly safe to assert that the average of free hydrochloric acid in normal pure gastric juice is higher than it was formerly stated to be. Recent examinations of pure human gastric juice by Carlson show that the total hydrochloric acid averages 0.45 per cent. and the free hydrochloric acid 0.4 per cent. These figures apply to gastric juice obtained from one person, but data furnished from other sources indicate that they approximate the usual averages for pure gastric juice.

2. Nichrome wire.

MEDICAL HISTORY

To the Editor:—1. Do any of the medical colleges in the United States have chairs of medical history?

2. Please give me a list of the best books on the history of medicine.

3. Please refer me to magazines dealing with medical history or publications which have a department of medical history. I. L. M.

Answer.—1. No. Fourteen schools offer courses of from three to thirty hours, and these are usually optional.

2. Such a list appeared in The Journal, Feb. 7, 1914.

3. Publications:

Janus: Archives internationales pour l'histoire de la médecine et pour la géographie médicale, published in Amsterdam, Bimonthly.
Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften, Hamburg.
Proceedings of the Royal Society of Medicine, published by Longmans, Green & Co., New York, Section on History of Medicine.

ORTHOFORM-NEW UNDER THE HARRISON LAW

To the Editor:—Please tell me whether the sale of orthoform comes under the Harrison law. The local druggist has been instructed by the manufacturers that the status of orthoform is undecided.
J. S. White, M.D., St. Paul.

Answer.—As orthoform is no longer on the market, we take it that our correspondent's inquiry refers to "orthoform-new." As stated in The Journal, Nov. 20, 1915, p. 1837, "Treasury Decision 2194 requires the registration of any 'artificial substance or preparation which is or may be substituted for cocain, alpha or beta eucaine, or any of their salts as ordinarily prescribed or used. . .'" New and Nonofficial Remedies, 1915, p. 35, states that "orthoform-new is a local anesthetic, resembling cocaine in its local action. . . ." It would seem that the treasury decision contemplates registration of orthoform-new.

ARTICLES ON INTESTINAL CAUSES OF EPILEPSY

To the Editor:—Where can I find recent literature on the intestinal causes of epilepsy? Austin M. Grove, M.D., York, Pa.

Answer.—The following is a list of articles on this subject:

Cornwall, E. E.: Clinical Study of Case of Epilepsy Apparently of Intestinal Origin, *Arch. Diagnosis,* July, 1915; abstr., The Journal Oct. 16, 1915, p. 1404.
Francaviglia, M. C.: Reflex Epilepsy from Intestinal Helminthiasis, *Policlinico,* Rome, Aug. 1, 1915; abstr., The Journal, Sept. 4, 1915, p. 913.
McCoy, W. K.: Intestinal Intoxication: Headaches and Epilepsy, *Lancet-Clinic,* April 24, 1915.
Reed, C. A. L.: Probable Cause and Logical Treatment of Epilepsy, The Journal, March 27, 1915, p. 1047.
Powers, H.: Rôle of Gastric and Intestinal Stasis in Some Cases of Epilepsy, *Boston Med. and Surg. Jour.,* Aug. 7, 1913; abstr., The Journal, Sept. 6, 1913, p. 807.
Berger, F.: Epileptic Seizures from Appendicitis, *Med. Klin.,* Feb. 18, 1912.
Axtell, W. H.: Acute Angulation and Flexure of the Sigmoid a Causative Factor in Epilepsy, *Am. Jour. Surg.,* December, 1910; abstr., The Journal, Jan. 7, 1911, p. 74; *Am. Jour. Surg.,* August, 1911; abstr., The Journal, Aug. 26, 1911, p. 767.
Skoog, A. L.: Focal Epilepsy, *Surg., Gynec. and Obst.,* December, 1911.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

California: Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Colorado: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, Jan. 11, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Illinois: Chicago, Jan. 13-15, 1916. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 11, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

Minnesota: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

New Mexico: Santa Fé, Jan. 10, 1916. Sec., Dr. W. E. Kaser, East Las Vegas.

New York: Albany, Buffalo, New York and Syracuse, Jan. 25-28, 1916. Chief, Examinations Division, Mr. Harlan H. Horner, State Education Bldg., Albany.

North Dakota: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

Oregon: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

Pennsylvania: Philadelphia, Jan. 18-20, 1916. Sec., Mr. Nathan C. Schaeffer, Harrisburg.

Rhode Island: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

South Dakota: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Washington: Spokane, Jan. 4, 1916. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Texas June Report

Dr. M. P. McElhannon, secretary of the Texas State Board of Medical Examiners, reports the practical and written examination held at Austin, June 22-24, 1915. The total number of subjects examined in was 12; total number of questions asked, 132; percentage required to pass, 75. The total number of candidates examined was 139, of whom 136 passed, including 15 osteopaths, and 3 failed, including 1 osteopath. Thirty-three candidates were licensed through reciprocity. Seven candidates were granted reregistration licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1915)	90
Rush Medical College	(1910)	88
University of Louisville	(1915)	81, 89
Tulane University of Louisiana	(1885) 75; (1902)	83, 89; (1907) 89; (1910) 82; (1915) 86, 86, 88, 89, 89, 89, 90, 91, 92
Johns Hopkins University	(1913)	88, 90
Harvard University	(1908) 84; (1915)	86
St. Louis Coll. of Phys. and Surgs	(1914) 78; (1915)	76
Columbia University, College of Phys. and Surgs	(1911)	92
New York Homeo. Med. Coll. and Flower Hosp	(1915)	87
University of Pennsylvania	(1915)	83
Meharry Medical College	(1915)	76, 79, 81, 86, 86, 87, 89
University of Tennessee	(1912) 75; (1914) 86, 86; (1915)	76, 83, 84, 86, 92.
Vanderbilt University	(1913) 88; (1914) 81, 83; (1915)	80, 81, 84, 84, 86, 87, 88, 88, 90, 91, 92.
Baylor University	(1915)	79, 81, 81, 83, 84, 84, 85, 86, 87, 87, 87, 89, 91, 92, 93.
Southern Methodist University	(1915)	84, 85, 87, 90, 93
Fort Worth School of Medicine	(1915)	81, 81, 82, 84, 84, 85, 86, 86, 87, 87, 92.
University of Texas	(1914) 92; (1915)	80, 82, 83, 84, 84, 84, 85, 85, 86, 86, 87, 87, 87, 88, 88, 89, 89, 89, 89, 89, 89, 90, 90, 91, 91, 91, 93, 93.
National School of Medicine, Mexico	(1887) 75; (1893)	83; (1900) 82; (1901) 81.
School of Medicine of Nuova Leon, Monterey	(1899)	78

FAILED

College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1914)	*
University of Tennessee	(1915)	*

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Arkansas Industrial University	(1889)	Oklahoma
Atlanta College of Physicians and Surgeons	(1902)	Oklahoma
Atlanta Medical College	(1894)	Georgia
College of Physicians and Surgeons, Chicago	(1905)	Arkansas
Jenner Medical College	(1912)	Arkansas
Rush Medical College	(1902)	Wisconsin
Kentucky School of Medicine	(1892)	Georgia
Louisville Medical College	(1896)	Georgia
University of Louisville	(1913)	W. Virginia
Maryland Medical College	(1901)	W. Virginia
Tufts College Medical School	(1903)	Missouri
Detroit College of Medicine	(1897)	Michigan
University of Michigan Medical School	(1909)	Minnesota
University of Minnesota	(1907)	N. Dakota
Eclectic Medical University, Cincinnati	(1914)	Arkansas
Kansas City Homeo. Med. College	(1899)	Missouri
St. Louis University	(1912) (1913)	Missouri
Medical College of Ohio	(1907)	Ohio
Miami Medical College	(1881)	Ohio
Ohio Medical University	(1898)	Ohio
Western Reserve University	(1893)	Ohio
Hahnemann Medical Coll. and Hosp., Philadelphia	(1907)	Maryland
University of Pennsylvania	(1913)	Maryland
Meharry Medical College	(1904)	Missouri
Memphis Hospital Medical College	(1897)	Mississippi
Vanderbilt University	(1888) Kentucky; (1893) Indiana; (1900)	Kentucky
Baylor University	(1908)	Oklahoma
Fort Worth School of Medicine	(1906)	Oklahoma

LICENSED BY ORDER OF THE BOARD

Two graduates of the National School of Mexico were granted reciprocity licenses by the order of the board. The years of graduation were not given.

* No grade given.

Michigan June Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the oral and written examination held at Ann Arbor, June 8-10, 1915. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 59, of whom 55 passed and 4 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1915)	88.8
Louisville Medical College	(1897)	75
University of Michigan Medical School	(1915)	79, 80.9, 81, 81.2, 81.5, 81.7, 82.1, 82.4, 82.8, 83.2, 83.2, 83.4, 83.6, 83.8, 83.9, 84.1, 84.9, 85.2, 85.2, 85.7, 85.8, 85.8, 85.8, 86.1, 86.6, 86.7, 86.9, 87, 87.1, 87.4, 87.5, 87.6, 88, 88.2, 88.9, 89.3, 89.5, 89.7, 91.3.
University of Michigan Homeo. Med. School	(1915)	75, 76.7, 80.2, 82, 82.6, 83.5, 83.6, 84.8, 85.1, 85.1.
Eclectic Medical College, Cincinnati	(1915)	82
University of Pennsylvania	(1915)	83.6, 91.7
University of Pittsburgh	(1915)	82.9

FAILED

College	Year Grad.	Per Cent.
University of Michigan Medical School	(1915)	*
University of Michigan Homeo. Med. School	(1915)	*, *, *

* Conditioned in pathology; no grade given.

Oregon July Report

Dr. J. L. Hamilton, secretary of the Oregon State Board of Medical Examiners, reports the written examination held at Portland, July 6-8, 1915. The total number of subjects examined in was 15; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 49, of whom 31 passed and 18 failed. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
California Eclectic Medical College	(1914)	1
College of Physicians and Surgeons, San Francisco	(1915)	1
Bennett College of Eclectic Medicine and Surgery	(1884)	1
Chicago College of Medicine and Surgery	(1914)	1
Hahnemann Medical College and Hospital, Chicago	(1894)	1
Northwestern University	(1905) (1914)	2
Rush Medical College	(1911)	1
University of Louisville	(1913)	1
Baltimore Medical College	(1901)	1
University of Michigan, Homeo. Medical School	(1913)	1
St. Louis College of Physicians and Surgeons	(1915)	1
St. Louis University	(1908)	1
University Medical College, Kansas City	(1910)	1
University of Oregon	(1915)	11
Hahnemann Medical Coll. and Hosp., Philadelphia	(1915)	1
Jefferson Medical College	(1912, 2) (1913)	3
Woman's Medical College of Pennsylvania	(1909)	1
McGill University	(1914)	1

FAILED

College	Year Grad.	Total No. Licensed
College of Medical Evangelists	(1914)	1
College of Physicians and Surgeons, San Francisco	(1915)	1
George Washington University	(1907)	1
Bennett Medical College	(1913)	1
Chicago College of Medicine and Surgery	(1914)	1
Indiana University	(1909)	1
Louisville and Hospital Medical College	(1908)	1
St. Louis College of Physicians and Surgeons	(1904) (1915)	2
St. Louis University	(1905)	1
University of Oregon	(1908) (1910) (1915, 4)	6
Willamette University	(1905) (1907)	2

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.

CHICAGO GYNECOLOGICAL SOCIETY

Stated Meeting, held Nov. 19, 1915

Dr. Channing W. Barrett in the Chair

The Induction of Labor at Term

Dr. Charles B. Reed: Can we determine whether or not the child has reached maturity, thus fixing the time at which labor should occur? A child weighing more than 8 pounds is past maturity in 70 per cent. of cases. We accept seventeen weeks from conception as the day of quickening and forty-two weeks as the culmination of pregnancy. Sometimes a week more is allowed, depending on the number of labors which the patient has had. The work may be done under any aseptic environment, but the hospital is preferable. Attention should be given to the bowels the night before, and in the morning the usual obstetric preparation of the genitalia should be made. Under the strictest asepsis a Voorhees bag is introduced without rupture of the membranes, the patient being in the exaggerated lithotomy position. Anesthesia is necessary only occasionally, even in primiparas. If the os is not sufficiently patulous to admit the bag, it should be dilated. The bag is rolled up to a compact mass, seized with a Péan forceps and passed into the uterus and filled with an ordinary hand syringe. If the pains do not start in an hour, a weight of a pound or two is attached to the bag and hung over the foot of the bed. Usually in from one to two hours the labor begins. The bag remains for a variable period, rarely more than four hours, when it is expelled with strong pains. Dilatation is practically complete. The head follows the bag down, the membranes rupture and the second stage begins. From now on the case is managed according to general obstetric principles. If the pains are weak and shallow, pituitary extract is given; if strong and regular, morphin and scopolamin, gas or chloroform may be used. The first stage has been shortened and controlled. The bag acts as a dynamic stimulant to the contractions as well as a mechanical aid to dilatation, and preserves the membranes from rupture until physiologic rupture occurs.

It is believed that shortening the labor process and the preservation of maternal vitality make for immunity and prevent the infection that might follow a prolonged labor. The second danger is the possibility of prematurity. This happened once. The case was not supervised, and an intern, supposed to be reliable, measured the uterus instead of the fetus. The result was a seven months' child. It has been urged as an objection to the bag that it frequently changes the location of the presenting part. This occurred two or three times, but was not unfavorable.

In a series of 100 cases, the results were as follows: primiparas, 35; multiparas, 65; average duration of labor, seven and three-quarters hours; shortest labor, fifty-five minutes; longest, thirty hours in a primipara with a hard, cartilaginous cervix, and twenty-eight hours in a multipara with cicatricial tissue in the cervix. The bag broke six times, and was reinserted three times; the average time for expulsion of the bag was three hours and twenty minutes; membranes ruptured by bag, eleven; maternal deaths, two, one from placenta praevia and one from pneumonia eight days after labor; average weight of children, 7 pounds, 7 ounces; smallest, 5 pounds; heaviest, 10 pounds, 5 ounces; seven babies died, one a child of a primipara after a spontaneous labor of sixteen and a half hours; a baby born in asphyxia pallida, and revived with difficulty, died eight hours later; second, of a multipara; labor eleven and a half hours; blue baby; revived, and died suddenly thirty-six hours later; third and fourth children, compression of cord at outlet, one syphilitic; fifth and sixth children, moderately contracted pelvis in a primipara; one occipital posterior position stillborn. This is the only case attributable to the method.

Complications: Version and expression, 3; breech, 4; placenta praevia, 2, and collapse of the arm, 1; moderately contracted pelvis, external conjugate 8 cm., 6; stenosis, 1; motor insufficiency, 1; lacerations, 17; grave albuminuria, 1; forceps, axis traction, 2; low forceps for occipital posterior, 9; deep transverse arrest, 8; insufficiency of power, 4; total, 23. Elevation of temperature, 7.

DISCUSSION

Dr. J. Clarence Webster: The induction of labor at a calculated date is not new. I should like to emphasize that there is no means of calculating the exact age of the fetus in utero, because no one yet knows when conception begins. There is always a period of uncertainty of one or two or three weeks; consequently the determination of the time of maturity is guesswork to a considerable extent even in the hands of the expert. A 4½ or 5 pound child may be just as well developed as one weighing 7 or 8 pounds, and the measurements will be different. One good object that can be gained by this procedure is the prevention of an extension beyond term, which is so bad for many mothers and children. I employed a similar technic for many years, but in later years I have abandoned forceps and have used the fingers. In primiparas I always dilate the vagina with the cone-shaped hand covered with a rubber glove, and I then study the condition of the cervix. In the great majority of primiparas or multiparas one can dilate the cervix with the finger. I have seen a very bad tear caused by the use of the vulsella on the cervix in this process, and I rarely use them. Cases with rigid cervix I do not consider fit for the bag at all. I think one of Dr. Reed's long labors was a typical case of rigid cervix. That is a case for a vaginal or abdominal cesarean section, but not for dilatation. In reference to the shortness of the labor, for sixteen years I have generally introduced the bag in the forenoon. In the great majority of cases the labors have not come off until late in the evening, toward midnight, or the next morning. I think a very small percentage of labors have come off within six hours. In the great majority of these cases no weight was attached to the bag. The attachment of a weight has advantages, if one wishes to insure the stimulation of the uterus and the early development of good pains. One point that Dr. Reed did not mention is that in those cases of first stage slight pains that keep the woman in uncertainty and misery and spoil sleep for a long number of hours, the introduction of a Voorhees bag is one of the very best clinical measures that can be adopted to shorten this period and bring about dilatation.

Dr. Charles E. Paddock: If Dr. Reed intends this as an instruction to us to deliver every case at term or as near term as we can judge the case, then we are meddling somewhat with obstetric practice. In the attempt to carry out this line of treatment we will have many failures. I cannot find the cervix dilated or dilated sufficiently in every primipara to admit a bag in the manner described. I cannot do it without at first dilating at least one third of the primiparas that come to me, and without putting the majority of them under an anesthetic to do it. In about nine tenths of the cases in which I have seen the woman throughout pregnancy I know when she is at term, and I advise that she go to the hospital and have the pregnancy interrupted, provided the cervix is in such shape that it can be done without any great traumatism to the mother or danger to the child. But to send out such a teaching to the world as the treatment to pursue I do not believe is right.

Dr. Rudolph W. Holmes: I have been hearing rumors of Dr. Reed's method, and I have been very skeptical about it. I could not believe it possible that any one would want to induce labor in every case. People may consent to the procedure, and if there is failure there will be intense criticism, deep prejudice will be aroused, and great hardship will be worked to physicians. I think it is ill advised to make it a leading practice in obstetrics. I am convinced that a woman postmature is as rare as flies on the north pole. Dr. Reed has made the mistake of delivering a seven months' baby, and I know of a cesarean section that was done here at seven months. I have used the bag in 100 cases. In one case of placenta praevia I had the placenta out and the uterus tamponed in ten minutes. In another case I had the bag in five days and then had to secure delivery by cutting. Each bag would work for a time and then the cervix would go back. The bag does not secure sufficient dilatation—only a little more than half. To put in a large bag is a great volume to put into the uterus, and it will dislodge the head. When the bag comes out, the head, if favorably placed, will slip back into place. But they are dislodged, and the fact that Dr. Reed had several occipitoposterior positions is suggestive. If he follows up his experience, I believe he is going to be convinced that the bag dislodges the head, and when it slips back into the pelvis it will take an abnormal position.

Dr. Rachel Yarros: We have been trained to leave our obstetric patients alone, or to meddle with them as little as possible. In abnormal cases the bag does not work so remarkably as in Dr. Reed's cases. I have never had a case in a primipara in which the bag worked as successfully, and especially a small bag. It is expelled before there is time for the membranes to rupture or for the baby to be delivered.

Dr. N. S. Heaney: Any method of shortening the first stage of labor without danger to the mother or child is desirable. We have not used traction in connection with the bag according to the method of Dr. Reed, except in placenta praevia, and then just enough weight to stop the hemorrhage. Lately I have been using traction in a larger percentage of cases by means of rubber tubing from a fountain syringe.

Dr. Frank Carey: I am inclined to let my patients get into labor before I undertake to do anything. I have not been able to tell when a patient is at full term, and until I can do that I shall hardly be inclined to resort to artificial means until the patient is in labor.

Dr. R. T. Gillmore: I have watched Dr. Reed for some time, and I confess that it has taught me to fear the bringing on of labor less than before I was familiar with it. I am inclined to believe Dr. Reed's theory of the patient not being tired out and not having the exhaustion of the nervous elements is an important factor both in the patient's recovery and in the prevention of sepsis. I am going to try it oftener in hospital cases, in which asepsis is perfect and I have better control.

Dr. Carey Culbertson: For some months I have used the method in my private cases, pathologic and clinical, at what we call "term." I think all obstetricians will agree that it does not make very much difference, as far as recovery goes, whether a baby is born at 280, 285 or 290 days, or throughout a fourteen-day period. I have been inducing labor after the 280th day, choosing the day when the patient expressed the desire to have the baby. The first stage has been shortened and the entire labor is confined to forty-eight hours, whether the patient is a primipara or a multipara. The second stage is not materially altered, because the bag is out. As far as the displacement of the head is concerned, in multiparas that is not an important factor, because in the average multipara the head is not in the pelvis. I find as a rule that the head returns to the pelvis when the bag is out of the cervix in the vagina. There are occasional cases in which labor is not induced, in which it cannot be induced by any artificial means and the patient must be delivered surgically, but that does not happen oftener than once in twelve or fifteen times. I think we are using a larger bag than Dr. Reed. I have never found it necessary to put the bag in three or four or five times. I should not do it, especially every day. I should allow two or three days to intervene. As a rule, I do not find it necessary to employ traction, but when I do I use the elastic tube. It is important not to make too much traction, and the bag can be too tight in the cervix. A little tension is all that is required. I usually expect contractions to occur immediately after the introduction of the bag. When the bag has been in all night or all day and pains do not come on, I think it best to take the bag out. It certainly should not be left in twenty-four hours.

Dr. Mark T. Goldstine: The impression is that the technic of this is simple. I have just the opposite impression. I do not think the introduction of the bag and the management of the case afterward is always as simple as one would be inclined to believe from what has been said here. I would not say that the introduction of the bag is difficult, but the asepsis and carefulness required after the bag is introduced are far from simple, and it requires either the man himself to watch his patient or some one who has had a great deal of experience. Dr. Reed's success I attribute as much to the lack of intravaginal manipulation as to the short labor. In the great majority of cases the only intravaginal manipulation done would be the introduction of the bag. No other vaginal examinations are made. I think that has some bearing on his lack of morbidity. The work will impress a great many men. I should like to see the same procedure tried in a series of normal cases, leaving out the abnormal ones.

Dr. Charles B. Reed: It makes little difference whether the child comes two weeks before full term or not; it does make a difference whether the child is delivered two weeks after the expected time. Dr. Paddock made use of the term "meddlesome obstetrics." I suppose it is. I used to hear the term applied to surgery when some one was going to open an appendiceal abscess. The point is, Are we going to control the situation from the beginning, or shirk responsibility? If we are going to be men we will take the responsibility and take what blame comes to us and not claim to be obstetricians. As to the introductoin of the bag, Dr. Paddock and others manifested an unwillingness to do it without an anesthetic. My associates at the hospital see one bag introduced, and after that they introduce it themselves. My interns will put in the bag without an anesthetic and without any difficulty whatever, provided they have the manual dexterity. Deliver at the time set, in as short a time as possible, and make it as nearly painless as possible. The small bag has been chosen purposely. We have experimented with large sized bags. We have selected the small bag deliberately because we do not want to get complete dilatation. We inaugurate labor and let Nature complete it. Formerly when the bag came out the pains might cease, but now we have pituitary extract, the labor continues and the woman is delivered. The babies do not suffer and the women do not suffer more than a few hours. The technic is important, and I am free to say that the cases do require an unusual amount of attention.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

December, CL, No. 6, pp. 781-936

1 *Complement Fixation in Diagnosis of Pulmonary Tuberculosis. C. F. Craig, U. S. Army.
2 *Landry's Paralysis; Report of Case with Necropsy and Histopathologic Findings. E. D. Fisher, New York.
3 Value of Symptomatic Drug Treatment. J. L. Miller, Chicago.
4 Problems of Nephritis from Clinical Standpoint. A. R. Elliott, Chicago.
5 Chronic Interstitial Nephritis and Arteriosclerosis. O. Klotz, Pittsburgh.
6 Certain Syphilitic Affections of Heart and Aorta. J. M. Anders, Philadelphia.
7 *Heart Cases Showing Vagus Influence. M. H. Sicard and F. S. Meara, New York.
8 "Sugar" Content of Spinal Fluid in Meningitis and Other Diseases. A. H. Hopkins, Philadelphia.
9 *Tubercle Bacilli not Stainable by Ziehl; Their Clinical Significance. C. N. Meader, Denver.
10 *Hodgkin's Disease; Study of Twenty-Five Cases. W. F. Cunningham, New York.
11 Citrate Method of Blood Transfusion in Children. R. Lewisohn, New York.

1. **Complement Fixation in Tuberculosis.**—Craig believes that in this method we possess a valuable aid in the diagnosis of active tuberculous infection and a guide as to the results of therapeutic measures. The general technic of the complement fixation test for tuberculosis experimented with is that employed in making the Wassermann test. The

antigen employed consists of an extract of several strains of the human tubercle bacillus. A human hemolytic system was employed. As complement guinea-pig blood serum was used, Craig tested the blood of 166 patients suffering from pulmonary tuberculosis. In addition, the blood of 150 syphilitic as well as of 100 patients suffering from other diseases was tested, and also 150 normal individuals who were used as controls. Of the 142 cases of pulmonary tuberculosis that reacted to the test, 119 gave a double-plus reaction and 23 a plus reaction; of the 103 cases of active infection reacting, 87 gave a double-plus reaction and 16 a plus reaction; while of the 39 inactive cases of infection, 32 gave a double-plus reaction and 7 a plus reaction. Of 150 syphilitics tested, all giving a positive Wassermann, not one gave a positive reaction with the antigen employed in the complement fixation test for tuberculosis. Of the patients suffering from other diseases, 100 in number, all gave a negative reaction. The blood serum of 150 individuals in good health and free from tuberculous infection was tested and a negative result was obtained in every instance. The results of the test also demonstrate that while a patient may have a clinically inactive tuberculous infection, the blood often gives a positive complement fixation reaction, and this fact, Craig says, should prove of considerable value in the control of the treatment of the disease.

2. Abstracted in The Journal, June 12, p. 2013.

7. **Heart Cases Showing Vagus Influence.**—One of the cases cited by Sicard and Meara, a case of simple increased frequency of the heart's action, was controlled and slowed by compression of the right vagus governing the sinus node, the slowed impulses from which were transmitted through junctional tissue to the ventricles, maintaining normal rhythm; this is what one would expect. The other case, one of tachycardia of auricular origin, was slowed by compression of the left vagus.

9. **Tubercle Bacilli Not Stainable by Ziehl.**—In any patient suspected of tuberculosis in whom Ziehl forms cannot be demonstrated, Meader says, it is as important to search for Gram-staining forms as it was for the Ziehl-staining bacilli, and a diagnosis of tuberculosis cannot be certainly excluded until such search has proved negative. The type of case in which they are characteristically present strongly supports the conception that they represent a resistance stage of low virulence, and their presence alone warrants a much more favorable prognosis than does the presence of Ziehl forms. Further, they are probably a definite factor of as yet undetermined importance in the spread of tuberculosis.

10. **Hodgkin's Disease.**—According to Cunningham, the treatment of Hodgkin's disease is excision of all foci of infection and Roentgen rays. Vaccines are of no value. For diagnosis in lymphatic disturbances, more than one gland should be obtained. The following evidence is given to support it as an infection, bacterial or protozoan in origin: (a) the histology is that of an inflammatory reaction; (b) injections of gland emulsions have caused temporary lymphatic enlargement in lower animals (literature); (c) the fever resembles closely that of other infections; (d) the leukocytosis; (e) the exudate when serous surfaces are involved. The specific organism has not been isolated.

American Journal of Physiology, Baltimore

December, XXXIX, No. 2, pp. 131-238

12 *Effect of Chloroform on Factors of Coagulation. G. R. Minot, Boston.
13 Peristalsis and Coordination in Earthworm. W. E. Garrey and A. R. Moore.
14 *Cardio-Inhibitory Center. F. R. Miller and J. T. Bowman, London, Canada.
15 Effects of Aqueous Extracts of Organs on Contractions of Unstriated Muscle Fibers. G. G. Fawcett, J. M. Rahe, G. S. Hackett and J. Rogers, New York.
16 Feeding of Young Chicks on Grain Mixtures of High and Low Lysin Content. G. D. Buckner, E. H. Nollau and J. H. Kastle, Louisville, Ky.
17 Electrical Studies in Mammalian Reflexes. Correlation Between Strength of Stimuli and Direct and Reflex Nerve Response. A. Forbes and A. Gregg, Boston.
18 *Evidence of Vasotonic and Vasoreflex Mechanism. W. T. Porter and A. H. Turner, Boston.

12. **Effect of Chloroform on Factors of Coagulation.**—In his experimental work Minot found that antithrombin is rendered inactive by chloroform and ether, thus allowing free thrombin if present in an oxalated plasma to clot fibrinogen. Prothrombin is not converted to thrombin by chloroform. Chloroform can precipitate both fibrinogen and prothrombin from an oxalated plasm. Chloroform does not weaken the action of a solution of pure thrombin. Ether does slightly. Antithrombin could not be recovered from chloroform or ether extracts of serum or plasma, unheated or heated to 60 C., and is not exactly identical to antitrypsin or to Doyon's antithrombin. In one chloroform poisoned rabbit the antithrombin of the blood was decreased below normal.

14. **Cardio-Inhibitory Center.**—The results of the experiments made by Miller and Bowman show that the cardio-inhibitory center is situated in the dorsal vagus nucleus and are thus in harmony with the histologic investigations of Kohnstamm and of van Gehuchten and Molhant.

18. **Vasotonic and Vasoreflex Mechanism.**—The method employed by Porter and Turner consisted in applying curare to the vasomotor center hitherto believed to control both the vasotonic and the vasoreflex function. Curare left the tonus unchanged, while the depressor and the sciatic vasomotor reflexes were more than doubled. Curare thus separated the vasoreflex from the vasotonic function. Certain doses of alcohol leave the tonus unchanged while completely suspending the vasomotor reflexes. Neither phenomenon would be possible if the vasotonic and the vasoreflex mechanism were identical.

Southern Medical Journal, Birmingham, Ala.

December, VIII, No. 12, pp. 1019-1122

19 *Abscess of Liver. J. B. Elliott, Jr., New Orleans.
20 Renal Infections, with Special Reference to Distant Foci. C. M. Nice, Birmingham.
21 Detection and Diagnosis of Gallstones by Roentgen Ray. G. M. Niles, Atlanta, Ga.
22 Disease — Neglected Factor in History. J. W. Fries, Winston-Salem, N. C.
23 *Test of Diet in Prevention of Pellagra. J. Goldberger, C. H. Waring and D. G. Willets, Washington, D. C.
24 *Treatment of Pellagra by Diet. D. G. Willets, Washington, D. C.
25 Sanitation of Vera Cruz, Mexico, During American Occupation. W. D. Wrightson, Washington, D. C.
26 Full-Time Health Officer Work in Walker County (Ala.). C. A. Grote, Jasper.
27 Local Anesthesia Laparotomy for Forty-Three-Pound Multilocular Ovarian Cyst in Patient Seventeen Years of Age. H. P. Cole, Mobile.
28 Importance of Faucial Tonsil as Portal of Entry in Tuberculous Cervical Adenitis; Twenty-Nine Cases. B. C. Willis, Richmond, Va.
29 Vocal Strain from Laryngologist's Standpoint; Its Causes and Prevention. W. A. Wells, Washington, D. C.

19. **Abscess of Liver.**—While the ameba histolytica was found by Elliott in only 21.5 per cent. of 116 cases, he believes that more correct methods of investigation would show it to be the primal cause in at least 80 per cent. of the cases. The most constant symptoms are pain in region of the liver, loss of weight and increased leukocyte count. The aspirating needle used for exploration should be at least 5 inches in length. Exploratory laparotomy is justifiable in doubtful cases. Emetin should be used in all cases of hepatic abscess as a regular postoperative measure. Elliott urges that all recurring diarrhea in the South should be studied carefully. He is of the belief that many of these cases are amebic in origin.

23 and 24. Abstracted in The Journal, December 11, p. 2114.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

November, XX, No. 6, pp. 175-208

1 *New Therapeutic Roentgen Ray Localizer. R. Knox and A. St. George Caulfeild.
2 Photographic Action of Radio-Active Sources. W. Makower.

3 Fluorescent Screen Localization by Parallax Method. A. C. Jordan.
4 *Roentgenograms to Illustrate Velocity of Rifle Bullet as Determining Factor in Extent of Injury. G. Vilvandre.

1. **New Therapeutic Roentgen Ray Localizer.**—The principle employed by Knox and Caulfeild is that of the rotating tube, making a circle on the surface and focusing the sheaf of rays on a point in the interior whose depth is determined by the angle at which the tube box is fixed. The chief field of action for the centering device is in the treatment of malignant disease. It will be possible to attack a growth from all aspects and the maximum dose to be administered at will to selected areas of the growth.

4. **Roentgenograms to Illustrate Velocity of Rifle Bullet.**—The series of cases reported by Vilvandre illustrates the point that the damage done by rifle bullets is dependent on the velocity of the missile rather than on the texture of the bone.

British Medical Journal, London

November 20, II, No. 2864, pp. 737-768

5 Clinical Aspects of Typhus. P. C. T. Davy and A. J. Brown.
6 Recrudescence of Local Sepsis in Completely Healed Wounds. R. H. J. Swan and K. Goadby.
7 Treatment of Wounds in War. J. Tissot.
8 Tartar Emetic in Kala-Azar. P. Mackie.
9 Bilharziosis in Natal. F. G. Cawston.
10 Auscultation of Heart of Recruit. J. K. Fowler.

Journal of Tropical Medicine and Hygiene, London

November 15, XVIII, No. 22, pp. 253-264

11 *Notes on Certain Insecticides. A. Castellani and T. W. Jackson.
12 *Inoculation of Smallpox as Prophylactic Measure as Practiced by Natives at Djen in Nigeria. H. A. Foy.
13 Schistosomiasis in Natal. F. G. Cawston.
14 Case of Oriental Sore Treated by Antimonium Tartaratum (Tartar Emetic) Locally. G. C. Low.

11. **Insecticides.**—In regard to solid and liquid insecticides, the substances which Castellani and Jackson have found to be deleterious to body-lice are, in the order of their efficiency: Kerosene oil, petrolatum, guaiacol, anise preparations, iodoform, compound solution of cresol and similar preparations, phenol solution, naphthalene, camphor. Pyrethrum has a feeble action on lice, while boric acid, sulphur, mercuric chlorid and zinc sulphate, when used in powder form, have apparently no action whatever. As regards bedbugs, kerosene oil is the best insecticide. Next to it comes guaiacol, one of the most active drugs of those the authors have tried.

Substances which are powerful licecides may have little or no action on bedbugs, and vice versa. For instance, iodoform, which kills lice within ten to fifteen minutes, has practically no deleterious action on bedbugs, which may live for more than twenty-four hours when exposed to it. It has also little effect on fleas. Pyrethrum, on the other hand, has a much more powerful action on bedbugs than on lice.

For use against lice on a large scale, as among troops and prisoners, perhaps the best insecticide powder is naphthalene. This substance has a lower licecide action than kerosene oil, guaiacol, iodoform and anise preparations, but it has a less displeasing odor than the first three named. In stored blankets and clothing it is also practicable and of use, as frequently lice are found on the clothing and blankets stored through the summer. Naphthalene is useful also for its well-known deterrent action on moths. Castellani and Jackson are speaking here of insecticide powders. As regards liquid insecticides, the American Red Cross Sanitary Commission gave sanction to kerosene by its daily use on troops and prisoners. For the better class of patients in practice a menthol powder is to be preferred to naphthalene in most cases, as its odor is not displeasing, while it is repellent to mosquitoes, in addition to lice and fleas. Such powder is especially useful in summer in hot countries, as it has a cooling effect on the skin and often prevents a prickly heat.

12. **Inoculation of Smallpox.**—The points of interest in Foy's paper are: (a) Of a mixed population 80 per cent. (male, female and children) inoculated with the virus of smallpox from a case of discrete smallpox developed a local reaction, the comparative percentage so far as adults and children go being fairly equal. (b) Of those inoculated, 43.3 per cent. (mixed population) developed smallpox; adults 30.9 per cent. and children 48.7 per cent. (c) Fifty-three per cent. of those that showed a local reaction at seat of inoculation developed smallpox. (d) Adults 38.8 per cent. (male and female) and 48.7 per cent. children out of (c) developed smallpox. (e) Both from (b) and (d) the figures show a much higher degree of susceptibility of children as compared with adults when inoculated with the disease. (f) The mortality in twenty-six cases that developed the disease out of sixty inoculated was nil; mortality, however, occurred among other inoculated cases, but it was not possible to get definite figures of mortality relative to the number inoculated and to the number that developed a local reaction. (g) Incubation period of infection naturally acquired is eleven days. In three inoculated cases the eruption appeared on the ninth day after inoculation, so that the disease began on the seventh day and incubation period is shortened as a result of inoculation. (h) Nature of attack resulting from inoculation. Of the twenty-six cases that developed smallpox, six were badly marked, showing a fairly acute attack of discrete smallpox; the remaining twenty had slight marking as an indication of a mild attack.

Annales de Médecine, Paris

July, II, No. 4, pp. 315-440

15 Paratyphoid Fevers. C. Achard.
16 Traumatism as a Factor in Pleuro-Pulmonary Tuberculosis. G. Brouardel and L. Giroux.
17 *Cholera; One Hundred Cases. G. Delamare.
18 Blue-Staining Granules in the Mononuclears in Normal and in Leukemic Blood. (Les granulations azurophiles des mononucléaires.) C. Aubertin and H. Chabanier.
19 *The Cardio-Peritoneal Syndromes in Typhoid Fever. L. Bernard and J. Paraf.

17. **Cholera.**—Delamare's study is based on 100 cases of which he had charge in Constantinople in 1912. These patients were nearly all otherwise healthy; there was a history of malaria in only ten. The general mortality during the epidemic was 47 per cent., but in his cases it was only 30 per cent. His main reliance was on baths, and heat applied to the feet and hands, with saline infusion and heart tonics. Yoghurt and rice were the main diet during convalescence, and there were no gastro-intestinal after-effects.

19. **The Heart and Peritoneum in Typhoid Fever.**—Bernard and Paraf call attention to the symptoms of weakness on the part of the heart and of irritation of the peritoneum before there is actual peritonitis. With both the cardiac asthenia and the preperitonitic syndrome, we have meteorism, small, rapid pulse and cyanosis or pallor of the face or the leaden tint of peritonitis, but the heart sounds reveal the weakening of the heart action, while the muscular defense in the abdominal wall calls attention to the trouble below, thus differentiating the two syndromes. When the two are associated death generally ensues, even without actual development of peritonitis or true heart collapse. They describe some typical cases in which the cardiac or the peritoneal syndrome preceded the other. The measures required for one are contraindicated by the other. In the preperitonitic stage prompt operative treatment may be the only means to ward off the impending peritonitis. In their one case of recovery they varied the treatment according to which syndrome predominated at the moment, changing from baths to ice or heart tonics as the indications varied.

Archives des Maladies du Cœur, etc., Paris

November, VIII, No. 11, pp. 361-436

20 *Nature and Cause of Accidents from Resorption in Edema. H. Vaquez.
21 *Typhoid Appearing as a Hemorrhagic Syndrome. J. Milhit and H. Chabanier.

20. **Disturbances from Absorption in Edema.**—Vaquez refers to the dizziness, headache, dyspnea, general weakness and other symptoms sometimes noted when edematous fluid is being absorbed, before the fluid has been thrown off by the kidneys or evacuated otherwise. Swelling of the joints, cramps in the calf of the leg, somnolency, stupor or insomnia with agitation, vomiting or convulsions, may also be encoun-

tered, but they subside as a rule as soon as ample diuresis is established. In one of his cases the congestion of the face was so intense that some of the capillaries seemed to have ruptured. Andral and Kostkevitch have each reported negative necropsy findings in a case of fatal accidents from this cause. Vaquez reviews the data on the subject and agrees with those who regard the disturbances as analogous to serum sickness. As the dropsical accumulations become mobilized and are taken up into the blood they induce actual anaphylaxis. The phenomena of this auto-anaphylaxis also include the dropping of the arterial blood pressure and considerable but transient albuminuria.

The third criterion of the "anaphylactic shock"—leukopenia—has not been sought for systematically to date, but de Jong and Bezançon reported a leukopenia like that of anaphylactic shock in a case in which part of a pleural effusion was siphoned out, but quite a quantity still left. Vaquez noted in one case a marked drop in arterial tension after diuresis amounting to 18 liters. When the edema fluid is drained away through the skin, there is no chance for the conflict between the albuminoids in the fluid and the colloids in the blood, which causes the phenomena. The latter are more frequent in the elderly because their kidneys are less able to cope with the task of eliminating the mobilized fluids. The anaphylactic phenomena are of course most liable to occur and most pronounced during the period between the mobilization of the dropsical accumulations and the liberating diuresis. Analysis of the phenomena reveals that they are essentially the same as those induced by Richet in his experimental research on anaphylaxis and those recorded by Widal in clinical paroxysmal hemoglobinuria.

21. **Hemorrhagic Onset of Typhoid.**—The patient was a young man who complained of headache and pain in the lumbar region and the next day he voided red urine. This suggested scarlet fever and he was sent to the isolation hospital, but the absence of sore throat and eruption, and a history of scarlet fever in childhood finally excluded this disease. The intestines, liver and lungs seemed to be normal, but the agglutination test finally pointed to typhoid. Hemorrhagic vesicles developed on the body, with epistaxis, and spitting of blood, till death the twenty-fourth day.

Beiträge zur Klinik der Tuberkulose, Würzburg

XXXIII, No. 2, pp. 111-220. Last indexed Jan. 30, 1915, p. 472

22 Therapeutic Induced Pneumothorax in Pulmonary Tuberculosis. W. Zinn and H. Geppert.

23 Serologic Tests to Distinguish Between Tuberculous Bronchial Glands and Pulmonary Tuberculosis. (Versuch zur Abgrenzung der reinen Bronchialdrüsentuberkulose von der Lungentuberkulose mit Hilfe der Abderhaldenschen Abwehrfermente.) F. Oeri.

24 Lime in Treatment of Tuberculous Bronchial Glands. (Einige röntgenologische und klinische Beobachtungen bei Kalkbehandlung der Bronchialdrüsentuberkulose.) A. Wersen.

June, No. 3, pp. 221-266

25 Spread of Tuberculosis in the Male Genital System. (Ueber die Ausbreitung der Tuberkulose im männlichen Genitalsystem.) C. Kraemer.

July, No. 4, pp. 267-412

26 Pulmonary Tuberculosis and New Dualistic Bases for Actually Specific Treatment. H. Kronberger.

Mitteilungen a. d. Grenzgeb. der Med. und Chir., Jena

XXVIII, No. 5, pp. 749-900. Last indexed Aug. 21, p. 749

27 *Typhoid from Surgical Standpoint. (Chirurgisches über Typhus; schwierigere Fälle.) B. Riedel.

28 *Dissolved Albumin in Stomach Content as Sign of Cancer. (Die diagnostiche Bedeutung der Eiweissbestimmung im Mageninhalt nach Salomon.) H. Zoeppritz.

29 Importance of the Functioning of the Antrum Pylori in Prevention and Treatment of Postoperative Peptic Ulcer. (Bedeutung der Funktion des Antrum pylori für die Magenchirurgie.) H. Schur and S. Plaschkes.

30 Influencing of Leukocyte Picture by Iodin. (Ueber die Beinflussung des weissen Blutbildes durch Jod.) J. Bauer.

31 Gunshot and Shell Wounds of the Chest. (Ueber Chylopneumothorax durch Schussverletzung nebst Bemerkungen über Lungenschüsse.) J. Frohmann.

32 Roentgenoscopy of Motor Function of Diseased Stomach. (Zur Radiologie der Bewegungsvorgänge am kranken Magen.) H. Fischer.

33 *Transient Glucosuria with Fractures. (Glykosurie und Diabetes bei chirurgischen Erkrankungen. I.) G. E. Konjetzny and W. Weiland.

34 Inhibiting Action of Malachite Green and Kristallviolett on Experimental Septicemia in Guinea-Pigs. (Wirkung einiger Anilinfarbstoffe auf experimentell erzeugte Septikämie bei Tieren.) G. Hofer.

27. **Surgical Aspects of Typhoid Complications.**—Riedel analyzes here his experiences with forty operative typhoid cases, mostly tardy complications. He remarks that the number of such complications is probably larger than has been suspected hitherto, as the connection with typhoid years before has often been overlooked. Complications in soft parts are particularly dangerous, especially peritonitis from diapedesis. Typhoid appendicitis is controlled comparatively easily, and typhoid cholecystitis still more readily. Bone tissue is vitally less important than soft part tissues, and has unlimited capacity for regeneration. Hence typhoid foci in bones are not much to be feared unless they are located at particularly unfavorable points. Typhoid foci in joints heal favorably if operated on at the proper time. One boy of 14, seven months after appendicectomy, suddenly developed symptoms of peritonitis ascribed to the stump of the appendix. Laparotomy the third day confirmed the diffuse peritonitis, but no cause for it could be detected until necropsy next day revealed flat typhoid ulcers in the intestines, the serosa above absolutely intact. This case suggests that a symptomless typhoid may be responsible for many cases of so-called spontaneous peritonitis. In one case he mistook ordinary swollen glands back of the apparently sound appendix for typhoid appendicitis, and Thomas and Frazier have reported eight cases of typhoid suppuration in mesenteric glands.

Another patient was a man of 35 with multiple posttyphoid fistulas near the anus beyond operative repair. One woman with senile paranoia at 57 had peritonitis from diapedesis and typhoid was assumed. The intestines were found sound but typhoid bacilli were cultivated from the gallbladder. One patient with purulent typhoid thrombophlebitis of the internal saphenous vein was saved by its extirpation. Thrombosis followed in the external saphenous vein but no suppuration. In another case thrombosis in the femoral vein in the course of typhoid was followed four years later by thrombophlebitis in the external saphenous and the fever persisted for weeks after extirpation of the vein.

The costal cartilages were the seat of the skeletal typhoid process in eleven of twenty-three cases, and the tibia in six. The process healed smoothly, as a rule, after resection. The most serious were typhoid foci in the costal arch. He had five such cases, and remarks that one can be extravagant in resecting under these conditions as repair proceeds promptly and thoroughly when there is no infection. In infected cases the operation has to be frightfully radical, and the perichondrium grows only bone, not cartilage. In his joint cases, the interval since the typhoid was twelve years in the case of a man of 44 who had had an osteomyelitic process in the hip joint for a year. It healed after resection. Puncture of the hip joint in another case, in a boy of 16, brought typhoid bacilli, and recovery was soon complete under drainage alone. In two other cases the knee or hip joint developed deforming arthritis after the typhoid joint trouble.

28. **Dissolved Albumin in Stomach Content as Sign of Cancer.**—Zoeppritz points out that the presence of dissolved albumin in the fasting stomach does not decide between ulcerative and nonulcerative processes, but the absence of albumin renders the assumption of malignant disease highly improbable. Stagnation of stomach contents and lack of the normal acid favor the appearance of albumin in the stomach washings but do not influence its production. Albumin may sometimes be found in the clinically normal stomach, but it occurs more frequently with chronic gastric trouble. His tabulated records of forty-eight operative cases of gastric cancer showed a positive response to the Esbach test in all but 8 cases, and there was no free acid in 7 in this group and very little in the remaining case. His tables show further a positive reaction in 14 of 21 operative cases of gastric ulcer and in 5 of 6 without an operation;

also in 5 of 6 operative cases of chronic gastritis and in 8 of 8 nonoperative cases; in 4 of 7 other operative stomach affections and in 5 of 5 nonoperative; in 14 of 16 operative abdominal affections and in 12 of 12 in which no operation was attempted. In one case an extensive cancer in the submucosa had irritated the mucosa and caused secretion of mucin and nuclein, which gave the positive albumin reaction, although there was scarcely any ulceration and this was close to the gaping pylorus. The various groups are tabulated in detail and the reaction compared to other tests for cancer. In 135 cases of gastric cancer at Kiel occult or visible blood was found in 95 per cent.; there was emaciation in 90 per cent.; anacidity in 89; dissolved albumin in 83; lactic acid in 67; long bacilli in 64 and a palpable tumor also in 64 per cent. The albumin reaction was positive, if at all, very soon after the first symptoms appeared. The test for albumin is simple and easy if the stomach motor function is normal, but with impaired evacuation it is a tedious matter to rinse the stomach clean, and the slightest erosion of the stomach walls nullifies the findings of the test.

33. **Transient Glucosuria with Fractures.**—Konjetzny and Weiland report from the surgical clinic at Kiel 34 cases of fracture in which there were no traces of traumatic glucosuria; 3 in which the examination on account of the accident revealed hitherto unsuspected diabetes; and 24 of alimentary glucosuria after fracture of the leg or arm. The sugar content of the blood was recorded in 36 cases and found abnormally high in 31. Of the total 83 fracture cases there was no tendency to glucosuria in 48.1 per cent., while in 40.9 per cent. there was actual traumatic glucosuria, and in 7.2 per cent. alimentary glucosuria. The traumatic glucosuria is transient and there is no polyuria or polydipsia, but it is accompanied by hyperglycemia. They regard it as a transient central lesion, like the sugar puncture; it may be in the nature of fat embolism.

Policlinico, Rome

November 7, XXII, No. 45, pp. 1505-1536

35 Hydatidiform Mole in Mother and Daughter. (Mola vescicolare in parto bigemino teratologico.) E. Iraci.
36 Scarlet Fever. P. Timpano.

November 14, No. 46, pp. 1537-1568

37 *Hemoglobinuria from Beans. (Il favismo.) A. Gasbarrini.
38 Workmen's Compensation and Safety Appliances. (La profilassi degli infortuni e gli interessi degli operai.) G. Dragotti.
39 Subcutaneous Nodules in Acute Articular Rheumatism. P. Ercolani.

37. **Hemolytic Jaundice from Beans.**—Favism, from *fava*, "bean," is the name given in Italy to an acute febrile anemia with jaundice and hemoglobinuria which is not uncommon there, and is ascribed to the eating of fresh, raw or dried and cooked beans or smelling the blossoms of bean plants. Gasbarrini accepts it as a morbid entity, the result of acute toxic hemolysis. It was mentioned by Herodotus and by numerous Italian writers in the last century, but Fermi (1905) was the first to apply experimental research in the study of favism. His conclusions favored the assumption of acute toxic action of beans in the predisposed. In the very young it is liable to prove rapidly fatal. It is known only where beans are cultivated on an extensive scale, occurs usually in the spring, and Fermi noticed a hereditary character in 20 per cent. of his cases, sometimes through several generations. The inherited predisposition may not become manifest till adult life. Infants and the elderly generally escape. Quinin has been excluded as a factor by six Italian physicians who have made a special study of this question. The Wassermann reaction has always been found negative in favism, and the history of the frequent cases also excludes syphilis as a factor. Fermi has reported that in 1,211 cases in Sardinia, 752 were ascribed to ingestion of beans and the others to inhalation of the odor or pollen. Tomaselli has reported cases in which the disturbances occurred immediately after passing through a field of beans in flower. Montano had one patient affected anew whenever he inhaled the odor of bean blossoms or passed near a pile of fresh beans. Nurslings can also be affected when the predisposed mother eats beans.

The affection does not seem to be contagious and there is no period of incubation, the disturbances coming on at latest in a day or so after ingestion of the beans or in from two to six hours after inhalation. Acute fever, black urine, intense anemia and jaundice distinguish favism and there may be a rigor, vomiting and diarrhea. No one has been able to isolate from beans any toxic substance that might be responsible for this toxic hemolysis; some believe that a fungus on the beans is responsible for the symptoms. Others accept a bacterial origin, but no evidence has been presented to sustain this assumption. There does not seem to be any idiosyncrasy to quinin in persons affected with or predisposed to favism. With paroxysmal hemoglobinuria there is not the extreme prostration characteristic of favism, but there is a close resemblance between the latter and Plehn's hemoglobinuric icterus in all its forms, from the abortive and mild to the grave, the fulminating and the hemorrhagic. Even the blood picture seems to be identical. Echinococcus disease of the liver is liable to be mistaken for favism or vice versa, as both are prevalent in the same regions. The cadaver of one child with acute favism showed merely changes indicating some old liver and spleen trouble of obscure cause. This is the only complete necropsy on record. As soon as the hemoglobinuria is past, recovery proceeds rapidly. Some of the predisposed suffer whenever they are exposed to the assumed cause; in others, one attack seems to confer immunity for years or permanently. In Fermi's statistics the mortality was 8 per cent. It is highest in children and the disease seems to be especially grave in certain seasons. Treatment can be only symptomatic. Injections of horse serum and of cholesterin and calcium chlorid by the mouth have been tried but without decisive results.

Hygiea, Stockholm

LXXVII, No. 20, pp. 1185-1264

40 *Abuse of Tobacco from the Medical Standpoint. (Om tobaksmissbruket från medicinsk synpunkt.) C. F. Höckert.

40. **Abuse of Tobacco from the Medical Standpoint.**—This issue of *Hygiea* has an unusually good portrait of Ehrlich, with a ten-page tribute to his work. The usual comment on the picture, however, is that Ehrlich is shown without his inevitable cigar, and it is a curious coincidence that the rest of the number is devoted to the "Abuse of Tobacco." Its use and abuse are discussed from the historical and geographical as well as the medical standpoint. Some recent chemical and experimental research is described and some of the new books on the subject are reviewed. They include Bresler's "Tabakologia medicinalis" (1911) and von Frankl-Hochwart's "Nervous Affections of Tobacco Smokers" (1912).

Ugeskrift for Læger, Copenhagen

November 11, LXXVII, No. 45, pp. 1737-1784

41 *Pronounced Lesions in Untreated Syphilis with Negative Wassermann Reaction. A. L. Fønss.

41. **Manifest Syphilis, Untreated, with Negative Wassermann Reaction.**—Fønss has encountered 243 cases of syphilis in which there had been no attempt at treatment. In 172 the lesions were those of the secondary stage of the disease and in 20 of the tertiary stage. Of these two groups with manifest syphilitic lesions, there was no reaction to the Wassermann test in 10 of the 172 secondary cases nor in 4 of the 20 extensive tertiary cases nor in 11 of the 51 cases with tertiary lesions restricted to a single small area. The negative response may veer to positive or vice versa within a few days, so that repetition of the test in dubious cases is advisable after the reactivation liable when treatment is instituted. Fønss remarks that a positive reaction is extremely important with latent syphilis and also in dubious cases, although, he reiterates, we must not forget that it is never an "organ diagnosis." A repeatedly negative reaction, he adds, is not particularly important for the diagnosis, especially when the patient has been taking recent treatment. His experience shows further that even with untreated syphilis a negative reaction is not uncommon, nearly 10 per cent. in his cases (25 in 243). These negative cases are described in detail and compared with those published by others.

JOURNALS INDEXED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT
JULY-DECEMBER, 1915

The following journals have been indexed in the Current Literature Department of THE JOURNAL during the past six months. Any of the foreign journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Only one journal may be borrowed at a time. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Domestic journals can be obtained by sending the approximate amount direct to the respective publishers. Thus most of the journals indexed are accessible to the general practitioner, no matter where he may be located.

Albany Medical Annals. M. $2. 170 Washington Ave., Albany, N. Y.
American Journal of Anatomy. Bi-m. $5. 36th St. and Woodland Ave., Philadelphia.
American Journal of Diseases of Children. M. $3. American Medical Association, 535 N. Dearborn St., Chicago.
American Journal of Insanity. Q. $5. Johns Hopkins Press, Baltimore.
American Journal of the Medical Sciences. M. $5. Lea & Febiger, 706 Sansom St., Philadelphia.
American Journal of Obstetrics and Diseases of Women and Children. M. $5. William Wood & Co., 51 Fifth Ave., New York.
American Journal of Orthopedic Surgery. Q. $3. P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia.
American Journal of Physiology. M. $5. Johns Hopkins Medical School, Baltimore, Md.
American Journal of Public Health. M. $3. 755 Boylston St., Boston.
American Journal of Roentgenology, M. $5. 67 E. 59th St., New York.
American Journal of Tropical Diseases and Preventive Medicine. M. $2. P. O. Drawer 1110, New Orleans, La.
Annales de gynécologie et d'obstétrique. M. 22 francs. Paris.
Annales de médecine. M. 23 francs. Paris.
Annals of Ophthalmology. Q. $4. Mermod-Jaccard Bldg., St. Louis.
Annals of Otology, Rhinology and Laryngology. Q. $4. Mermod-Jaccard Bldg., St. Louis.
Annals of Surgery. M. $5. J. B. Lippincott Co., E. Washington Square, Philadelphia.
Annals of Tropical Medicine and Parasitology. Q. $5. Liverpool.
Archiv für Gynäkologie. Irregular. Price varies. Berlin.
*Archiv für Kinderheilkunde. Irregular. 15 marks. Stuttgart.
Archiv für klinische Chirurgie. Irregular. Price varies. Berlin.
Archiv für Verdauungs-Krankheiten. Bi-m. 24 marks. Berlin.
Archives of Diagnosis. Q. Rebman Co., 141 W. 36th St., New York.
Archives of Internal Medicine. M. $4. American Medical Association, 535 N. Dearborn St., Chicago.
*Archives de médecine des enfants. M. 18 francs. Paris.
*Archives des maladies de l'appareil digestif et de la nutrition. M. 14 francs. Paris.
Archives des maladies du cœur, des vaisseaux et du sang. M. 17 francs. Paris.
Archives mensuelles d'obstétrique et de gynécologie. M. 25 francs. Paris.
Archives of Ophthalmology. Bi-m. $5. G. P. Putnam's Sons, 2 W. 45th St., New York.
Archives of Pediatrics. M. $3. E. B. Treat & Co., 241 W. 23d St., New York.
Archives of Radiology and Electrotherapy. M. $4.50. London.
Arizona Medical Journal. M. $2. Phoenix, Ariz.
*Beiträge zur klinischen Chirurgie. M. Price varies. Tübingen.
Berliner klinische Wochenschrift. W. 24 marks. Berlin.
Boston Medical and Surgical Journal. W. $5. 126 Massachusetts Ave., Boston.
Brain: A Journal of Neurology. Irregular. $4. London.
Brazil Medico. W. 20 milreis. Rio de Janeiro.
Bristol Medico-Chirurgical Journal. Q. $3.
British Journal of Children's Diseases. M. $5. London.
British Journal of Surgery. Q. $6.50. William Wood & Company, 51 Fifth Ave., New York.
British Journal of Tuberculosis. Q. $1.25. G. E. Stechert & Co., 151 W. 25th St., New York.
British Medical Journal. W. $8.50. London.
Bulletin de l'Académie de médecine. W. 20 francs. Paris.
Bulletin of the Johns Hopkins Hospital. M. $2. Baltimore.
Bulletin of the Lying-in Hospital of the City of New York. Irregular. $1. 23 E. 93d St., New York.
Bulletin of the Medical and Chirurgical Faculty of Maryland. M. $0.25. 1211 Cathedral St., Baltimore.
California State Journal of Medicine. M. $1. Butler Bldg., San Francisco.
Canadian Medical Association Journal. M. $5. 145 Wellington St., W., Toronto.
Centralblatt für die Grenzgebiete der Medizin und Chirurgie. Irregular. 22 marks. Jena.
China Medical Journal. Bi-m. $4. Shanghai.
Cleveland Medical Journal. M. $2. 2318 Prospect Ave., Cleveland.
Colorado Medicine. M. $2. Majestic Bldg., Denver.
Correspondenz-Blatt für schweizer Aerzte. W. 22 francs. Basel.
Delaware State Medical Journal. M. $1. Wilmington.
Deutsche medizinische Wochenschrift. W. 32 marks. Berlin.
*Deutsche Zeitschrift für Chirurgie. M. Price varies. Leipsic.
*Deutsches Archiv für klinische Medizin. Irregular. Price varies. Leipsic.
Dublin Journal of Medical Science. M. $5.
Edinburgh Medical Journal. M. $6.
Gazzetta degli ospedali e delle cliniche. Semi-w. 25 francs. Milan.
Glasgow Medical Journal. M. $5.
Grèce médicale. Semi-m. 12 francs. Athens.
Hospitalstidende. W. 27.5 kronen. Copenhagen.
Hygiea. M. $5. Stockholm.
Illinois Medical Journal. M. $2. 3338 Ogden Ave., Chicago.
Indian Journal of Medical Research. Q. $2.50. Calcutta.
Indian Medical Gazette. M. $5. Calcutta.
Jahrbuch für Kinderheilkunde. M. 36 marks. Berlin.
Journal d'urologie médicale et chirurgicale. M. 40 francs. Paris.
Journal of Abnormal Psychology. Bi-m. $4. R. G. Badger, 194 Boylston St., Boston.
Journal of the American Medical Association. W. $5. 535 N. Dearborn St., Chicago.
Journal of the Arkansas Medical Society. M. $1. 810 State Bank Bldg., Little Rock, Ark.
Journal of Biological Chemistry. M. $3. 2419 Greenmount Ave., Baltimore.
Journal of Cutaneous Diseases. M. $5. Rebman Company, 141 W. 36th St., New York.
Journal of Experimental Medicine. M. $5. Rockefeller Institute for Medical Research, 66th St. and Avenue A, New York.
Journal of the Florida Medical Association. M. $1.00. 334 St. James Bldg., Jacksonville, Fla.
Journal of the Indiana State Medical Association. M. $1. 219 W. Wayne St., Fort Wayne, Ind.
Journal of Infectious Diseases. Bi-m. $5. 629 S. Wood St., Chicago.
Journal of Iowa State Medical Society. M. $2. Des Moines, Ia.
Journal of Kansas Medical Society. M. $2. 303 Commerce Bldg., Topeka, Kan.
Journal of Laboratory and Clinical Medicine. M. $3. C. V. Mosby Company, St. Louis.
Journal of Laryngology, Rhinology and Otology. M. $5. London.
Journal of Maine Medical Association. M. $2. Portland, Maine.
Journal of Medical Association of Georgia. M. $1. Harison Bldg., Augusta, Ga.
Journal of Medical Research. Bi-m. $4. 240 Longwood Ave., Boston.
Journal of Medical Society of New Jersey. M. $2. 12 Cone St., Orange, N. J.
Journal of Michigan State Medical Society. M. $3.50. 91 Monroe Ave., Grand Rapids, Mich.
Journal of Missouri State Medical Association. M. $2. 3525 Pine St., St. Louis.
Journal of Nervous and Mental Diseases. M. $5. 64 W. 56th St., New York.
Journal of Obstetrics and Gynecology of the British Empire. M. $6.25. London.
Journal of Oklahoma State Medical Association. M. $2. Muskogee.
Journal of Outdoor Life. M. $1. 289 Fourth Ave., New York.
Journal of Parasitology. Q. $2. Urbana, Ill.
Journal of Pathology and Bacteriology. Q. $5.50. Cambridge, Eng.
Journal of Pharmacology and Experimental Therapeutics. Bi-m. $5. 2419 Greenmount Ave., Baltimore.
Journal of the Royal Naval Medical Service. Q. $1. London.
Journal of Sociologic Medicine. Bi-m. $3. 52 N. Fourth St., Easton, Pa.

W.—Weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly. *Cannot be loaned.

Journal of South Carolina Medical Association. M. $2. Anderson, S. C.
Journal of Tennessee State Medical Association. M. $2. 306 First National Bank Bldg., Nashville, Tenn.
Journal of Tropical Medicine and Hygiene. Semi-m. $5. London.
Journal-Lancet. Semi-m. $2. 839 Lumber Exchange, Minneapolis.
Kentucky Medical Journal. M. $2. State and Twelfth Sts., Bowling Green, Ky.
Lancet. W. $8. London.
Lancet-Clinic. W. $3. University Bldg., 648 Main St., Cincinnati.
Laryngoscope. M. $5. 3858 Westminster Place, St. Louis.
Lyon chirurgical. M. 25 francs.
Lyon médical. W. 20 francs.
Medical Record. W. $5. W. Wood & Co., 51 Fifth Ave., New York.
Medizinische Klinik. W. 32 marks. Berlin.
Military Surgeon. M. $3.50. Seventh and B Streets, S. W., Washington, D. C.,
Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie. Irregular. 25 marks. Jena.
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo. Irreg. Price varies. Tokio.
Modern Hospital. M. $3. Metropolitan Bldg., St. Louis.
Monatsschrift für Geburtshülfe und Gynäkologie. M. 42 marks. Berlin.
Monatsschrift für Kinderheilkunde. M. 20 marks. Leipsic.
Münchener medizinische Wochenschrift. W. 32 marks. Munich.
Nederlandsch Tijdschrift voor Geneeskunde. W. 10.50 florins. Amsterdam.
New Mexico Medical Journal. M. $2. P. O. 23, Las Cruces, N. M.
New Orleans Medical and Surgical Journal. M. $2. 1551 Canal St., New Orleans.
New York Medical Journal. W. $5. A. R. Elliott Publishing Co., 66 W. Broadway, New York.
New York State Journal of Medicine. M. $1. 17 W. 43d St., New York.
*Nordiskt Mediciniskt Arkiv. Irregular. 30 marks. Stockholm.
Norsk Magazin for Lægevidenskaben. M. $5. Christiania.
Northwest Medicine. M. $2. Cobb Bldg., Seattle, Wash.
Ohio State Medical Journal. M. $2. 25 Ruggery Bldg., Columbus, Ohio.
Old Dominion Journal of Medicine and Surgery. M. $2. 116 E. Franklin St., Richmond, Va.
Ophthalmic Record. M. $4. 7 W. Madison St., Chicago.
Ophthalmology. Q. $5. 711 Cobb Bldg., Seattle, Wash.
Paris médical. Tri-m. 16 francs.
Pediatria. M. 12.50 lire. Naples.
Pennsylvania Medical Journal. M. $2. Athens, Pa.
Philippine Journal of Science. Irregular. $7. Manila, P. I.
Policlinico. W. 32 lire. Rome.
Practitioner. M. $6.50. London.
Presse médicale. Semi-w. 15 francs. Paris.
Providence Medical Journal. Bi-m. $1. Francis and Hayes Sts., Providence, R. I.
Public Health Journal. M. $2. York Publishing Co., Lumsden Bldg., Toronto.
Quarterly Journal of Medicine. $6.50. London.
Revue médicale de la Suisse romande. M. 14 francs. Geneva.
Riforma medica. W. 35.50 lire. Naples.
Russkiy Vrach. W. 13 rubles. Petrograd.
Sei-I-Kwai. M. $2. Tokio.
Semana médica. W. $5. Buenos Aires.
Southern Medical Journal. M. $2. 807 Empire Bldg., Birmingham, Ala.
Southwest Journal of Medicine and Surgery. M. $1. El Renò, Okla.
Surgery, Gynecology and Obstetrics with International Abstract of Surgery. M. $10. Surgical Publishing Co., 30 N. Michigan Ave., Chicago.
Svenska Läkaresällskapets Forhandlingar. Irregular. 7.50 kronen. Stockholm.
Texas State Journal of Medicine. M. $1.50. Western National Bank Bldg., Fort Worth, Tex.
Therapeutische Monatshefte. M. 12 marks. Berlin.
Therapie der Gegenwart. M. 14 marks. Berlin.
Tumori. Bi-m. 25 lire. Rome.
Ugeskrift for Læger. W. 20 kr. Copenhagen.
United States Naval Medical Bulletin. Q. $1. Washington, D. C.
Upsala Läkareförenings Förhandlingar. Irregular, 10 kr.
Washington Medical Annals. Bi-m. $1. 2114 18th St., N. W., Washington, D. C.
West Virginia Medical Journal. M. $1. Wheeling, W. Va.
Wiener klinische Wochenschrift. W. 24 marks. Vienna.
Wisconsin Medical Journal. M. $2. Goldsmith Bldg., Milwaukee.
Zeitschrift für Geburtshülfe und Gynäkologie. Irregular. Price varies. Stuttgart.
*Zeitschrift für Kinderheilkunde. Irregular. 18 marks. Berlin.
*Zeitschrift für klinische Medizin. Irregular. 16 marks. Berlin.
*Zeitschrift für Urologie. M. 30 marks. Berlin.
Zentralblatt für Chirurgie. W. 30 marks. Leipsic.
Zentralblatt für Gynäkologie. W. 30 marks. Leipsic.
Zentralblatt für innere Medizin. W. 30 marks. Leipsic.

W.—Weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly. *Cannot be loaned.

EXPLANATION OF THE USE OF THE INDEX

This is an index not only to the reading matter in The Journal, but also to original articles in the principal medical periodicals of this and other countries. The reading matter appearing in The Journal is distinguished by the use of **black-faced numerals.**

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an "Original Article" in The Journal.

This is a subject index and one should, therefore, look for the chief word, with the following exceptions: "Book Notices," "Deaths" and "Society Proceedings" are indexed under these titles at the end of the letters "B" "D" and "S." Matter pertaining to the Association is indexed under American Medical Association."

All matter is indexed under the most important word of the heading used in The Journal, and also under the subject heading. For instance, abscess of the brain will be found under "abscess," as well as under "brain." Such titles as "ocular manifestations, etc.," have been indexed under "Eye." Cross references have been liberally used.

The figures in parentheses refer to the paragraph, the number following to the page in The Journal.

ABORTION, cause and treatment, ***1262**

This reference is to an original article in The Journal, as shown both by the star and by the black-faced numerals indicating the page.

ACID, uric, in blood, Maase-Zondek test for, **1748**

This reference as indicated by the black-faced figures, is also in The Journal, and on turning to page 1748 we find an answer to a question in the Department of Queries and Minor Notes.

ABDOMEN, anomalies of, (149) **1143**

In this reference, the (149) indicates that the article is in the Current Literature Department and the fact that the page number is in black-faced type shows that the article is abstracted and discussed in The Journal. Turning to page 1143, we find (149) refers to an article by F. G. DuBose in the *Southern Medical Journal,* September.

ACETONE bodies in urine, signification of, (24) 831

The fact that in this last reference the page is given in ordinary type indicates that only the title of the article is given. Turning to page 831 we find that the numeral (24) refers to a paper on that subject by B. Derham which appeared in the *Lancet,* July 31.

In the Author's Index are the names of the authors of articles which have appeared in The Journal of the American Medical Association and of articles that have been listed from week to week in the Department of Current Medical Literature as having appeared in other journals. The black-faced numerals indicate that the article is in The Journal, either in full or in abstract. The star (*) preceding the page number indicates an original article.

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Adair, R., Practical Oral Hygiene Prophylaxis and Pyorrhea Alveolaris, 1938
Asch, P., Twelve Lectures on the Modern Treatment of Gonorrhea in the Male, 1750
Aschaffenburg, G., Text-Book on Nervous Diseases, 975
Ashburn, P. M., Elements of Military Hygiene, 552
Augenheilkunde, Geschichte der, 449, 1937
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Bethea, O. W., Practical Materia Medica and Prescription Writing with Illustrations, 1667
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Farr, C. B., Outlines of Internal Medicine for Use of Nurses, 1052
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Fitzsimons, F. W., The House Fly: A Slayer of Men, 1840
Fly, Book of the, A Nature Study of the House-Fly and Its Kin, the Fly-Plague and a Cure, 1573
Food—What It Is and Does, 1938
Fox, H., A Text-Book of Pathology, 1667
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Hardy, G. H., The Book of the Fly. A Nature Study of the House-Fly and Its Kin, the Fly-Plague and a Cure, 1573
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Hill, L. W., The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital, 1667
Hirschberg, J., Geschichte der Augenheilkunde, 449, 1938
Histology, Text Book of, 1938
Holmes, B., The Insanity of Youth and Other Essays, 898
House Fly: A Slayer of Men, 1840
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Hygiene, Educational, from the Pre-School Period to the University, 1573
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Insanity of Youth and Other Essays, 898
Internal Medicine, Outlines of, for the Use of Nurses, 1052
Intestinal Stasis, Chronic, Operative Treatment of, 898
Ivy, R. H., Applied Immunology, 1132
Jackson, C., Peroral Endoscopy and Laryngeal Surgery, 1840
Jean, G. W., Ophthalmoscopic Diagnosis for Practitioners and Students, 2027
Jelliffe, S. E., Diseases of the Nervous System, 1938
Knox, R., Radiography, X-Ray Therapeutics and Radium Therapy, 643
Kraemer, H., Scientific and Applied Pharmacognosy, 1667
Krause, R., Text-Book of Histology, 1938
Lane, W. A., Operative Treatment of Chronic Intestinal Stasis, 898
Laryngeal Surgery and Peroral Endoscopy, 1840
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McGill University, Descriptive Catalogue of the Medical Museum of, 1574
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Macmichael, W., The Gold Headed Cane, 2027
MacNutt, J. S., A Manual for Health Officers, 1300
Malay Poisons and Charm Cures, 1393
Materia Medica and Therapeutics, 975
Materia Medica, Practical, and Prescription Writing with Illustrations, 1667
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Ophthalmology, the American Encyclopedia and Dictionary of, 1481
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Oral Hygiene Prophylaxis and Pyorrhea Alveolaris, 1938
Ormsby, O. S., Practical Treatise on Diseases of the Skin, 450
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Peroral Endoscopy and Laryngeal Surgery, 1840
Pharmacognosy, Scientific and Applied, 1667
Pharmaco-Therapy and Preventive Inoculation Applied to Pneumonia in African White, 1938
Physician's Visiting List for 1916, 2111
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Prescription Writing, Practical Materia Medica and, with illustrations, 1667
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Putnam, J. J., Human Motives, 898
Pyle, W. L., Manual of Practical Hygiene, 551
Pyorrhea Alveolaris and Practical Oral Hygiene Prophylaxis, 1938
Pyorrhea, Alveolodental, 1206
Radiotherapy, X-Ray Therapeutics and Radium Therapy, 643
Ransome, A., A Campaign Against Cancer, 1393
Rapeer, L. W., Educational Hygiene from the Pre-School Period to the University, 1573
Reference Handbook of Medical Sciences, Vol. 5, 47
Rhodes, F. A., The Next Generation, 1132
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Stengel, A., A Text-Book of Pathology, 1667
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Twilight Sleep, 975
Urgent Symptoms in Medical Practice, 1300
White, R. P., Occupational Affections of the Skin, 643
Wilson, T. S., The Early Diagnosis of Heart Failure and Other Essays on the Heart and Circulation, 1300
Wilson, W. J., Students Text Book of Hygiene, 1938
Wood, C. A., The American Encyclopedia and Dictionary of Ophthalmology, 1481
Wright, Sir A. E., On Pharmaco-Therapy and Preventive Inoculation Applied in Pneumonia in African Native, 1938
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SOCIETIES

A.—Association.
Acad.—Academy.
Am.—American.
Coll.—College.
Conf.—Conference.
Cong.—Congress.
Conv.—Convention.
Dist.—District.
Hosp.—Hospital.
Internat.—International.
M.—Medical or Medicine.
Nat.—National.
Phar.—Pharmaceutical.
Phys.—Physicians.
Ry.—Railway.
S.—Society.
Surg.—Surgical, Surgeon or Surgery.

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Brittin, A. L., (43) 460, (58) 1217
Broadbent, W., (3) 982
Broadhurst, J., (76) **1217**
Broadman, J., (102) 829
Brobeck, C. J., (109) 649
Broca, A., (58) 60, (34) 365, (63) 1953
Broder, C. B., (100) 1141, (97) 1219
Brodie, T. G., (19) 1951
Brodribb, C. H., (13) 1310
Brodsky, E. S., (95) 1219, (109) 2037
Broers, C. W., (102) 1226
Bronfenbrenner, J., ***1268**, (9) 1755, (35) 2121
Bronner, C. E. C., (60) **1494**
Brooks, C. S., (54) 648
Brooks, H., (100) 198, (111) **462**, (113) 1142
Brooks, H. T., (145) 1853
Brooks, P. B., (122) 1142
Brophy, J. A., (81) 741
Broquin-Lacombe, (49) 1682
Brose, L. D., (77) 197
Brosius, O. T., ***1610**
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Brown, A., (1) **1754**, (23) 2120
Brown, A. C., (14) **983**
Brown, A. J., (5) 2262
Brown, A. W., **191**
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Brown, D. L. F., (118) 2037
Brown, E. F., (20) 53
Brown, E. W., (14) **1214**
Brown, H. A., (80) 905
Brown, H. C., (4. 5) **1588**
Brown, J. H., (37) 1217
Brown, L., (116) 656, **2194**
Brown, O. H.. (73) 2122
Brown, P., (24) 360, (15) 2198
Brown, P. K., (50) 1058, (31) 1488
Brown, R. O., ***1459**
Brown, S., **272**
Brown, S. H., (48) 53
Brown, T. R., (126) 281
Brown, W. H., (24) 1057, (58) **1850**
Brown, W. L., ***1007**, (18) 1056, **1388**
Brown, W. M., (10) **1486**, (117) 1852
Browne, W. W., (63) 460
Browning, C. H., (4) **982**
Brownlee, J., (5) 982
Brownson, W. C., (126) **829**
Bruce, D., (13) 364, (5) 462, (27) 463, (5, 13) 559, (23) 561, (13, 23) 651, (4) **1950**, (15) **1951**
Bruce, H. A., (49) 1850
Bruecken, A. J., (23) 1404
Brugsch, T., (37) **365**, (99) 834.
Bruhl, N. V., (136) 1067
Bruhns, C., (50) **1856**
Brunelle, G. C., (93) 1141
von Brunn, W., (54) **202**, (50) 1312, (55) 1409
Brunner, C., (123) **1066**
Bruns, L., (56) **1683**
Brunton, L., (8) **744**
Brunzel, H. F., (80) 750, (58) 1063
Brush, E. N., **1480**
Bryan, C. W. G., (19) 1407
Bryan, R. C., (49) 2200
Bryan, W. A., (61) 1585, (143) 1853
Bryan, W. J., **516**
Bryant, C., (26) 1849
Bryant, J., ***1**, (38) 1140, **1207**, (21) 1487, (15) 1584, **1747**
Bryant, W. S., ***163**, (105) 462, (76) **828**
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Bubis, J. L., ***1019**, (34) 1057, (138) 1852
Buc, (45) **1145**
Buchanan, J. J., (137) 1586
Buchanan, L., (16) 1061
Buchanan, R. E., (45) 1948
Buckner, G. D., (16) 2261
Bucky, G., (72) 911, (62) 1313
Budd, S. W., (142) 199, (148) 1143
Buerger, L., (50) 53, (115) **742**
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Bule, J. B., (123) 363
Bulkley, L. D., (82) 280, (116) 281
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Bull, P., (149) **658**
Bullock, E. S., (13) 53, (81) 649, (7) 650, (94) 1851
Bullock, F. D., (46) **740**, (72) **1308**, (39) 2121
Bullrich, R. A., (127) 2043
Bulson, A. E., (86) 280
Bunce, A. H., (50) 1307
Bunker, H. A., Jr., (61) 1850
Bunker, J. W. M., (13) 1849
Bunnell, S., (24) 647
Bunting, C. H., (137) 1220, (28) 2120
Bunts, F. E., (41) **902**
Burbank, L., **1017**, **1550**, **2054**
Burch, L. E., ***2235**
Burckhardt, H., (51) 367, (81) 1064
Burckhardt, J. L., (51) 1590
Burford, C. E., (70) 1405
Burge, E. L., (79) **558**
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Bürger, L., (66) **1494**
Burgess, A. M., (111) 1309, (14) **1584**
Burk, W., (124) 1066
Burkard, O., (69) 465
Burke, C. B., (144) 56
Burke, G., ***235**, (79) 1679
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Burkitt, R. W., (19) 2202
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Burmann, J., (46) 464
Burmeister, W. H., (88) 1218
Burnam, C. F., ***1874**
Burnand, R., (62) **60**
Burnet, (49) 1953
Burnett, E. D., (81) 981
Burnett, S. G., **1844**
Burnham, A. C., ***146**, (20) 277, (12) **1055**
Burnham, G. H., (127) 1490
Burns, T. C., (129) 1680
Burr, C. W., (80) 461, (96) 905. **1248**, **1547**
Burridge, W., (34) **1951**
Burroughs, L. G., (45) 1488
Burrows, W. F., (60) 361
Burton, J. A. G., (8) 1490
Buschmann, T. W., (14) 1755
Busila, V., (45) **1682**
Businco, A., (114) 913
Busquet, H., (27) 1144, (44) 1590
Busson, B., (89) 1411
Butt, A. P., (86) 2122
Butt, W. R., (125) 1142
Buzano, U., (111) 290
Byford, H. T., (65) 1217
Bythell, W. J. S., (3) **830**

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Caan, A., (90) 911
Caballero, J. M., (112) **467**
Cables, H. A., (65) 648
Cabot, H., (123) **742**, ***1233**, (120) **1586**, (40) 1850, (74) 1949, (47) 2200
Cabot, R. C., *947
Cadwalader, W. B., (14) 1305, ***1793**
Cahanescu, M., (87) **287**
Cailliau, F., (43) 1145
Cain, A. W., (70) 280
Calcagno, B. N., (86) 1225
Calderon, F., (127) 649
Caldwell, B. W., **641**
Caldwell, C. E., (93) 362, (101) 1758, (115) 1852
Caldwell, E. W., (25) 360
Caldwell, J. R., (18) 364, (15) 122
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Calhoun, F. P., (108) 1309
Callender, G. R., (5) 358
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Camerer, C. B., (145) 363
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Cameron, H. C., (4) 1143
Camp, F. K., **1944**
Camp, W. E., (48) **647**
Campana, R., (71) 1225
Campbell, D. G., (42) 647
Campbell, E. H., (90) 1489
Campbell, G. H., (60) 1217
Campbell, H. J., (24) 1062
Campbell, J. A., (94) 741
Campbell, J. M., (2) 462
Campbell, K., (6) 1490
Campbell, W., (4) **743**
Camus, L., (27) **984**
Canaan, (49) 367
Candido, J., (101) 1685
Canfield, R. B., (107) 558, (84) 1679
Cannaday, J. E., (156) 462, (57) 2200
Canon, H., (56) 1062
Cantelli, O., (116) 566, (68) 987
Capell, C., **1943**
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Capitan, (26) **2202**
Capps, J. A., **133**
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Carhart, G. A., (70) 2201
Carlson, A. J., (13) 359, (10) **739**
Carman, R. D., (30) 53, ***227**, (22) 1214, (19) 1306, (79) 1309, **1580**, **1752**, ***1812**, (12) **1946**
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Carnelli, R., (105) **289**
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Caronia, G., (100) **912**, (49) **1062**
Carr, G. L., (20) 1306, (30) **2120**
Carrel, A., (147) 199, (59) 1953, (52) **2039**
Carrell, J. B., (132) 1759
Carrick, M. M., (147) 462, (106) 1586
Carroll, H. R., (77) 280
Carslaw, R. B., (1) **1220**
Carson, F. L., (119) 1219
Carson, H. Y., (15) 1849
Carstens, J. H., (11) 2032
Carta-Mulas, L., (131) **207**
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Carter, H. R., (16) 458, (141) 1142
Carter, J. H., (113) 1586
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Carter, W. W., (101) 462
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Cary, E. H., ***1540**
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Casper, M., (95) 462, (56) 828 **1485**
Caspersohn, C., (81) 1410
Cassel, J., (59) **652**
Castaigne, J., (48) 562, (31) **907**
Castelaw, R. E., (96) 649
Castellani, A., (10) **2122**, (11) **2262**
Castle, C. H., (128) 56
Castueil, (29) 907
Cathcart, C. W., (7) **743**
Cattell, M., (60) 2035
Cattermole, G. H., ***782**, (42) 1307
Catton, J. H., ***1100**
Cauble, L. A., (55) 1140
Caulfeild, A. H., (29) **827**
Caulfeild, A. St. G., (1) **2261**
Caulk, J. R., **2032**
Cavalié, (25) 1144
Cavanaugh, J. A., (35) 1488
Cavazzutti, G. B., (118) 835
Cawston, F. G., (9, 13) 2262
Cayet, R., (77) 1859
Cazamian, P., (43) 2203
Cecikas, J., (117) **2043**
Cecil, A. B., ***1436**
Ceconi, A., (107) 1411
Center, W. B., (55) 1757
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Cernic, M., (105) 1955
Chabanier, H., (37) **463**, (18, 21) **2262**
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Chalmers, A. J., (22) 200, (22) 561, (18) **830**, (7) 1143, (15) 1588, (18) 1759
Chalmers, A. K., (30) 1310
Chambers, G., (112) **1852**
Chambers, T. R., (99) 982
Champion, W. L., (44) 1585
Chance, B., (18) 2120
Chand, K., (13) 1588
Chandler, H. M., (116) 2037
Chantemesse, A., (27) 1408, (26) 2124
Chapin, C. V., (6) 277
Chapin, D. S., (105) 1149
Chapin, H. D., ***786**, (20) 2120
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Chapman, V. A., **1137**
Chapman, W. H., (74) **1308**
Chapman, W. L., (113) 1309
Chaput, H., (53) **202**, (42) **1856**
Charles, H. L., (82) 1309
Chase, P. M., (24) 555
Chase, W. B., (9) 457
Chatillon F., (39) **284**
Chauchard, (29) 984
Chauffard, (32) 1408
Chaussé, P., (41) 651
Chavigny, P., (46) 1953, (34) **2203**
Cheatle, G. L., (9) **744**
Cheboksaroff, M. N., (88) **1226**
Chechott, O. A., (123) 835
Cheever, D., (33) 1306
Chenai, A., (48) 59
Cheney, H. W., (82) **1405**
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Chernevsky, L. N., (137) 2044
Cherrill, N. K., (3) 1854
Cherubim, M., (86) 649
Chetwood, C. H., **272**, (117) 742
Chevallier, P., (39) 562
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Chiavaro, A., (105) 835
Chickering, H. T., (53) **647**
Chigasaki, Y., (91) 370, (97) 1593
Child, H. T., (91) 649
Childs, H. C., (106) 829
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Christen, T., (66) 2205
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Christophers, S. R., (1) 364, (13) 1588
Chrom, J. P., (123) 566
Churchman, J. W., ***1027**, (34) **1756**
Chute, A. L., (125) 1586
Ciavaldini, (37) **832**
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Cignozzi, O., (96) **1149**, (117) 1956
Cimoroni, A., (116) **913**
Cioseffi, M., (137) **1765**
Clapp, C. A., (89) 362, (123) 1490
Clapper, E. N., **510**
Clark, A. H., ***245**, (9) **1676**
Clark, D., (55) 280
Clark, E. D., (49) 556, (95) 1758
Clark, E. L., (2) 2119
Clark, G. H., ***405**
Clark, H. C., (43) **1677**, (5) 1754
Clark, J. G., **276**, (127) **281**, (101) 1060
Clark, J. S., (69) 1217
Clark, L. N., (84) **1757**
Clark, S. M. D., (58) 741, ***1171**
Clark, T., (126) 199
Clark, W. L., (6) 457
Clark, W. M., (66-68) 460, (42) 979
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Clarke, D. S., (9) 982
Clarke, J. M., (24) 2038, (12) **2202**
Clarke, J. T., (34) 59
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Class, J. M., (73) 904, (16) **2123**
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Cole, A. M., (40) 828, (21) 1306
Cole, H. N., (94) 1586, (38) **2033**
Cole, H. P., (62) 904, (151) 1143, ***2005**, (27) 2261
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Cole, L. G., (29) 53, (120) 281, (142) 1586, (58) 2200
Cole, W. F., (143) 1950
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de Conciliis, U., (102) 1411
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Connor, F. P., (10) 1220
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Corbus, B. R., (88) 1949
Cords, R., (77) 1410
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Cornwall, E. E., (93) 829, (84) **981**, (20) **1403**, (83) 1585
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Cottam, G. G., (52) 1058
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Cotton, A., (27) 1755
Cotton, F. J., (110) **362**, (16) 2198
Cotton, H. A., (8) **825**, (49) **1677**, (11) 1946
Coues, W. P., (30) 278, (43) **2035**
Councilman, W. T., (60) 1757
Coupin, H., (32) **907**
de Courmelles, F., (2) 1854
Courtellemont, V., (49) **1761**
Courtney, A. M., (7) **52**, (2) **1138**, (1) **1485**, (2) 2198
Couteaud (31) 1144
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Cox, E., (29) 979
Cox, R., (20) 1589
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Crabtree, E. G., (123) **742**, (46) 1850 (47) 2200
Craig, C. F., (13) 1056, (1) **2260**
Craig, D. A., (141) 650
Craig, T. E., (65) 1585
Crain, A. P., **549**
Crain, F. M., (72) 1851
Cramer, W., (61) **980**
Crandall, E. P., (18) 740, (3) 1583
Crane, A. W., (28) 360, (22) 1306
Crank, A. C., (77) 1405
Crawford, G. E., (72) 1217
Crawford, J., (157) 1143
Crawford, W. W., (138) 829
Creel, R. H., (1) 1675
Creighton, H. J. M., (45) 196, (89) 1757
Crenshaw, J. W., (58) 1585
Crichton, E. C., (16) 560, (9) 906
Crile, G. W., (140, 146) 199, (38) 279, (20) 458, (8) 739, (19) 1139, (92) 1586, (13) 2032, ***2129**
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Crissey, R. H., (91) 1489
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Croissant, K., (98) 565
Cromback, J., (58) 1224
Cromble, D. W., (33) 278
Cronin, H. J., (13) 1584
Cronk, F. Y., (131) 559, (114) 1060
Croom, J. H., (13) 907
Cross, J. G., ***1778**
Crossen, H. S., (150) 462
Crothers, T. D., (73) 1141, (105) 1758, (111) 2037
Crouch, J. F., (123) 1490
Crouse, H., (153) **199**, (40) **1756**
Crowe, H. W., (16) 2202
Crowell, A. J., (137) 282, ***1434**
Crowell, B. C., (98) **741**, (120) 1852
Crozier, W. J., (53) 2200
Crum, F. S., (14) 1849
Csernel, E., (79) 1315
Csonka, F. A., (52, 53) 979
Culmer, W. N., **1577**
Culver, G. D., ***773**, (52) 828, (42) 1140
Cumberbatch, E. P., (2) 200
Cummer, C. L., **455**, (10) 901, (103) **1949**
Cummings, E., (70) 197, (89) 2036
Cummings, F. A., (89) 1586
Cummings, J. C., (30) **1584**
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Davis, D. J., (69) 460
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Davis, E. G., (129) 742
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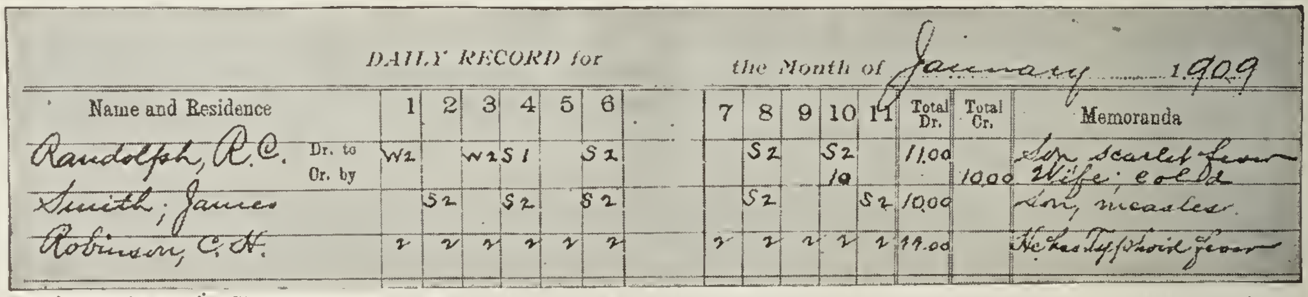

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Randolph, R. C.	Dr. to Cr. by	W2		W2	S1		S2		S2		S2 10		11.00	10.00	Son scarlet fever Wife; colds
Smith, James			S2		S2		S2		S2			S2	10.00		Son, measles.
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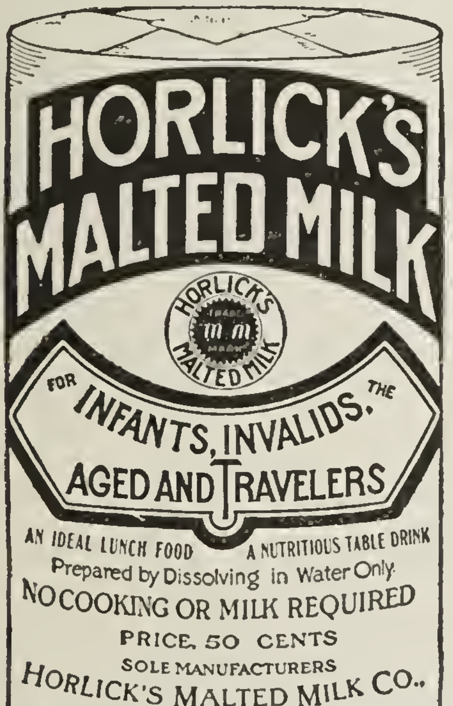

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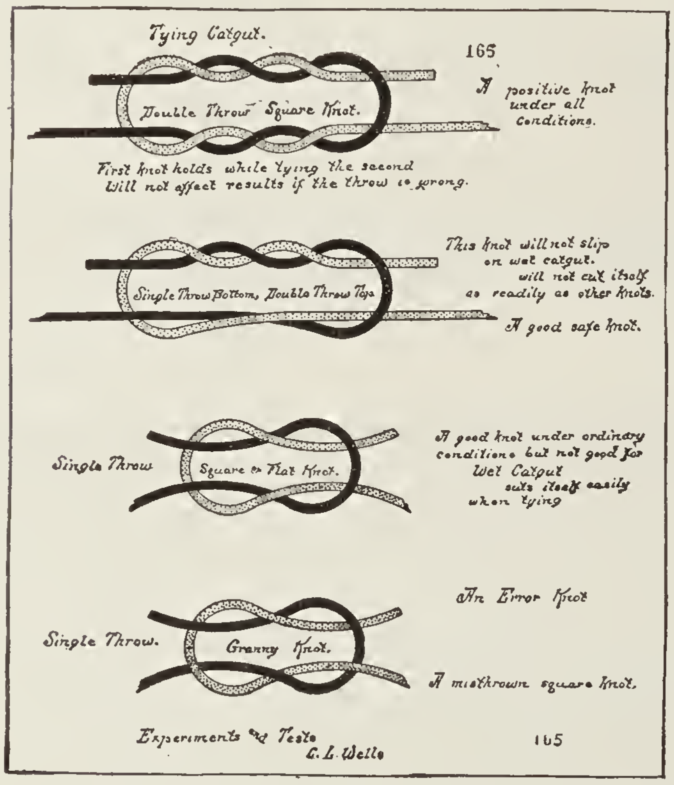
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A good knot under ordinary conditions but not good for Wet Catgut
cuts itself easily when tying
An Error Knot
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Experiments and Tests
C. L. Wells
165

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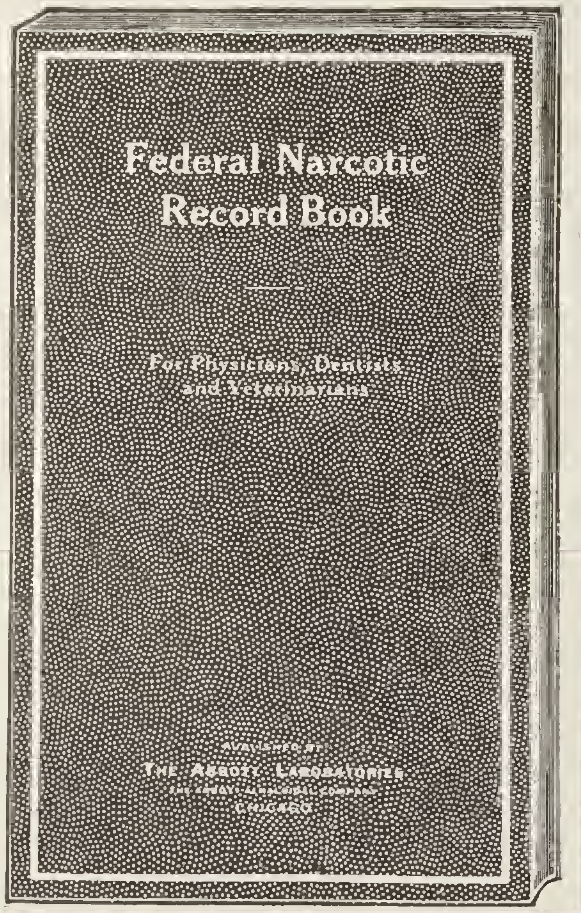

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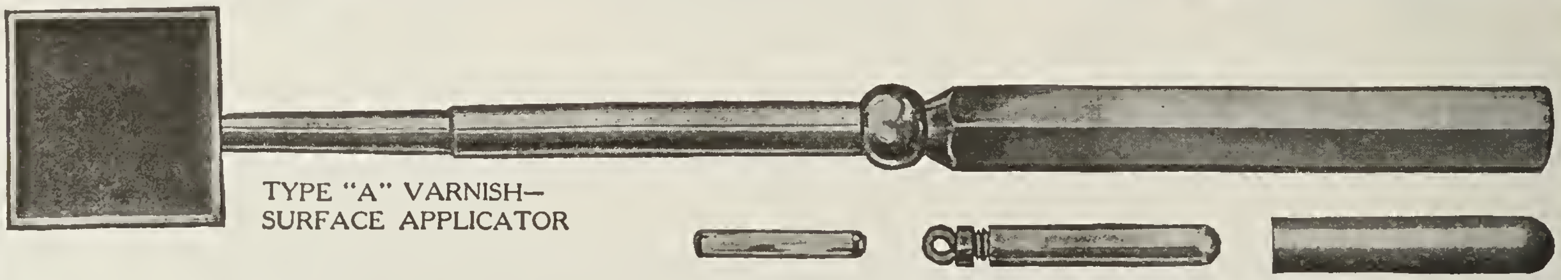
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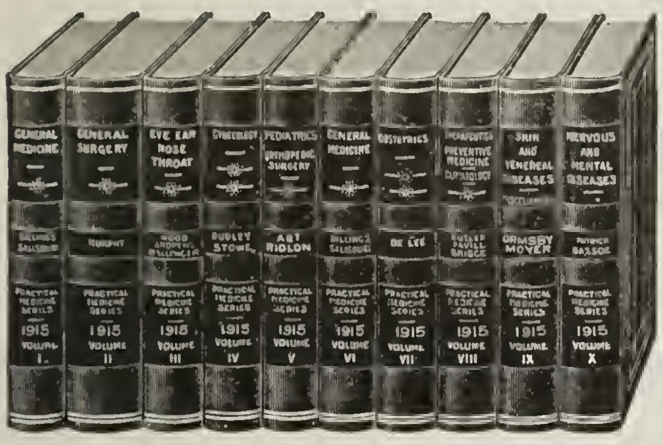

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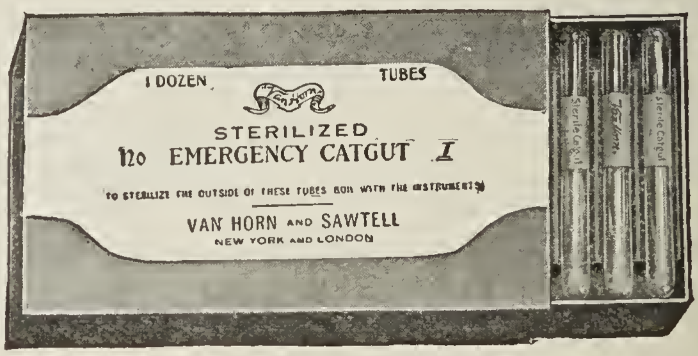

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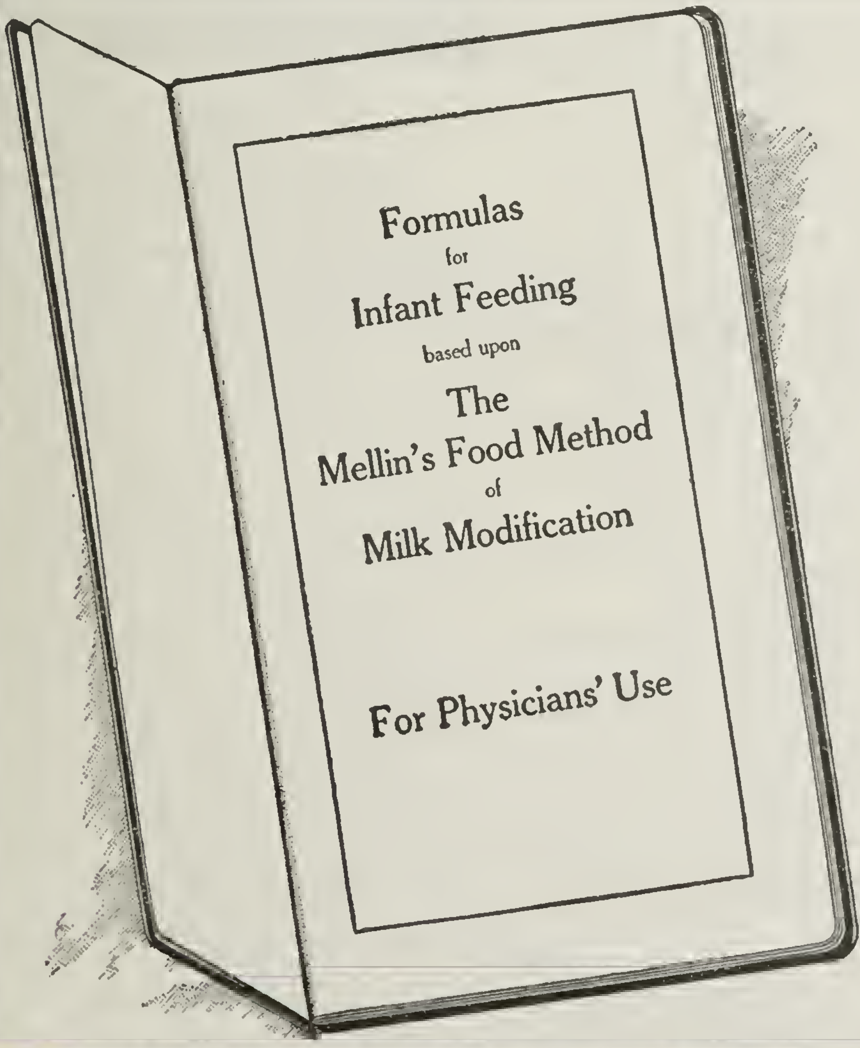

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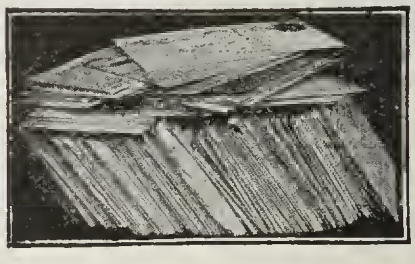

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(*Continued on next page*)

A. M. A. ANNOUNCEMENT

(*Continued from preceding page*)

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Average number of eye cases treated annually, 31,000.

Average number of ear cases treated annually, 12,000.

Average number of operations performed annually in the Eye Department, 5,500.

Average number of operations performed annually in the Ear Department, 3,500.

For application blanks address THOMAS K. ROBERTSON, Superintendent, 218 Second Avenue, New York City. A

ASSISTANTS WANTED

WANTED — TWO ASSISTANT PHYSICIANS (preferably one woman) in tuberculosis sanatorium in Middle West; salary, $75 per month at the start, with maintenance; chances good for promotion; applicant should be unmarried, healthy, of good habits; give following particulars in full in letter of application; age, medical school, year of graduation; date you can come if appointed; experience in hospital and private practice; send references in full and recent photograph. Add. 9411 B, % AMA.

WANTED — ROENTGENOLOGY ASSISTANT; single man with some college education, recent graduate of A medical school with hospital diploma, to learn this specialty in New York City; no experience necessary; after two trial months living expenses without salary offered; salary at end of year and a half; submit education, qualifications and photograph. Add. Box 23, Station F, New York, N. Y. B

WANTED—INDIANA—AN ASSISTANT BY an eye, ear, nose and throat specialist; give full particulars first letter—age, school, year of graduation, qualifications, habits, church, married or single, personal appearance; must be able to give best of recommendations as to character and habits; state salary expected. Add. 9390 B, % AMA .

WANTED — ASSISTANT IN GENERAL practice in Minnesota town of 15,000; must have hospital experience; one familiar with x-ray work preferred; salary, $100 per month and maintenance. Add. 9401 B, % AMA.

WANTED—ASSISTANT PHYSICIAN AT Connecticut Hospital for Insane; applicants must be single and have general hospital experience; salary $900, increasing $100 yearly to $1,500; give full details in first letter and enclose recent photograph. Add. the Superintendent, Dr. C. Floyd Haviland, Middletown, Conn. B

WANTED—PHYSICIAN TO ASSIST IN general practice in Illinois; must be willing, capable and of good appearance; give full particulars as to self, education and religion; send references; salary, $100 per month; everything furnished except board and laundry. Add. 9372 B, % AMA.

(*Continued on next page*)

TONICS AND SEDATIVES

(*Continued from preceding page*)

"I mean," said the attorney, "what form of expression did he use in speaking of the shooting? Did he say, 'he did it,' or did he say, 'I did it'?"

"He said he did it himself," was the answer. "He never said you done it. He never mentioned your name. Nobody who knows you would ever charge you with shooting anything bigger than a jack rabbit."—*Case and Comment.*

—o—

A NEW CURE

A grimly humorous incident of the war is told in a letter written by a soldier to his mother in England:

"There's one chap in our company that's got a rippin' cure for neuralgia, but he isn't going to take out a patent because it's too risky and might kill the patient. Good luck's one of the ingredients, and you can't always be sure of that.

"He was lying in the trenches the other day, nearly mad with pain in his face, when a German shell burst close by. He wasn't hit, but the explosion knocked him senseless for a bit. 'My neuralgia's gone,' says he when he came round. 'And so's six of your mates,' said I. His name's Palmer, and that's why we now call the German shells 'Palmer's neuralgia cure.' "—*Youth's Companion.*

—o—

POOR WILHELM

Here is a specimen of Australian frightfulness found in the advertising columns of a Melbourne paper:

WE REFUSE TO SUPPLY THE KAISER
WITH ——'S HERBAL SKIN OINTMENT.
LET HIM SUFFER.

Even the thickest skin must feel this.—Manchester *Guardian.*

—o—

A DIFFICULT MATCH

Oliver Herford, the humorist, is addicted to gray clothes. His summer time garb may vary as to cut, but never as to color. On the first hot day of last June a friend overtook him as he strolled down Fifth Avenue.

"Oliver," asked the friend, "how does it happen that your suits are invariably of the same shade of gray?"

"That's simple," drawled Herford. "I always send the tailor a sample of my dandruff. —*Saturday Evening Post.*

—o—

THE MOTOR MAID

There was a young maid of Detroit
Who at driving her car was adroit.
But her speed was too great,
And her turn came too late,
And so the young lady was hoit.

—*Tiger.*

—o—

SLIPPING ONE OVER

Convict 1103.—The doc just told me if I did not quit smoking I'd croak within two years.

Convict 1104.—Going to quit?

Convict 1103.—Nope; the joke's on the doc; I'm going to be hung next month.—*Chaparall.*

—o—

BUSINESS

"Doctor, do you believe in people taking vacations?"

"Considering the practice it brings me, I should be an ingrate to decry the custom." —Louisville *Courier-Journal.*

—o—

ALL LOCATED

When Prof. Walter Raleigh, an Englishman who was a direct descendant of the original Sir Walter Raleigh, was asked to lecture at Princeton College, Professor Root went down to the station to meet the distinguished visitor. Professor Root did not know Professor Raleigh, but walking up to a man that he thought looked like him he said:

"I beg your pardon, but am I addressing Walter Raleigh?"

The man looked at him for a moment and replied:

(*Continued on next page*)

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(*Continued from preceding page*)

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WANTED—PHYSICIAN—A FINE LOCATION is open for a competent man in a developed stock farming country; no opposition, no money required; business from first day and boosters to help; right man can make $4,000 per year; this location will be taken quickly; for detailed information, write H. C. Caylor, Canadian, Texas. C

WANTED — CHICAGO — PHYSICIAN TO share office with dentist on busy transfer corner; growing neighborhood; northwest side. Add. Dentist, 4000 North Ave., Chicago, Ill. C

WANTED—NOSE AND THROAT SPECIALIST on salary and percentage basis by combination of ethical physicians; must be first class and good surgeon; good opportunity for right man. Add. 9377 C, % AMA.

WANTED — PHYSICIAN — MINNESOTA town; fine place for Norwegian or American; a good practice awaits a general practitioner and preferably one competent to do surgery; nothing to buy; sponsorship of druggist; English speaking only necessary; three railroads here; high school; a competent physician wanted and especially good for surgeon. Add. 768 F. V. Kniest, Omaha, Neb. C

WANTED — RESIDENTS — IN GENERAL hospital of 300 beds; all departments represented; 70 per cent. of work surgical; term one year; two vacancies January 1 and February 1; remuneration during senior months; location central west; desirable and active service. Add. 9359 C, % AMA.

LOCATIONS WANTED

WANTED—UNOPPOSED LOCATION OR a partnership; Pennsylvania preferred; school A nine years ago; married, aged 34; high Mason, healthy, no addictions; well trained medicine and surgery; up to date, tactful, good diagnostician; professional appearance, extensive hospital experience; please give details as to immediate and surrounding population, nearest competition, fees, town modern, etc. Add. 9398 E, % AMA.

WANTED—AN UNOPPOSED PRACTICE in a town reciprocating with Illinois, or preferably Illinois; income of at least $2,000 yearly desired; would also accept a salaried position or contract practice. Add. 9388 E, % AMA.

WANTED—LOCATION—EITHER IN MONTANA or Wyoming; contract practice preferred; experienced in mining surgery; graduate Class A school; ethical; would consider partnership; registered in Montana; could go at once. Add. 9378 E, % AMA.

WANTED—$5,000 YEARLY PRACTICE—Live, aggressive, suburban railroad town, 3,000 to 10,000; mixed population, New York or Massachusetts preferred; real estate leased with privilege of buying later; 23 years' experience in surgery, general medicine, pediatrics; well equipped, have stock and two cars; take possession immediately; reasonable investment. Add. Dr. G. H. Van Gaasbeek, investment. Add. 9394 E, % AMA.

WANTED — SURGICAL PRACTICE OR hospital ; do all major surgery; have $3,000 to invest; good appearance, hard worker; references; graduate University of Virginia; give full particulars of your deal and prospects; will consider any state reciprocating with Virginia or West Virginia. Add. Dr. R. Williams, Christiansburg, Va. E

LOCUM TENENS WANTED

WANTED—LOCUM TENENS—GENERAL practice, for January, February and March; will earn from $150 to $200 per month; need pay only $25 for the three months; town of 1,800; one other doctor; located on Pennsylvania railroad, main line, 7 miles from Harrisburg. Add. G. W. Gault, M.D., Marysville, Pa. F

PARTNERS WANTED

WANTED—IN LARGE INDIANA CITY—A young general surgeon to office and cooperate with four ethical, progressive doctors doing respectively, dentistry, internal medicine, laryngology, and abdominal surgery; short time to prepare; state all details in first letter; excellent opportunity for honest, hustling young man to build up large practice. Add. 9396 G, % AMA.

(*Continued on next page*)

TONICS AND SEDATIVES

(Continued from preceding page)

"No, I am Christopher Columbus. Walter Raleigh is in the smoking room with Queen Elizabeth."—*Christian Register.*

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

Theory and Practice of Bloodletting. By Heinrich Stern, M.D., LL.D., Visiting Physician, St. Mark's Hospital, New York. Cloth. Price, $2.50. Pp. 264, with illustrations. New York: Rebman Company, 1915.

Makers of Modern Medicine. By James J. Walsh, M.D., Ph.D., LL.D., Professor of Physiological Psychology at the Cathedral College, New York. Catholic University Edition. Cloth. Price, $2. Pp. 441, with illustrations. New York: Fordham University Press, 1915.

An Introduction to Bacteriology for Nurses. By Harry W. Carey, A.B., M.D., Associate in Medicine, Samaritan Hospital, Troy. Cloth. Price, $1 net. Pp. 144, with illustrations. Philadelphia: F. A. Davis Company, 1915.

Transactions of the American Ophthalmological Society, Fifty-First Annual Meeting, 1915. Volume 14, Part 1. Paper. Price, $2. Pp. 416, with illustrations. Philadelphia: American Ophthalmological Society, 1915.

Selbstmordverdacht und Selbstmordverhütung. Eine Anleitung zur Prophylaxe für Arzte, Geistliche, Lehrer und Verwaltungsbeamte. Von Dr. Placzek. Paper. Price, 6 marks. Pp. 272. Leipzig: Georg Thieme, 1915.

Hospitals and the Law. By Edwin Valentine Mitchell, LL.B. Cloth. Price, $1.75. Pp. 178. New York: Rebman Company, 1915.

Annual Report of the Rockefeller Foundation, 1913-1914. Paper.

The Public Service

Changes for the seven days ended Dec. 8, 1915:

Cofer, L. E., asst. surg-gen., granted 3 days' leave of absence from Nov. 27, 1915.

Stoner, George W., senior surg., granted 5 days' leave of absence from Nov. 24, 1915, under paragraph 193 of the Service Regulations.

Young, G. B., surgeon, directed to represent the Service at a meeting of the Seaboard Medical Association, at Norfolk, Va., Dec. 7, 1915.

Lumsden, L. L., surgeon, detailed to present an address on rural sanitation at the meeting of the Southern Commercial Congress, at Charleston, S. C., Dec. 16, 1915.

Gwyn, M. K., surgeon, granted 25 days' leave of absence from Dec. 7, 1915.

McCoy, George W., surgeon, leave of absence for 10 days en route to Washington amended to read 2 days' leave of absence en route.

Bryan, W. M., P. A. surgeon, granted 10 days' leave of absence on account of sickness, from Nov. 30, 1915.

Heterick, R. H., asst.-surg., granted 1 month's leave of absence on account of sickness, from Dec. 7, 1915.

Sweeney, A. R., asst.-surg., granted 15 days' leave of absence from Dec. 6, 1915.

Treadway, W. L., asst.-surg., directed to proceed to Frederick, Md., for duty in connection with studies of school hygiene.

Yarbrough, H. C., asst.-surg., granted 1 month's leave of absence from Dec. 15, 1915.

Bean, W. S., Jr., asst.-surg., relieved at the Marine Hospital, Boston, Mass., and report to the commanding officer of the Coast Guard cutter *Androscoggin* for duty.

La Grange, J. V., pharmacist, granted 1 day's leave of absence, Dec. 3, 1915.

(Continued on next page)

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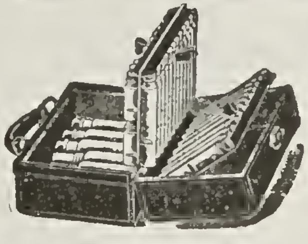

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(Continued from preceding page.)

WANTED — CALIFORNIA — PARTNER — He must be right, good surgeon; speak English and German preferred; I have the practice; will sell half interest to right man; will retire in few years; beautiful city, climate and boulevards; write fully in first letter; do not write unless you have some money, and can fill bill; this is rare opportunity. Add. 9326 G, % AMA.

PARTNERSHIP WANTED

WANTED—BY A SURGEON OF LONG experience, a partnership in a large surgical practice in some state south of Mason and Dixon's line for climatic reasons; can satisfy as to capability and experience by unquestionable references. Add. 9373 H, % AMA.

WANTED—BY SURGEON—ASSOCIATION with surgeon as partner or assistant or with internist who can refer surgical work; 4 years' training in surgery, surgical anatomy, laboratory and general practice, doing high grade general and abdominal surgery; good address, personality, aged 34 years, 32nd degree Mason, wife Catholic, no children; reliable references; go anywhere; have instruments, some cash; available now. Add. 9367 H, % AMA.

WANTED—BY DOCTOR DESIRING TO take up genito-urinary practice, association with an ethical men; graduate Class A school, 1912; excellent hospital training and very active practice since graduation; good surgeon; will learn to do Wassermann if necessary; aged 29, single; prefer South or West; anywhere considered. Add. 9346 H. % AMA.

SITUATIONS WANTED

WANTED—POSITION—PREFERABLY ASSISTANTSHIP to busy surgeon or general practitioner with view to later partnership if mutually agreeable; graduate Class A Chicago school, 1914; internship in large charity hospital and some assistant work; aged 30 years; 170 pounds; 6 feet; single, American, Protestant; no bad habits; satisfactory references. Add. 9379 I, % AMA.

WANTED—BY WOMAN PHYSICIAN, POSITION as assistant physician in state or private hospital or as superintendent of hospital or sanitarium; thoroughly experienced in institutional work; have conducted hospitals successfully, making them self supporting; also have had charge of acute service in state insane hospital for seven years. Add. 9179 I, % AMA.

WANTED — POSITION — AGED 42—MARRIED; no children; graduate Northwestern University (Chicago); registered in Illinois, Wisconsin, Michigan, Missouri and reciprocating privileges in many others; large extended institution and general practice experience; postgraduate work in several cities; fine recommendations; salary, $150, or $100, with maintenance for self and wife. Add. Dr. maintenance for self and wife. Add. 767 F. V. Kniest, Omaha, Neb. I

(Continued on next page)

THE PUBLIC SERVICE

(*Continued from preceding page*)

Wilbert, M. I., technical assistant, detailed to present an address on antinarcotic legislation at the meeting of the American Medical Society for the Study of Alcohol and Other Narcotics, Washington, D. C., Dec. 15-16, 1915.

RESIGNATION

Resignation of Asst.-Surg. Don C. Sutton accepted by the president to take effect Dec. 22, 1915.

BOARD CONVENED

Board of medical officers convened to meet at Vancouver, B.C., for the examination of a detained alien. Detail for the board: Acting Asst.-Surg. H. R. Storrs, chairman.

—o—

Medical Department, U. S. Army

Changes for the week ended Dec. 11, 1915:

Tefft, Lloyd E., first lieut., M. C., is relieved from duty with Ambulance Company No. 6, Fort Ethan Allen, Vt., and will proceed to Fort Randolph, C. Z., for duty.

Morningstar, James G., acting dental surgeon, on arrival in the United States will proceed to Fort Huachuca, Ariz., for duty.

Rukke, Guy V., captain, M. C., relieved from duty at Fort Bliss, Texas, and will proceed to Fort Mackenzie, Wyo., for temporary duty.

Blair, Harry C., first lieut., M. R. C., relieved from duty at Fort Bliss, Texas, and will report to the commanding general, Fifth Brigade, Douglas, Ariz., for assignment to duty.

Hess, Louis T., major, granted 5 days' leave effective Dec. 27, 1915.

Culler, Robert M., captain, M. C., relieved James D. Fife, captain, M. C., in charge of construction work at the Army and Navy General Hospital at Hot Springs, Ark., under instruction of the quartermaster general of the Army.

Kimble, Harry E., acting dental surgeon, Harlingen, Texas, and Fairbanks, Leigh C., acting dental surgeon, Fort Sam Houston, Texas, relieved from duty from the stations specified under their names and directed to take the transport to sail from San Francisco, on or about Feb. 5, 1916, for Philippine Islands.

Register, E. C., reports departure from Fort Monroe, Va., on 1 month's leave of absence; address on leave No. 9 St. Michael's Place, Charleston, S. C.

Mount, James R., captain, reports on 4 months' leave of absence, with address care of Department Surgeon, Western Department, San Francisco.

Falkner, L. W., first lieut., M. R. C., reports his relief November 26 from the Medical Reserve Corps, and departure for his home in Youngstown, N. Y.

Card, Daniel P., captain, reports departure on 2 months' and 5 days' leave of absence; address, Postgraduate Hospital, Second Avenue and Twentieth Street, New York City.

Irwin, J. L. P., acting dental surgeon, reports departure from Vancouver Barracks, Washington, on 7 days' leave of absence.

Napier, Edwin L., captain, November 28 departed for 21 days' leave of absence, with address care of Napier Brothers, Sixteenth and Farnum Streets, Omaha, Neb.

McRae, D. M., cont. surg., reports relief from U. S. Army transport *Logan*, and assignment to U. S. Army transport *Sherman*, as surgeon.

Gentry, Ernest R., captain, reports departure from Fort Screven, Ga., on 3 months' and 18 days' leave of absence; address, General Delivery, Baltimore, Md.

Ogg, Lester C., dental surgeon, first lieut., promoted from acting dental surgeon to first lieut., dental surgeon, U. S. Army, November 12, 1915.

Humphreys, H. G., captain, M. C., departed from Fort Oglethorpe, Georgia, en route to Fort Crockett, Texas, for duty.

Waring, John B. H., captain, M. C., reports departure December 5 from San Francisco, en route to Honolulu, H. T., for duty.

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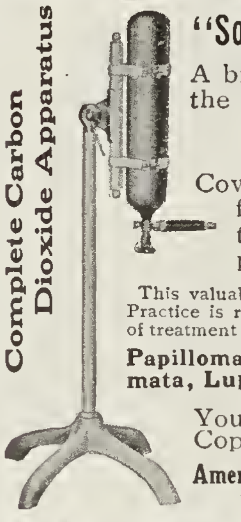

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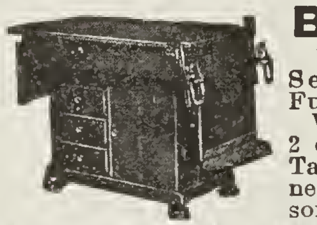

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(*Continued from preceding page*)

WANTED—ASSISTANTSHIP—CONTRACT or institutional work, locum tenens or residenceship by a graduate of 1913; registered California and Illinois; internships at Los Angeles County Hospital and Chicago Lying-In Hospital and Dispensary; able to do operative obstetrics; California, Mexico preferred; aged 29; best of references; available at once. Add. 9383 I, % AMA.

WANTED—SITUATION—ASSISTANTSHIP or salaried internship by young unmarried man; graduate of Class A medical college; just finished 18 months' general hospital work; American, Protestant, good health, good habits, aged 29 years; can begin work immediately; at present in Greater New York, but will go anywhere. Add. 9409 I, % AMA.

WANTED—A MAN, 24 YEARS OLD, graduate of class A school 1913; have had excellent training in surgery and general practice of medicine; also hospital experience and 18 months' private practice; desires a position as assistant to established doctor; contract practice, or institutional work; will only work on salary basis. Address me. Box 359, New Orleans, La. I

WANTED—ASSISTANTSHIP TO A BUSY ophthalmologist by physician just completing postgraduate course in ophthalmology; considerable experience in refraction; good habits and not afraid of work; salary not an object; Middle West preferred. Add. 9374 I, % AMA.

WANTED—AN ASSISTANTSHIP WITH busy physician or surgeon, or in institution; city must be not less than 75,000 population; graduate from Class A medical school 1913; 18 months' hospital training and 16 months' assistantship in surgery; Missouri and Nevada license; state full particulars. Add. 9341 I, % AMA.

WANTED—POSITION AS LOCUM TENens for six months or a year in California; am a graduate of Class A school, '98, married, no children; perfectly healthy; have held similar positions before; commission or salary basis; position must be open at once. Add. "Dr. F. E. G. B.," % Hotel Sherman, Los Angeles, Calif. I

WANTED—POSITION BY A PHYSICIAN, graduate 1914 Class A school; energetic, tactful and capable; aged 27, single; hospital training; good habits and good appearance; best references; licensed in Alabama and Mississippi; will go anywhere; contract practice or salaried assistantship preferred. Correspondence solicited. Add. 9400 I, % AMA.

WANTED — CONTRACT PRACTICE OR salaried assistantship with industrial or insurance company; S. B. degree; four years industrial chemist; graduate A school, 1914; one year general hospital; six months minor surgery; licensed; aged 30, 6 feet, 175 lbs.; handle employees tactfully, increasing good will toward company; go anywhere if position with prospects. Add. 9298 I, % AMA.

WANTED—YOUNG WOMAN PHYSICIAN desires position with busy practitioner or institutional work; had good experience in hospital work, and in private practice; special experience in obstetrics, gynecology and anesthetics; some experience in x-ray work; graduate Class A school; registered in Massachusetts and Maryland, with reciprocal privileges; references. Add. 9380 I, % AMA.

WANTED — POSITION — GRADUATE Class A school; B.S. and M.D.; more than three years work in general and surgical hospitals; special work in obstetrics and surgery; best references; aged 30; industrious, temperate; American, Christian; want to assist surgeon, do salaried hospital work, or industrial work; Illinois license. Add. 9330 I, % AMA.

WANTED—BY WOMAN PHYSICIAN—POsition as assistant physician in state or private hospital, or superintendent of hospital or sanitarium; have had thirteen years' experience in institutional work; licensed in Pennsylvania and Michigan. Add. 9402 I, % AMA.

WANTED—POSITION — MATRON — BY woman of middle age, former teacher, domestic science graduate, position as matron in institution, sanatorium, hospital, school or college; 5 years' experience in sanatorium cafeteria and boarding school; references. Add. 9293 I, % AMA.

(*Continued on next page*)

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GRADUATE NURSES FURNISHED — WE have nurses with advanced hospital experience located in every state in this country, wanting hospital positions. If you need a nurse in any department, write or wire; we will put you in touch with nurses promptly. No charges for this service. Aznoe's Central Registry for Nurses, 3544 Grand Blvd., Chicago, Ill.

WANTED—BY GRADUATE REGISTERED nurse of eastern state; has had five years' hospital management, two years' surgical work; postgraduate in surgery, taken in New York; desires position, assistant superintendent or charge of surgical department; can furnish splendid references; will report for duty immediately. Add. 9404, % AMA.

WANTED—GRADUATE NURSE DESIRES position in doctor's office, general duty in hospital or as assistant superintendent; good references as to ability. Add. 9375 % AMA.

WANTED—BY GRADUATE REGISTERED nurse, position in hospital, rural nurse or doctor's office; no objection to location; can furnish the best of references. For full particulars write Nurse, P. O. Box 573, Lexington, Va.

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WANTED—BY GRADUATE NURSE—ORthopedic experience; a few crippled children to care for in her own home. For terms, etc., add. 9376 J, % AMA.

THE PRIZE OF THE ALUMNI ASSOciation of the college of Physicans and Surgeons, Columbia University, New York will be awarded at Commencement, 1916. This is a Biennial Prize of five hundred dollars open for competition to the alumni of the above college. It is awarded for the best medical essay submitted upon any subject the writer may select. The prize money is payable upon the filing with the secretary of a printed copy of the prize essay. An essay, in order to be held worthy of the prize, must contain the results of original investigations made by the writer. This prize is not awarded to any previously published essay, or to one which is the work of more than one author, or which is at the same time submitted for another prize. Each competitor is required to send with his essay to the Prize Committee a statement that these requirements have been complied with. Essays in competition for the prize to be awarded at commencement 1916 must be typewritten in English and sent to the Secretary of the Alumni Association on or before April 1, 1916. They must be marked with a device or motto, and accompanied by a sealed envelope similarly marked, containing the name and address of the author. If no one of the competing essays be deemed sufficiently meritorious, the prize is not awarded. In 1917 the Cartwright prize will be offered. The requirements of this are the same as those of the Alumni Prize, excepting that it is open to universal competition. H. E. Hale, M.D., Secretary of the Alumni Association of the College of Physicians and Surgeons, 64 West 50th St., New York City.

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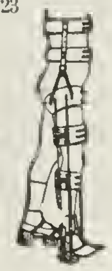

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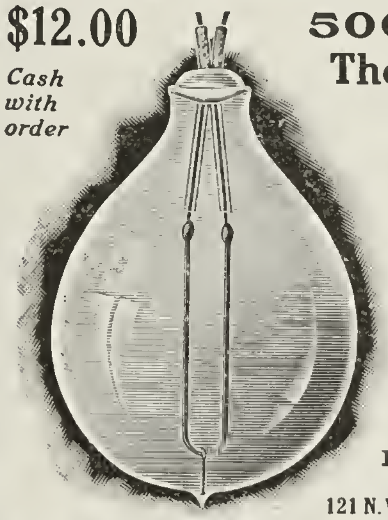

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FOR SALE—CALIFORNIA—PHYSICIAN'S office, equipment and practice; town of over 13,000, near San Francisco; write at once for particulars. Add. 9412 N, % AMA.

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FOR SALE—CALIFORNIA—PRACTICE OF $10,000 year and the best little hospital in the county; town of 3,000 and large country territory; good field for surgery; practically unopposed; price, $15,000, one half cash, or will take California ranch. Add. 9366 N, % AMA.

FOR SALE—COLORADO—OWING TO ILL health will sell my modernly built and equiped ten-bed hospital with fine residence apartments at a great sacrifice; yearly business, $8,000; best town of size (1,500) in state; accredited high school; electric lights, waterworks and sewers; large territory, good fees; fine agricultural, fruit and stock-raising country; price, $7,500, half on time; cost almost twice that amount; fine opportunity for a surgeon; do not write unless you mean business. Add. 9405 N, % AMA.

FOR SALE — COLORADO — PHYSICIAN'S $4,000 practice, drugs and office equipment; county seat, railroad division; high school and churches; waterworks and electric lights; fine roads; large territory; good crops; collections, 95 per cent.; competition right; insurance appointments transferable; fine climate for lung trouble; for quick sale, $600; don't answer unless you mean business. Add. 9320 N, % AMA.

(Continued on next page)

FOR SALE—WILMINGTON, DELAWARE —Fully stocked drug store and medical practice; income, $5,000 per year; can be easily increased; in heart of industrial section; plenty of minor surgery; all cash practice; price, $5,000, ½ cash, balance monthly payments; am going to specialize. Add. 9371 N, % AMA.

FOR SALE—IDAHO PRACTICE—NO OPposition; practice last year, $4,725; can use an auto 365 days; part cash and balance terms; complete house and office equipment for both ready to step into; territory, 12 to 22 miles; population, 450; fine fees; lease on combined office and residence for over two years; particulars, add. Dr. A. V. Fankboner, Hagerman, Idaho. N

FOR SALE—CENTRAL ILLINOIS—RARE oportunity; $5,000 general and surgical practice located inland village; six miles to railroad; for price of office outfit, fully equipped, $500; competition 6, 8, 15 miles; prairie roads; prosperous community; no real estate; cheap rent; leaving for postgraduate study; act quick; this adv. appears but once; terms. Add. 9393 N, % AMA.

FOR SALE—ILLINOIS—CONTRACT PRACtice of $100 per month, besides good general practice; in good growing city; will sell for price of property; building and business lots in center of town, worth $16,000, will sell for $12,000; $5,000 down, balance to suite, or will exchange for good farm in corn belt. Add. 9223 N, % AMA.

FOR SALE — ILLINOIS — CLOSE TO State Capital; $3,000 general practice; can be increased; wealthy farming community; good fees and collections; electric lights; town 1,000; four churches, accredited high school; competition right; 6-room house, 3-room office with drugs and part of equipment; barn room for auto, horses and buggy; all on two good corner lots; price, $2,500; $1,000 down, balance terms. Add. 9290 N, % AMA.

FOR SALE — ILLINOIS — PHYSICIAN'S practice goes with fine residence; ample office space; growing railroad center; rich farming country; northwestern Illinois; price, $7,000; must see to appreciate. Add. 9334 N, % AMA.

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FOR SALE—ILLINOIS—$5,000 TO $6,000 practice in city of 30,000; have corporation work which I can transfer that pays $250 to $300 per month; my office will invoice over $1,000; one of the finest locations in state; rent cheap; this is an exceptional offer, rare opportunity, invite inspection; this adv. appears but once as I want a quick sale as I am leaving to specialize; do not write unless you mean business and can close deal at once. Price, $1,500; cash $1,000, rest to suit. Add. 9406 N, % AMA.

FOR SALE—ILLINOIS—DO $6,000 A YEAR general and corporation practice; appointments transferable; average $250 a month from appointments; price, $1,500 cash, and one-third of cash received from appointments for one year; city of 4,000; do not answer unless you have money and can come by January 15. Send stamped envelope. Add. 9387 N, % AMA.

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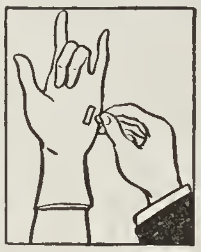

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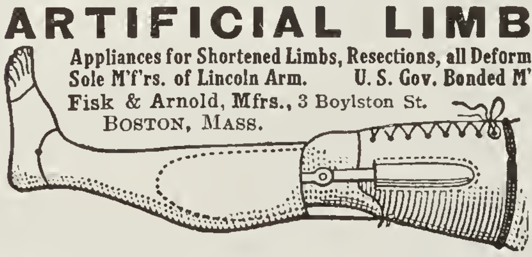

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FOR SALE—SOUTHEASTERN IOWA— $3,000 practice; town of 685; surrounding territory 14, 15, 9, 9 miles; good schools and 3 churches; one competitor; no blue sky; must come at once; this is our busy season. Add. 9382 N, % AMA.

FOR SALE—IOWA—WHOLE OR HALF OF $3,000 practice and about $1,600 equipment; place, 1,600, one of the best parts of state; easy competition; will take six months' postgraduate work if arrangement can be made soon enough; cash for half interest; act quickly if you want a good thing; references required and given. Add. 9395 N, % AMA.

FOR SALE—IOWA—WELL-ESTABLISHED eye, ear, nose and throat practice, large city; fully equipped, practice over $10,000 cash yearly; excellent opportunity for capable surgeon; reason for disposal, illness; immediate possession; cash for equipment, $2,800; do not answer unless you can handle this proposition at once. Add. 9403 N, % AMA.

FOR SALE — IOWA—EYE, EAR, NOSE and throat practice in town of 6,000 people; nearest competitor 50 miles; practice averages about $5,000 per year; can be doubled by right man; good reason for selling; wish to sell office fixtures, drugs, records, etc. Add. 9173 N, % AMA.

FOR SALE — KANSAS — $6,000 OFFICE practice; collections, 98 per cent.; in town, 65,000 population; established 10 years; free to purchaser of my complete office equipment, including all modern instruments of diagnostic precision and for the office treatment of chronic diseases; invoices about $3,500; $3,500 cash takes it; thorough introduction. Add. 9352 N, % AMA.

FOR SALE — SOUTHEAST KANSAS — $3,000 unopposed practice for price of invoice of furniture and drugs; must be competent man; none other need apply; large territory; office optional with two lots; send references in letter of inquiry. Add. 9370 N, % AMA.

FOR SALE—KANSAS—$2,000 UNOPPOSED practice, 8, 9, 11 miles to competitor; do my own dispensing; good grade, high school, church and good roads; fine farming community; natural gas; going West; will sell location, office furniture and small stock of drugs for $200 if taken at once. Add. 9386 N, % AMA.

FOR SALE—CENTRAL KANSAS LOCAtion; practice and drug store; practice runs from $3,000 to $3,500; collections good; well-improved country; nearly new stock of drugs invoicing $2,200; good fixtures; money-making proposition from start; $2,200 for practice and stock, or will sell practice separately; terms to suit; town of 250 population; no competition. Add. 9328 N, % AMA.

FOR SALE — IN CRIDER, CALDWELL County, Kentucky — 9-room house, water works in house; 3 cisterns; stables, 2 outhouses; 35 acres in blue grass; 2-room office in center of town immediately on railroad; good country; 95 per cent. collections; one other doctor; reason for selling, age, 75 years. Add. 9304 N, % AMA.

FOR SALE — LOUISIANA — $3,500 TO $4,000 practice; live town 400 on main line railroad; 16 miles from Shreveport; collections good; model roads, churches and schools; practice can be increased; one opponent, weak; $300 buys drugs, one fine saddle horse and practice; automobile optional; introduction and insurance appointments. Add. 9259 N, % AMA.

FOR SALE — MISSOURI — CITY 800,000 — Appointments and practice, $2,000 yearly; thrifty German-American community; middle class own their own home and pay their bills; established 5 years; want $2,100 cash for equity in my flat (valuation $5,100), lower of which I occupy, upper rented out; on car line; good condition; going to specialize. Add. 9364 N, % AMA.

FOR SALE — ST. LOUIS — MISSOURI — Practice established 40 years on the same block (20 years in general practice, 20 years in G. U. and surgery); central location, only physician in office building; up-to-date equipment, large library, surgical instruments and appliances, with accessories; well appointed and modern offices; poor health compels the sacrifice of this first-class outfit; inventory and terms to parties interested only and with means. Add. 9354 N, % AMA.

(*Continued on next page.*)

FOR SALE—WESTERN MISSOURI—EYE, ear, nose and throat practice and three equipped rooms; one of best locations in city of 40,000; fixtures, etc., invoices better than $500; office practice averages $400 per month; can be increased to more than double that amount if taken care of; desire to quit business to look after mining interests; price, $500, time on part, or would take in partner for $300 cash; this is a bargain; do not answer unless you have the cash and mean business. Add. 9408 N, % AMA.

FOR SALE—CENTRAL MISSOURI—$3,500 practice; railroad division town of 5,000; splendid schools and churches, surrounded by good farming community; good roads; good collections; competition light; free to purchaser of my home, good house, barn and garage; priced worth the money; will introduce; terms. Add. 9275 N, % AMA.

FOR SALE—CENTRAL MAINE—$3,500 TO $4,000 practice in town of 2,500 with adjunct town with 1,000 more inhabitants; light competition; very little surgical; railroad center; two woolen mills, large shops, other factories; large summer business on lakes; school, church, lights, water; fine home, stable; low rent; terms $500; need rest and postgraduate. Add. 9360 N, % AMA.

FOR SALE—MAINE — $4,500 GENERAL and surgical practice to competent capable man; must be graduate first-class medical school; $1,000 cash; will introduce and turn over case records; immediate sale desired; office, house, stable, garage rent for $26 per month; all modern conveniences. C. H. Witherill, M.D., Oakland, Maine. N

FOR SALE—MICHIGAN — PRACTICE IN center of thumb district; new up-to-date railroad town; opposition 11, 16, 10 and 4 miles; thickly settled farming country; fine American people; can run car 10 months of year; must go south; price, $500; this sells soon. Add. 9141 N, % AMA.

FOR SALE—EASTERN MICHIGAN PRACTICE; one of the best farming countries in state; village, 800; competitor, one; distance to others, north 10 miles, west 20 miles, south 10 miles, east 10 miles; collections, 95 per cent.; Polish preferred; $500 cash. Add. 9348 N, % AMA.

FOR SALE — MICHIGAN — PROPERTY, practice and interest in a private hospital in one of the most progressive cities in central Michigan; income, $7,000 to $10,000 annually; good opportunity for surgeon with experience; property includes modern twelve-room house, stable, garage, etc.; an ideal location to build a substantial business. Add. 9391 N, % AMA.

FOR SALE—MINNESOTA — EQUIPMENT and practice in a western Minnesota town of 8,000 population, with two hospitals; practice pays from $8,000 to $10,000 yearly and consists of general surgical and office practice, eye, ear, nose and throat and x-ray work; price, $5,000. Add. 9258 N, % AMA.

FOR SALE — MISSISSIPPI — $3,000 TO $3,500 delta practice for buying drugs and office equipment; automobile optional; practically all plantation work, guaranteed by planters; 98 per cent. collections; one competitor, weak; good school, railroad and churches; $300 will cover deal; good reason for leaving; this adv. appears once only. Add. 9389 N, % AMA.

FOR SALE — WESTERN MONTANA — Practice and drug store combined, which nets $4,000 yearly, can be materially increased by doing surgery; rent very low; one competitor and no drug store in 25, 25, 35 and 40 miles; collections, 98 per cent.; ideal climate and roads; town 400, good rural population; fine hunting and fishing right at door; income right from start; going to larger place. Price, $2,500 cash, balance to suit; furniture and auto optional; immediate possession; no triflers. Add. 9365 N, % AMA.

FOR SALE — NEWARK, N. J.—A $3,000 cash practice; established 7 years; excellent location for one speaking Polish or Russian; will sell with or without office equipment. Add. 9101 N, % AMA.

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(*Continued on next page*)

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FOR SALE—NEW YORK CITY—$10,000 A year practice in Eye, Ear, Nose and Throat, consisting largely of refraction work, by a refraction pupil of Dr. George M. Gould, who has lately been endowed with the money to devote himself entirely to social work; purchaser will be thoroughly trained in each one of these specialties if desired before practice is relinquished to him; half cash down and the balance in instalments; young man totally inexperienced in these lines prefered whom I can teach the entire subject from the ground up. Add. 9355 N, % AMA.

FOR SALE—WESTERN OHIO—$4,000 UNopposed practice in town 300; churches, high school, lodges; convenient to city and college; competition 6, 8, 12 and 15 miles; automobile roads all year; good property; $1,000 cash; balance terms. Add. 9189 N, % AMA.

FOR SALE—OKLAHOMA — $3,000 PRACtice, residence and office fixtures in growing town of 3,500, with good country around; splendid oportunity for a man to do surgery. Add. Box 261, Sallisaw, Okla. N

FOR SALE — OKLAHOMA — PRACTICE and only drug store; town of 600 in oil belt; good schools, people and country; competition light; a good man can make $2,500 first year; $3,000 will handle; good deal for doctor and druggist; will introduce; good reason for selling. Add. 9399 N, % AMA.

FOR SALE—OKLAHOMA—$3,600 PRACtice in good farming section; population, 1,000; on railroad; $550 cash buys good team, new buggy, harness and office equipment; competition right; will rent or sell residence, $1,200, terms to suit purchaser; am going to city to specialize; cash from start. Add. 9381 N, % AMA.

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FOR SALE — PENNSYLVANIA — UNOPposed town and country practice of $3,000 in a borough of 300 on railroad in Mercer County, Pennsylvania; in good farming and mining community; collections good; excellent roads, graded school and churches; price, $500 for large stock of drugs and other equipment. Add. 9385 N, % AMA.

FOR SALE—EASTERN PENNSYLVANIA—Farming community; a good general and surgical practice, established 50 years; collections, 95 per cent.; retiring; 13-room house, stable and garage, in town of 1,000, on main line of Pennsylvania railroad; trolley; modern conveniences; up-to-date town; $7,000, easy terms. Add. 9349 N, % AMA.

FOR SALE — CENTRAL TEXAS — $3,500 practice; village 500 inhabitants; thickly settled community; good school, three churches; railroad; want to sell small farm or horse, buggy and automobile; $600 to $1,000 down will handle deal; sell or rent residence; can deliver practice. Add. 9310 N, % AMA.

FOR SALE — WISCONSIN — PRACTICE $3,500 to $4,500, in town of 5,000; no real estate; modern equipment, including x-ray, well-equipped laboratory, gas apparatus, up-to-date library, drug stock, sterilizer, instruments; price, $1,200 to $2,000 cash, depending on amount of equipment desired; going to specialize. Add. 9342 N, % AMA.

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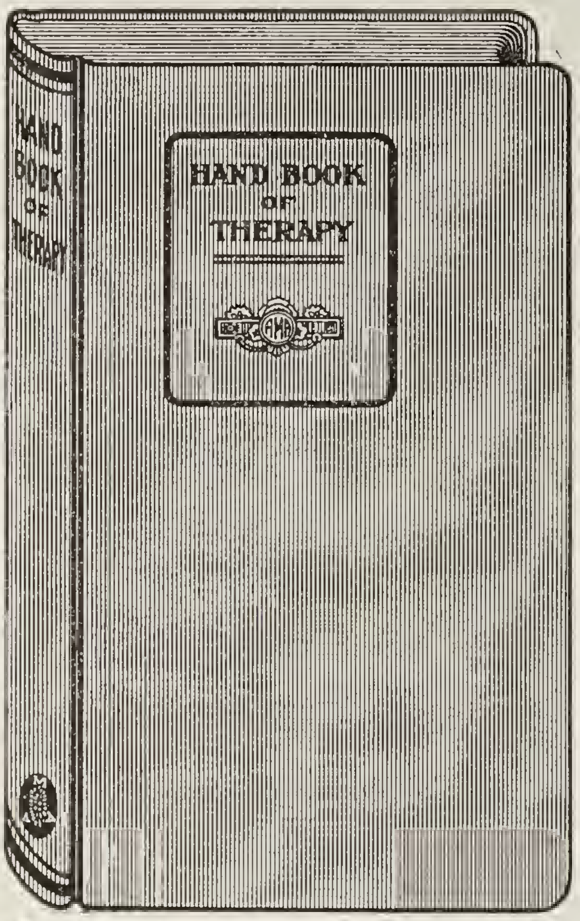

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It covers in detail the following subjects: Prescription Writing—General Diseases—Diseases of the Respiratory Tract—The Gastro-Intestional Tract—The Kidney Diseases of Metabolism—Disturbances of the Heart—The Thyroid—The Nervous System—Intoxication—Diseases of the Eye—The Ear—The Skin—The Genito-Urinary Tract—Obstetrics and Gynecology—Diseases of Infancy—Physical Therapy—Useful Drugs, etc.

The Handbook of Therapy is just what the General Practitioner wants, written in the way he wants it.

Eighteen-thousand physicians ordered the 1st, 2d, and 3d editions.

Price $1.50

AMERICAN MEDICAL ASSOCIATION
535 N. Dearborn St., CHICAGO, ILL.

FOR SALE OR LEASE—SANATORIUM IN mountains of Western Pennsylvania; ideal location, surroundings and climate; altitude, 1,800 feet; 100 acres of land; coal and water on premises; building fully equipped; capacity 130; established patronage; supported by medical profession; through train service on two railroads from Pittsburgh, Washington, Baltimore, Philadelphia and New York. Add 9292 O, % AMA.

FOR SALE—CHICAGO—PRIVATE HOSpital on south side; 35 beds, 3 wards; well patronized by reliable middle class patients; has been conducted on profitable basis for 6 years; annual income, $7,000; monthly rent, $125; unusual circumstances necessitate immediate sale; will sacrifice for $2,500; liberal terms; exceptional opportunity for one or more energetic surgeons; for details, add. 9357 O, % AMA.

FOR SALE—PRIVATE SURGICAL HOSpital; new 26-room two-story brick, elegant interior and exterior, in progressive southwestern city 40,000 inhabitants; great manufacturing and jobbing center, backed by fine farming and coal-mining country; best car accommodation and a few blocks from business center; retiring from practice. Add. 9260 O, % AMA.

LOCATIONS FOR SANITARIA

UNUSUAL OPPORTUNITY—PENSACOLA, Florida; population 25,000; an estate offers for sale at a very low figure an exceedingly attractive property, located within city limits two blocks from trolley line; 11 acres (equal to 100 city lots), many trees, including pecan, and plants in great variety; all under cultivation for 40 years; dwelling, 8 rooms and bath; laundry; outbuildings consisting of dwelling 7 rooms, stable, cow barn furnished for stock accommodating thirty head, buildings, etc., in thorough order; this property offers a healthful residence or would be exceptionally well adapted for sanitarium; is located on high ground and in a city well known for its delightful climate; Pensacola has an excellent sewage system and pure drinking water. Add. A. R. Stoddart, Trustee, 100 William St., New York City. P

FOR RENT

FOR RENT—CENTRAL ILLINOIS—CITY 1,350; modern residence, office, ten rooms, baths, electric lighted, hot water heated, laundry, hardwood interior garage; will discount one half for cash or bankable note $1,500, furnishings, instruments, drugs; active $3,500 practice included; have the goods; retiring; here since 1904. Add. 9407 Q, % AMA.

FOR RENT—CHICAGO—OFFICE—SUITable for physician or dentist; on prominent business corner; new building; running water in office; stove heat; reasonable rent. Apply M. L. Levit, 3115 Homer St., Chicago. Phone Belmont 44. Q

EDUCATIONAL

OPHTHALMOLOGY — SPECIAL COURSES given in the anatomy, physiology, pathology and diseases of the eye and its appendages: Also in ophthalmoscopy, refraction and ophthalmic surgery. Instruction is didactic, clinical and on animals and cadaver. Classes limited. Write. T. J. Williams, M.D., F.R.C.S., Edin., Suite 1322, 77 E. Washington St., Chicago.

MEDICAL BROKERS

CORPORATIONS, PHYSICIANS, HOSpitals. If you need physician as assistant, locum tenens, etc., write. If you need capable nurse, write. The above service is free to you. Halbur Exchange, Halbur, Iowa. EE

SPECIAL ATTENTION—HOUSE OF KNIEST. Estab. 1904. Gilt-edge references. National Clearance House for U. S. and Canada for doctors wanting to sell or buy a practice. For doctors wanting locum tenens, permanent positions of any kind, partnerships or business outside medical lines. For doctors wanting partners, assistants, nurses (no charge for assistants), associations, etc. All manner of medical deals handled and furnished in U. S. or Canada. Service likewise for dentists, veterinarians, nurses. Drug positions, all kinds. Drug stores sold and furnished. If possible come direct to Omaha for consultation, and if service desired, make deposit and get what you want, otherwise write F. V. Kniest, R. P., Bee Bldg., Omaha, Neb.

(*Continued on next page*)

DOCTOR, IF YOU WISH TO BUY INTO practice, write for our list. It is free. If you want to sell, want partner, write for terms. Physicians and nurses placed in salaried positions. Terms on request. We furnish interns, assistants, locum tenens, nurses, free to physicians and hospitals. Halbur Exchange, Halbur, Iowa. EE

MEDICAL PRACTICES—MEDICAL PRACTICES bought and sold in all sections; several vacancies in Hospitals and Sanitariums for salaried assistants; 1,000 remunerative appointments already secured for our clients; business established 35 years; write for terms to "The Medical Echo," Lynn, Mass. EE

CONTRACT PRACTICES AND SALARIED positions. Doctors having contract practices, salaried appointments or salaried positions any kind to relinquish, please advise me with full particulars. F. V. Kniest, Bee Bldg., Omaha, Neb. EE

PUBLISHERS AND PRINTERS

DOCTORS' STATIONERY—OF ALL KINDS —Send for samples and price list. Physicians' labels, size 2 by 3 inches, your name, address, blank lines for directions; noncurling gummed paper; 1,000 prepaid $1; money order, drafts, stamps (no checks). The Fuller Press, 1863 Ogden Ave., Chicago, Ill. GG

VISITING LISTS FOR 1916—OUR PHYSICIAN'S visiting lists have been in constant use by the profession for over 30 years. Every detail has been included which will be of assistance to practitioners. Its use preserves the daily records, relieves the memory and maintains a permanent entry. Price, $1.25 net. Descriptive circular sent on request to the publishers, Lea and Febiger, 706 Sansom St., Philadelphia, Pa. GG

STEEL DIE EMBOSSED STATIONERY — Distinctive and impressive for the medical profession; will send samples and prices upon request. Hammond Printing Co., Fremont, Neb

GENTLEMEN:—
You may discontinue my adv., location for sale, as I have sold same.
I received 25 answers and out of that number had several possible buyers.

AUTOMOBILES & ACCESSORIES

RIDE IN SAFETY OVER SLIPPERY pavements. Physicians are usually compelled to "let her out." You can indulge in bursts of speed with little fear of skidding and slewing when the Woodworth Overshoe is on your tires. The sturdy steel studs on the surface give your car a good "purchase" on slippery pavements and make skidding, punctures, etc., an almost negligible factor. There's extra mileage and extra traction in our tire "overshoe." Let us send you descriptive circular. Leather Tire Goods Co., Niagara Falls, N. Y. II

CADILLAC COUPE — IDEAL CAR FOR physician. Looks like new. Mechanically perfect. New paint. Good tires, one extra. Cannot tell from 1916 model. Guaranteed. A bargain. Will accept terms. King Motor Company, Chicago, Ill. Calumet 5770. 2429 Michigan Ave. II

OVERLAND COUPE—OVERHAULED AND repainted. Classiest job in Chicago for little money. We will accept terms from doctor who needs this fine car. Write or call. King Motor Company, Chicago, Ill. Calumet 5770. 2429 Michigan Ave. II

RUBBER GLOVES

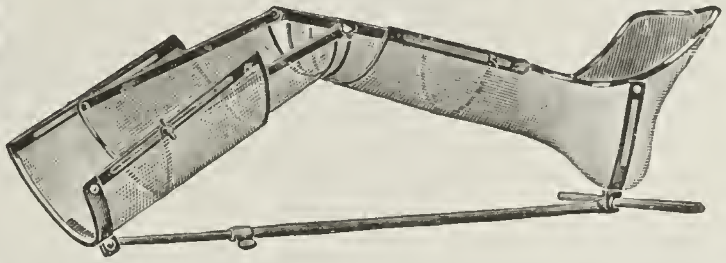
SURGEONS' GLOVES — SMOOTH OR rough finish; also reinforced wrists. We specialize on gloves and that is why we can give you a superior quality. Drainage tubing in all the standard sizes. The Massillon Rubber Co., Massillon, Ohio.

INVESTMENTS

ON QUESTIONS OF HEALTH ONE always consults a doctor. In solving the problem of investing surplus funds one should consult bankers of experience and standing. We are specialists in the selection of safe investments and will be pleased to be called into consultation by the profession on all such matters. If desired, we will suggest safe securities netting 5½ per cent. and 6 per cent. For additional information refer to our adv. on page 21. Shapker, Waller and Company, 234 S. La Salle St., Chicago. QQ

(Continued on next page)

YOU HAVE FRACTURE TROUBLES



These may be easily done away with by using the **DEPUY COMBINATION**

LEG SPLINT

and at the same time give comfort and satisfaction to your patient. On account of its great adaptability it is largely used in private and hospital practice. In this one single splint you have the well known Bucks, Hodgens and McIntyre. We make two sizes, large size No. 65 and the small size No. 66. They are ten dollars each with express charges prepaid. It will give us pleasure to send our little booklet, also our price list of our full line of splints.

DEPUY MFG. CO. :: 401 Center St. :: WARSAW, INDIANA

Justrite TRADE MARK

Sanitary Receptacles

FOR PHYSICIANS, DENTISTS AND HOSPITALS

Opens with foot pressure—closes automatically—maintains an aseptic condition of physicians' and nurses' hands.

Clean — Durable — Convenient

THREE COAT (BAKED) ENAMEL		WHITE PORCELAIN ENAMEL	
No. 40 3-gallon	$3.00	No. 50 3-gallon	$3.50
No. 41 6-gallon	3.50	No. 51 6-gallon	5 00
No. 42 8-gallon	3.75	No. 52 8-gallon	6.00
No. 43 10-gallon	4.00	No. 53 10-gallon	7.00
ALUMINUM FINISH			
No. 20 3-gallon (seamed)	$1.40	No 22 8-gallon (seamed)	$1.75
No. 21 6-gallon "	1.50	No. 23 10-gallon "	2.00

All pails packed separately in corrugated board carton. Please order by number. Sold by leading dealers or sent postpaid upon receipt of price.

Please send dealer's name.

JUSTRITE MANUFACTURING CO., Dept. H., 349 S. Clinton St. CHICAGO

AREND-ADAMICK

DOUBLE KUMYSS

AN IDEAL FOOD for all conditions of enfeebled digestive power from any cause, malnutrition in infants or the aged—a sustaining diet during the course of acute infectious diseases and gastro-intestinal disorders.

EASILY ASSIMILATED and contains the elements essential for the nourishment of the organism.

Its taste is pleasantly acidulous—its enticing flavor is unusually acceptable to the capricious appetite of the sick—it may be used for days as an exclusive diet.

Booklet giving instructions and interesting clinical report, also price list, free on request.

A. AREND DRUG COMPANY

Manufacturing Chemists **189 West Madison Street, Chicago**

A Satisfactory Location

A JOURNAL A. M. A. classified advertisement brought this physician a satisfactory location. The names are changed but the letter is genuine.

> "I have bought out Dr. Seller of Bridgeton, S. D. Kindly change my address from Blankington to Bridgeton, S. D.
>
> "I want to recommend THE JOURNAL as a very effective medium for finding locations, selling practices, etc. It brings the desired results promptly in a direct way—although the cost of an advertisement is only $1.50, it gives services worth fifty times that amount.
>
> "Use this letter for the benefit of others who may want to change locations or sell out, sell equipment, etc., or buy anything from other doctors that they do not care to buy direct from dealers.
>
> Yours respectfully,
> DR. J. G. BUYER."

We have many letters of similar nature in our files—they are from physicians who have consummated satisfactory deals through classified advertisements in THE JOURNAL.

Over 65.000 physicians read THE JOURNAL weekly.

Isn't it logical that among these 65.000 there are many who want to buy what you have to sell, or sell what you want to buy?

IF YOU are thinking of making a change—
YOU have anything to sell—
YOU want to buy or exchange some second hand equipment, books or an automobile, and want quick results, let THE JOURNAL put you in touch with the proper parties.

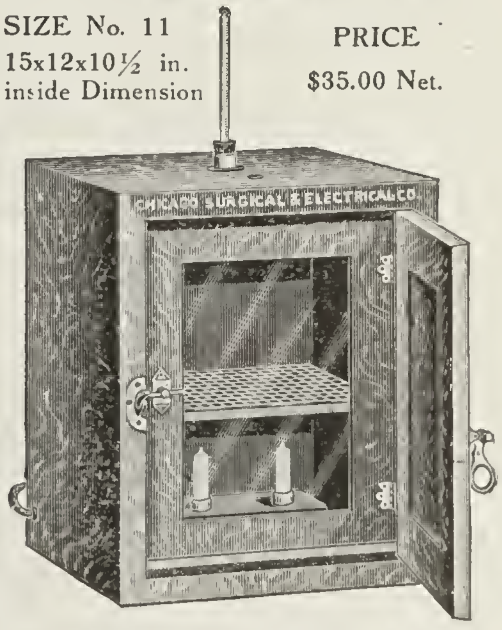
See page 20 for cost of classified and commercial announcement advertisements.

ELECTRIC INCUBATORS

with Automatic Temperature Control

SIZE No. 11
15x12x10½ in.
inside Dimension

PRICE
$35.00 Net.



CHICAGO SURGICAL & ELECTRICAL CO.

Our Latest Bacteriological Incubator

Ask your dealer for our catalogue or send for it direct

Chicago Surgical and Electrical Co.

859 N. Franklin Street, Chicago, Ill.

THE CLASSIFIED ADVERTISEMENTS AND THE PHYSICIAN

HOW TO WRITE AN INTERESTING "FOR SALE" ADVERTISEMENT. — The "make up" of "For Sale" copy is very important both to the physician who is offering to sell and the many applicants who want to buy. When you write your advertisement give its preparation study so as to cover in full the viewpoints of both buyer and seller — it will save you much wearisome and needless correspondence. Study out and include in your copy descriptions of what you would like to know about a practice before you bought it if you were the purchaser instead of the seller and bear in mind that it is a serious mistake to interject disconnected abbreviations in trying to economize on the number of words.

The most successful advertisements are those in which the seller has described in detail what he has to offer, explains why his practice has been profitable, outlines important qualifications which his successor should possess and proposes questions which the prospective buyer can answer. In your copy, cover all essential data with short, decisive words and sentences, thereby making it possible for the inquirer to at once enter into direct correspondence.

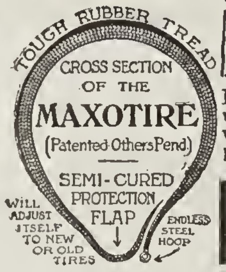
HOW TO PROPERLY ANSWER A CLASSIFIED ADVERTISEMENT. — Not infrequently we receive letters from physicians asking, "Why don't I receive a reply to the letter which I recently wrote advertiser ——?" As a general rule it may safely be stated that a large number of sellers do not reply because they are not impressed with the sincerity of the inquiry—it is written in such a thoughtless, irresponsive way.

In order to evoke a reply every answer should show plainly by its wording that the party writing has thoroughly read the advertisement, is sincere in his questions and has placed real thought and intelligence in the wording of his letter.

When you answer a classified advertisement, first read the copy as published in THE JOURNAL carefully and then frame your answer to fit the statements which it contains, asking additional questions which are of importance to you.

Many classified advertisers receive a large number of replies and in the mass of correspondence it is usually the earnest, interesting inquiry which receives the advertisers' best attention.

It is well in submitting letters of reference and recommendation to send a copy, retaining the original, also when photographs are submitted, stamps should be enclosed to insure their return.



Dont throw away your weak tires!

If their tread is good you can use them 1000 to 4000 miles more with no blow-outs, rim-cuts, tube pinches or trouble, if you

USE MAXOTIRES

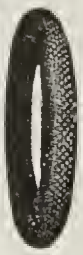
Doctor: Life is too short, your time too valuable to be taken up with tire trouble. Our 1915 Rubber Treaded MAXOTIRES prevent trouble until your tire is worn *clean thru.*

MAXOTIRES ARE GUARANTEED FOR ONE YEAR

Tire trouble costs you delay, money, and even life itself—so write for a MAXOTIRE CATALOG, and Special Price which we are giving to doctors where 1915 Rubber Treaded MAXOTIRES are not yet introduced

K & W RUBBER COMPANY
The Maxo Dept. ASHLAND, OHIO.

TRIPLE TREADED TIRES



Puncture Proof—Skid Proof—Oil Proof

All the features of the highest priced tires, combined in one tire—At the price of a plain tread tire or less,

Triple Treads are guaranteed 3500 miles
Send for circulars and descriptive booklet.

TRIPLE TREAD MFG. CO.
1549 Michigan Ave. CHICAGO

"EMCO" AUTOMOBILE OIL No. 300

is refined by us from Pennsylvania Crude Oil. It contains **No Carbon, has High Fire Test, Low Cold Test and Great Viscosity.**

Sold by all dealers or will be shipped direct from our refinery, Bradford, Pa., in 5 or 10 gallon cans, barrels or half barrels. Your money back if not satisfactory in every respect.

Prices and samples upon request.

New York Office—Maritime Bldg., 8-10 Bridge St.
EMERY MANUFACTURING CO., Bradford, Pa.

MISCELLANEOUS COM. ADVTS.

DO NOT DISSIPATE MENTAL ENERGY by trying to carry diagnostic clinical details in your mind. Our system of making records at the bedside relieves you of all necessity of memorizing numerous yet very essential points. The systematic method which you will follow when using our system has pronounced psychic effect in proving your thoroughness with patients. The method we have evolved is up to date, both a time and labor saver and lasts a life time. The illustration in our advertisement on page 9 in this week's issue will interest you. Complete descriptive matter on request. Address McCaskey Register Company, Alliance, Ohio.

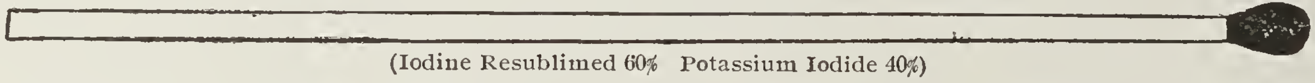
OUR BOOKLET "STORY OF THE SKIoptometer" contains many short cuts to right results in refraction work. This appliance operates on a single reel and does away entirely with old tiresome lense case system. Copy of the booklet mentioned will be mailed free on request to Michael Woolf, Mfr., 25 Maiden Lane, New York City. For additional information refer to our adv. on page 32 last week's issue. KK

TO OPEN A CARBUNCLE, BUBO, FURuncle or excise any cutaneous excrescence or growth use "Kelene." It will produce a prompt local anesthesia which last sufficiently long to enable the surgeon to do thorough work. Every physician should read our descriptive literature mailed free on request. Add. Fries Bros., Mfrs., 92 Reade St., New York City. KK

RETREAD, REINFORCE, OR RETIRE tires? "Many a tire is relegated to the junk heap long before its usefulness is over," declares the manager of an automobile tire manufacturer. "Often a repair, an inner liner or a retread, will put a tire in a condition which will permit an increased mileage more than justifying its cost. Time was when the tire repairman took long chances—inadvisable repairs were made—but the dependable vulcanizer today recommends only such work as he believes will make for a saving to the motorist. Before discarding an old tire it is well to show it to a competent repairman. He will generally be able to ascertain whether the additional mileage expected will warrant the expenditure involved. If a repair is inadvisable, he will not recommend it, for every job of that character means a dissatisfied customer. A tire that has given good service but has its fabric weakened in places, may be reinforced by the application of a proper inside tire protector. After the tire has attained its three score and ten and is finally removed, the protector may be taken out and applied in another tire. The protector applied properly becomes a part of the tire and gives the casing extra life and durability. If the tread on your tire is worn down, but the tire otherwise in fair condition, several thousand miles of service may be obtained by having it retreaded. In doing this the repairman tears the old tire down to the fabric and builds it up in the same manner as in making a new tire. There are other ways in which tires apparently worn out can be made to render much greater mileage. Before discarding them be sure to give them the 'once over.' A simple repair or an accessory may add a few extra thousands to their mileage."

A NEW TECHNIQUE FOR X-RAY operators. We have evolved a new method that is mathematically exact and always works. See our adv. on page 31, this issue. Geo. W. Brady & Co., 757 S. Western Ave., Chicago.

IODOAPPLICATORS



(Iodine Resublimed 60% Potassium Iodide 40%)

See Report of Council on page 2167, issue of Dec. 18, 1915. Samples for Your Dealer's Name.

ANTISEPTIC SUPPLY COMPANY, Mfrs., Dept. 9, 140 Liberty Street, NEW YORK CITY

COUPE, SEDAN and Commercial BODIES for Ford Model "T" nd Other Small Chasses

We build them in large quantities and have them in stock for immediate shipment. They are easily installed, the design good, quality good and prices low. They give the Ford the appearance of a high priced electric, mean solid comfort for the user, and a money-making proposition for the agent.

Write or wire us for prices and specifications.

IRVIN ROBBINS & COMPANY
Indianapolis, Ind.

GOOD AGENTS WANTED

JOURNAL CLASSIFIED ADS. BRING RESULTS—TRY THEM

Get 6 to 7 Percent— Not 3 or 4

You can safely get 6 to 7 per cent on your investments as well as 3 to 4 per cent. Our 68 page book "Investing Under Expert Direction" tells how. It won't cost you anything to have us send it to you, and it may be worth many hundreds of dollars to you in future years. Free on request—also our descriptive list of current offerings.

The Geiger-Jones Co.
Investment Bankers
556 Market Ave., North Canton, O.

It's Only the Hits that Count!

In the gigantic struggle now engaging the nations of Europe it's only the hits that count. Every Government and every Commander knows that.

And therefore they don't depend on *judgment* to find the range. *Far from it!* They find it with all the exactness and certainty of mathematics, *before they fire a shot!* Modern range-finders, scientifically accurate, are their guides. No guesswork, *there!*

Save 30% on Your X-Ray Plates

How many times does the Roentgenologist "shoot" without being sure he will make a "hit"? Practically *every* time, because he depends on his judgment to find the "range." And because he is not sure his first "shot" will find its "mark," he makes a duplicate "shot" whenever it is important that the "mark" is surely "hit."

Every duplicate made costs money—uses a plate unnecessarily—and *this cost can be entirely eliminated.*

Cut out all duplicate exposures, and save *at least* 30% of your plate expense!

Paragon Milli-Ampere-Second Technique

After several months' trial by prominent Radiographers we now announce this remarkable technique—the greatest advance in Radiography in years.

Based on known laws of the chemical effects of X-Rays (one milli-ampere-second exposure producing a definite chemical change in a Paragon X-Ray Plate) *proper exposures* can be *determined* with certainty, *in advance,* and perfect radiograms produced, with any type of apparatus.

This surely is better than *guessing* at it—no matter how well trained your judgment may be.

It cuts out all duplicate exposures. It makes failures absolutely unnecessary.

Geo. W. Brady & Co.
757 S. Western Ave., :: Chicago

No Need to Ever Make Another "Miss"

Cut out the guessing. Get right down to cases. *Know* what your results will be!

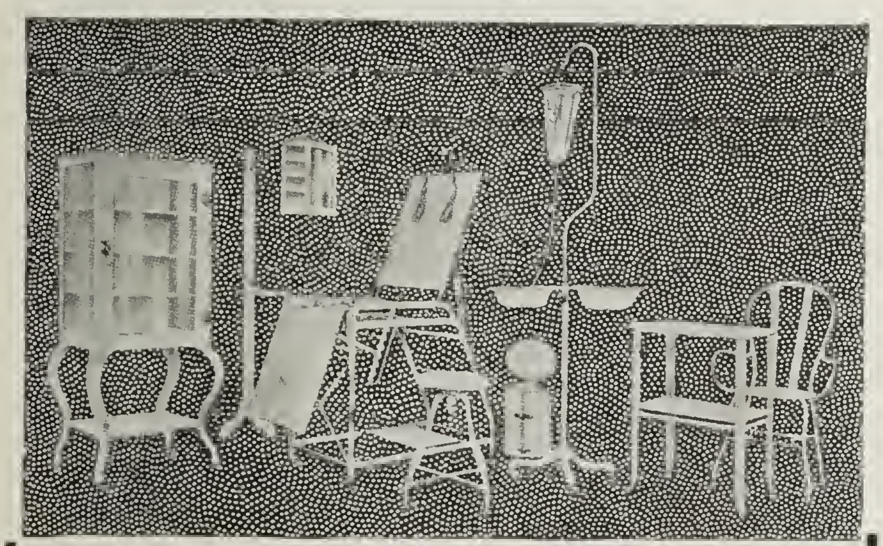
Paragon Milli-ampere-second Technique shows you how—shows the absolutely sure and right road to success with *every* exposure. *No more duplicates necessary.*

Save *at least* 30% on the number of plates you use. Save your tubes. Save time and work.

Send us your order for a dozen Paragon X-Ray Plates, and we'll include (on request) full information about this wonderful technique. It ALWAYS works!

Paragon Plates are remarkably *fast,* and *certain* in results. Their unusually heavy emulsion, extra rich in silver—their freshness—their uniformity—all have contributed to their great success. *You can't go wrong to try them.*

PARAGON X-RAY PLATES



$10.00 Puts This in Your Office

This magnificent nine-piece Fine White Enameled aseptic office furniture set. $55.00 Steel Cabinet. $25.00 Steel Operating Table. $18.00 Steel Irrigator. $8.00 Steel Instrument Table. $8.00 Steel Chair. $6.00 Operator's Stool. $3.50 Steel Waste Bucket. $7.50 Harwood Medicine Cabinet. $4.50 Harwood Costumer. Entire Outfit foots up $135.50. Our price only $100.00 on our

Easy Rental Purchase Plan

$10.00 Cash with order, balance $7.50 a month. Send $10.00 today or send for complete description of the outfit. Don't put off acting. This offer is backed by our Iron-clad Guarantee. If not satisfied return the outfit after ten days trial.

A. S. ALOE CO. SURGICAL SUPPLY DEPT.
515 Olive St., St. Louis, Mo.

Aren't Warm Hands an Absolute Necessity to all Physicians?

Why step from a hot sick-room right into a zero blast?

A SEAMAN WINTER TOP FOR FORD CARS is as *warm, dry* and *comfortable* as a *limousine.*

All steel construction—with all joints spot-welded—light, rigid and durable. Glass is set in steel sash. No rattles or squeaks.

Made by a company that has been making Quality Automobile Bodies for many years.

Made for 1913 - 1914 - 1915 - 1916 Models.

Touring Car Winter Top $125.00 } F.O.B. Milwaukee
Roadster Winter Top - - - 90.00 }

Crated for shipment.

ONLY THE PRICE IS CHEAP.

W. S. SEAMAN COMPANY
Manufacturers of Automobile Bodies
486-490 Virginia Street :-: MILWAUKEE, WIS.

SELF-HELP
Nemo
WONDERLIFT

Nemo Wonderlift Corsets

are constructed upon an entirely new mechanical principle. The adjustable uplifting and supporting Wonderlift Bandlet is semi-elastic—firm enough to give adequate support, yielding enough to insure comfort; made of patented Lastikops Webbing and guaranteed to outwear the corset and retain its original firmness to the end.

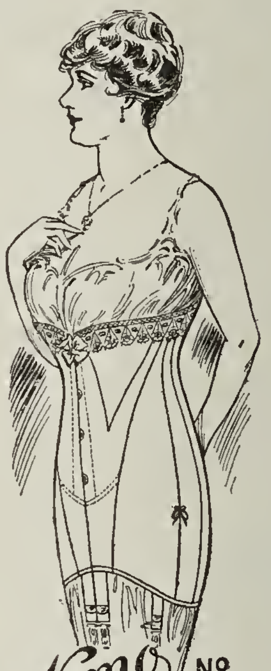
Models to fit every figure not actually abnormal:

No. **554** (pictured) is for short full figures of medium height; sizes 24 to 36. No. **555** is similar, but with longer lines, for taller full figures. No. **556** is for slender or even slight figures; sizes 20 to 30. All at **$5.00.**

No. **1000** is a corset *de luxe*, for average full figures; of lustrous brocade, beautifully finished; sizes 24 to 36—**$10.00.**

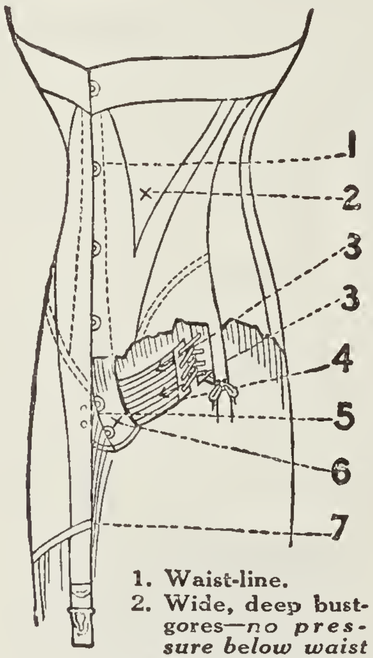
No. **998** *(ready Feb. 15, 1916)* is for abnormally large women with heavy, pendulous abdomen; 16-inch incurved front steels (12 inches below waist-line); strongly boned. Firm white coutil; sizes 30 to 44—**$10.00.**

These wonderful *health* corsets are also superior *style* corsets, and give no external hint of the concealed device that produces such excellent visceral support.



Nemo No 554 WONDERLIFT

To Adjust the Wonderlift Bandlet: The corset is first fitted upon the figure, well down, the curved steels engaging the *symphysis pubis.* The two protruding laces (on each side) are wound, flat and even, once around forefinger, and firmly held by the thumb. Pull *directly downward*, slowly and evenly. Do not jerk or twist the laces. Tie laces in single knot, finish with single bowknot.



1. Waist-line.
2. Wide, deep bust-gores—*no pressure below waist on stomach and liver.*
3. Adjustable semi-elastic binder (*oblique muscles*).
4. Poupart's ligament.
5. Symphysis pubis.
6. Curved steels—*no pressure over bladder.*
7. Garters attached to semi-detached skirt—*no undue pressure on abdomen.*

Why This is a Truly Scientific Supporting Corset

The semi-elastic bandlets are in exact apposition to the internal broad ligament, and, in position and action, closely simulate the lifting and supporting functions of the external and internal oblique muscles. The inner side-lacing permits exact individual adjustment, each side being independent of the other, thus providing for inequalities in size and shape of abdomen and hip bones. The mechanical construction is such that *the entire weight of support is carried upon the hip bones*, thus protecting the kidneys from undue pressure and the spinal column from distortion.

For various forms of ptoses. Invaluable in inoperable floating kidney. A great help in ante-partum, post-partum, obesity, hernia. The corset acts as a splint to the internal organs and their ligaments, giving them "physiological rest" until the organs and ligaments regain their tone.

This New Kind of a Binder "Stays Put!"

It keeps its place. It gives *added comfort.* It does not bulk the figure, but *reduces* it. It accomplishes its purpose *without offending the woman's pride of figure.* Your patient will wear this corset gladly. Too often she throws the binder aside the minute your back is turned.

It is *inexpensive.* The price of this corset is $5.00—less than the cost of the cheapest binder; and it's a big value, simply as a *corset*, at $5.00, saying nothing of its new supporting feature.

We shall be glad to furnish further information one request.

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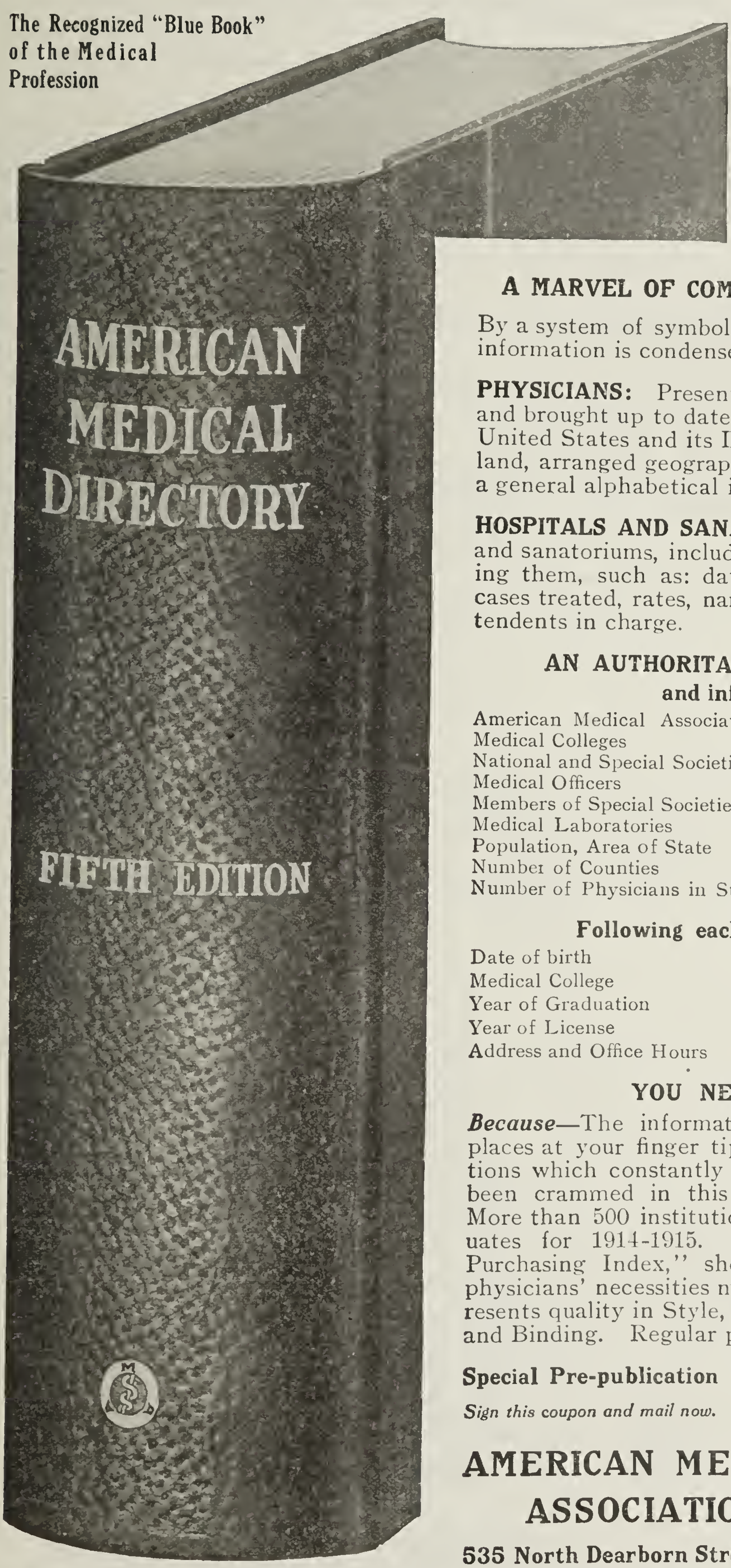

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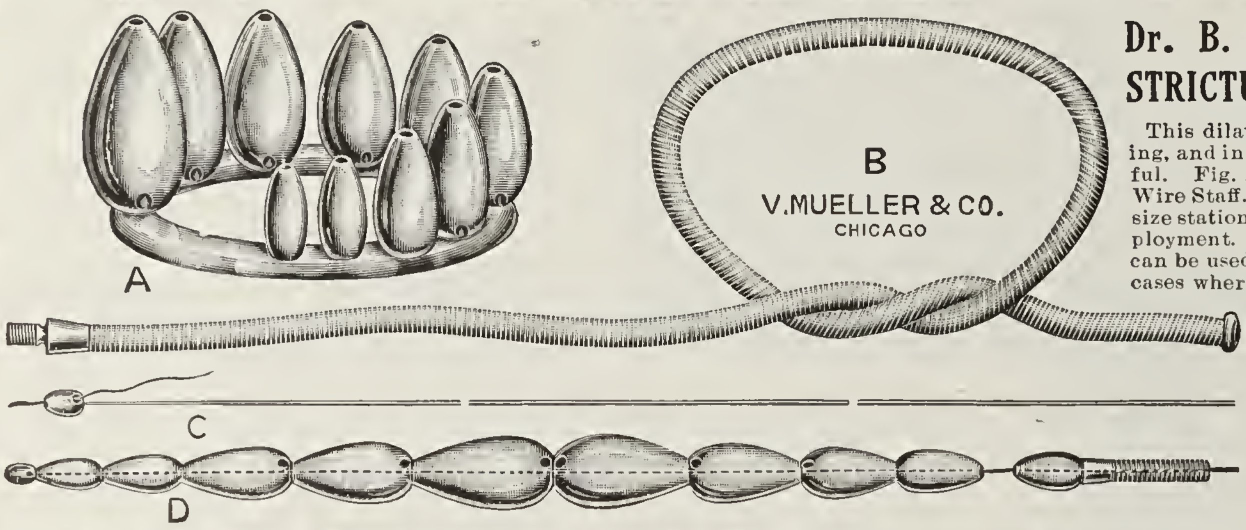

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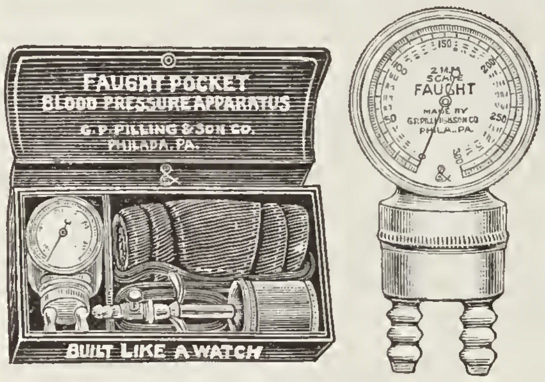
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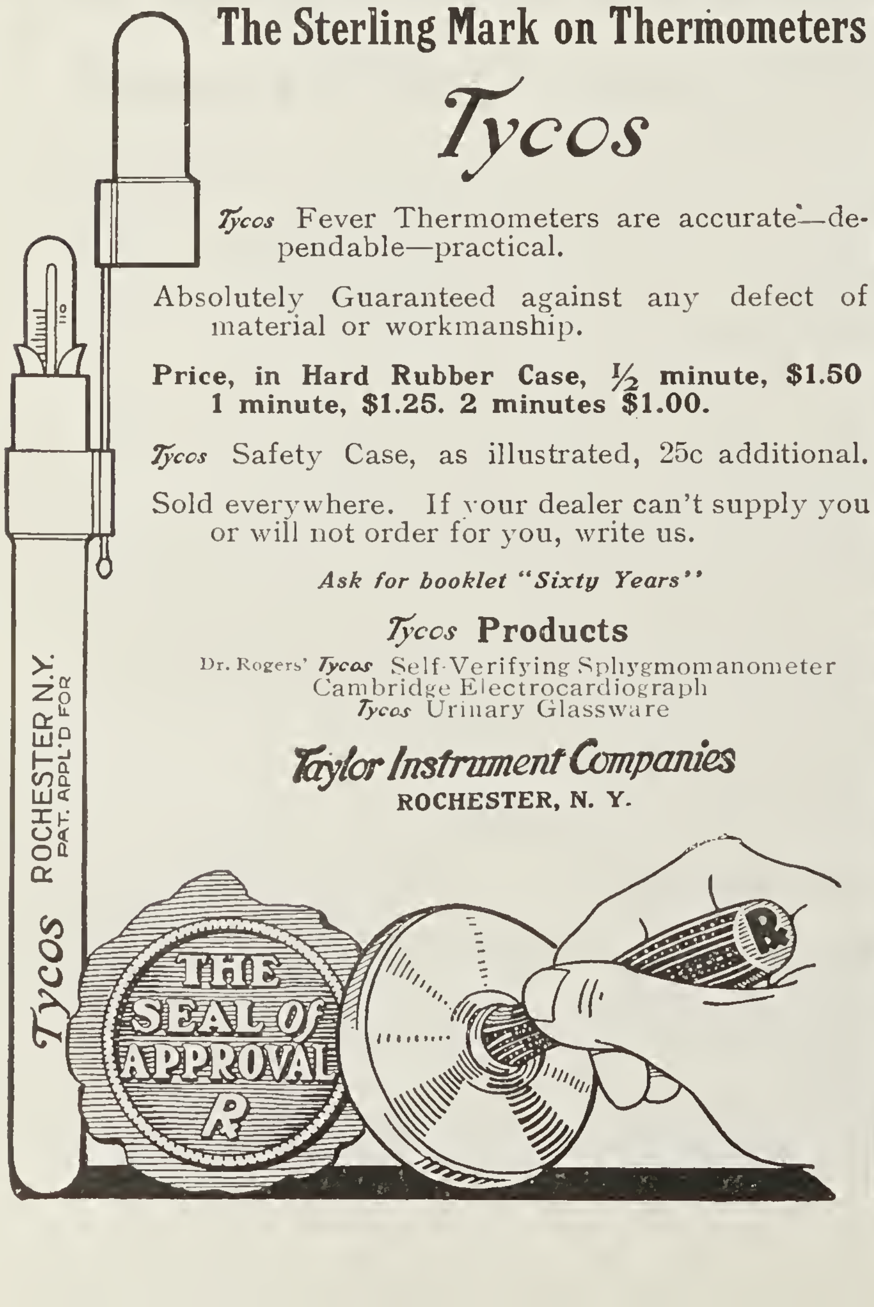
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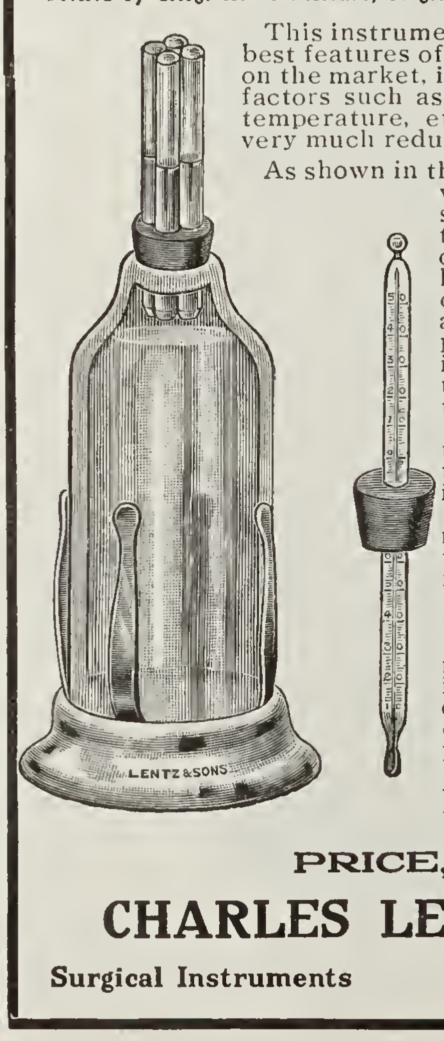

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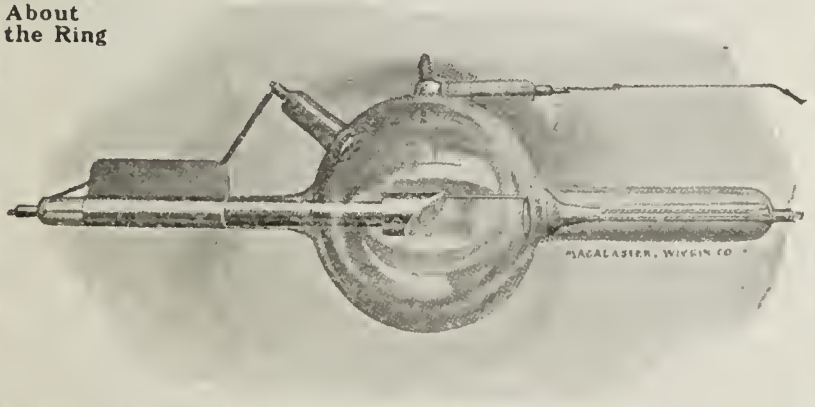

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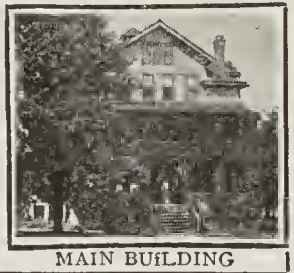

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Note: Full page 54, 4th Edition American Medical Directory.

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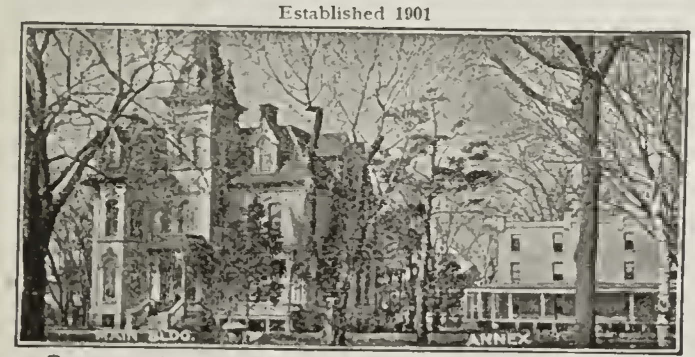

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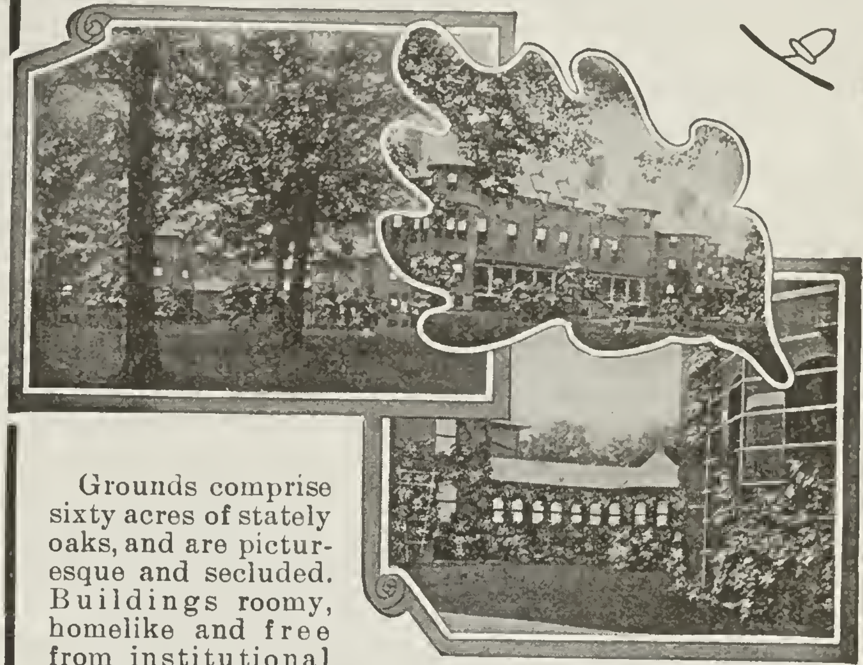

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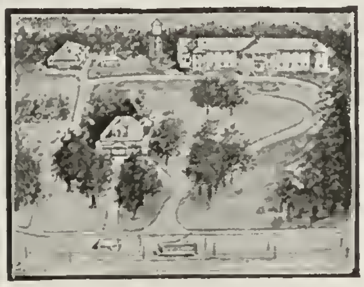

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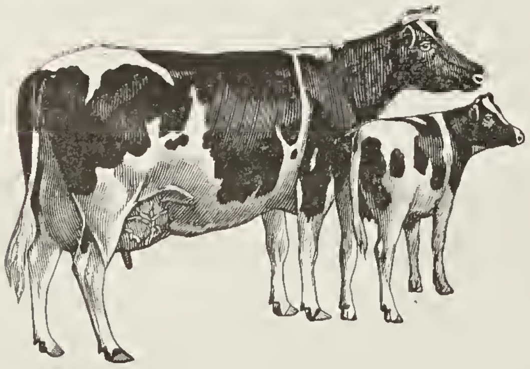

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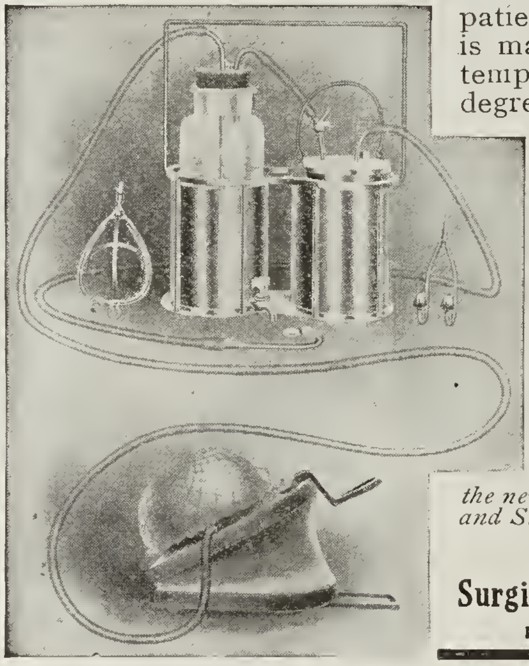

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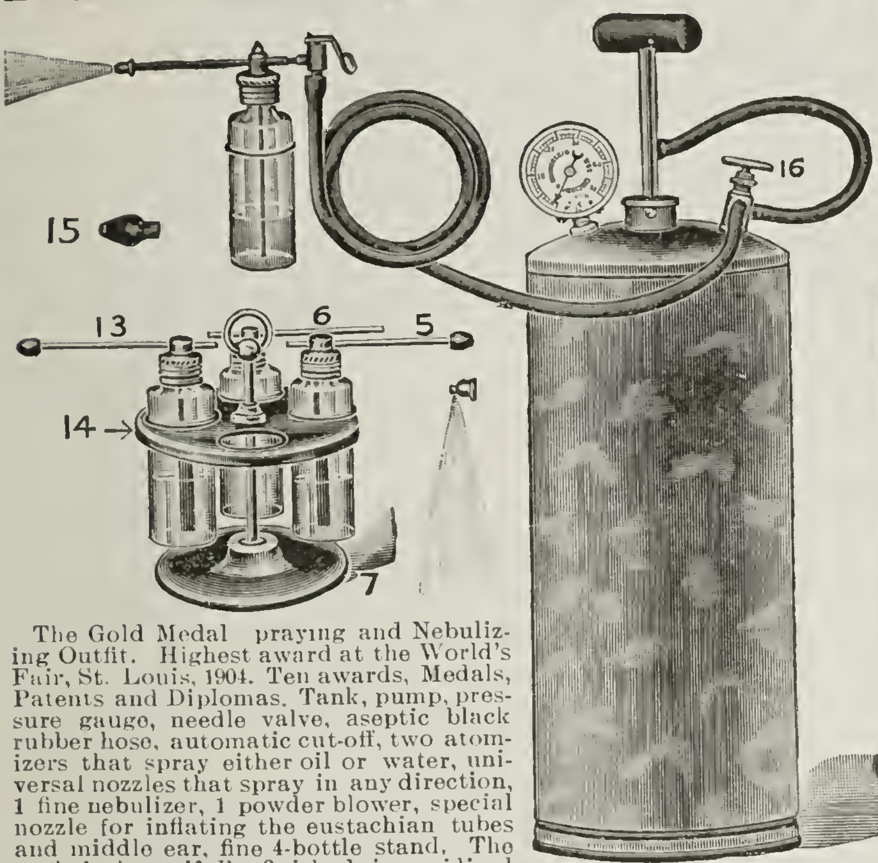

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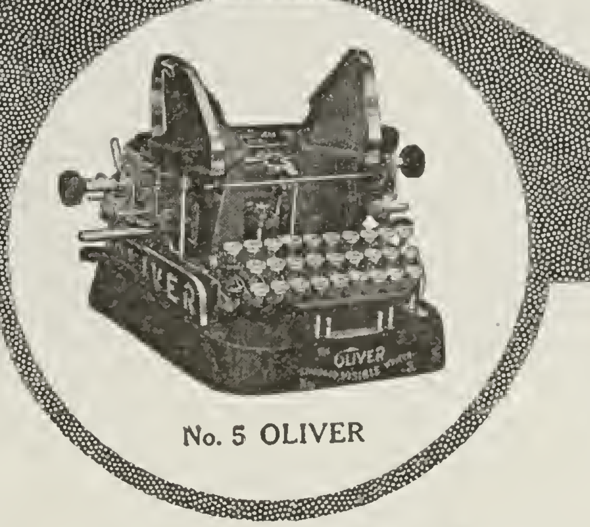

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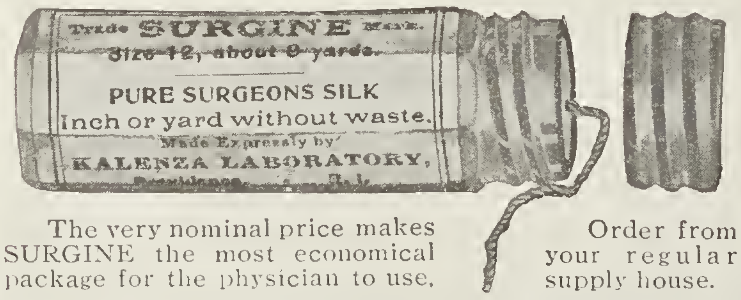

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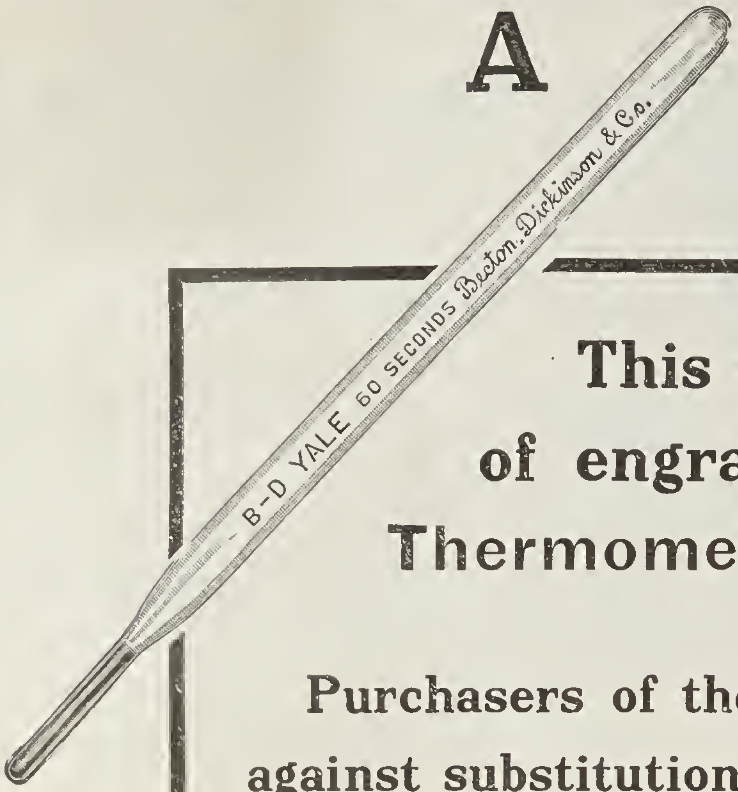
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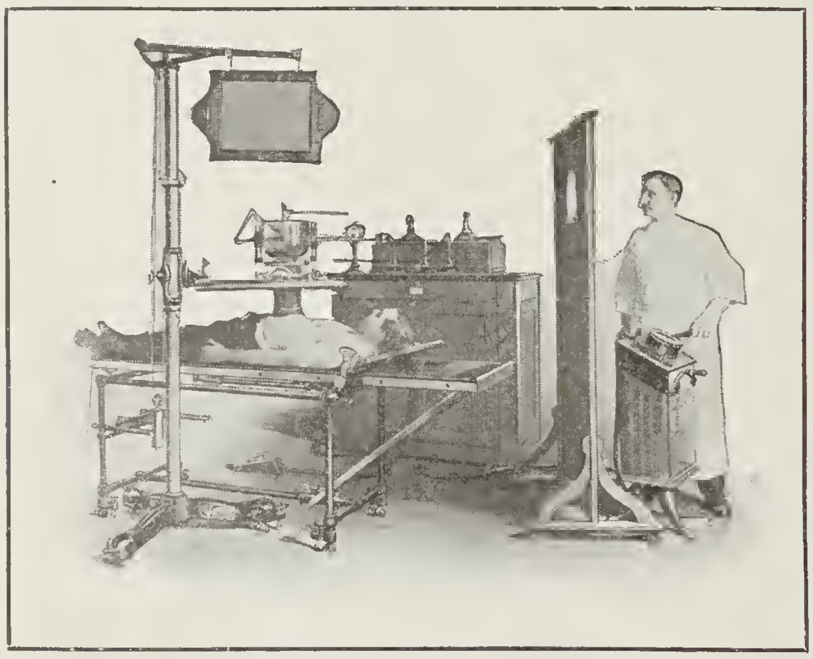

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